# Pasture Plants of Southern Inland Queensland

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# FOREWORD

A good stockman from the Maranoa district was asked about a steer which had a habit of straying to neighbouring properties and whether he would know the animal if he saw it. He replied, 'I'd know him anywhere, even in a stew!'

It's a paradox. We know our animals well, yet we largely take for granted the pastures which they graze. Perhaps this is a result of our history, of having seemingly unlimited grazing land and the ability to move the stock when pastures fail. The history of the bush, our folklore, our poetry and songs, our campfire yarns focus on our association with animals. Achievements and exploits with horses, cattle and sheep dominate the passing scene.

But grass did inspire some. In 1872 John Ingall had this to say:

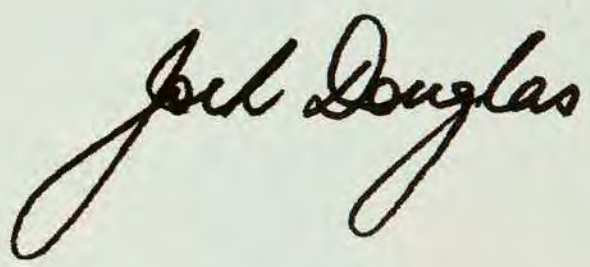
> Grass is the forgiveness of nature—her constant benediction. Forests decay, harvests perish, flowers vanish, but grass is immortal. Grass invades the solitude of deserts; climbs inaccessible mountains; modifies climates. Grass determines the history, character and destiny of nations.

Yet today, how many people reliant on 'the land' for a living, can walk through a paddock and name 10 or more of the edible plants growing there? Precious few.

But times are changing. There is a growing awareness of the need to manage our natural resource base better, so its diversity and productive capacity is maintained for future generations. There is also a growing recognition that best long-term production weights of meat and fibre from a given pasture paddock come from having lowered, optimised stocking rates.

To manage our pastures better we need to know the plants.

The authors who compiled this comprehensive manual about pasture plants have aimed to provide easy plant identification to assist practical pasture management decisions. This beautifully illustrated book is an invaluable reference source for pasture managers in southern inland Queensland and beyond.



Jock Douglas
Chair, Queensland Landcare Council

# CARE FOR THE GRASSLANDS

Ode to you, profuse and nutritious grass,
it seemed at first, you would forever last.

So indestructible you seemed, so much of our
wide land, did you clothe and cover,
it didn't occur to most, that you could ever
adversely suffer.

But if there is no care, you will change over
the years,
till our grasslands are sparse and sour, and
many are our tears.

Care for the grasslands, for our children's sake,
and conserve this land and life, so another
generation, to its beauty can awake.

**Carla Maree Schefe**

# CONTENTS

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■ Locality map:

Peter Ayriss

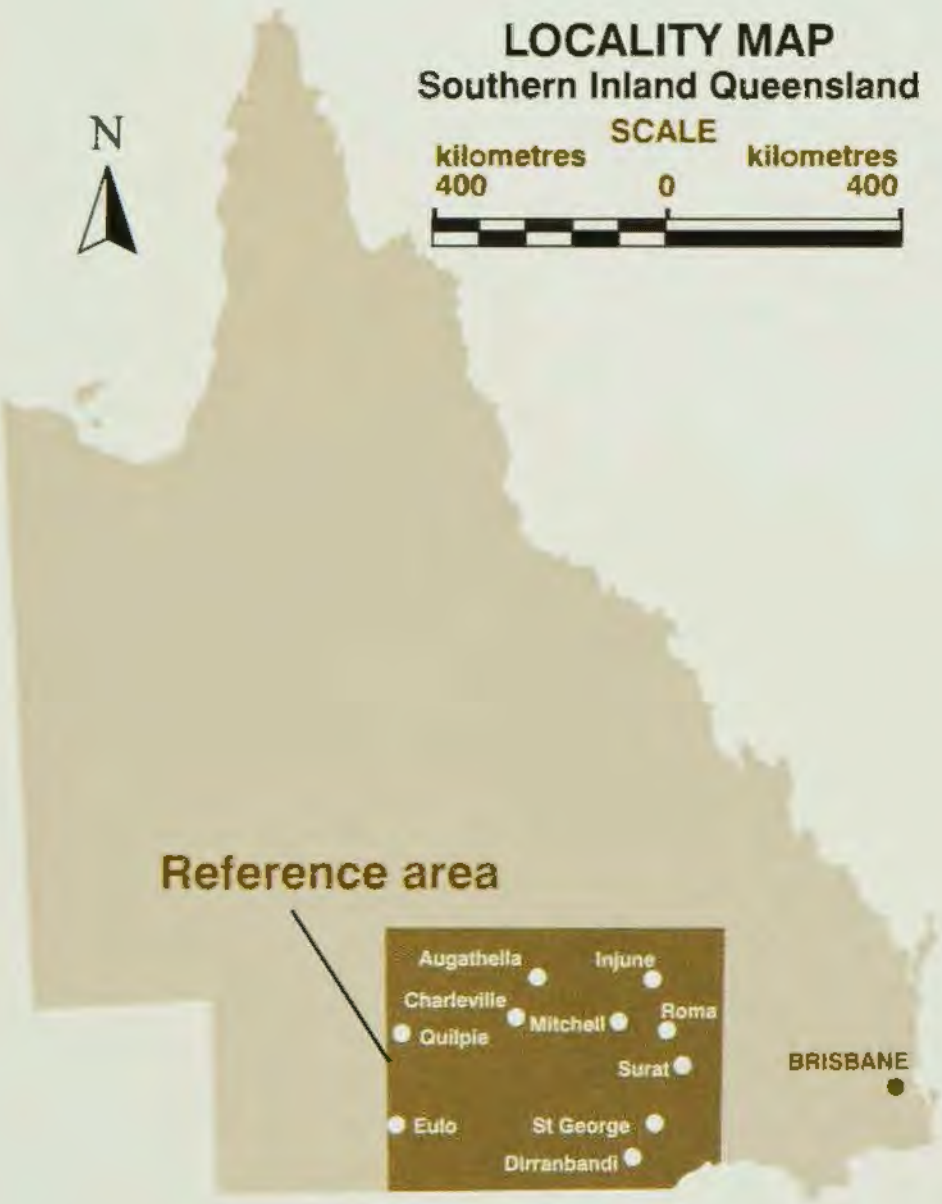
# INTRODUCTION

Native pastures are one of the greatest natural resources of Australia. They cover 90% of Queensland, support our extensive beef and sheep industries and provide forage and shelter for native animals. Pastures also provide protective cover for our valuable soil resource thus ensuring the maintenance of soil stability and fertility for future generations. It is therefore vital that native pastures are appropriately managed. Improved management of pasture and land resources benefits not only the individual grazing enterprise but the beef and wool industries as a whole.

To maintain and improve pastures it is important for land managers to be able to identify key grasses and forbs, understand their significance and recognise the effects of grazing management on pasture composition and soil stability. It is important to consider *pasture* condition as well as *stock* condition. This enables early detection of pasture changes so that management practices can be altered.

This book identifies the more common pasture plants of southern inland Queensland and provides additional information that will assist land managers with management decisions.

They may find it useful to integrate this knowledge of plant species with pasture composition and grazing management recording, using tools such as GRASS Check and the MAP (Mulga Assessment Programme). Such records form an integral part of Property Management Planning.




The focus of this book is the southern inland Queensland region which accounts for 6% of Queensland's beef producing herd, carries 26% of the State's sheep population and produces 26% of the wool clip (Australian Bureau of Statistics 1992/93). Land managers in this area have expressed a need for a plant identification guide that can assist them in their management practices. The greater part of this book consists of plant descriptions to enable identification of pasture plants. Chapter 7 provides additional information about plant identification services. The *References and further reading* section includes other resources that may be useful.

# HOW TO USE THIS BOOK

The introductory section of this book provides information on land types, pasture quality and management and the poisonous plants of the region. There are diagrams of basic plant structures and a plant identification key which is designed to help you identify plants quickly and easily.

Plant descriptions form the main body of this book. Plants are divided into two main sections—non grass-like and grass-like. Within each of these two main sections plants are arranged into types; for example, daisies, legumes etc. Details about individual plants are set out in the following way:

- **Names:** The standard common name taken from Lazarides and Hince (1993) is printed in large letters at the top of each page, except where a different common name is in widespread use in this region. Other common names are also listed. Different plants can have the same common name, so the scientific name is used as a unique identifier. The scientific name is in italics and the family name is at the top of each page.

- **Description:** The height, growth habit, leaves and flowers are briefly described to identify distinguishing features. Season of growth, flowering time and life cycle information is included.

- **Land type:** The land type(s) and soils preferred by the plant are indicated.

- **Grazing notes:** Forage value, grazing tolerance and the indicator value of the plants in terms of management and seasonal conditions are discussed. The most common plant toxins are described in Chapter 3 (Poisonous plants). Brief information on signs, management and control measures is given for potentially poisonous plants.

# CHAPTER 1

# Land types

The land types of the region have been divided into 10 units based on vegetation and soils.

- Brigalow–belah
- Mitchell grass
- Box woodland on grey clays
- Box woodland on red soils
- Pine
- Ironbark woodland
- Soft mulga and sand plains
- Hard mulga and jump-ups
- Gidyea
- Frontage flood plains and swamps

# Brigalow–belah

## Topography

Rolling plains and short slopes interspersed with low hills and ridges in the north of the region. Slopes mostly 1–3%, but up to 8%. In the south, brigalow occurs on flat to gently sloping (< 2%) land.

## Soils

Mostly grey, brown and red cracking clays with gilgais, some duplex (two-layered) soils with a loamy topsoil to 40 cm deep over a saline clay subsoil. High fertility and mostly alkaline.

## Vegetation

Brigalow forest or scrubs with scattered belah, poplar box, bauhinia and myall. Scattered patches of softwood scrubs in Taroom district and mountain yapunyah on some ridges. False sandalwood and wilga are a common understorey. Limebush may increase dramatically after clearing.

Pastures are sparse in uncleared country but in open areas are dominated by Queensland bluegrass, other bluegrasses, buffel grass, windmill grass, curly windmill grass, fairy grass, rat's-tail grasses, shot grasses, spring grass, saltbushes and saltweeds. Pastures in poor condition or after previous cultivation or renovation are often dominated by saltweeds, saltbushes, burrs and windmill grasses.

## Land use

Mostly grazing of cattle on a mix of sown and native pastures, plus winter grain and forage cropping and summer sorghum in the eastern part of the region.

TJH

# Mitchell grass

## Topography

Occurs as rolling open downs with slopes to 4% in the northern half of the region and as plains associated with major rivers in the south.

## Soils

Black, brown or grey, cracking self-mulching clays with no significant change in texture and colour with depth. High fertility and alkaline.

## Vegetation

Open grasslands containing Mitchell grasses, Queensland bluegrass, white speargrass, feathertop, Flinders grass and panic grasses plus a wide variety of other small grasses, legumes, daisies and herbage plants. Roly-poly and copperburrs increase when country is in poorer condition. Annual forbs (herbage) abound in wet winters, the major plants being lamb's tongue, wild carrot, daisies and Darling peas.

Mitchell grasslands sometimes grade into open woodlands containing whitewood, belah, bauhinia or poplar box. Coolibah occurs on drainage lines.

## Land use

Mostly grazing country but increasingly used for wheat and sorghum cropping in eastern parts of the region. Mitchell grass pasture is suitable for both sheep and cattle. Stock often graze a mix of native pasture and crop stubble or forage crops.

DRH

# Box woodland on grey clays

## Topography

Plains and rolling hills in the Injune district with slopes to 4%; extensive frontage areas adjacent to rivers and creeks.

## Soils

A mixture of moderate fertility, neutral to slightly alkaline pH loam to heavy clay soils with a predominance of grey clays.

## Vegetation

Trees are mainly poplar box, myall, whitewood and false sandalwood. Coolibah, river red gum and apple box occur on creek banks.

Pastures are predominantly bluegrasses, windmill grasses, digit grasses, panics, lovegrasses, spring grasses, bottlewasher grasses, shot grasses and silky browntop, with sedges and nardoo conspicuous in wetter areas. Coarse wiregrasses are common on creek flats and galvanised burr occurs in overgrazed areas.

## Land use

Well suited to sheep and cattle. Pasture improvement is limited. Cropping is possible in parts of the district.

TJH

# Box woodland on red soils

## Topography

Plains to undulating hills in the south and south-east of the region with slopes to 4%.

## Soils

Uniform red and red–yellow earths or duplex soils with a shallow, neutral to slightly acidic sandy loam over a tighter clay subsoil. Fertility is low to fair. *(Duplex soil—see inset.)*

## Vegetation

Trees are mostly poplar box with some yellow jacket, silver-leaved ironbark and an understorey of sandalwood. Patches of brigalow, belah, mulga or cypress pine can be found locally where soils change. Woody weeds such as bitterbark, false sandalwood, hopbush, currant bush, broombushes and wattles are often prevalent after clearing. Yellow jacket mixes are mainly confined to areas south of the Bollon–St George road.

Pastures are dominated by wiregrasses, panics, golden beard grass, curly windmill grass, windmill grass, pitted bluegrass and sometimes mulga country grasses. Lovegrasses, wiregrasses, burrs and five minute grass increase when the pasture condition declines.

## Land use

Mostly sheep and cattle on native pastures but cleared areas are often sown to buffel pasture. There is some forage cropping on better structured soils.

TJH



TJH

# Pine

## Topography

Rolling to steep hills and escarpments in the eastern half of the region with slopes to 8% in the north. Small strips on sandy rises among alluvial plains in the south.

## Soils

Low fertility, shallow to deep acid sands and sandy surface soils with yellow clay subsoils.

## Vegetation

Cypress pine is dominant, grading into eucalypts such as silver-leaved ironbark, poplar box, rusty gum and spotted gum depending on soil type and slope. Wattles and bull oak are a common understorey.

Main pasture plants are pitted bluegrass, wiregrasses, barbwire grass, golden beard grass, poverty grass, black speargrass and billybuttons. Windmill grasses, lovegrasses and comet grass increase when pastures are in poorer condition.

## Land use

Low intensity cattle grazing and forestry. Suitable for sowing buffel on more fertile soils.

TJH

# Ironbark woodland

## Topography

Large areas occur north-west of Injune on the upper slopes and crests of hills. Smaller patches are scattered throughout pine and box country. Rolling to steep hills and escarpments with slopes to 8%.

## Soils

A mix of stony, red and grey clays and clayey duplex soils. Low fertility, usually acid.

## Vegetation

Trees are mainly silver-leaved ironbark, narrow-leaved ironbark and cypress pine. Cabbage gum, apple box, molly box and zamia palms may be present and softwood scrubs may occur in wetter hollows.

Pastures are dominated by forest bluegrass, pitted bluegrass, golden beard grass, barbwire grass, wiregrasses, black speargrass and poverty grass. Spinifex occurs in patches on very infertile acid soils.

## Land use

Cattle grazing and areas of forestry. Two important problems affect graziers—sawfly larvae poisoning on silver-leaved ironbark country and zamia palm poisoning.

TJH

# Soft mulga and sand plains

## Topography

Extensive plain country west of the Maranoa river with slopes less than 2%. Soft mulga occurs mostly east of the Warrego and Langlo Rivers while sand plains are associated with the Paroo River south of Eulo. South of the Balonne highway this community grades into poplar box and yellow jacket woodlands.

## Soils

Low fertility red earths and deep sands. Very acidic.

## Vegetation

Trees are mostly mulga with scattered clumps of cypress pine, poplar box, beefwood and ironwood. Understorey hopbushes and green turkey bush can be very dense.

Pastures are predominantly mulga oats, mulga Mitchell, digit grasses, wiregrasses, wanderrie grasses and lovegrasses with many forbs (herbage) in wet winters. Poorer condition pastures are dominated by wiregrasses, silky umbrella grass, greybeard grass, foxtails, copperburrs, green crumbweed and woody weeds, especially turkey bush and hopbush.

## Land use

Predominantly sheep grazing with some cattle. Reduction in the natural frequency of fires is seriously reducing the grazing value of this country. Better poplar box/yellow jacket fringes may be sown to buffel grass in the south-east of the region.

CJE

# Hard mulga and jump-ups

## Topography

Timbered rolling hills and hard ridges with slopes of 2–8%; mainly in the southern and western parts of the region.

## Soils

Shallow, hard setting, red soils with stony covering and bare rock areas. Scalding is common. Very infertile and acidic.

## Vegetation

Trees are mostly mulga with lancewood, ironbark and bendee in the east and mountain yapunyah and western bloodwood in the west. Understories of hopbush, grey turkey bush and cassias are locally abundant.

Pastures are dominated by silky umbrella grass, cotton panic, wanderrie grasses and wiregrasses. Poor condition pastures have little grass or ground cover and consist of small wiregrasses, five minute grass and large populations of sidas, burrs and hop bushes. Annual forbs (herbage) abound in wet winters, the main plants being smooth velleia, daisy burrs, mulga nettle, parakeelya, paper daisies and foxtails.

## Land use

Suitable only for light grazing by sheep and normally should not be cleared.

CJE

# Gidyea

## Topography

Rolling plains and short slopes associated with minor ridges and jump-ups in the west and north-west. Slopes mostly to 3%. Flat plains associated with major river systems in the south.

## Soils

Mostly grey, brown and red cracking clays: some stony; others with strong gilgai development. Fertile and alkaline to very alkaline.

## Vegetation

Gidyea is the dominant tree. A sandalwood understorey may occur. Gidyea grades into brigalow south of St George and Bollon and into Mitchell grass in western areas.

Pastures in uncleared gidyea are sparse, have very few grasses and are dominated by saltbushes and succulents such as soft roly-poly, copperburrs, pigweed and ruby saltbush. Open or cleared areas have pastures dominated by ray grass, lovegrasses, windmill grasses, bottlewashers, buffel grass, fairy grass, Mitchell grasses and button grass. Degraded pastures on cleared gidyea often have severe gidyea regrowth and dense goathead burr and copperburrs.

## Land use

Mostly grazing with sheep and cattle. Pulled gidyea can be developed with sown buffel pasture, although this is sometimes difficult to establish south of Bollon and Cunnamulla.

TJH

# Frontage flood plains and swamps

## Topography

Grassy plains that experience intermittent flooding and are associated with watercourses and major river systems. Swampy areas and billabongs are common. Slopes less than 1%.

## Soils

Grey to brown cracking alluvial clays often with sand patches. Very fertile.

## Vegetation

These areas have scattered trees—mostly coolibah, black box and myall with a belalie and berrigan understorey in the east. In the west, dominant trees are coolibah, poplar box, yapunyah and gidyea with an understorey of Ellangowan poison bush and sandalwood. River red gums grow beside many watercourses. Extensive patches of lignum and Queensland bluebush occur in swamps in the southern part of the region.

In the east, pastures are based on Mitchell grasses, Queensland bluegrass, silky browntop, panics, shot grasses, lovegrasses, rat's-tail grasses, spring grasses and windmill grasses. Sedges and nardoo are common and become dominant in swampy areas. To the west the pasture has more digit grasses and lovegrasses. If degraded, the pastures lack strongly perennial plants, and sedges, umbrella canegrass and rat's-tail couch increase markedly.

## Land use

Sheep and cattle grazing on native pastures with small areas of opportunity cropping. Cotton growing is expanding on grey clays where irrigation is possible.

TJH

# CHAPTER 2

# Pasture quality, condition and grazing management

Sustainable management of pastures will ensure their future health and productivity. The presence or absence of certain plants can give an indication of pasture condition and the impact of management decisions. Furthermore, some plants have more nutritional value to stock than others. These points are dealt with in relation to specific plants in Chapter 6. This chapter provides an overview of factors associated with pasture quality, condition and management.

The value of a pasture for animal production depends on many interacting factors, including the:

- amount and distribution of rainfall in recent years
- stage of growth of the plants
- proportion of edible green leaf
- digestibility and palatability of plant parts
- range of plants available
- yield of total plant material
- soil type and fertility
- current and previous grazing pressures
- type of animal.

## Pasture quality

*(see Figure 2.1)*

### Response to season

The southern inland Queensland climate is semi-arid and between sub-tropical and temperate. There is no reliable wet or dry season. Pastures in the region include both summer and winter growing plants but on average, 85% of the annual pasture growth occurs in the six summer months (October to March). This is because the major pasture plants are the summer growing perennial grasses. Winter rains result in mostly annual forb growth which, though high in quality, does not produce nearly as much dry feed. Many winter growing forbs do not mature and flower until at least August. After their seeds ripen, they disintegrate rapidly and have no grazing value in summer.

### Plant growth stage

Plant growth stage is the major factor affecting pasture quality. Forage value increases rapidly during the weeks before flowering. As pasture plants mature after flowering, their quality declines due to an increase in the proportion of less digestible material (mostly stem) and a decline in the concentration of protein and other nutrients. After seeding, quality continues to decline due mainly to the physical loss of leaf. Frost exaggerates this trend and the old pasture falls below that quality needed for maintaining liveweight (*see the dotted line in Figure 2.1 below*).

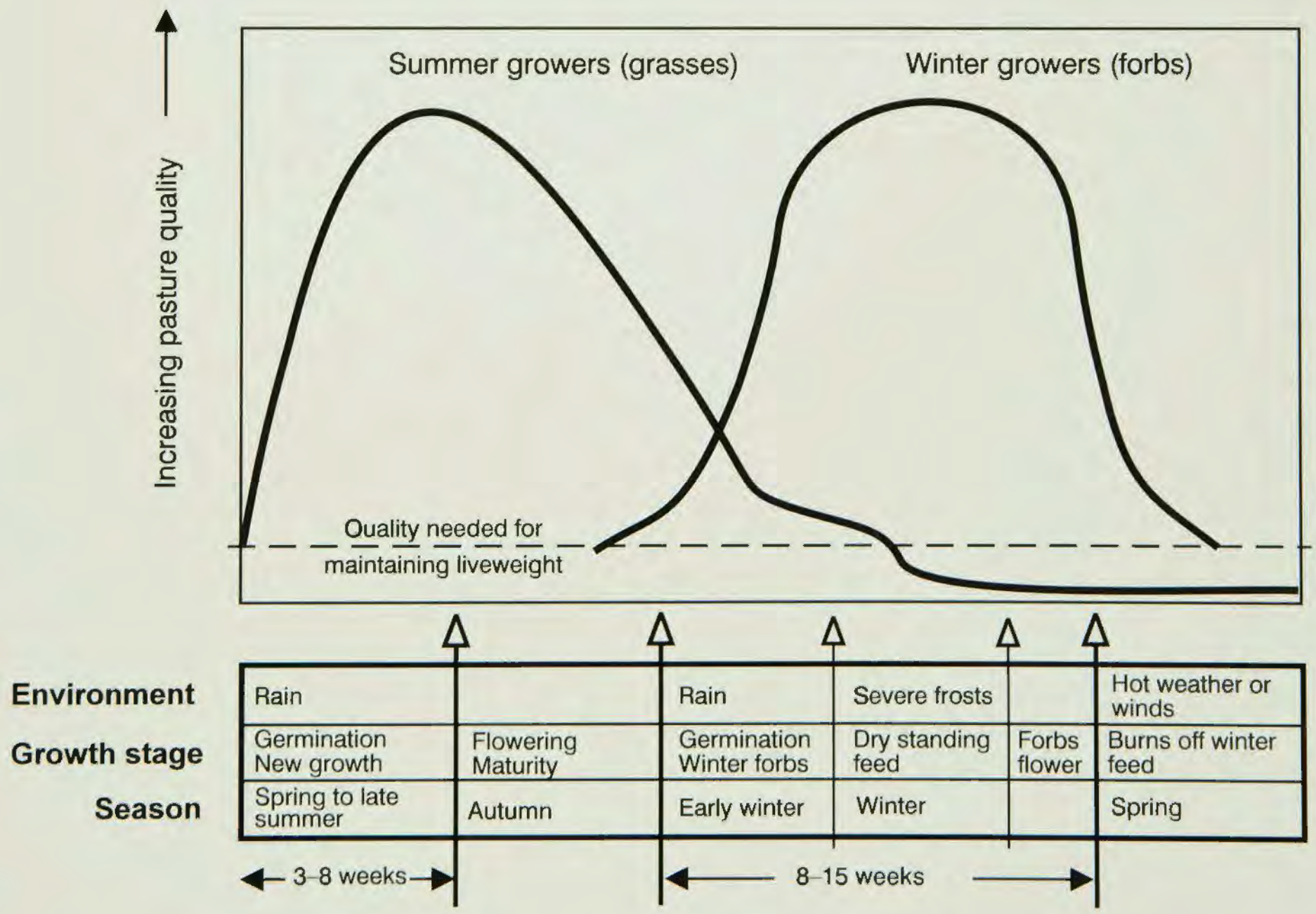





**Figure 2.1.** Pasture quality changes according to time of rainfall and pasture plants' stage of growth

TJH

**Left:** Green, leafy, high quality pasture in summer

TJH

**Right:** Dry, stemmy, low quality pasture in winter

## Plant type

The concentration of nutrients in different grasses is usually similar for comparable plant parts. The protein content of most grasses declines from 10–15% for young leaf to 1–4% when the plant is mature and dry or frosted. Their nutritive value also varies with the growing season, rainfall and soil fertility. In higher rainfall years the yield of plant material may be high, however the protein content is often lower than normal. A plant grown on a relatively fertile soil will usually have a higher nutritive value at the same stage of growth than the same species grown on less fertile soils. Because of this, it is difficult to compare species according to their published nutritive values.

Differences in nutritive value between plants are due mainly to plant type (grass versus forbs) and the proportion of leaf to stem. Provided they contain no poisons and are palatable, legumes and forbs have a high nutritive value (digestibility, protein and minerals) which is only equalled by the very best grasses when they are young and leafy. In both plant groups, green leaves have a higher percentage of digestible material and protein than do fibrous stems. Desirable plants have a higher proportion of palatable green leaf for a longer period each year. There is a close relationship between stock performance and the quantity of green leaf in a pasture, especially in autumn–winter.

## Pasture condition

Pasture condition is related to the composition, cover and yield potential of the pasture. Pasture in good condition has:

- a high proportion of desirable grasses (productive, palatable, perennial grasses)
- good ground cover
- few, if any, woody weeds, other weeds or regrowth problems
- little, if any, sign of erosion or soil degradation.

The desired proportion of the above plant components in a pasture varies with land type (soil type, topography), pasture type, climate and past and current grazing pressures (*see Figure 2.2*).

### Pasture condition changes and pasture monitoring

Pasture condition is influenced by a combination of factors including:

- grazing pressure
- climate
- fire
- timber control.

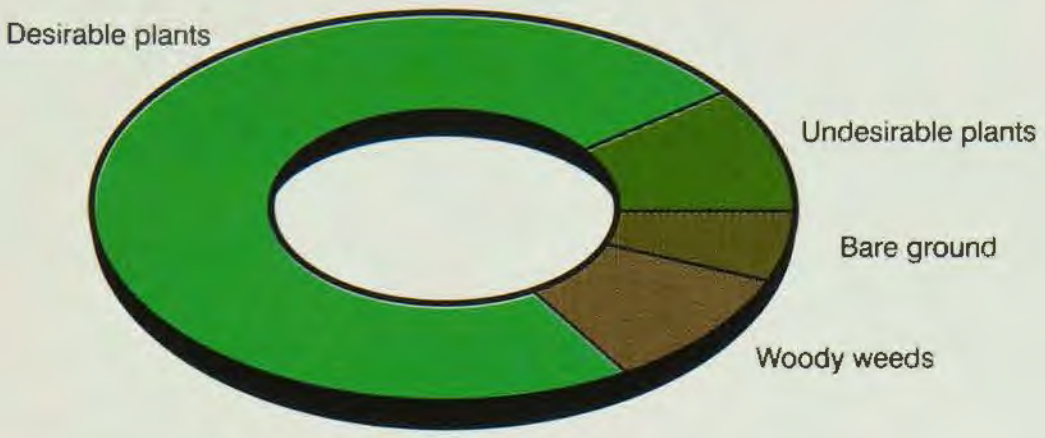
Different pasture types have different levels of resilience to inappropriate stocking management and unfavourable seasons. Resilience does not imply that a pasture is immune to the grazing stresses placed upon it. For example, Mitchell grass pastures have a greater resilience to long periods of heavy grazing with little apparent visible effect compared to mulga country pastures. However, a drought during a prolonged period of heavy grazing can be the final stress which causes a 'crash' in pasture condition, often with little prior warning. In most other land types, this change is more visible (via woody weeds and scalding) and occurs gradually over a number of years or decades.

These changes can be measured. If changes are detected early, there is time to identify causes and alter management practices thus preventing a permanent decline in condition. Pasture monitoring can be as simple as an annual photograph and inspection in a few parts of most paddocks. The pasture composition and condition is checked, recorded and compared with previous years. It requires some plant identification skills and an understanding of pasture dynamics.

Pasture monitoring programs such as GRASS Check and the Mulga Assessment Programme can help land managers understand changes in pasture condition and adjust management practices accordingly. Both these programs are available through local DPI offices and information centres.

## Pasture in good condition

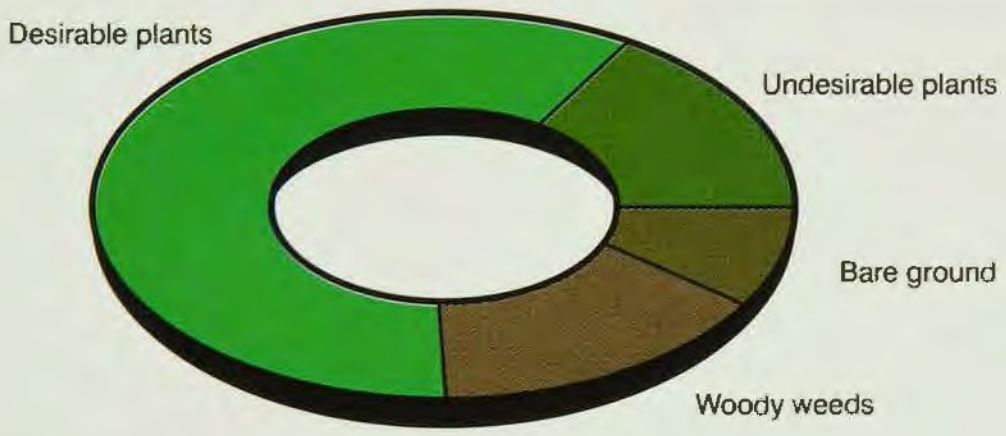
**Composition profile**




**No obvious signs of erosion**


## Pasture in fair condition

**Composition profile**




**Slight signs of erosion**


## Pasture in poor condition

**Composition profile**


**Obvious signs of erosion**


**Figure 2.2.** Stylised representation of composition profiles of pastures in good, fair, and poor condition. Corresponding photographs are examples from mulga country.

Pasture management which maintains a good proportion of productive and palatable perennial grasses, a good canopy cover and a stable soil will ensure that pastures remain stable and productive in the long term. However, even a small outbreak of a particular weed can indicate long-term disaster if not acted upon quickly; mesquite, parthenium and rubber vine can each cause problems.

Different land types have different dominant pasture plants when the land types are in good, fair and poor pasture condition (*see Table 2.1*).

**Table 2.1.** Dominant pasture plants on different land types in good, fair and poor condition

| Land type | Pasture condition | Dominant pasture plants |
|---|---|---|
| Brigalow–belah | Good | Queensland bluegrass, brigalow grass, forest bluegrass, buffel grass, shot grasses |
| | Fair | Queensland bluegrass, brigalow grass, spring grass, slender bamboo grass, annual saltbush |
| | Poor | windmill grasses, curly windmill grass, fairy grass, black roly-poly, saltweeds |
| Mitchell grass | Good | Mitchell grasses, Queensland bluegrass, silky browntop, Flinders grass, spring grass, rhynchosia |
| | Fair | Mitchell grasses, white speargrass, feathertop, fairy grass, soft roly-poly, Flinders grass, panics, malvastrum |
| | Poor | feathertop, white speargrass, copperburrs, daisy burrs, soft roly-poly, annual saltbush |
| Box woodland (grey and red soils) | Good | forest bluegrass, Queensland bluegrass, umbrella grasses, kangaroo grass, panics, buffel grass |
| | Fair | pitted bluegrass, curly windmill grass, windmill grasses, bottlewashers, lovegrasses |
| | Poor | wiregrasses, lovegrasses, windmill grasses, pimeleas five minute grass, curly windmill grass, galvanised burr |
| Pine and ironbark | Good | pitted bluegrass, barbwire grass, forest bluegrass, golden beard grass, black speargrass, kangaroo grass |
| | Fair | golden beard grass, pitted bluegrass, windmill grasses, wiregrasses, poverty grass, yellow buttons |
| | Poor | wiregrasses, lovegrasses, poverty grass, pimeleas |

| Land type | Pasture condition | Dominant pasture plants |
|---|---|---|
| Soft mulga and sand plains | Good | umbrella grasses, mulga oats, mulga Mitchell grass, kangaroo grass, woollybutt wanderrie, woollybutt |
| | Fair | umbrella grasses, woollybutt wanderrie, wiregrasses, woollybutt, mulga Mitchell grass, greybeard grass, daisy burrs |
| | Poor | wiregrasses, five minute grass, woollybutt, purple lovegrass, wanderrie grasses, sidas, galvanised burr, mulga fern, plus woody weeds |
| Hard mulga and jump-ups | Good | cotton panic grass, mountain wanderrie, mulga Mitchell, mulga oats, small wiregrasses |
| | Fair | mountain wanderrie, wiregrasses, foxtails, burrs, green crumbweed |
| | Poor | mountain wanderrie, coarse wiregrasses, plus woody weeds |
| Gidyea | Good | comb chloris, buffel grass, weeping lovegrass, fairy grass, saltbushes |
| | Fair | comb chloris, neverfail grass, button grass, saltweeds, red spinach |
| | Poor | copperburrs, soft roly-poly |
| Frontage flood plains and swamps (east of region) | Good | Mitchell grasses, silky browntop, Queensland bluegrass, spring grass |
| | Fair | Mitchell grasses, neverfail, shot grasses, rat's-tail couch, sesbania pea and lignum |
| | Poor | black roly-poly, sedges, western nutgrass, nardoo, raspweed, belalie, plus other woody weeds |
| Frontage flood plains and swamps (west of region) | Good | native millet, curly windmill grass, Warrego summer grass, common fringe-rush, fairy grass, spring grass |
| | Fair | slender chloris, button grass, dainty lovegrass, Brown's lovegrass, ruby saltbush, bluebells, native leek, lamb's tongues |
| | Poor | comb chloris, galvanised burr, common joyweed, copperburrs, daisy burrs, five minute grass, mulka |

# Grazing management

## Animal grazing habits

Animals selectively graze particular species and plant parts. Palatable and nutritious forbs and annual grasses are often selected, forming a higher percentage of the diet than they do of the pasture. When grass is dry, stock can improve the quality of their diet by browsing green leaf on shrubs and trees. Some forbs are toxic or unpalatable, despite being rich in nutrients.

Selective grazing is more evident in sheep than cattle. Cattle wrap their tongue around the leaf and stems and break or strip them off. Sheep bite off plants or leaves close to the base, eat seed pods on the ground and graze short, green shoots with ease. This allows sheep to obtain a higher quality diet in dry times, and put more pressure on the survival of the sweeter and more palatable plants. A good way to obtain more uniform use of pasture in large paddocks is to strategically locate water points.

## Animal intake

Livestock need to eat the equivalent of $2^1/_2$–3% of their body weight each day to maintain liveweight. The amount of forage consumed depends on body weight, pregnancy and lactation status (*see Table 2.2*) as well as pasture conditions. Normally, livestock can consume enough dry matter for their energy needs, and protein is their most likely limiting nutrient. However, on rare occasions, extremely lush winter pastures may contain so much moisture that the animals cannot satisfy their energy needs.

**Table 2.2.** Average intake (kg/year) by different classes of sheep and cattle (*Source: Adapted from GRASS Check*)

| Sheep | |
|---|---|
| **Class** | **Average intake (kg/yr)** |
| Weaner | 360 |
| Empty ewe<br>Wether | 450<br>450 |
| Pregnant ewe | 550 |
| Lactating ewe<br>Ram | 640<br>640 |

| Cattle | |
|---|---|
| **Class** | **Average intake (kg/yr)** |
| Calf < 1 yr | 1600 |
| Heifer 1 yr<br>Steer 1 yr | 2240<br>2560 |
| Steer 2 yrs<br>Heifer 2 yrs<br>Cow | 3200<br>3200<br>3200 |
| Bull | 4000 |

## How much of a pasture should be grazed?

Grazing pressure on a pasture should not be gauged by counting stock numbers but by calculating animal consumption rate. Grazing to utilise annually 20–30% of the standing pasture at the end of the summer growing season will maintain the desirable grasses in pastures. Such pastures are more stable, productive and drought resistant in the long term. To calculate a utilisation rate, use the following formula:

$$\text{Stocking rate at 30\% utilisation} = \frac{\text{Pasture yield (kg/ha) x Paddock area (ha) x 0.3 (\% utilisation)}}{\text{Annual pasture consumption for the class of stock (see Table 2.2).}}$$

The recommended rates for utilisation vary with average rainfall of the area. For example:

- 500–800 mm (20–32") of rainfall per annum = 30% utilisation
- less than 500 mm of rainfall per annum = 20% utilisation.

The remaining reserve of 70–80% allows:

- reserves for plant regeneration and seeding
- soil cover giving protection against erosion
- material for decomposition, aiding nutrient cycling which maintains soil fertility
- for losses by trampling, termites and other consumers
- fuel for controlled burns.

The pasture utilisation rate is based on plant *weight* rather than *height* (see *Figure 2.3).*

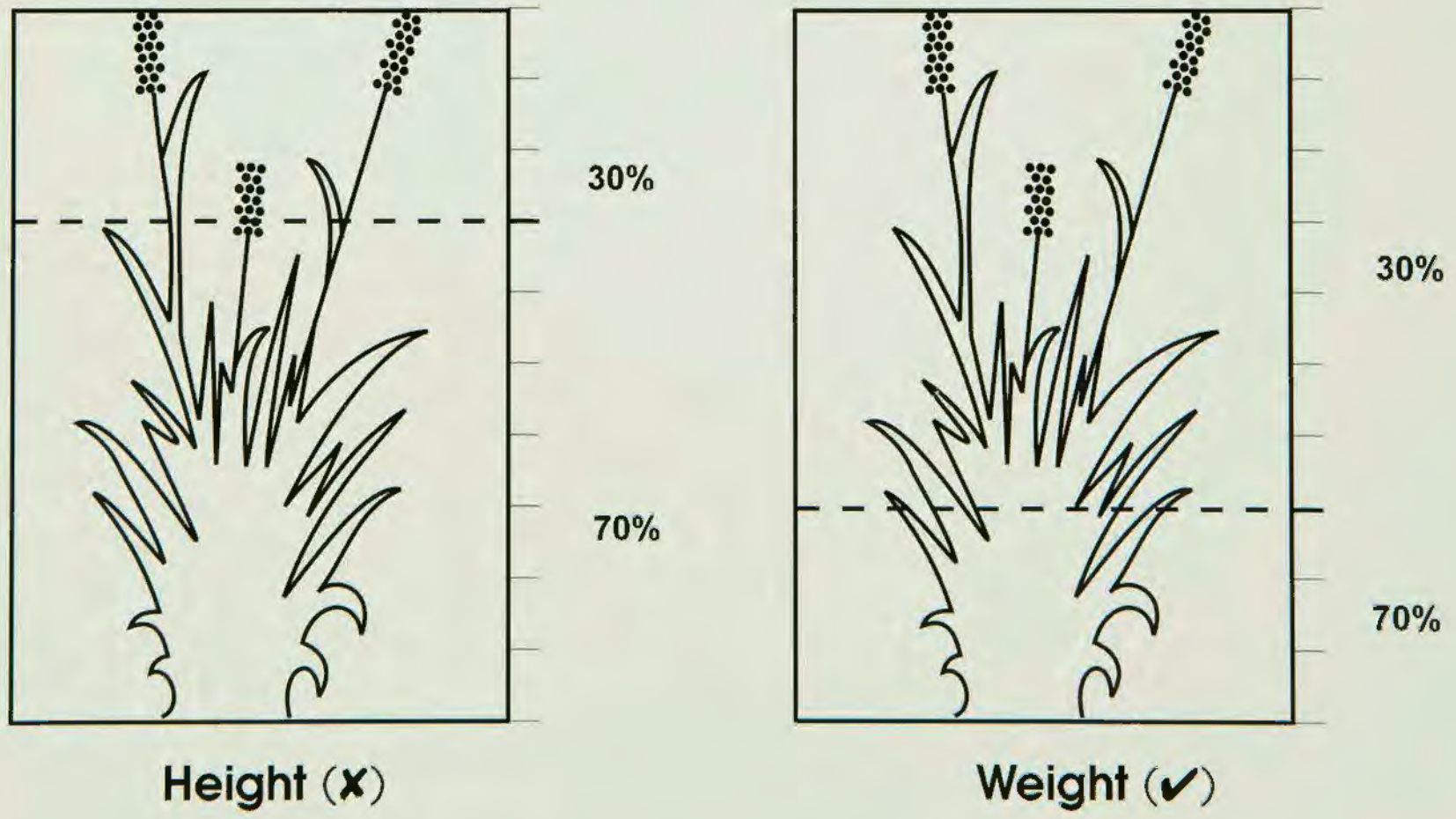



**Figure 2.3.** Assessment of 30% pasture utilisation based on weight

Total grazing pressure in a paddock needs to be calculated to include domestic, native and feral animals. Approximate comparative animal equivalents (conversion factors) from dry sheep equivalent (DSE) and adult cattle equivalent (AE) are:

**Table 2.3**. Approximate comparative animal equivalents

| 1 Dry sheep equivalent | 1 Adult cattle equivalent |
|---|---|
| = 1 wether | = 1 adult bullock/dry cow |
| = 0.7 ewe and lamb | = 0.65 cow and calf |
| = 1.25 weaner sheep | = 1.35 weaner cattle |
| = 1 goat | = 8 goats |
| = 1.4 grey kangaroos | = 11.2 grey kangaroos |
| = 2.5 whiptail wallabies | = 20 whiptail wallabies |
| = 10 rabbits | = 80 rabbits |
| = 0.125 dry cow | = 8 wethers |
| = 0.17 weaner cattle | = 10 weaner sheep |
| = 0.08 cow and calf | = 5.6 ewes and lambs |

Improved stock performance can be achieved from well-managed, quality pastures (*see Figure 2.4*). Consideration of these factors that influence the value of a pasture for animal production and the maintenance or improvement of pasture condition is necessary to ensure good, long-term pasture and animal productivity and profitability.

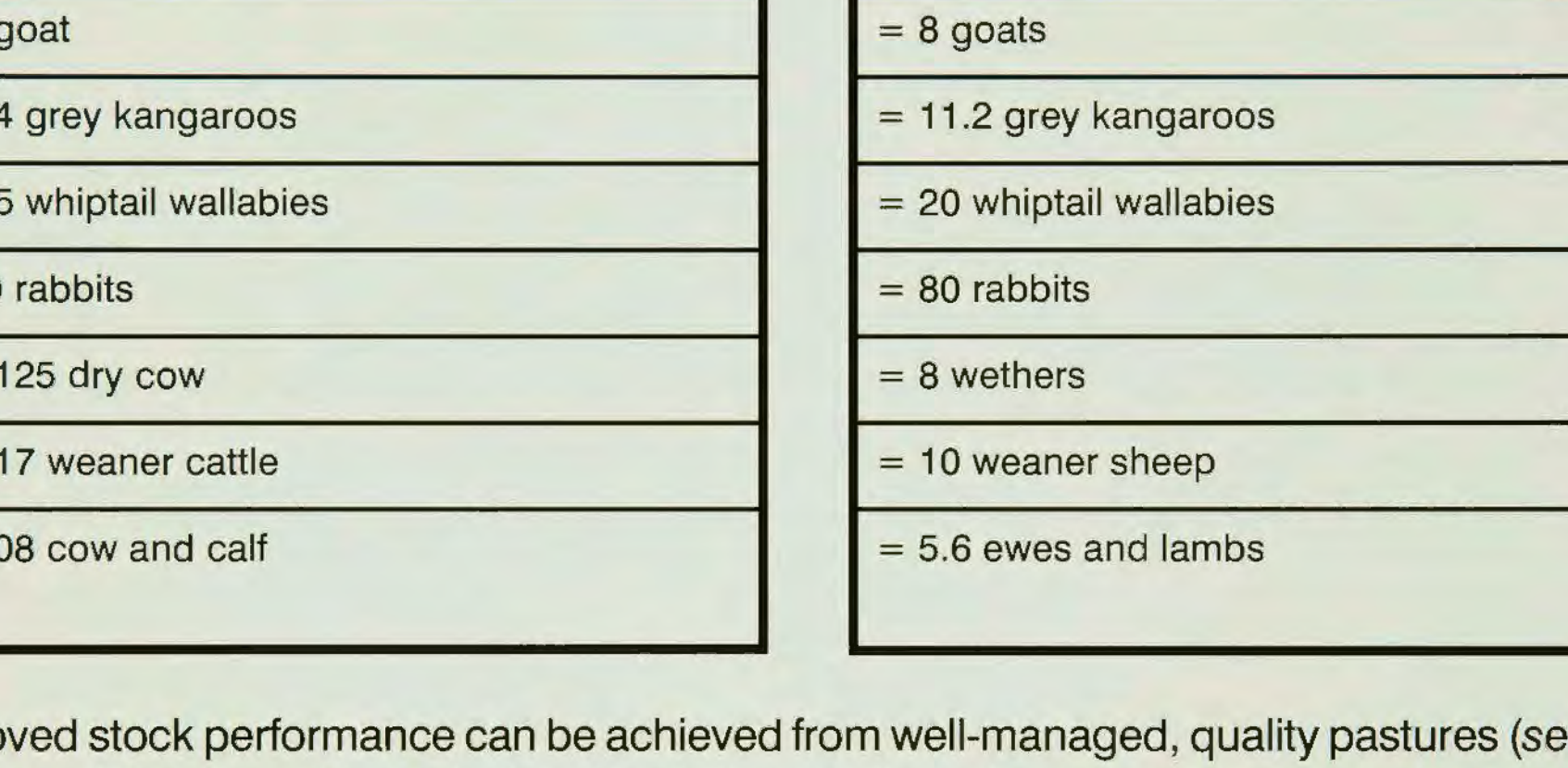



**Figure 2.4**. Difference in pasture production and possible stocking rates at 30% utilisation for 200 ha (500 acres) of mulga pastures ranging from good to poor condition (due to woody weeds) following dry and wet seasons

# CHAPTER 3

# Poisonous plants

Occasionally animals will eat plants that poison them. Poisonings are more common with hungry stock or newly introduced stock or when feed supply is limited. Most poisonous plants are not eaten readily. Others may be eaten or nibbled but are only toxic under certain grazing or seasonal conditions.

This chapter provides introductory information on plant poisonings, the conditions under which poisonings occur and the management of pastures containing poisonous plants. Much of the information in this chapter includes material used with permission from Dowling and McKenzie's *Poisonous Plants: a field guide*. Table 3.1 provides a quick reference tool for potentially poisonous plants in southern inland Queensland and the types of animal affected. Remember, it is best to consult your veterinary surgeon and local DPI staff if you suspect plant poisoning.

## Common circumstances leading to poisoning

- **Disturbance of grazing routine which puts animals under stress**

– hungry animals allowed access to lush growth of plants that accumulate oxalate, nitrate or cyanide (prussic acid)—such as pigweed, buffel grass or fuchsia bush

– travelling or recently introduced stock may consume greater quantities of poisonous plants

– thirsty stock given access to water after recently eating poisonous plants

– the stress of mustering and yarding may compound poisoning

- **Drought conditions**

– animals may eat poisonous trees, shrubs and deep-rooted herbs which remain green during dry seasons when pasture is scarce e.g. Ellangowan poison bush

- **Light rainfall**

– rainfall not sufficient for the growth of useful pasture can be suitable for sprouting of toxic plants such as mulga fern, Noogoora burr (poisonous in the two-leaf stage), and pimelea

- **Sudden increase in toxic properties of plants**

– very cloudy weather favours the build-up of nitrates in plants

– light drizzly rain enhances cyanide poisoning

– herbicides can increase palatability

– young succulent growth can occur and increase poisonous substances in good seasons

## Avoiding plant poisoning

Cures are not available for most poisonous plants so it is important to prevent poisoning from occurring. The management of poisonous plants should be included in your property plan. The following hints may assist you.

- Know the poisonous plants in your district and the conditions which enhance poisoning.
- Remove poisonous plants by using herbicides, fire, mechanical or biological methods. Some herbicide-treated plants become more palatable and stock should be removed until the plants are dead.
- Keep stressed, travelling, droughted or hungry animals away from poisonous plants or feed them hay before allowing access to pastures with poisonous plants. Check yards and remove any poisonous plants.
- Observe stock introduced to areas known to contain poisonous plants, and remove them quietly if signs of poisoning appear.

- Keep animals suspected of eating poisonous plants away from water for a few hours to allow time for the poison to be broken down in the body. Drinking water often causes more rapid absorption of some plant poisons. Remove poisoned or surviving animals quietly from affected paddocks and then leave them alone unless there is a specific treatment that can be economically administered.
- Manage pastures to increase growth of desirable perennial grasses thereby reducing opportunities for poisonous plant growth.

## Major types of plant poisonings

The following descriptions of types of poisonings are referred to throughout the book. Some plants contain more than one poisonous principle. Some poisonous compounds cause problems after limited consumption while others take months or years to cause problems.

### Cyanide (prussic acid, HCN)

Death is usually rapid (1–2 hours). Signs include rapid and deep breathing, excess salivation, twitching, trembling, spasms, staggering, collapse, coma and death. There are no obvious post mortem changes.

*Prevention and treatment*

Prevent animals from grazing new growth of cyanide–containing crops (e.g. sorghum) or after a sudden check in growth from frosting or wilting after severe heat.

Remove affected animals from infested pastures. An initial intravenous injection of sodium thiosulphate (hypo) solution followed by oral doses hourly for all exposed animals may aid survival.

### Nitrate–nitrite

Poisoning can occur when soil nitrates are high but growing conditions over a few days are not suitable for normal plant growth which would convert nitrate into protein within the plant. These conditions include sufficient soil moisture to allow uptake of nitrates during the night followed by hot or dry conditions during the day causing rapid wilting soon after sunrise. Cold or cloudy weather or herbicide treatment also slows or stops the conversion. Nitrates can persist in hay. The accumulated nitrates can be converted into the more toxic nitrites by ruminants. Death occurs within hours. Signs include rapid gasping/breathing, blue gums, convulsions. After death the chocolate-coloured blood clots poorly, and the liver, kidneys and lungs are often congested with blood.

*Prevention and treatment*

To avoid poisoning, do not allow stock access to hazardous plants under the above conditions and do not graze cattle being fed monensin on hazardous pastures.

Treat affected animals with intravenous injections of methylene blue, repeated every 6–8 hours.

## Oxalate

Oxalates bind with calcium and the induced calcium deficiency causes muscle tremors, staggering, collapse, coma and death in sheep. In cattle, signs are lethargy, reduced appetite, staggering, diarrhoea, collapse and death. Some animals die rapidly while others may be ill for up to two weeks before death. The kidneys are usually swollen and pale, and excess fluid accumulates around the kidneys and heart and in the abdomen. Oxalate 'grains' may be felt when cutting the kidneys.

*Prevention and treatment*

Calcium borogluconate administered promptly into the vein or under the skin may be successful, depending on the amount of kidney damage.

## Pyrrolizidine alkaloids

Plants containing these compounds are rarely grazed except when there is little alternative feed. The effects on animals are mostly long-term and cumulative. However poisoning may occur more immediately if large amounts are eaten in a short time.

The liver is most affected and the kidneys and lungs may be damaged also. Signs include poor growth, wasting, nervous problems, aimless wandering, unsteady gait, apparent blindness, photosensitisation, jaundice, abdominal straining, protracted scouring, continual drooling, breathing difficulties, collapse and death. In horses it can cause walkabout disease or Kimberley horse disease with weight loss, sleepiness, yawning, muscle twitching, poor coordination, irritability and compulsive walking or galloping. Affected horses appear blind, walk into obstacles and may remain pressing against the obstacle rather than walk around it. Following sudden death, horses have excess fluid in the abdomen and may have a swollen, dark liver, while sheep and cattle have excess fluid in the chest cavity and lungs.

*Prevention and treatment*

There is no satisfactory treatment. Do not allow stock access to large amounts of these plants for long periods.

## Cardiac glycosides

Severely affected animals may collapse with breathing difficulty, bluish lips and gums and die rapidly. Less severely affected animals stop grazing, are depressed, develop diarrhoea (some droppings containing blood) and may die within about five days. Some slowly recover.

*Prevention and treatment*

Veterinary treatment will assist animals showing signs of recovery.

# Diseases caused by more than one plant

This section provides information about some of the diseases caused by more than one plant. There are other diseases caused by individual plants—for example, Birdsville indigo can cause Birdsville disease. The poisonous potential of plants is mentioned, where relevant, in the plant descriptions in Chapter 6.

## Big head disease of horses and donkeys

This is a chronic form of low-level oxalate poisoning causing calcium deficiency in these animals. The main signs are lameness, condition loss, and swollen, firm jaw bones. After death the jaw bones can be cut easily with a knife. Big head occurs when horses are grazed on almost pure stands of buffel, green panic or purple pigeon grass. Native grasses do not cause this condition because native pastures rarely have pure stands of the potentially toxic plants. Big head commonly occurs after 6–8 months but can develop within two months. Mares and foals are most susceptible.

*Prevention and treatment*

Grazing horses or donkeys on hazardous pastures should be restricted to less than one month at a time. If this is not possible, they should be fed a calcium and phosphorus supplement weekly. Mitchell grass and sown legumes are oxalate-free feed sources.

## Photosensitisation

Photosensitisation is the result of heightened sensitivity of the skin to sunlight and is usually a result of liver damage caused by plant toxins. It is sometimes called 'yellow big head' in sheep. Signs include frequent head-shaking, avoidance of direct sunlight, red, itchy skin and fluid build-up in the face, eyelids, lips and ears causing them to swell and the ears to droop. Serum may weep from affected areas. Jaundice often appears after 2–3 days. Eventually the affected skin becomes dry, blackened, cracked and leathery, often immobilising the lips and eyelids before peeling off. Fluid accumulation in the throat may cause breathing difficulties. In cattle, unpigmented skin is similarly affected, sores may develop on the underside of the tongue tip while horns and hooves may be shed.

*Prevention and treatment*

Affected animals should be provided with shade. Treatment of skin lesions may be useful in valuable animals.

Photosensitisation may occasionally occur in younger stock on some wilted or moisture-stressed sown pastures (e.g. bambatsi panic) or crops (e.g. French millet) being fed-off during dry periods, or regrowth following rain. These feed sources can be safely utilised during these periods if young sheep and cattle are monitored for the early signs of

head shaking or facial skin irritation. Early removal before more than 5% of animals show these signs will minimise adverse effects on their growth. Such forages may be grazed safely by more mature stock.

## Acute liver damage

Signs of acute liver damage include depression, reduced appetite, possible abdominal pain (grinding the teeth, kicking at the flanks, 'saw-horse' stance). It can also cause secondary brain damage and affected animals may charge when approached or walk or stumble blindly into obstacles. Some animals lie down within two days, convulse, pass into a coma and die within three days. Post-mortem signs include a swollen, dark-reddish liver which may look mottled when closely examined, the gall bladder wall swollen with fluid, reddened stomach and intestinal linings, haemorrhages into the digestive tract and other areas of the body and on the surface of the heart, and excessive fluid in the abdominal and chest cavities and around the heart.

*Prevention and treatment*

There is no effective treatment, although drenching with activated charcoal may benefit some animals. Mildly affected animals usually recover.

## Key for Table 3.1

**Animals affected:**

**C** = Cattle
**S/G** = Sheep and/or Goats

**H** = Horses
**P** = Pigs

**Major plant poisons/induced diseases:**

**N** = Nitrates
**C** = Cyanide
**O** = Oxalates

**P** = Photosensitisation
**PA** = Pyrrolizidine alkaloids
**CG** = Cardiac glycosides
**ALD** = Acute Liver Damage

✔ Poisoning can occur

(✔) Poisonings are rare or there is only a potential threat

* Descriptions for these plants not contained in text of this book.

**Table 3.1.** The main plants in southern inland Queensland that may poison animals and their major type of poison (*see page 28 for key*)

| | Animals affected | | | | Poisonous principles and induced diseases | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Plant** | **C** | **S/G** | **H** | **P** | **N** | **C** | **O** | **P** | **PA** | **CG** | **ALD** | **Other** | **Page** |
| Bambatsi panic | ✔ | ✔ | ✔ | | | | (✔) | ✔ | | | | | * |
| Birdsville indigo | | | ✔ | | | | | | | | | ✔ | 98 |
| Blue heliotrope | ✔ | ✔ | ✔ | | | | | | ✔ | | | | 120 |
| Buffel grass | | ✔ | ✔ | | | | ✔ | | | | | | 196 |
| Button grass | ✔ | ✔ | | | ✔ | | | | | | | | 175 |
| Caltrop | | ✔ | | | (✔) | | | ✔ | | | | ✔ | 151 |
| Caustic vine | ✔ | ✔ | ✔ | | | | | | | | | ✔ | 118 |
| Caustic weed | | ✔ | | | | ✔ | | | | | | | 130 |
| Couch | ✔ | ✔ | ✔ | | | ✔ | | | | | | | 176-7 |
| Crownbeard | (✔) | ✔ | | (✔) | | | | | | | | ✔ | 80 |
| Darling pea | ✔ | ✔ | ✔ | | | | | | | | | ✔ | 103 |
| Ellangowan poison bush | ✔ | ✔ | | | | | | | | | | ✔ | * |
| Fireweed | ✔ | ✔ | ✔ | | | | | | ✔ | | | | 77 |
| Flat billybuttons | | ✔ | | | | | | | | | | ✔ | 71 |
| French millet | | ✔ | | | | | | ✔ | | | | | * |
| Fuschia bush | ✔ | ✔ | | | | ✔ | | | | | | | * |
| Gomphrena weed | | | ✔ | | | | | | | | | ✔ | 61 |
| Green cestrum | ✔ | | | | | | | | | | ✔ | | * |
| Liverseed grass | ✔ | (✔) | | | ✔ | | | | | | | | 187 |
| Mexican poppy | (✔) | (✔) | | | (✔) | | | | | | | ✔ | 139 |
| Mintweed | ✔ | ✔ | | | ✔ | | | | | | | | 136 |
| Mother-of-millions | ✔ | (✔) | | | | | | | | ✔ | | | 128 |
| Mulga fern | ✔ | ✔ | | | | | | | | | | ✔ | 153 |
| Nardoo | | ✔ | (✔) | | | | | | | | | ✔ | 154 |
| Wild tobacco | ✔ | ✔ | | | | | | | | | | ✔ | 145 |
| Noogoora burr | ✔ | ✔ | | ✔ | | | | | | | ✔ | | 81 |
| Oleanders | ✔ | (✔) | ✔ | ✔ | | | | | | ✔ | | | * |
| Panic grasses | ✔ | ✔ | | | | | (✔) | ✔ | | | | | 212–15 |
| Paterson's curse | (✔) | ✔ | ✔ | ✔ | | | | (✔) | ✔ | | | | 119 |
| Pigweed | ✔ | ✔ | | | ✔ | | ✔ | | | | | | 143 |
| Pimelea | ✔ | (✔) | | | | | | | | | | ✔ | 147 |
| Prickly paddymelon | ✔ | (✔) | | | | | | | | | | ✔ | 129 |
| Purple plume grass | (✔) | ✔ | | | | ✔ | | | | | | | 237 |
| Small-flowered mallow | ✔ | ✔ | ✔ | | (✔) | | | | | | | ✔ | 110 |
| Soda bush | | ✔ | | | | | ✔ | | | | | | 89 |
| Soft roly-poly | (✔) | (✔) | | | | | ✔ | | | | | | 90 |
| Sorghum (crop) | ✔ | ✔ | ✔ | | ✔ | ✔ | | | | | | | * |
| Thornapple | (✔) | (✔) | (✔) | ✔ | | | | | | | | ✔ | 144 |
| Variegated thistle | ✔ | ✔ | | | ✔ | | | | | | | | 78 |
| Weir vine | (✔) | ✔ | ✔ | | | | | | | | | ✔ | 126 |
| Wild parsnip | | ✔ | | | | | | | | | | ✔ | 117 |
| Zamias (cycads) | ✔ | (✔) | (✔) | (✔) | | | | | | | | ✔ | * |

# CHAPTER 4

# Declared plants

Under the *Rural Lands Protection Act 1985* (Qld) land owners are required to control 'declared' plants on their land.

# DECLARED PLANTS

There are five categories of declared plants:

- **P1** Plants whose introduction into the State is prohibited
- **P2** Plants which are to be destroyed throughout the State or relevant parts of the State
- **P3** Plants whose numbers and/or distribution are to be reduced throughout the State or relevant parts of the State
- **P4** Plants which are to be prevented from spreading from places where they occur in the State or relevant parts thereof
- **P5** Plants which should be controlled only on land under the control of a government department or local authority.

Table 4.1 is a list of declared plants in southern inland Queensland that has been adapted from information supplied by the Land Protection Branch of the Department of Lands (P1 classified plants are not included in this list). If you locate any of these plants, you can contact the Department of Lands for further advice.

**Table 4.1.** Classification of declared plants (*Source: Department of Lands*)

| Common name | Botanical name | Classification |
|---|---|---|
| *African boxthorn | *Lycium ferocissimum* | P3 |
| Annual ragweed | *Ambrosia artemisiifolia* | P3 |
| Badhara bush | *Gmelina asiatica* | P2 |
| *Bathurst burr | *Xanthium spinosum* | P3 |
| Bitou bush | *Chrysanthemoides monilifera* | P2 |
| Chinee apple | *Ziziphus mauritiana* | P3 |
| Crofton weed | *Eupatorium adenophorum* | P3 |
| Fireweed | *Senecio madagascariensis* | P2 |
| Giant rat's-tail grass | *Sporobolus pyramidalis* | P4 |
| Giant sensitive plant | *Mimosa invisa* | P2 |
| Groundsel bush | *Baccharis halimifolia* | P3 |
| Harrisia cactus | *Eriocereus* spp. | P3 |
| Honey locust | *Gleditsia triacanthos* | P2 |
| Hemlock | *Conium maculatum* | P2 |
| *Mesquite | *Prosopis* spp. | P2 or P3 |
| Milkweed | *Euphorbia heterophylla* | P2 |
| Mistflower | *Eupatorium riparium* | P3 |
| Navua sedge | *Cyperus aromaticus* | P3 |
| *Noogoora burr | *Xanthium pungens* | P3 |
| *Parthenium weed | *Parthenium hysterophorus* | P2 |
| Perennial ragweed | *Ambrosia psilostachya* | P3 |
| *Prickly acacia | *Acacia nilotica* | P2 |
| *Prickly pear | *Opuntia* spp. | P3 |
| *Rubber vine | *Cryptostegia grandiflora* | P2 |
| *Saffron thistle | *Carthamus lanatus* | P3 |
| Salvinia | *Salvinia molesta* | P2 |
| Sicklepod | *Cassia obtusifolia* | P2 |
| *Spiny emex | *Emex australis* | Paroo Shire P3/P4 |
| *Thornapple | *Datura* spp. | P3 |
| Tobacco weed | *Elephantopus mollis* | P2 |
| Water hyacinth | *Eichhornia crassipes* | P2 |
| Water lettuce | *Pistia stratiotes* | P2 |

* Declared weeds with a significant potential presence in the region

# CHAPTER 5

# Key for plant identification

This key has been developed to help you identify plants for which you do not know the names. If you already know the name of the plant and want more information, you can use the index in the back of this book to find the page you need. The diagrams on pages 36 and 37 provide stylised representations of non grass-like and grass-like plants—these may also assist you.

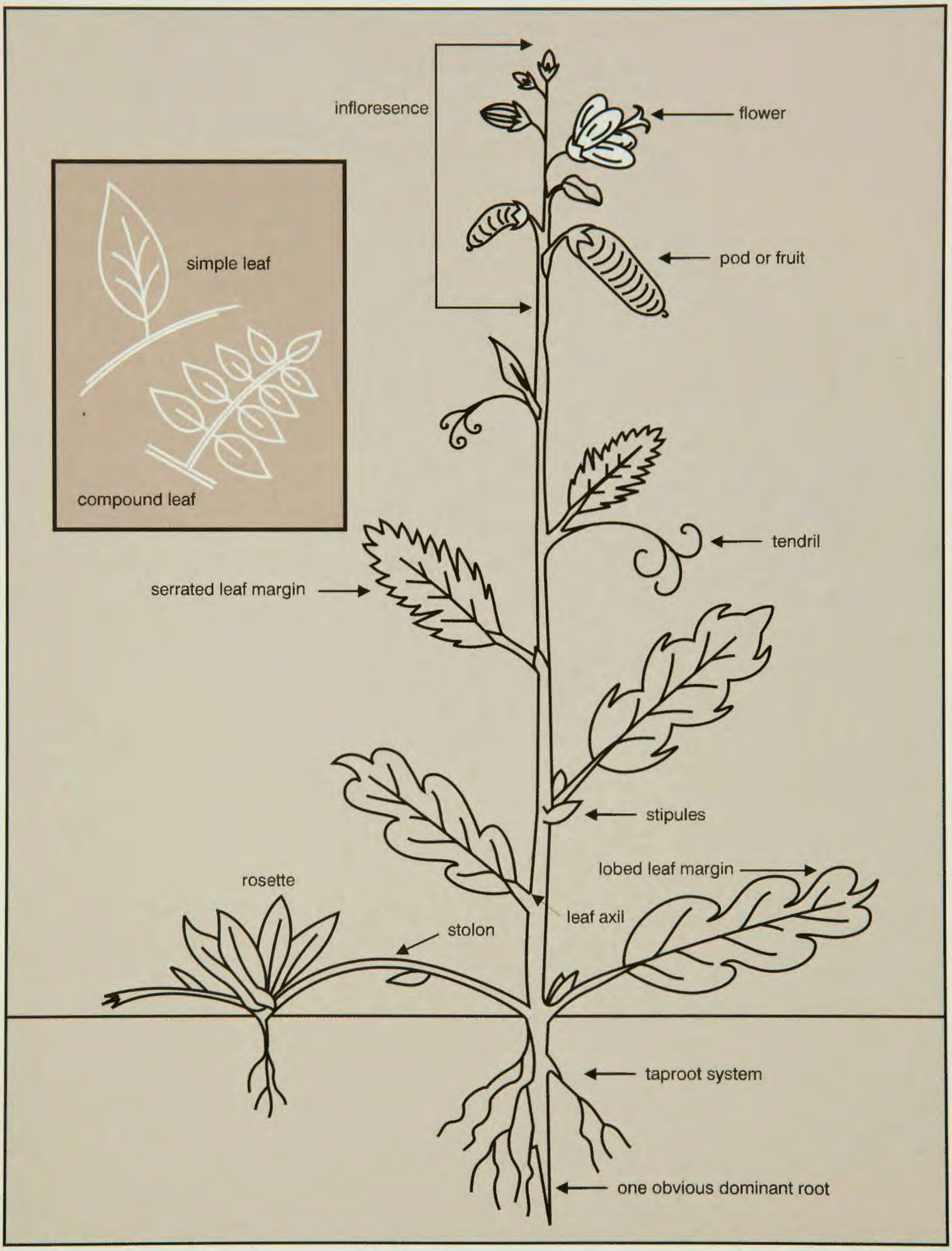



**Figure 5.1. Non grass-like plants (forbs):** stylised diagram illustrating features commonly mentioned *(see Glossary)*

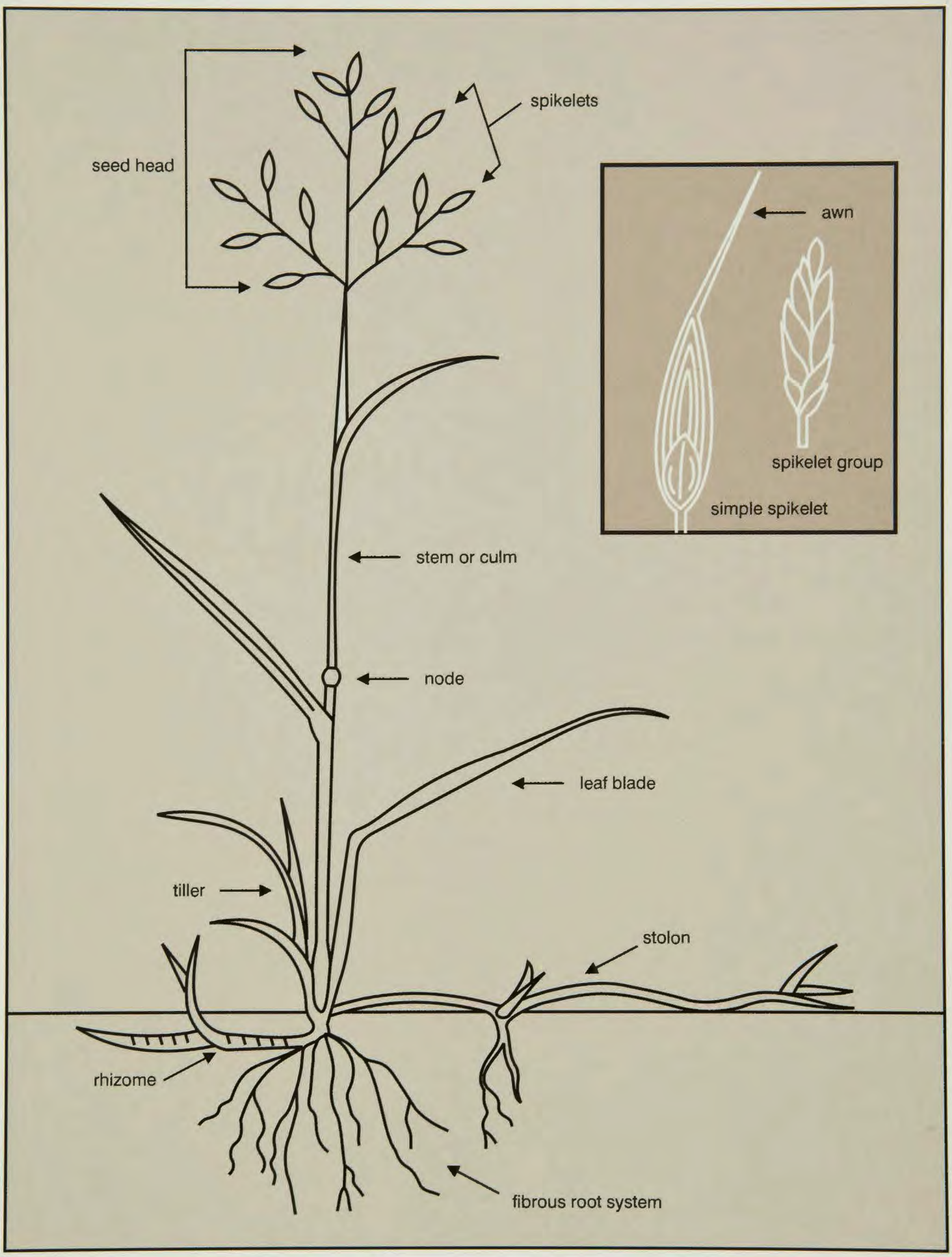



**Figure 5.2. Grass-like plants:** stylised diagram illustrating features commonly mentioned *(see Glossary)*

# KEY FOR PLANT IDENTIFICATION

To use the key, start with the first question (Q1), the answer to which will direct you either to non grass-like plants (Q 2 to 31) or grass-like plants (Q 32 to 58). Your answers to succeeding questions will gradually reveal the likely identity of the plant in question. For simplicity, the choices lead to a small group of plants (rather than a single plant) against which you can compare your specimen. You can then consult photographs and descriptions in this book to confirm your identification.

It is easiest to identify a plant which has flowers and ripe seeds. If your plant does not resemble any in this book, you should refer to a more detailed reference book (*see References and further reading*) or send it away for identification (*see Chapter 7*).

## Question 1

Does your plant look like a **grass** (i.e. has long leaves and no petalled flowers or leaves like an onion, lily or nutgrass)?

**NO** ..... go to Q 2 p. 39

**YES** ..... go to Q 32 (Grass-like plants) p. 47

# Non grass-like plants

## Question 2

Does the plant have leaves, even tiny ones only 2–3 mm long?

**NO** ..... try plant:
*S. viminale* ..... p. 118
**YES** ..... go to Q 3

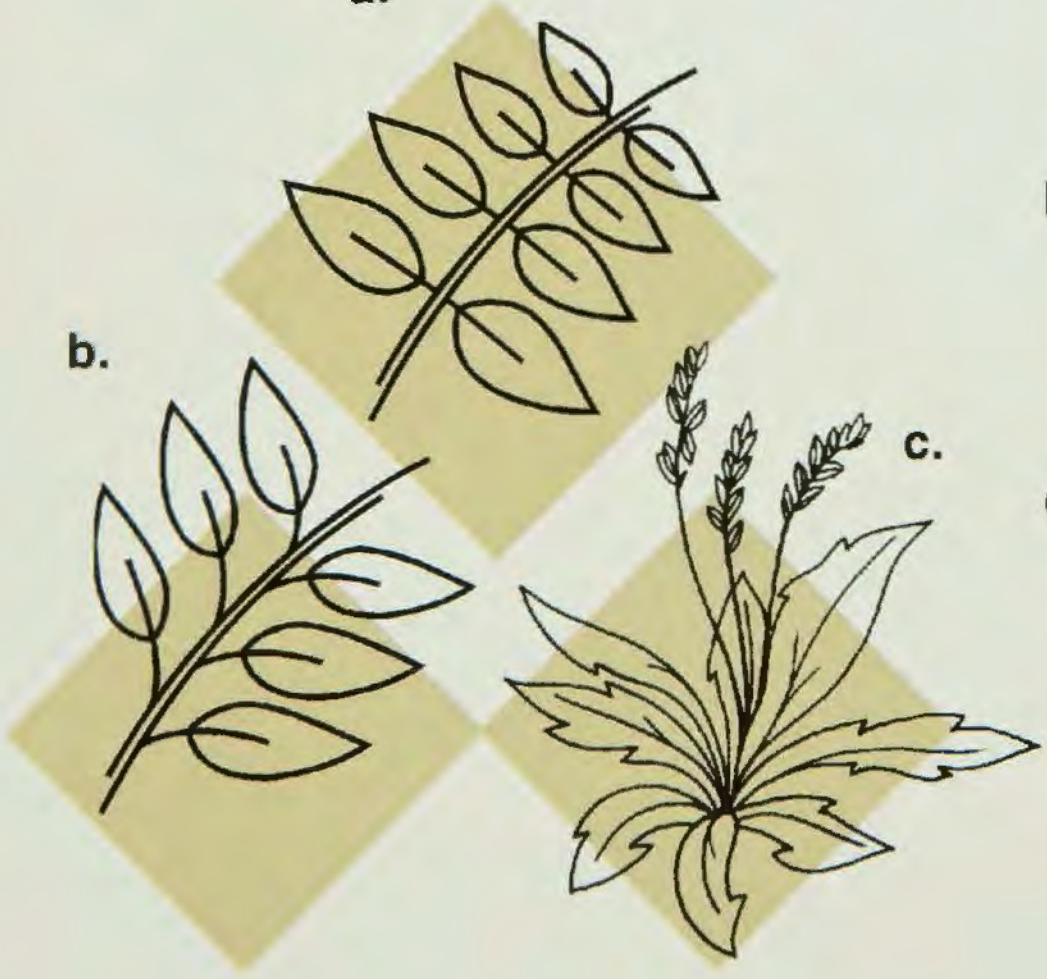
## Question 3

Are the **upper** leaves (including those with two or more segments per leaf) attached to the stems

**a.** In regular pairs (opposite)?
..... go to Q 4

**b.** Singly (usually on alternate sides)?
..... go to Q 8

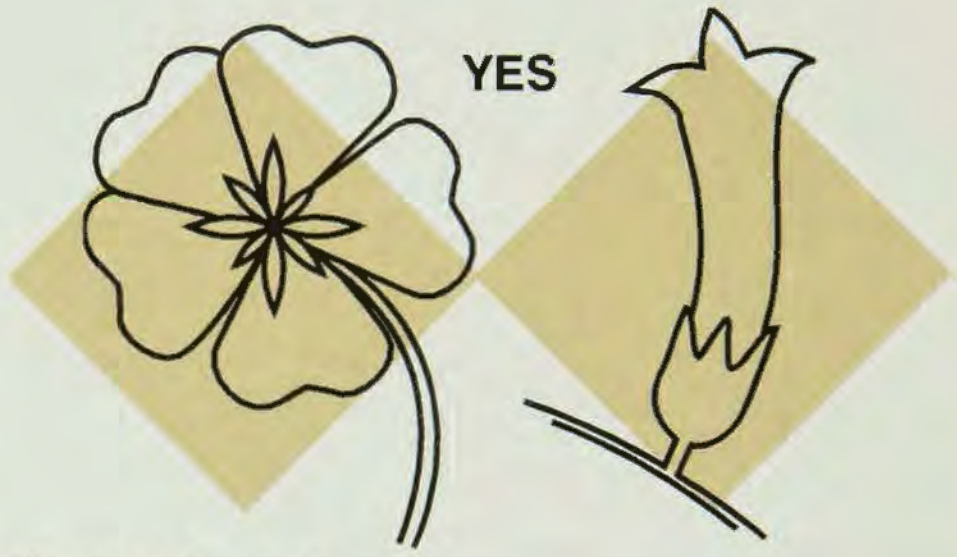
**c.** In an inconsistent pattern, **OR** in distinct whorls **OR** some other pattern e.g. only as a basal rosette?
..... go to Q 28




## Question 4

Do the flowers have **EITHER** several obvious petals **OR** a single trumpet-shaped petal tube?

**YES** ..... go to Q 5
**NO** ..... go to Q 6




## Question 5

Are the petals:

**a.** Blue or purple? ..... try plants:
*B. australis* ..... p. 116
*W. gracilis* ..... p. 123
*E. crinitum* ..... p. 131
*S. reflexa* ..... p. 136
*V. officinalis* ..... p. 149
*V. tenuisecta* ..... p. 150

**b.** Yellow and more than six in number per flower? ..... try plants:
*V. encelioides* ..... p. 80
*N. gracilis* ..... p. 106

**c.** Yellow with fewer than seven per flower? ..... try plants:
*T. procumbens* ..... p. 79
*V. glabrata* ..... p. 134
*T. terrestris* ..... p. 151
*Z. apiculatum* ..... p. 152

**d.** Pink or reddish? ..... try plants:

*B. tubiflorum* ..... p. 128

*B.* hybrid ..... p. 128

*B. dominii* ..... p. 137

## Question 6

Are the ripe seed heads or flower heads either chaffy, fluffy or silky?

**YES** ..... go to Q 7

**NO** ..... try plants:

*F. australasica* ..... p. 70

*E. nutans* ..... p. 86

*N. gracilis* ..... p. 106

*E. drummondii* ..... p. 130

## Question 7

Are the seed/flower clusters only at the stem ends?

**YES** ..... try plants:

*F. floridana* ..... p. 60

*G. celosioides* ..... p. 61

*N. gracilis* ..... p. 106

**NO** ..... try plants:

*A. denticulata* ..... p. 58

*A. nodiflora* ..... p. 58

*A. pungens* ..... p. 59

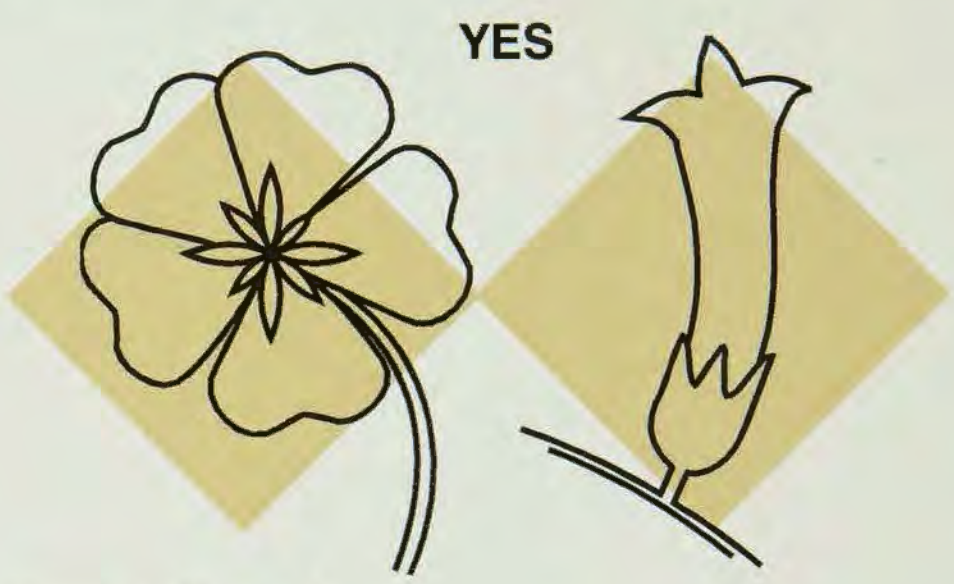
*N. gracilis* ..... p. 106

## Question 8

Do the plants have flowers with either several to many obvious petals, or a single, trumpet-shaped one?

**YES** ..... go to Q 9

**NO** ..... go to Q 20




## Question 9

Have the plants any prickles or burrs on their stems, leaves, fruit or seeds?

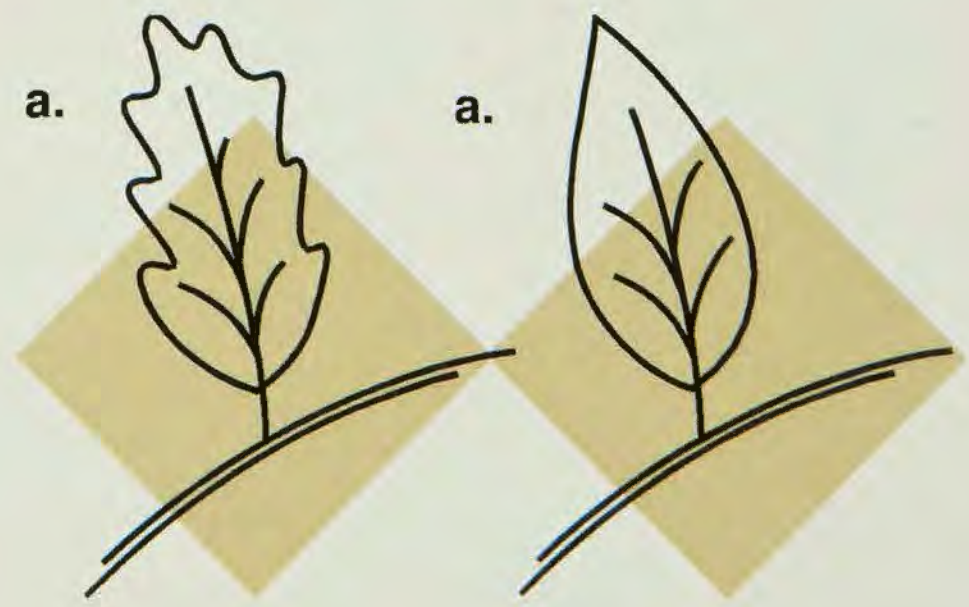
**YES** ..... go to Q 10

**NO** ..... go to Q 12

## Question 10

Is the outline of most leaves arising from the stems:

**a.** Fairly simple, or if lobed or serrated, with only one strong mid-vein?
..... go to Q 11

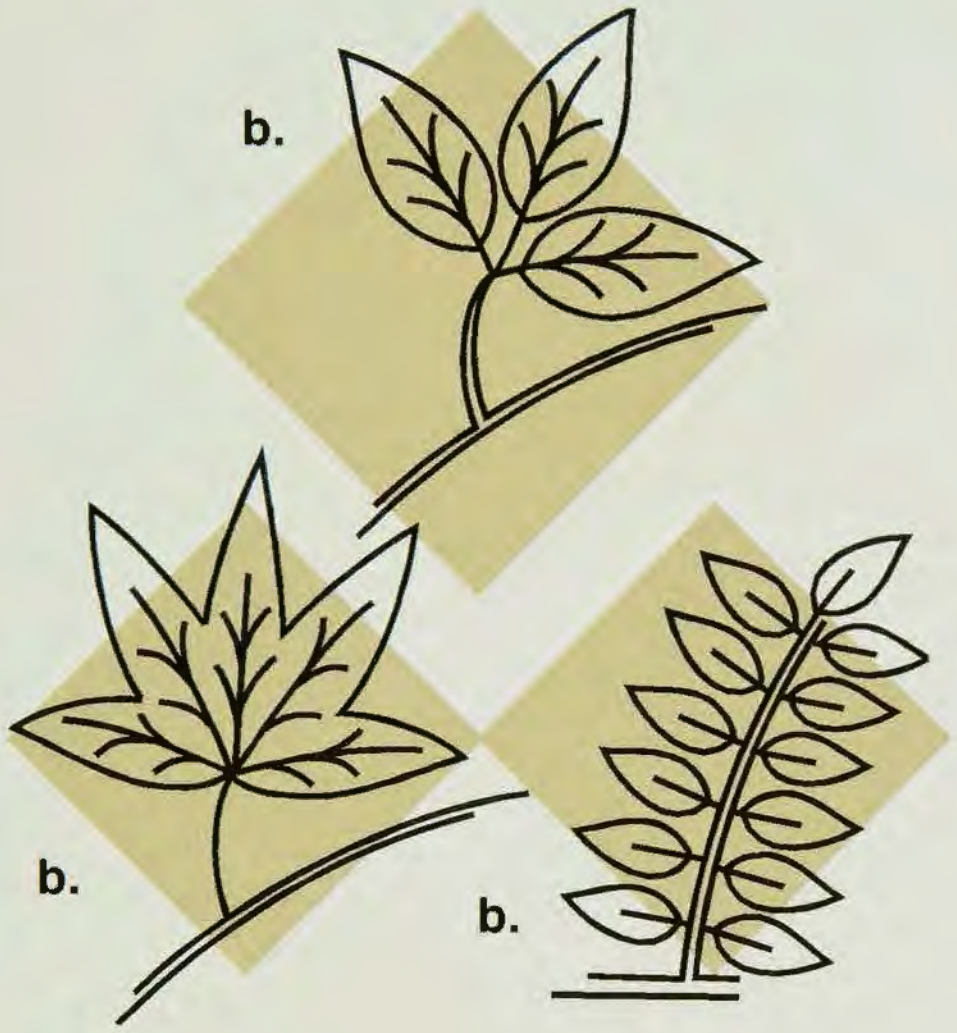


**b.** Made up of smaller leaflets or deeply lobed with a major vein originating from the leaf base in each lobe? ..... try plants:

*M. laciniata* ..... p. 99

*M. polymorpha* ..... p. 99

*C. myriocarpus* ..... p. 129




## Question 11

Are the petals mostly:

**a.** Deep yellow or orange? ..... try plants:

*C. lappulacea* ..... p. 65

*C. lanatus* ..... p. 67

*C. melitensis* ..... p. 68

*S. cordifolia* ..... p. 112

*S. platycalyx* ..... p. 112

*S. rohlenae* ..... p. 112

**b.** Cream-coloured? ..... try plants:

*S. kali* ..... p. 90

*A. ochroleuca* ..... p.139

**c.** White? ..... try plants:

*C. scabiosifolia* ..... p. 65

*D. stramonium* ..... p. 144

*D. ferox* ..... p. 144

**d.** Purple? ..... try plants:

*C. cuneifolia* ..... p. 65

*S. marianum* ..... p. 78

*S. ellipticum* ..... p. 146

*S. esuriale* ..... p. 146

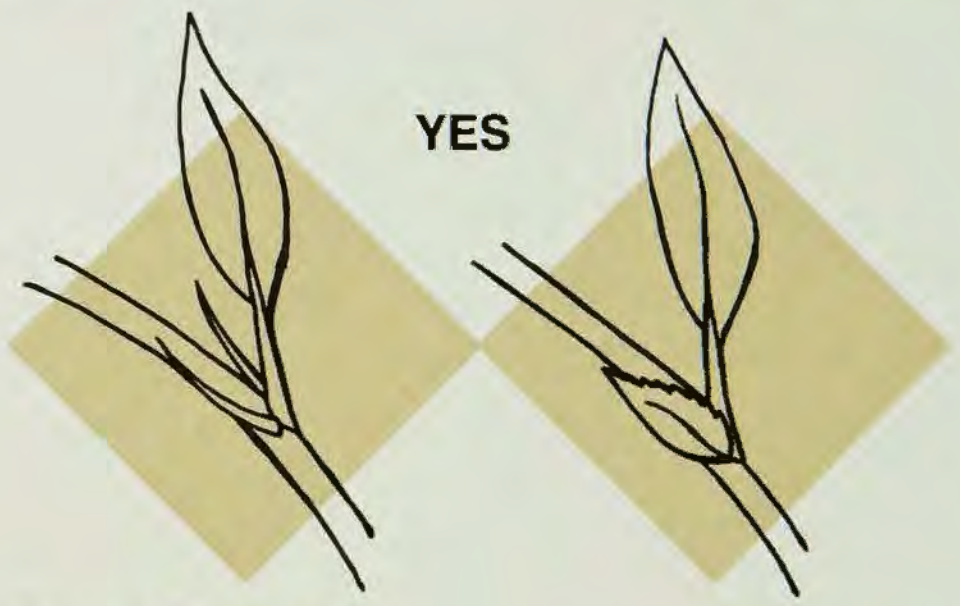
## Question 12

Look carefully at the base of young leaf stalks.

Is there a pair of small appendages either side of each leaf stalk where the leaf joins the stem (may be bristle-like or leaf-like)?

**YES** ..... go to Q 13

**NO** ..... go to Q 18




## Question 13

Which of the following best describes the leaves:

**a.** A single unit with one mid-vein, even if lobes are present? ..... go to Q 16

**b.** Three leaflets per leaf stalk (like clovers or medics)? ..... go to Q 14

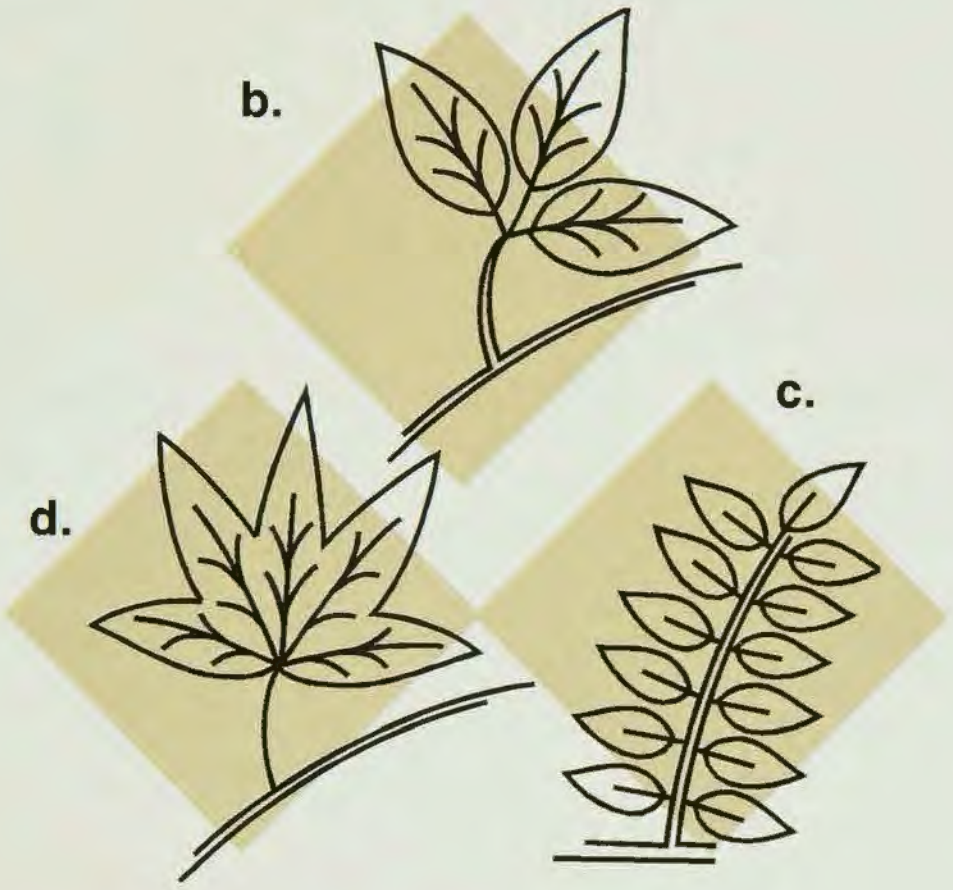
**c.** Many small leaflets in a double row? ..... go to Q 15

**d.** Deeply-lobed with more than one main vein? ..... try plants:

*P. tenax* ..... p. 100

*H. trionum* ..... p. 109

*M. parviflora* ..... p. 110




## Question 14

Are the flower petals:

**a.** Yellow or cream? ..... try plants:

*C. dissitiflora* ..... p. 94

*D. varians* ..... p. 95

*R. minima* ..... p. 101

*O. corniculata* ..... p. 138

**b.** Blue, pink or purple? ..... try plants:

*D. varians* ..... p. 95

*G. tabacina* ..... p. 96

*G. tomentella* ..... p. 96

*S. campylantha* ..... p. 103

## Question 15

Are the flower petals:

**a.** Yellow, cream or red? ..... try plants:

*I. linnaei* ..... p. 98

*S. cannabina* ..... p. 102

*N. gracilis* ..... p. 106

**b.** Pink or purple? ..... try plants:

*S. campylantha* ..... p. 103

*S. microphylla* ..... p. 103

*S. galegifolia* ..... p. 103

*S. greyana* ..... p. 103

*S. luteola* ..... p. 103

*V. monantha* ..... p. 105

## Question 16

Are the petals:

**a.** Yellow or cream? ..... go to Q 17

**b.** Some other colour? ..... try plants:

*I. linifolia* ..... p. 97

*H. sturtii* ..... p. 108

*M. parviflora* ..... p. 110

## Question 17

How many flowers are there on the end of each flower stalk:

**a.** One? ..... try plants:

*V. encelioides* ..... p. 80

*A. leucopetalum* ..... p. 107

*S. corrugata* ..... p. 112

*S. filiformis* ..... p. 112

*S. trichopoda* ..... p. 112

**b.** Several or many? ..... try plants:

*M. americanum* ..... p. 111

*S. cunninghamii* ..... p. 112

*S. fibulifera* ..... p. 112

*S. subspicata* ..... p. 112

## Question 18

Are the **ripe seeds** of the plant:

**a.** Smooth? ..... go to Q 19

**b.** Hairy, woolly or with a tuft of hairs at one end? ..... try plants:

*B. bracteata* ..... p. 64

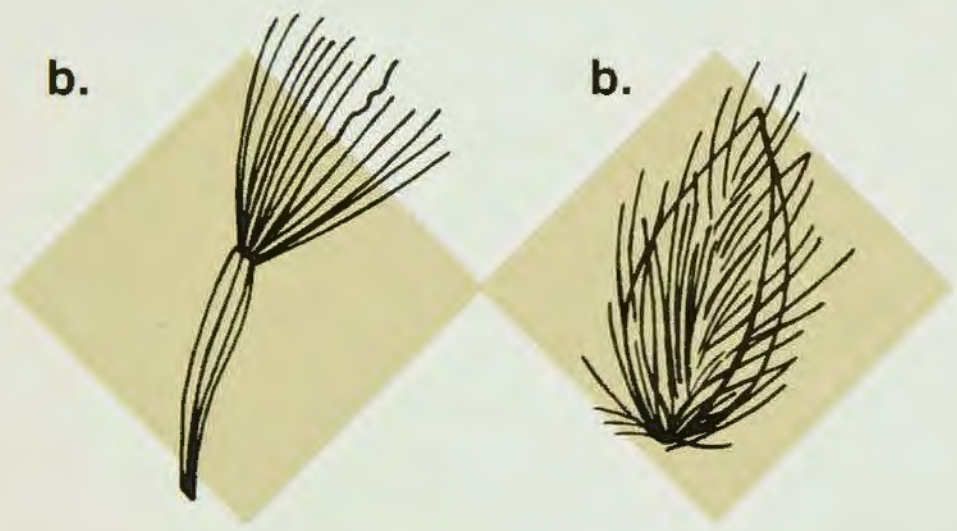
*L. molle* ..... p. 72

*P. arachnoidea* ..... p. 74

*P. jaceoides* ..... p. 74

*S. lautus* ..... p. 77

*I. calobra* ..... p. 126

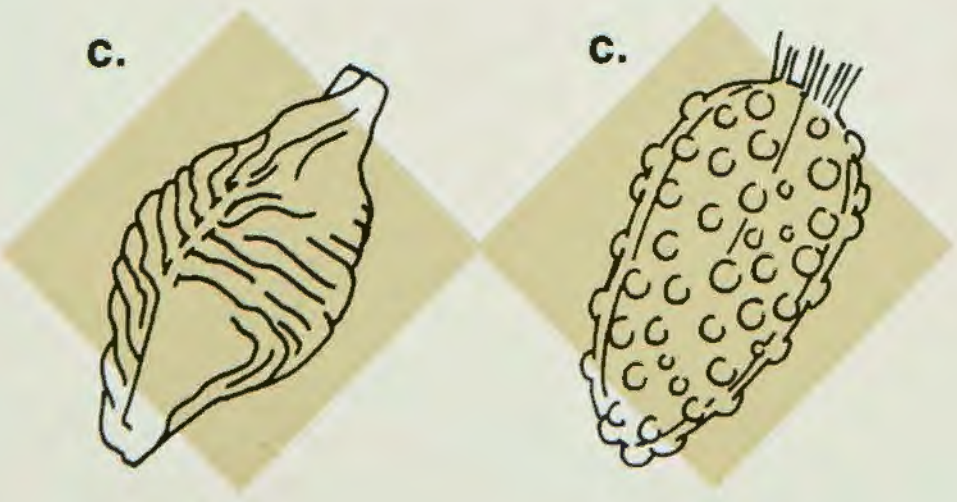



**c.** Wrinkly or warty surfaced? ..... try plants:

*E. plantagineum* ..... p. 119

*G. fascicularis* ..... p. 132

*G. glabra* ..... p. 132




**d.** Too small to tell or locked into the dried fruits? ..... try plants:

*M. villosa* ..... p. 88

*R. rugosum* ..... p. 121

*W. gracilis* ..... p. 123

*N. megalosiphon* ..... p. 145

*S. esuriale* ..... p. 146

## Question 19

Are the petals of the flowers:

**a.** Yellow, cream or white? ..... try plants:

*S. cannabina* ..... p. 102

*H. trionum* ..... p. 109

*I. lonchophylla* ..... p. 127

**b.** Blue, pink or purple? ..... try plants:

*H. sturtii* ..... p. 108

*H. amplexicaule* ..... p. 120

*C. erubescens* ..... p. 124

*E. alsinoides* ..... p. 125

## Question 20

Are there burrs or prickles on any part of the mature plant?

**YES** ..... go to Q 21

**NO** ..... go to Q 22

## Question 21

Are the leaves of the plant at their widest point:

**a.** Over 15 mm ($^5/_8$") wide? ..... try plants:

*C. lanatus* ..... p. 67

*C. melitensis* ..... p. 68

*S. marianum* ..... p. 78

*X. pungens* ..... p. 81

*X. spinosum* ..... p. 82

*E. australis* ..... p. 141

**b.** 3–15 mm ($^1/_8$–$^5/_8$") wide? ..... try plants:

*C. hispidula* ..... p. 65

*C. lappulacea* ..... p. 65

*S. birchii* ..... p. 91

**c.** Under 3 mm ($^1/_8$") wide? ..... try plants:

*S. kali* ..... p. 90

*S. anisacanthoides* ..... p. 91

*S. bicornis* ..... p. 91

*S. muricata* ..... p. 91

*S. lanicuspis* ..... p. 91

## Question 22

Is the seed head a **loose** fluffy, fuzzy, hairy or daisy-like structure?

**YES** ..... go to Q 23

**NO** (often crumbly or single-flowered) ..... go to Q 25

## Question 23

Are the mature flowering heads:

**a.** Pink or purple? ..... try plants:

*P. exaltatus* ..... p. 62

*P. leucocoma* ..... p. 62

*P. obovatus* ..... p. 62

**b.** Yellow and rounded? ..... try plants:

*C. apiculatum* ..... p. 69

*I. brevicompta* ..... p. 71

*R. moschata* ..... p. 76

*N. gracilis* ..... p. 106

**c.** Elongated and not strongly-coloured? ..... go to Q 24

## Question 24

Are the leaves:

**a.** Small (less than 20 mm ($^3/_4$") long) and smooth? ..... try plants:

*P. elongata* ..... p. 147

*P. trichostachya* ..... p. 147

**b.** Small and slightly hairy? ..... try plant:

*P. simplex* ..... p. 147

**c.** Mostly over 20 mm ($^3/_4$") long? ..... try plants:

*P. macrocephalus* ..... p. 62

*P. polystachyus* ..... p. 62

## Question 25

Are the individual flowers or resulting fruit easily discernible?

**YES** ..... go to Q 26

**NO** ..... go to Q 27

## Question 26

Are the fruits/pods of the plants:

**a.** Long and readily segmented? ..... try plant:

*D. varians* ..... p. 95

**b.** Fleshy, round and red, orange or purple? ..... try plants:

*E. nutans* ..... p. 86

*E. tomentosa* ..... p. 87

**c.** In large, open, much-branched heads? ..... try plant:

*P. hysterophorus* ..... p. 73

**d.** Something else? ..... try plants:

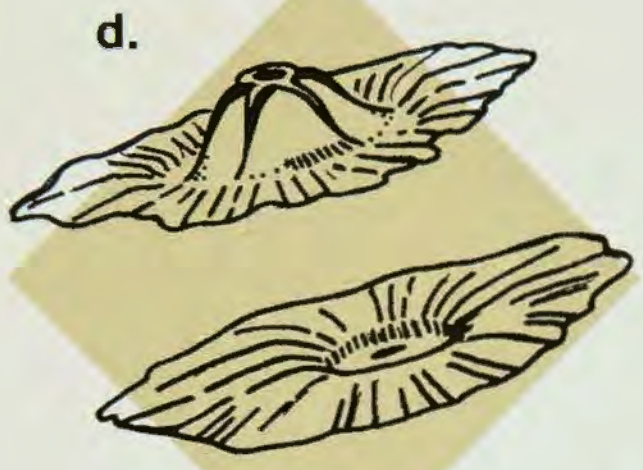
*A. muelleri* ..... p. 83

*M. microphylla* ..... p. 88

*M. villosa* ..... p. 88

*N. proceriflora* ..... p. 89

*H. odontocarpa* ..... p. 135






## Question 27

Are the flowers either:

**a.** In a dense, yellow-coloured knob on a long stalk? ..... try plants:

*P. chrysanthes* ..... p. 75

*P. globosus* ..... p. 75



**b.** Tiny, lacking bright colour and densely packed along branch tips, with individual flowers or their resulting fruits not obvious? ..... try plants:

*C. desertorum* ..... p. 84

*C. album* ..... p. 84

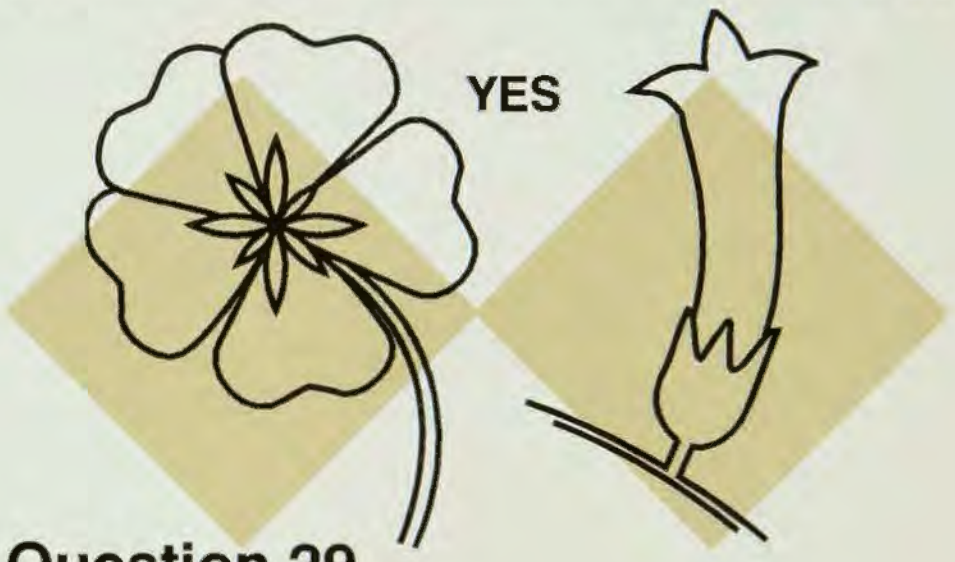
*D. rhadinostachya* ..... p. 85

## Question 28

Do the flowers have obvious petals or a single tubular petal?

**YES** ..... go to Q 29

**NO** ..... go to Q 30




## Question 29

Are the petals:

**a.** Yellow? ..... try plants:

*V. encelioides* ..... p. 80

*G. fascicularis* ..... p. 132

*G. glabra* ..... p. 132

*V. glabrata* ..... p. 134

*P. oleracea* ..... p. 143

*B. bulbosa* ..... p. 156

**b.** Red, pink or purple? ..... try plants:

*I. linnaei* ..... p. 98

*B.* hybrid ..... p. 128

*B. tubiflorum* ..... p. 128

*C. balonensis* ..... p. 142

**c.** Some other colour? ..... try plants:

*C. scabiosifolia* ..... p. 65

*T. ochracea* ..... p. 117

*T. cyanantha* ..... p. 117

*B. australis* ..... p. 122

*W. gracilis* ..... p. 123

## Question 30

Are all leaves in a tight basal rosette without stalks?

**YES** ..... try plants:

*P. cunninghamii* ..... p. 140

*P. drummondii* ..... p. 140

*P. lanceolata* ..... p. 140

**NO** ..... go to Q 31


## Question 31

Do the plants have any prickles?

**YES** ..... try plants:

*S. anisacanthoides* ..... p. 91

*S. bicornis* ..... p. 91

*S. lanicuspis* ..... p. 91

**NO** ..... try plants:

*C. desertorum* ..... p. 84

*E. nutans* ..... p. 86

*H. odontocarpa* ..... p. 135

*C. sieberi* ..... p. 153

*M. drummondii* ..... p. 154

# Grass-like plants

## Question 32

Does your grass-like plant have obvious petals on its flowers or seed head?

**YES** ..... try plants:

*B. bulbosa* ..... p. 156

*L. leucocephala* ..... p. 157

**NO** ..... go to Q 33

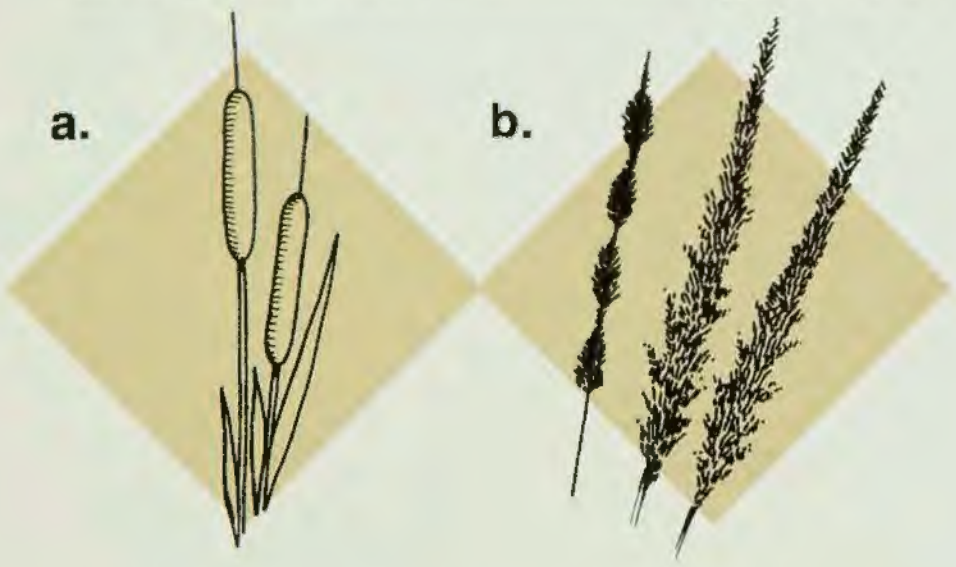
## Question 33

Of the following, which most nearly describes the seed head or flower head of your plant:

**a.** A single, very dense cylinder bigger than 1.5 cm ($^5/_8$") wide? ..... try plant:

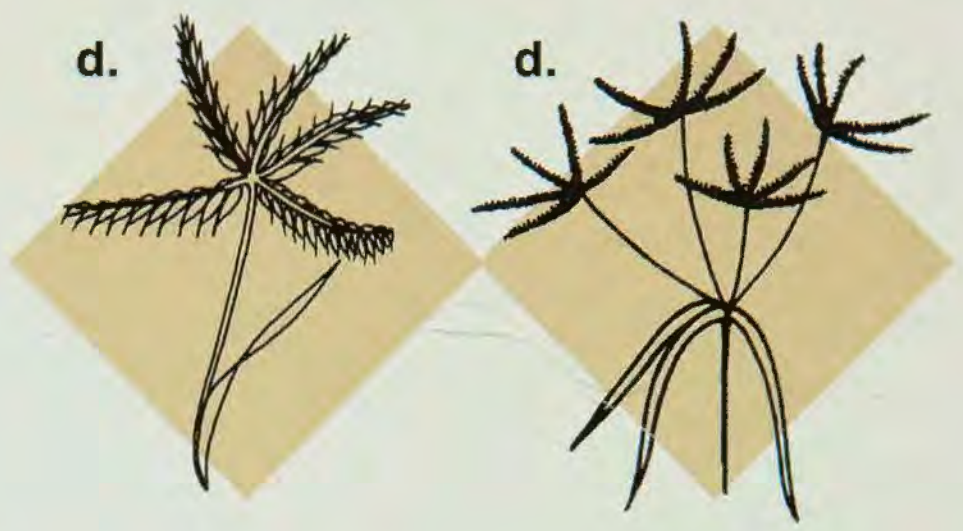
*T. domingensis* ..... p. 159

**b.** A single axis, often smaller than 1 cm ($^3/_8$") across, with no distinct spreading arms/branches? ..... go to Q 34




**c.** 2–10 unbranched arms, mostly arising singly (with or without a basal ring of arms), all of which clearly diverge from the central stalk? ..... go to Q 43


**d.** 3–12 straight, unbranched arms of similar length pointing upward from a common point, sometimes with a second whorl just above? ..... go to Q 46




**e.** A large, much-branched and rebranched seed head with many well-spaced seeds or discrete seed groups? ..... go to Q 50


**f.** Some other shape or branching pattern, maybe including leafy bits or long spines, or even no obvious seed head despite looking like a mature plant? ..... go to Q 55

## Question 34

Do the individual seeds have any bristles, spines or long hairs?

**YES** ..... go to Q 35

**NO** ..... go to Q 40

## Question 35

Are the **bristles or spines** hooked and all over the rounded seed so that they catch in socks easily?

**YES** ..... try plants:

*C. echinatus* ..... p. 198

*C. incertus* ..... p. 199

*T. australianus* ..... p. 221

**NO** ..... go to Q 36


## Question 36

Are the **seeds** elongated and very thin, often with a sharp point?

**YES** with three awns (thin apical bristles) ..... try plants:

*T. mollis* ..... p. 237

*A. jerichoensis* ..... p. 239

*A. platychaeta* ..... p. 239

*A. ramosa* ..... p. 239

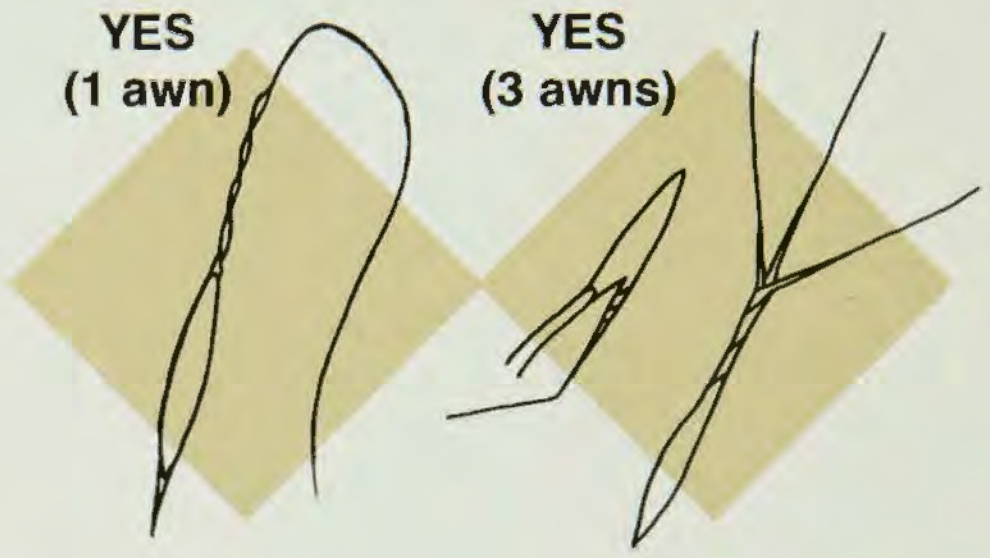
**YES** with one or two awns ..... try plants:

*H. contortus* ..... p. 168

*S. scabra* ..... p. 235

*P. rara* ..... p. 238

**NO** ..... go to Q 37




## Question 37

Are the seeds bigger than 3 mm ($^1/_8$") wide **beneath** the bristles and hairs?

**YES** ..... try plants:

*C. murinum* ..... p. 200

*M. paradoxus* ..... p. 205

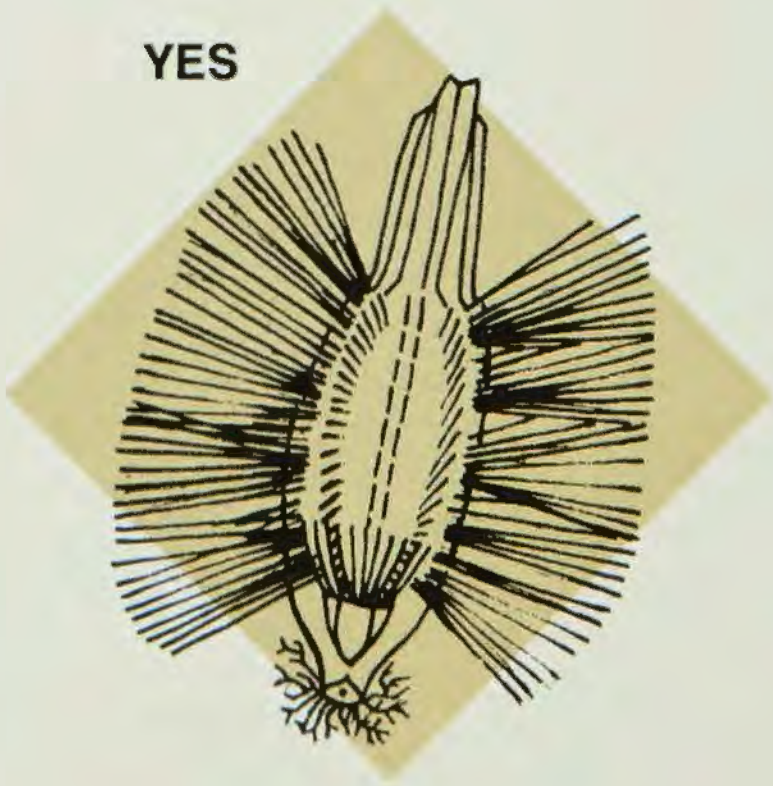
*A. lappacea* ..... p. 216

*A. pectinata* ..... p. 216

*A. squarrosa* ..... p. 216

*T. mitchelliana* ..... p. 219

**NO** ..... go to Q 38



## Question 38

NO

Do most of the seeds have a long, very thin, twisted dark bristle?

**YES** ..... try plants:

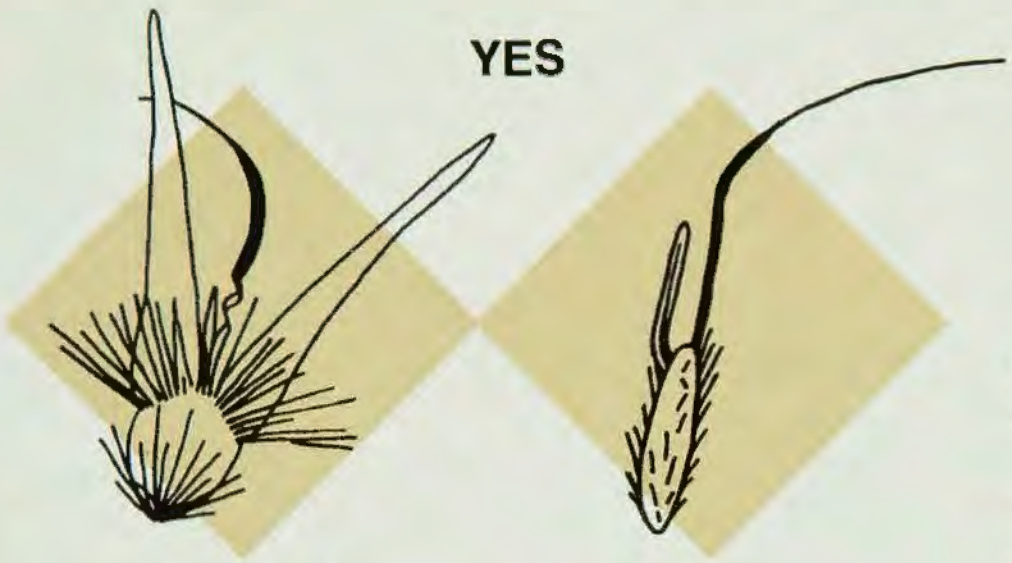
*D. sericeum* ..... p. 163

*B. decipiens* ..... p. 164

*H. contortus* ..... p. 168

*M. paradoxus* ..... p. 205

**NO** ..... go to Q 39



YES

## Question 39

Do the bases of the bristles arise in a circle at the top of a large seed?

**YES** ..... try plants:

*E. gracilis* ..... p. 201

*E. nigricans* ..... p. 201

*E. pallidus* ..... p. 201

*E. polyphyllus* ..... p. 201

*A. caricinus* ..... p. 204

YES

**NO** ..... try plants:

*B. erianthoides* ..... p. 164

*C. ciliaris* ..... p. 196

*A. elymoides* ..... p. 216

*T. mitchelliana* ..... p. 219

*T. xerophila* ..... p. 219

*E. bimaculata* ..... p. 222

## Question 40

If you rub the ripe seed head in the palm of your hand then gently blow away the husks, what is left:

**a.** Large, round or oval grains at least 1.5 mm ($^1/_{16}$") long? ..... go to Q 41

**b.** Very small (less than 0.75 mm ($^1/_{32}$") across) fine grains? ..... go to Q 42

## Question 41

Are most leaves smaller than 2 mm ($^3/_{32}$") wide, smooth, shiny and soft?

**YES** ..... try plant:

*P. rarum* ..... p. 192

**NO** ..... try plants:

*B. bulbosa* ..... p. 156

*P. caespitosum* ..... p. 192

*P. constrictum* ..... p. 192

*P. globoideum* ..... p. 192

*P. jubiflorum* ..... p. 192

*S. surgens* ..... p. 195

## Question 42

Are the seeds normally packed in discrete, flattened elliptical groups?

**YES** ..... try plants:

- *T. loliiformis* ..... p. 227
- *E. brownii* ..... p. 228
- *E. elongata* ..... p. 228
- *E. setifolia* ..... p. 228
- *E. sororia* ..... p. 228


**NO** ..... try plants:

- *S. creber* ..... p. 225
- *S. elongatus* ..... p. 225
- *S. mitchellii* ..... p. 225

## Question 43

Are the individual seeds within the seed head very small, hairless and densely packed on small plants?

**YES** ..... try plants:

- *S. actinocladus* ..... p. 223
- *E. dielsii* ..... p. 228
- *E. microcarpa* ..... p. 228

**NO** ..... go to Q 44

## Question 44

Are the seed head arms very thin (< 2 mm ($^3/_{32}$") wide)?

**YES** ..... try plants:

- *B. bladhii* ..... p. 164
- *D. ammophila* ..... p. 209
- *D. coenicola* ..... p. 209
- *D. divaricatissima* ..... p. 209
- *D. brownii* ..... p. 211
- *A. calycina* ..... p. 239

**NO** ..... go to Q 45

## Question 45

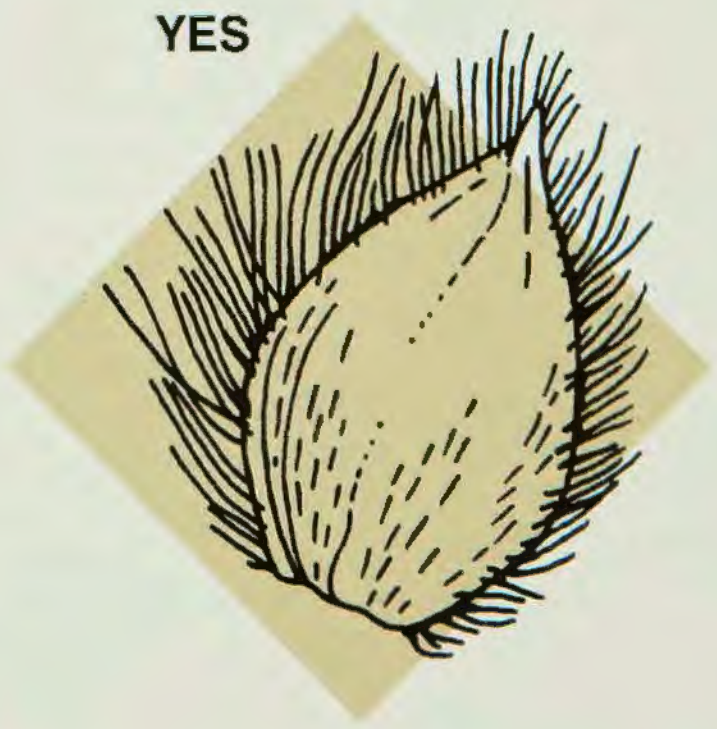
Are the ripe seeds obviously hairy when gently rubbed off the seed head?

**YES** ..... try plants:

- *E. crebra* ..... p. 185
- *E. pseudoacrotricha* ..... p. 185
- *U. mosambicensis* ..... p. 187
- *P. dilatatum* ..... p. 189
- *B. piligera* ..... p. 190

**NO** ..... try plants:

- *U. panicoides* ..... p. 187
- *E. colona* ..... p. 191



## Question 46

Do the seeds have obvious bristles or hairs at least as long as the seed?

**YES** ..... go to Q 48

**NO** ..... go to Q 47


## Question 47

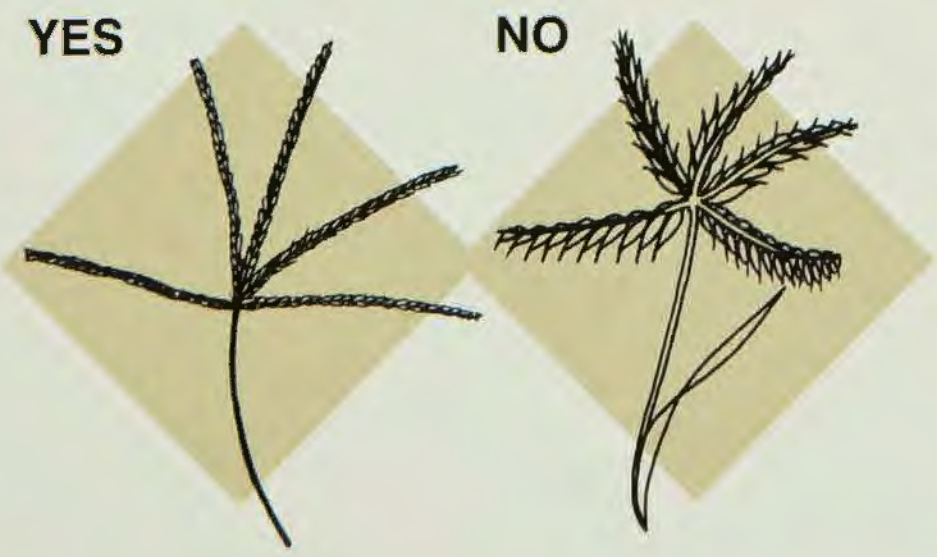
Are the seed head arms smaller than 2 mm ($^{3}/_{32}$") across?

**YES** ..... try plants:

- *C. gracilis* ..... p. 160
- *B. convergens* ..... p. 176
- *C. dactylon* ..... p. 177
- *L. digitata* ..... p. 184

**NO** ..... try plants:

- *C. exaltatus* ..... p. 160
- *C. gracilis* ..... p. 160
- *C. rigidellus* ..... p. 160
- *D. radulans* ..... p. 175




## Question 48

Are the longest seed head arms less than 12 cm (5") long **AND** is the plant quite robust?

**YES** ..... go to Q 49

**NO** ..... try plants:

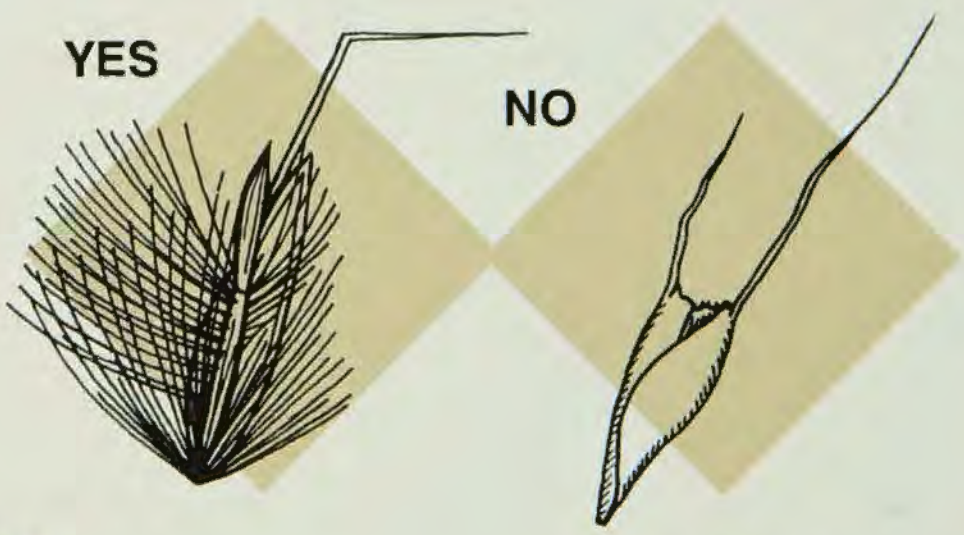
- *C. divaricata* ..... p. 178
- *C. pectinata* ..... p. 178
- *C. truncata* ..... p. 178
- *E. acicularis* ..... p. 182
- *D. coenicola* ..... p. 209
- *D. divaricatissima* ..... p. 209

## Question 49

Does each seed have many soft hairs as well as one to two long bristles?

**YES** ..... try plants:

- *D. sericeum* ..... p. 163
- *B. decipiens* ..... p. 164
- *B. ewartiana* ..... p. 164
- *B. erianthoides* ..... p. 164
- *E. aurea* ..... p. 167
- *C. virgata* ..... p. 180




**NO** ..... try plants:

- *C. ventricosa* ..... p. 178
- *C. gayana* ..... p. 180
- *E. ramosus* ..... p. 182

## Question 50

Are the seeds long, thin and bearing one or three long bristles?

**YES** ..... try plants:

*C. fallax* ..... p. 234

*S. verticillata* ..... p. 236

*A. contorta* ..... p. 239

*A. leptopoda* ..... p. 239

**NO** ..... go to Q 51


## Question 51

If you rub the ripe seed head in the palm of your hand then gently blow away the husks, what is left:

**a.** very small (smaller than 0.75 mm ($^1/_{32}$") across) fine grains? ..... go to Q 52

**b.** larger round or oval grains at least 1.5 mm ($^1/_{16}$") long? ..... go to Q 53

## Question 52

Are the leaves generally more than 10 cm (4") long **AND** less than 3 mm ($^1/_8$") wide?

**YES** ..... try plants:

*E. molybdea* ..... p. 228

*E. parviflora* ..... p. 228

**NO** and hairless ..... try plants:

*F. dichotoma* ..... p. 162

*E. cilianensis* ..... p. 228

*E. eriopoda* ..... p. 228

*E. setifolia* ..... p. 228

**NO** and hairy if held up to the light ..... try plants:

*S. caroli* ..... p. 223

*E. lacunaria* ..... p. 228

*E. molybdea* ..... p. 228

## Question 53

Are the ripe seeds very hairy or fluffy?

**YES** ..... try plants:

*E. aristidea* ..... p. 206

*E. helmsii* ..... p. 206

*E. mucronata* ..... p. 206

*M. repens* ..... p. 208

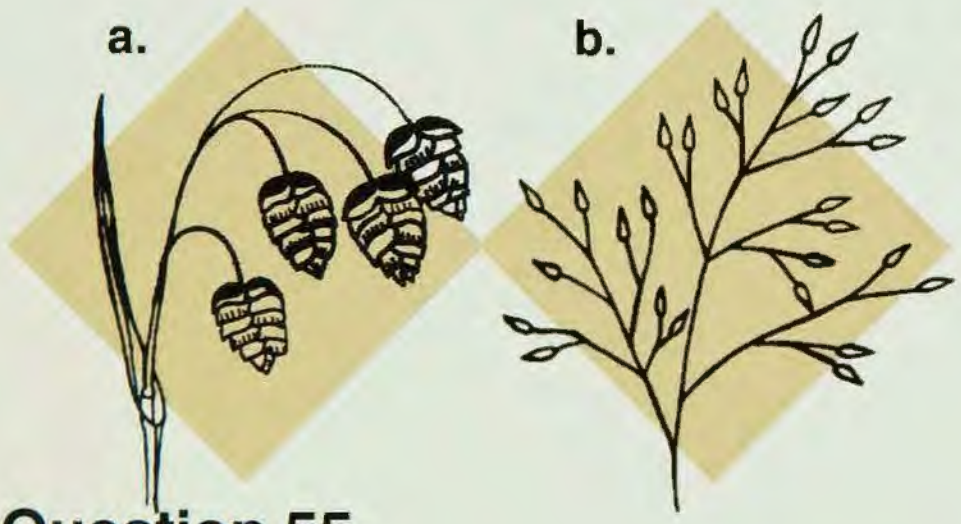
**NO** ..... go to Q 54

## Question 54

Are the seeds closely overlapping in dense clumps or found mostly as well-spaced individuals?

**a.** Overlapping clumps ..... try plants:
- *F. dichotoma* ..... p. 162
- *T. marginata* ..... p. 233
- *T. mitchellii* ..... p. 233

**b.** Spaced individuals ..... try plants:
- *P. buncei* ..... p. 212
- *P. maximum* var. *trichoglume* ..... p. 212
- *P. decompositum* ..... p. 214
- *P. effusum* ..... p. 214
- *P. queenslandicum* ..... p. 214
- *P. subxerophilum* ..... p. 214




## Question 55

Are the **seeds**:

**a.** Hanging (especially when green) on short, thin drooping arms, free from leaflets? ..... try plants:
- *E. avenaceus* ..... p. 201
- *M. paradoxus* ..... p. 205
- *D. brownii* ..... p. 211
- *S. scabra* ..... p. 235
- *A. calycina* ..... p. 239
- *A. latifolia* ..... p. 239

**b.** Densely clumped in rounded heads or ragged clusters? ..... go to Q 56

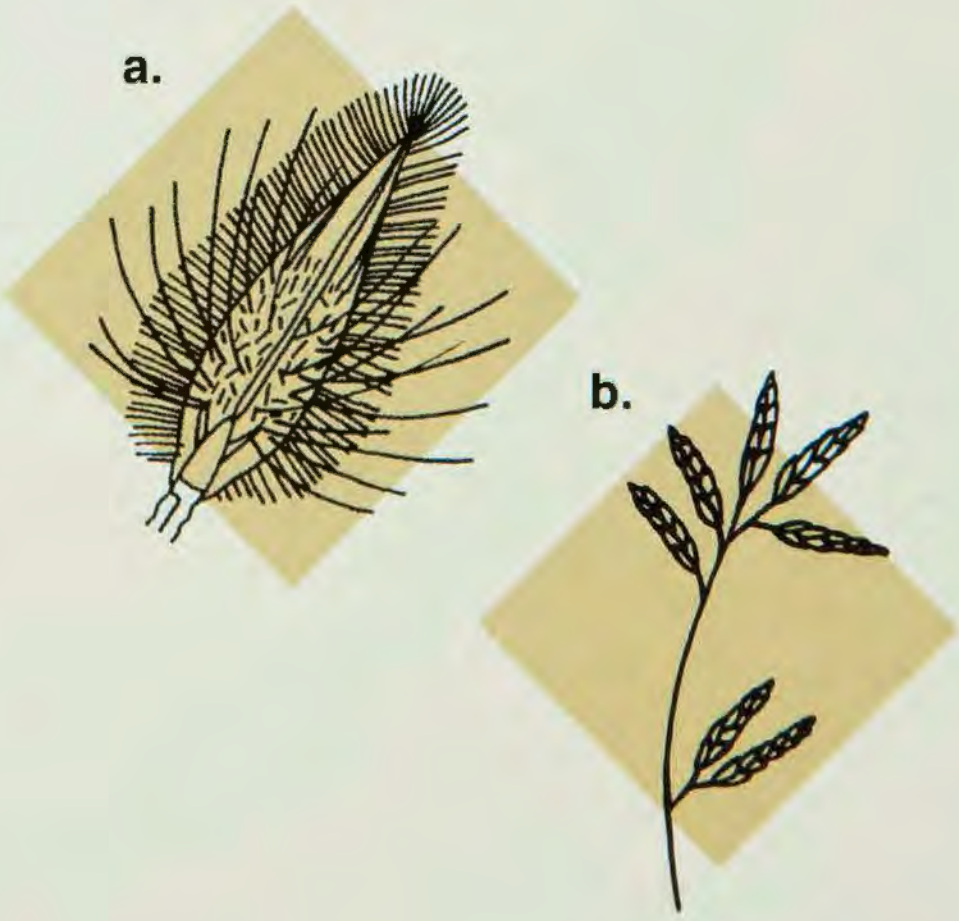
**c.** Symmetrically packed into short arms try plants:
- *C. exaltatus* ..... p. 160
- *C. rigidellus* ..... p. 160

**d.** Some other hard-to-describe arrangement? ..... go to Q 57


## Question 56

Are the ripe seeds:

**a.** Large, very hairy and without sharp points? ..... try plants:
- *C. obtectus* ..... p. 171
- *E. avenaceus* ..... p. 201
- *E. gracilis* ..... p. 201



**b.** Small, hairless and tightly overlapped in elliptical clusters? ..... try plants:

*F. dichotoma* ..... p. 162

*E. brownii* ..... p. 228

*E. elongata* ..... p. 228

*E. sororia* ..... p. 228

**c.** Otherwise? ..... try plants:

*L. leucocephala* ..... p. 157

*C. refractus* ..... p. 171

*I. membranaceum* ..... p. 173

*I. vaginiflorum* ..... p. 173

*D. radulans* ..... p. 175

*C. murinum* ..... p. 200

*A. caput-medusae* ..... p. 239

## Question 57

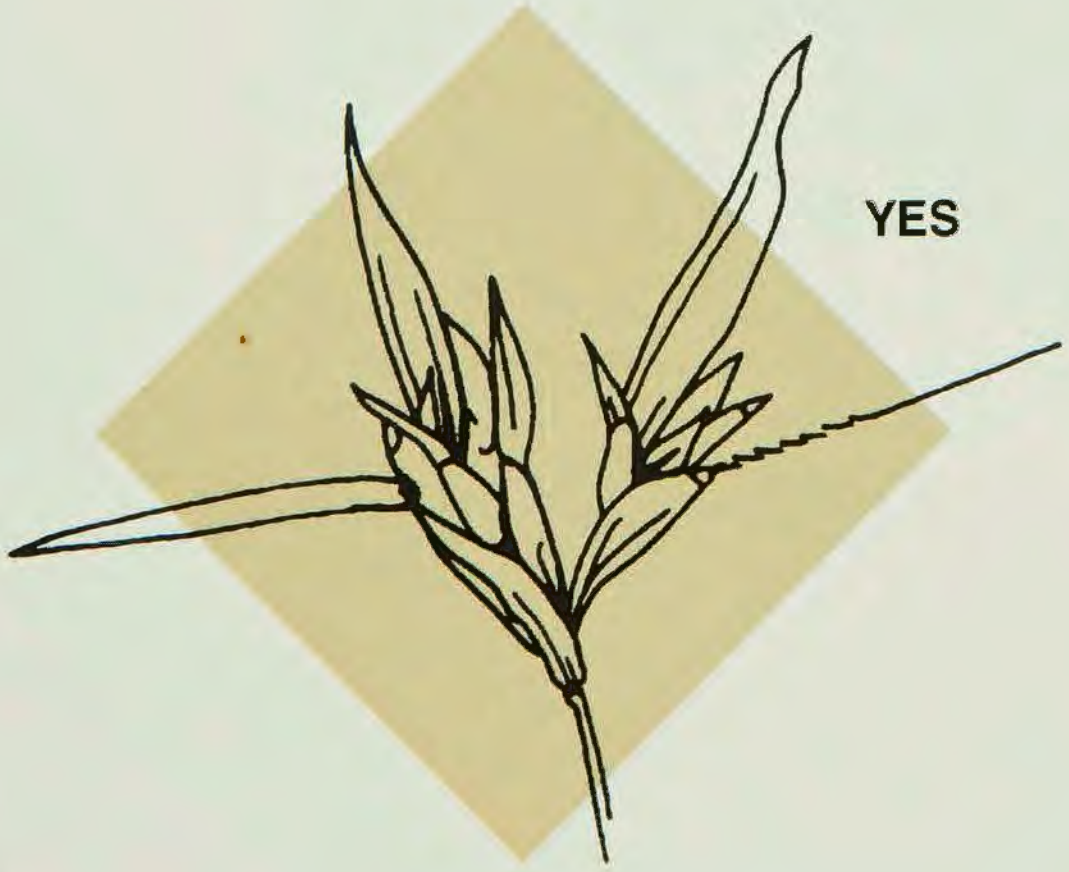
Do mature plants lack an apparent seed head but may have small bristles emerging from upper leaf bases?

**YES** ..... try plants:

*I. membranaceum* ..... p. 173

*I. vaginiflorum* ..... p. 173

**NO** ..... go to Q 58




## Question 58

Are there very long, dark, sturdy, twisted bristles among the seed head?

**YES** ..... try plants:

*T. quadrivalvis* ..... p. 169

*T. triandra* ..... p. 170

**NO** ..... try plants:

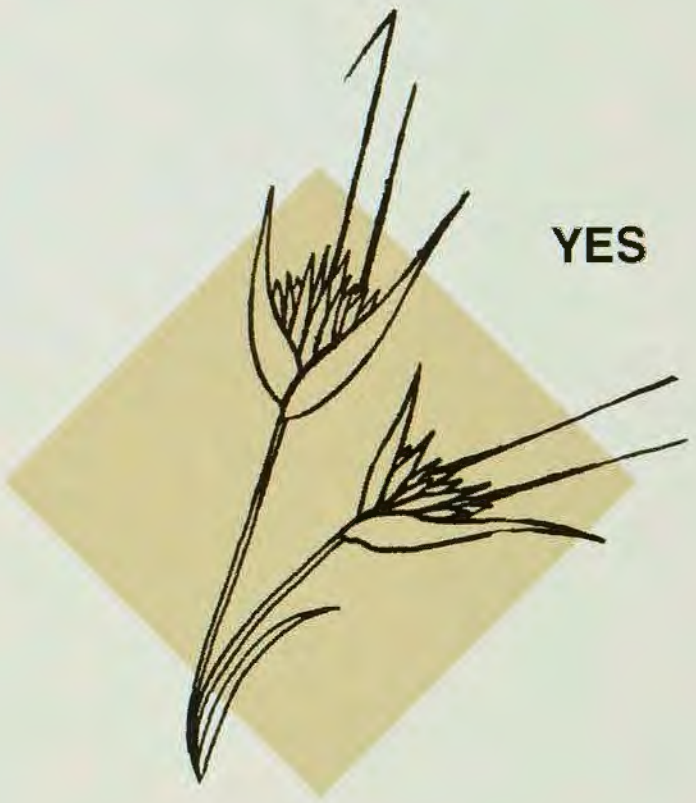
*L. longifolia* ..... p. 157

*C. obtectus* ..... p. 171

*C. refractus* ..... p. 171

*E. eriopoda* ..... p. 228

*A. contorta* ..... p. 239



# CHAPTER 6

# Plant descriptions

## Non grass-like plants (forbs)

Amaranths

Daisies

Chenopods

Legumes

Flannel weeds

Ferns and others

## Grass-like plants

Lilies, rushes and sedges

Grasses

# Non grass-like plants (forbs)

**Amaranths** (Amaranthaceae)—joyweed, foxtail

**Daisies** (Asteraceae)—billybuttons, daisy burr, thistle

**Chenopods** (Chenopodiaceae)—saltweed, saltbush, copperburr, galvanised burr, goosefoot

**Legumes** (Fabaceae; Mimosaceae)—medic, pea plant, vetch

**Flannel weeds** (Malvaceae)—mallow, hibiscus, sida

**Ferns and others**

# AMARANTHACEAE

## Lesser joyweed

***Alternanthera denticulata***

## Common joyweed

***Alternanthera nodiflora***

JAM

**Common joyweed:** white flower clusters

### Description

These two plants are similar. Both are annual forbs and, depending on plant density, have either trailing or upright stems to about 30 cm long. They have opposite leaves which are thin and oblong, about 3 cm long and 6–8 mm wide. Whitish flowers form chaffy clusters in leaf axils. They can grow all year round but grow mostly in the warmer months from spring to autumn.

**Lesser joyweed** is the smaller of the two. The 'flower' clusters are distinctly smaller and less than 1 cm wide.

**Common joyweed** flower clusters are about 2 cm wide.

### Land types

Occur on many soils in most land types. They are more common in wet situations.

### Grazing notes

Palatable to stock, but do not grow much bulk and rarely occur in large enough numbers to be useful as a fodder source.

DRH

**Lesser joyweed:** sprawling forb; small flowers

TJH

**Lesser joyweed:** flower clusters

## Khaki burr

***Alternanthera pungens***

Other common name:
**Bindy-eye**

### Description

Prostrate perennial forb with spreading, hairy, reddish stems to about 50 cm long. Flowers are burr-like and form straw-coloured, prickly clusters in the leaf axils. The stems root at the nodes and the plant forms dense mats. It has opposite, oval-shaped leaves to 3 cm long. Khaki burr can grow all year round but most growth occurs during the warmer months.

### Land types

Found on most land types. It is common in open disturbed areas, along roadsides and around buildings and yards.

### Grazing notes

Mildly palatable to stock when young, but becomes a pest when it forms dense mats which block the growth of more desirable plants. The sharp prickles can be a nuisance.

TJH

**Khaki burr:** clustered prickles

TJH

**Khaki burr:** spreading prickly mat

# Cottontails

***Froelichia floridana***

## Description

Upright, annual forb to 1 m tall. It first appears as a rosette with thick, furry leaves which then sends up a series of tall, pale, sparsely-branched flower stems with opposite upper leaves. The young flower heads are often in a tightly-packed, spiralled arrangement. The ripe flowers form fluffy, white spikes to 10 cm long at stem tips. Ripe seeds are 3–5 mm across, and fluffy with a woody centre. Cottontails grow and flower during the warmer months.

## Land types

Grows in pine and box country on sandy soils in the northern part of the region. Often found in isolated colonies on roadsides and in disturbed areas.

DRH

**Cottontails:** terminal white flowers

## Grazing notes

Low palatability and little feed value. May be grazed by cattle when little other feed is available. This plant is spreading and should be discouraged from establishing a hold in clean country.

DRH

**Cottontails**: erect plant; fluffy seed heads

# Gomphrena weed

## *Gomphrena celosioides*

### Description

Hairy, spreading, short-lived, perennial forb with opposite leaves on branched pinkish stems up to 30 cm long. Flowers form dense, white or pale-pink, round to elongated heads 1–3 cm long and 1 cm wide at the stem ends. Gomphrena weed grows and flowers in warmer months.

### Land types

Occurs on most land types. It is rarely found in dense stands in native pastures, however can be common in disturbed areas around house yards and on roadsides.

### Grazing notes/poisonous potential

Normally unpalatable and of no forage value. It can be poisonous to horses if eaten in large amounts over extended periods.

DJC

**Gomphrena weed:** white, clustered flowers

Affected animals show depression, awkward gait, muscular spasms and may die. Poor seasons and overgrazing can lead to an abundance of gomphrena weed. Spelling pastures to encourage more competitive, desirable grasses will reduce its incidence.

DJC

**Gomphrena weed:** low, spreading forb with hairy, pink stems

# AMARANTHACEAE

## Lamb's tail

***Ptilotus exaltatus* var. *semilanatus***

## Small purple foxtail

***Ptilotus leucocoma***

## Green pussytail

***Ptilotus macrocephalus***

## Silvertail

***Ptilotus obovatus***

## Longtails

***Ptilotus polystachyus***

### Description

These plants are forbs or small bushes. Leaves are alternately arranged on flowering stems. Distinctive bottlebrush-shaped or 'foxtail' flower heads are of varying sizes and colour. The flowers form globular to cylindrical spikes at branch ends. Each head has numerous thin flowers in whorls at right angles to the main axis. Lamb's tail, longtails and green pussytail have each flower covered with long hairs. Ripe seeds fall still enclosed in a dead floral tube. Flowering occurs in warmer months. In dry seasons the plants can die back in summer and re-shoot from winter to spring.

**Lamb's tail** is a semi-erect, multi-stemmed, perennial forb which grows to 30 cm tall. Narrow leaves grow on unbranched stems. Purple or pink flower heads are up to 35 mm wide. The flower stalks are 3–4 mm thick and woolly when young.

TJH

**Lamb's tail:** large purple flowers

**Small purple foxtail** is a dainty, hairless, weakly perennial forb which grows to 25 cm tall. Narrow leaves grow on sprawling stems. Flower heads are conspicuous, mauve to pink, densely packed with flowers, and grow 2–4 cm long and 1 cm wide.

JRM

**Small purple foxtail:** fine leaves; elongated flowers

**Green pussytail** is a hairless, perennial forb to 50 cm tall. Narrow leaves with wavy edges grow from erect, unbranched stems. Yellowish-green, oblong flower heads grow 5–12 cm long and up to 6 cm wide and stand well clear of the foliage.

# AMARANTHACEAE

TJH

**Green pussytail:** large green-white flowers

**Silvertail** is a small perennial bush to 1 m across and 60 cm high. The leaves are rounded and covered in short, white hairs. Grey to pale-pink flower heads are almost globular and reach up to 15 mm wide.

**Longtails** is a short-lived forb which is sparsely hairy when young. It initially grows as a prostrate rosette and then sends up flower heads. Narrow leaves grow on stems to 1 m long. Flower spikes are cylindrical and usually yellowish-green and sometimes reddish. They grow to 15 cm long and 3 cm in diameter and may droop over near the tip.

## Land types

Lamb's tail grows best on the clay soils of Mitchell grass, brigalow and gidyea country.

ERA

**Silvertail**: globular pink flowers

Small purple foxtail grows mostly in mulga country.

Green pussytail and silvertail grow best on sandy red or red-brown earths of mulga and box country. They also grow on shallow, stony soils.

Longtails grows on the red earths of mulga and box country and can be prominent on sand dunes and sand plains.

## Grazing notes

*Ptilotus* spp. are moderately palatable to stock, particularly as young plants. Lamb's tail and longtails can be quite abundant and provide useful forage. Most seem to recover well from grazing.

JRM

**Longtails:** fine leaves; long flowers

# Yellow everlasting daisy

*Bracteantha bracteata*

## Description

Upright, annual forb to 80 cm tall. Leaves are large, 5–15 cm long, soft, elongated and often sticky. The plant is initially a rosette until erect flower stems appear. Flowers are golden-yellow, papery daisies to 4 cm in diameter with numerous, small, overlapping dry petals. Seeds are thin, 3.5 mm long, with a large yellow tuft of hairs that rubs off easily. Growing through winter, the plant flowers mostly in the late spring.

## Land types

Grows mostly in loamy and sandy soils in box, mulga and pine country.

## Grazing notes

Palatable but of significance in a pasture only in very wet winters. It is susceptible to grazing and is lost easily from a pasture under moderate to heavy grazing. Flowers make attractive dried arrangements which last for years.

DRH

**Yellow everlasting daisy:** erect forb; papery flowers

## Purple daisy burr

*Calotis cuneifolia*

## Bogan flea

*Calotis hispidula*

## Yellow daisy burr

*Calotis lappulacea*

## Rough daisy burr

*Calotis scabiosifolia* var. *scabiosifolia*

JRM

**Purple daisy burr:** purple with a yellow centre

### Description

Except for bogan flea, daisy burrs have small, daisy-like flowers with yellow, white or lavender petals. When the flowers mature, the seeds are packed into a round, prickly ball. They flower in spring and early summer.

**Purple daisy burr** is a bushy, perennial forb to 40 cm tall with foliage sparsely covered with stiff hairs. The alternate leaves grow to 4 cm long and 2 cm wide, are widened at the base and have three to six pointed lobes near the tip. Flower heads have purple to white outer petals and a yellow centre. When ripe, the prickly seed ball breaks up readily into numerous flat, reddish-brown seeds, 3–4 mm long with two barbed spines.

**Bogan flea** is a small, hairy, annual forb to 5 cm tall. Stems may be trailing and up to 25 cm long. The wedge-shaped leaves are up to 2 cm long and are arranged alternately along each stem. Flower heads are greenish, up to 1 cm wide, with inconspicuous yellow petals. Seeds are flat, dark-brown and hairy and each have five to six spreading spines.

TJH

**Purple daisy burr:** prickly, round burrs

JAM

**Bogan flea:** greenish flowers

# ASTERACEAE

TJH

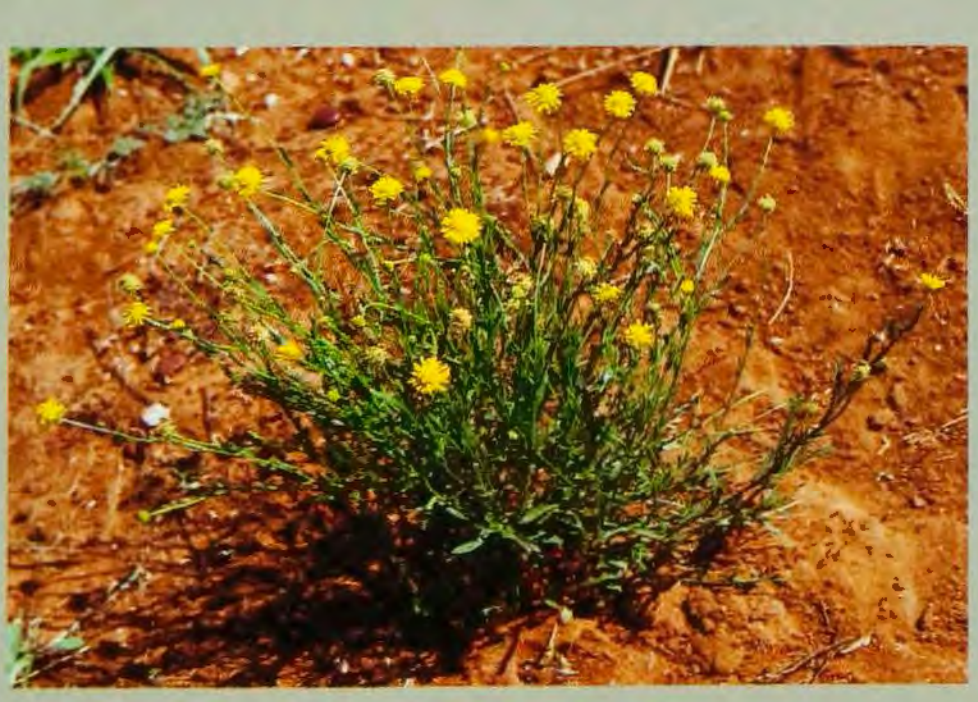
**Rough daisy burr:** large-toothed basal leaves; white petals

TJH

**Rough daisy burr:** round, spiky burr

**Yellow daisy burr** is a small, bushy, perennial forb to 30 cm high on a short but distinct stem. Leaves are small and variable in shape. Deep-yellow flower heads are up to 1 cm in diameter with numerous small, yellow petals. The burrs form compact balls less than 1 cm across that do not break up easily.

TJH



**Yellow daisy burr:** erect, bushy; yellow flowers

**Rough daisy burr** is a perennial forb with hairy leaves up to 6 cm long. Numerous stolons (runners like a strawberry plant) distinguish it from the other daisy burrs. Leaves initially grow in a rosette, have distinctly toothed margins and are larger than those which grow up the flowering stems. Flowers are 2–4 cm across and have many long, narrow, white petals, sometimes with a mauve tinge, and a yellow centre. They are borne singly on a thin, 10–20 cm long stalk. Seeds are packed tightly into a pale, prickly ball that does not readily break up.

## Land types

This plant group is widespread over a variety of land types, most commonly on loamy sand and red earth soils in box, mulga and pine country. Rough daisy burr grows well on clay soils, as will bogan flea.

## Grazing notes

These plants can cause severe matting and vegetable fault in wool, but are well grazed in winter when green grass is unavailable. Their high fodder value and consequent effect on fleece weight outweighs the adverse effect of the burr contamination on fleece value. All grow well in winter and purple and yellow daisy burr can grow slowly through summer. All may cause eye and skin injury to sheep.

# Saffron thistle

*Carthamus lanatus*

## Description

Upright, annual thistle to 90 cm tall. Leaves are 20 cm long, distinctly green, oval and deeply-lobed when the young plant is in the rosette form; and alternate, deeply-serrated and thorny on upper plant stems. The main stem is much-branched near the top. Flowers are yellow and surrounded by thorny structures about 3 cm long. The plant has large, light-brown, four-sided seeds, oval in shape with a feathery tuft of hairs which rub off easily. In spring the rosette dries off and only the few upright stems remain. It flowers and sets seed in early summer. In this region several flushes of seedlings may occur in the one winter season. Many of these seedlings will flower and set seed when only 10 cm tall.

TJH

**Saffron thistle:** erect; thorny leaves

## Land types

Found on most land types, although more common on disturbed clay and loamy soils.

Saffron thistle is very common in cultivated land. The seed is viable for up to eight years. It is difficult to remove from winter grains. The plant increases after heavy grazing or drought, but can be suppressed by strong perennial native grass pastures.

## Grazing notes

Palatable in the rosette stage and fallen seeds may be eaten by sheep. It is avoided once stems with prickly leaves emerge as these leaves cause injury to soft mouth parts. Thick stands interfere with mustering and the leaves and spines contaminate wool, reduce its value and interfere with handling. Old, dead plants remain standing for months and spiky fallen leaves remain intact for months and interfere with grazing.

# Maltese cockspur

*Centaurea melitensis*

## Description

Upright, annual forb to 1 m tall. It begins as a large rosette of felty leaves 2–3 cm across with wavy margins and grows into a robust, stemmy, well-branched and thistle-like plant. Prickly, yellow flowers grow 2–3 cm across. Each flower has a globular, spiky base topped with a tuft of short yellow 'petals'. It is a cool season grower, germinating in autumn, growing through winter and flowering in spring and early summer.

## Land types

Mainly found on shallow and sandy soils in box, pine and mulga country.

## Grazing notes

Occurs as a weed of disturbed and overgrazed pastures. It is grazed when young and in the rosette stage but becomes unpalatable once flowering commences.

DRH

**Maltese cockspur:** flowers have a spiky, globular base and yellow, tufted top

# Yellow buttons

## *Chrysocephalum apiculatum*

Other common name:
**Common everlasting daisy**

### Description

Upright or bushy, perennial forb to 60 cm tall with a deep taproot. The leaves and stems are bluish-grey, densely hairy; the flowers which occur in clusters, are bright yellow and fuzzy. The plant grows mostly during the spring and autumn and flowers in spring. A flat, pale-ribbed disk 5–8 mm in diameter remains after the minute, fluffy, yellow seeds have dropped.

### Land types

Occurs on acidic soils on many land types and is often dominant in pine country.

TJH

**Yellow buttons:** clustered, yellow, terminal flowers

### Grazing notes

This common plant is often found in colonies in open areas, particularly after dry years. While yellow buttons are not very palatable, they provide useful forage during spring and autumn when other feed is scarce.

JRM

**Yellow buttons:** small, bluish bushes; erect flower stems

# Speedy weed

*Flaveria australasica*

## Description

Hairless, bushy, annual forb to 60 cm tall. It has stiff, stout, reddish stems which are repeatedly forked to form a compact bush. Narrow, pointed leaves 2–8 cm long clasp the stem in pairs. Stiff, yellow flowers grow in 1 cm diameter groups from the stem ends and forks. A warm season grower with a strong smell, speedy weed flowers in autumn.

## Land types

Found on clay-loam to heavy clay soils in brigalow–belah, gidyea and Mitchell grass country. It thrives in bare paddocks; for example, after drought or overgrazing.

TJH

**Speedy weed:** clustered yellow flowers

## Grazing notes

Appears to be ignored by stock unless they are extremely hungry. If growing over a large area, it can be controlled by cultivation.

JOC

**Speedy weed:** yellow-green bush with forked stems

# Flat billybuttons

*Ixiolaena brevicompta*

Other common name:
**Plains plover daisy**

TJH

**Flat billybuttons:** flowers have flat base

## Description

Upright, weakly perennial or biennial forb usually to 50 cm tall. Leaves are 2–3 cm long and 2–7 mm wide without a stalk to the stem. The basal stems are rough and woody. Flowers are yellow, hemispherical, 1–1.5 cm across, with a distinctive flat base. Ripe seed heads remain intact for many weeks. Growth and flowering occurs in warmer months.

## Land types

Grows on grey cracking clay soils on frontage, Mitchell grass and box country in the southern portion of the region. It often grows in association with billybuttons (*Pycnosorus* spp.).

TJH

**Flat billybuttons:** small bush with erect flower stems

## Grazing notes/poisonous potential

Not normally eaten and fairly unpalatable. Only the mature, dry seed heads are poisonous. Poisoning can occur in sheep of all ages, usually within two weeks after grazing has commenced and where thick stands of the mature plants bear dry seed heads. Mustering may bring on or worsen the signs of poisoning.

Signs of poisoning include weakness of the hind legs, short strides, staggering and collapse after walking very short distances, increased temperature, pulse and breathing rates. Many die in 1 to 2 days. Sheep may die suddenly after running short distances when startled. The affected muscles of the hind legs are pale.

Affected flocks should be carefully removed from the flood plains to other areas. Losses should then stop within 7 to 10 days. There is no known cure. Prevention is best achieved by stocking heavily until flowering, then removing stock to non-affected pastures.

# Hoary sunray

*Leucochrysum molle*

## Description

Semi-erect, multi-stemmed, greyish annual plant to 30 cm tall. The stems are wiry and bear many narrow, stalkless leaves. Flower heads are 2–3 cm in diameter and have an outer ring of many overlapping yellow petals. The flower heads are borne singly on a thin stalk well clear of the foliage. The underside of each mature flower is fairly flat. Seeds are thin, 2–3 mm long with a tuft of feathery bristles at one end. These bristles do not rub off easily.

## Land types

Occurs on a wide range of land types and is more frequent on clay loams and silty soils.

## Grazing notes

Palatable and nutritious prior to flowering. In wet winters it makes a significant contribution to stock diets.

JRM

**Hoary sunray:** erect, grey forb; showy yellow flowers

# Parthenium

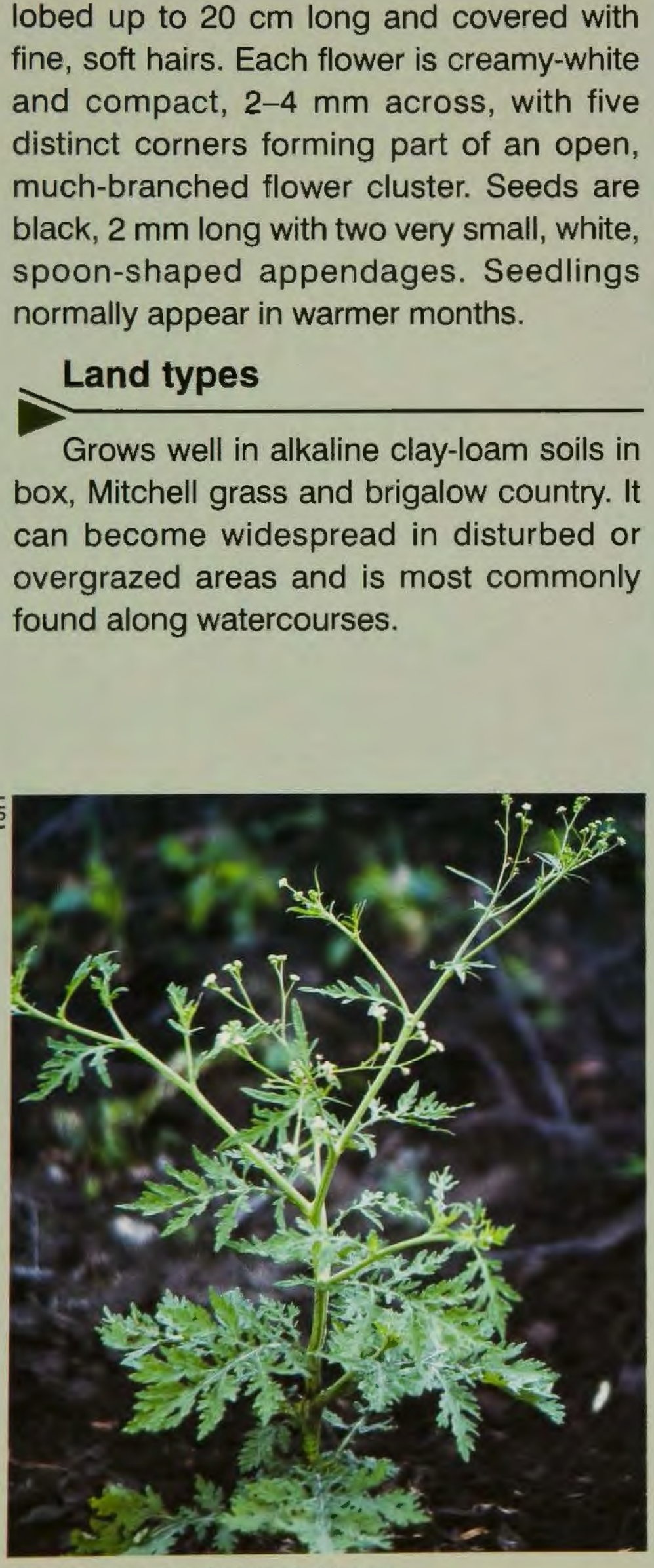
## *Parthenium hysterophorus*

### Description

Upright, annual forb developing from a basal rosette into a plant 1–2 m tall which becomes woody with age. Leaves are deeply lobed up to 20 cm long and covered with fine, soft hairs. Each flower is creamy-white and compact, 2–4 mm across, with five distinct corners forming part of an open, much-branched flower cluster. Seeds are black, 2 mm long with two very small, white, spoon-shaped appendages. Seedlings normally appear in warmer months.

### Land types

Grows well in alkaline clay-loam soils in box, Mitchell grass and brigalow country. It can become widespread in disturbed or overgrazed areas and is most commonly found along watercourses.



JAM

**Parthenium:** white, five-cornered flowers

### Grazing notes

Parthenium is an introduced declared plant throughout Queensland. Seeds are easily spread by vehicles, animals and water. Vehicles from parthenium areas should be washed before leaving. It is important to watch carefully for this plant and eradicate all plants and seed heads. Continual checking of previously contaminated areas and waterways leading onto the property is necessary.

Parthenium causes problems by reducing the productive capacity of grazing land. It can also cause allergic skin and respiratory reactions in people.

Overgrazing encourages parthenium. It is a competitive plant, prolific seeder and exudes growth-inhibiting substances from the roots which lower the germination chances of more desirable species.



TJH

**Parthenium:** deeply indented leaves

# Clustered copperwire daisy

*Podolepis arachnoidea*

# Showy copperwire daisy

*Podolepis jaceoides*

RGS

**Showy copperwire daisy:** erect forb

## Description

Upright, annual forbs to 80 cm tall. They have yellow-petalled flowers and small, cylindrical seeds tipped with a tuft of bristles. Growing during the cooler months, they flower in spring.

DRH

**Clustered copperwire daisy:** yellow flowers

**Clustered copperwire daisy** has fine, reddish stems covered in white, woolly hairs. The leaves to 10 cm long are stem-clasping with margins that roll under. The small yellow flowers, each 15 mm across, are borne in clusters and have outer petals with three-lobed tips.

**Showy copperwire daisy** has thicker, reddish stems which may be woolly. The leaves are mostly concentrated at the base of the plant and are up to 10 cm long. Bright yellow flowers about 3 cm in diameter, are borne singly on long, reddish stalks. The petals are toothed at the tips.

## Land types

Clustered copperwire daisy is mainly found on deep sandy soils and red earths in pine, box and mulga country.

Showy copperwire daisy is found on heavy, grey clays on river frontages and flood plains in box country and red sandy soils in pine country.

RGS

**Showy copperwire daisy:** toothed petals

## Grazing notes

Rarely found in abundance except following wet winters. They may be found in large patches where little else is growing. They are palatable but contribute little bulk to the diet.

## Golden billybuttons

*Pycnosorus chrysanthes*

## Drumsticks

*Pycnosorus globosus*

### Description

These plants have bluish-grey, downy leaves and dense, yellow, globular to egg-shaped flowers on fine, erect stems. They are warm season growers.

TJH

**Drumsticks:** bluish, downy basal leaves

JRM

**Golden billybuttons:** bluish-grey, downy leaves

### Land types

Usually found on clay soils in box and Mitchell grass country.

### Grazing notes/poisonous potential

Not very palatable but are sometimes grazed by stock, usually without ill effect. Poisoning may occur when these plants are abundant in pastures and there is little other feed available. In this situation poisoning can be avoided if stock are not driven or mustered.

**Golden billybuttons** only grow up to 25 cm tall; leaves are smaller, to 6 cm long and 6 mm wide. The plant is often well-branched from the base. Flowers are up to 10 mm in diameter. Seeds are 3–5 mm long with a tuft of feathery bristles at the top.

**Drumsticks** are upright perennial forbs to 80 cm tall with stems rarely branched. The leaves grow mainly from the base and grow to 12 cm long and 5 mm wide. Flowers are up to 20 mm in diameter.

TJH

**Drumsticks:** dense, yellow terminal flower ball

# Musk sunray

*Rhodanthe moschata*

## Description

Erect, annual, grey woolly forb to 30 cm tall. The stems are soft and branched with numerous, simple grey leaves, 2–3 cm long which clasp the stems. Flowers are cream to yellow and clustered into heads 5–10 mm across although flower buds are initially pink. There are no obvious petals and each small individual flower is urn-shaped with a deep-yellow centre. Seeds are 1–2 mm long with 5–10 feathery bristles at one end that stay attached after the seed falls.

## Land types

Red loams and sandy soils in box, mulga and sand plain country.

## Grazing notes

A common winter grower that can provide some bulk although it is not very palatable to stock.

JAM

**Musk sunray:** grey, woolly leaves; yellowish, clustered flowers

# Fireweed

*Senecio lautus*

## Description

Upright, annual daisy to 70 cm tall but normally 35 cm. Leaves are elongated, dark-green and variable in shape. It produces clusters of yellow daisy flowers 3–5 cm across with 8 to 14 petals. Narrow, cylindrical seeds have tufts of white, silky bristles at one end. Fireweed grows in cool seasons and flowers in spring.

## Land types

Found in most land types within the region on a variety of soils, except in drier mulga country. The plant can carpet extensive areas of land in favourable seasons.

## Grazing notes/poisonous potential

Normally only found as scattered plants, it can become prolific after a run of dry summers and wet winters and/or overgrazing.

Although not normally palatable, it can poison cattle, sheep and horses if eaten over a number of months. Loss of condition, jaundice, lethargy and poor muscle coordination and twitching are signs of poisoning. Sudden death may occur without any signs.

Stock do not usually eat the plant if supplementary feeding is introduced. Remove stock from seriously-affected areas where other forage is limited. Consider a pasture spelling or renovation program to re-establish more desirable perennial grasses and other forage.

*For further information see Pyrrolizidine alkaloid poisoning in Chapter 3.*

RDL

**Fireweed:** erect forb; showy yellow flowers

# Variegated thistle

*Silybum marianum*

## Description

Biennial forb which grows initially as a rosette to about 50 cm diameter. It then develops into a robust, upright forb to 2 m tall. It has large, distinctive, grey and green, variegated, shiny, thistle-like leaves with spiny margins. Purple thistle-like flowers up to 3–5 cm wide, are borne singly at the ends of stalks which branch from main flower stems.

It germinates in cooler months. In its first spring the plant produces a single flower stem up to 1 m tall. Given enough moisture the plant will grow through the following year increasing in sturdiness and producing multiple flower stems and side branches.

## Land types

Occurs as single plants or in dense clumps in damp, disturbed areas such as around yards, dam walls and in overgrazed areas and cultivation. Variegated thistle requires good fertility and is found in black and brown earth soils and alluviums associated with box, Mitchell grass, brigalow and frontage country.

## Grazing notes/poisonous potential

Variegated thistle chokes out more desirable pasture plants. Although leaves are spiky, the plant is eaten by hungry stock or when other feed is limited. Poisoning can occur when sheep and cattle are allowed access to large amounts of the plant or when conditions are suitable for the plant to accumulate nitrates. Spraying with hormone herbicides can increase palatability and increase nitrate content.

*For further information see Nitrate–nitrite poisoning in Chapter 3.*

TJH

**Variegated thistle:** pictured at rosette stage

# Tridax daisy

***Tridax procumbens***

DJC

**Tridax daisy:** pale-yellow, toothed petals

## Description

Sprawling perennial which roots down at the nodes. It has opposite, rough, hairy, irregularly-toothed leaves. Flowers are borne singly on thin, unbranched stalks to 30 cm tall. They have pale-yellow petals, 10–20 mm in diameter, with a dark-yellow centre. The five to six main petals have toothed ends. Seeds are hairy with a tuft of bristles at the tip. It grows mainly from late winter through summer, flowering from mid-spring onwards.

## Land types

This plant is usually found on disturbed areas, but is sometimes scattered through native pastures on a wide range of soil and land types. It is more common in box country and in the north-east of the region.

## Grazing notes

An abundance of tridax daisy is rare but can result from overgrazing a pasture. The plant is not known to be palatable.

ERA

**Tridax daisy:** sprawling forb with hairy, irregularly-toothed leaves

# Crownbeard

## *Verbesina encelioides*

Other common name:
**Wild sunflower**

ERA

**Crownbeard:** erect forb; wings at base of leaf stalks

### Description

Erect, branched, annual forb which can grow to 150 cm tall. It is commonly 80 cm tall. Leaves are large and triangular-shaped to 10 cm long but become smaller with toothed edges near the top of the plant. They are bluish-green on the upper surface and white and hairy underneath. The base of the leaf stalk near the stem has two small, leaf-like wings. Flowers are large (4–7 cm diameter), bright-golden in colour, with lobed petals and resemble small sunflowers; they have a yellow centre. Seeds are flattened, downy, 5–8 mm long and dark-brown in colour. Crownbeard grows and flowers in the warmer months.

### Land types

Widespread on most land types it usually grows on lighter soils especially in disturbed areas, roadsides and abandoned cultivation.

### Grazing notes/poisonous potential

Not eaten by stock except when they are under stress, when sheep are hungry and there is little other feed available, or following light rain during a drought. Poisoning can occur in sheep and sometimes cattle. Death is usually sudden and there are few signs of poisoning. Frothing at the mouth, bluish lips and gums and protruding tongue may be seen. Large volumes of fluid occur in the chest and frothy fluid is usually found in the windpipe.

Stressed stock should be denied access to crownbeard. Stock with access to the plant should be watched after light rain during droughts. Chipping is the most effective method of control as herbicides can make the plant more attractive and palatable to stock.

TJH

**Crownbeard:** large, yellow, lobed petals

# Noogoora burr

*Xanthium pungens*

## Description

Upright, branched annual forb to 2 m tall. Large, rough-surfaced leaves are three to five lobed, grow to 20 by 15 cm and are borne on long, often purplish stems. The flowers are inconspicuous. The male flowers form at the tips of branches and are separate from the females which are located in leaf axils. Brown, oblong woody burrs are 1–2 cm long, and form in clusters. They are many-spined, two-seeded and have two prongs at one end. Noogoora burr grows during warmer months.

## Land types

Prefers creek banks and flooded frontage country and disturbed areas such as dams.

## Grazing notes/poisonous potential

Noogoora burr is a declared plant. Seeds are spread by water and by surface hooks clinging to passing animals. These seeds cause vegetable fault and price discounts in wool.

Livestock can be poisoned by small quantities of the seedlings in the two-leaf stage. This can often occur shortly after rain when little other feed is available. A complex poison which is concentrated in the first pair of seedling leaves (cotyledons) and burr can cause acute liver damage. Stock are usually safe once the plants have passed the seedling, two-leaf stage.

Best management is to maintain competitive pastures and keep animals away from areas where Noogoora burr is emerging. Control of seedlings by spraying may be required. The two seeds in each burr are long-lived and can germinate in different years, often after disturbance. A recently introduced rust has reduced the incidence and severity of this weed in some areas of Queensland.

*For more information see Acute liver damage in Chapter 3.*

TJH

**Noogoora burr:** large lobed leaves; purplish stems; spiny burrs in clusters

# Bathurst burr

## *Xanthium spinosum*

### Description

Upright or bushy annual forb to 60 cm tall. Shiny, dark-green leaves have three distinct, pointed lobes and an obvious pale-coloured mid-vein. They grow 5–8 cm long, are paler underneath and have yellow spines on the lobe tips. Three-branched spines occur on stems adjacent to the leaf bases. The oblong, yellowish burrs grow to 1 cm long and are covered in hooked spines. Male and female flowers grow separately—the female in the leaf axils and the males mostly on branch tips. Growing in the warmer season, the plant produces burrs in autumn. These burrs have a three year viability.

TJH

**Bathurst burr:** lobed, spiny leaves

TJH

**Bathurst burr:** three-branched spines on stems

### Land type

A common weed in disturbed areas of box, Mitchell grass and frontage country with clay or alluvial soils. Often found near dams and stock yards.

### Grazing notes

Bathurst burr is a declared weed. It is not palatable and causes vegetable fault in wool. It is spread by flood waters and by clinging to passing animals. Extensive stands of Bathurst burr need to be controlled. Overgrazing can encourage the incidence of the plant.

# Mueller's saltbush

***Atriplex muelleri***

Other common name:
**Annual saltbush**

## Description

Leafy, pale bluish-green, annual forb which grows to 40 cm tall. The leaves are up to 7 cm long and 2 cm wide, have coarsely-toothed edges and broad tips tapering to the base. The undersurface is paler than the upper surface. Flowers are small, inconspicuous and clustered in the leaf axils. Fruits are flat, fan-shaped, 3–4 mm long and grey-green in colour with one seed in each. The plant grows year round, but makes most growth during autumn and spring.

## Land types

Grows in many land types, commonly on medium to heavy clay soils, preferring areas receiving extra run-on water.

TJH

**Mueller's saltbush:** clustered green fruits in leaf axils

## Grazing notes/poisonous potential

Can be dominant in areas left bare by drought, overgrazing or disturbance and its presence may indicate the soils are saline.

When mature, Mueller's saltbush is a useful fodder plant. It is generally avoided by stock when young. Hungry or travelling stock may suffer poisoning on pastures flushed with new growth of Mueller's saltbush. Death from nitrate poisoning is rapid while the effects of oxalate poisoning are prolonged.

*For further information see Oxalate and Nitrate–nitrite poisoning in Chapter 3.*

TJH

**Mueller's saltbush:** bluish bush

# CHENOPODIACEAE

## Fat hen

*Chenopodium album*

## Desert goosefoot

*Chenopodium desertorum*

### Description

**Fat hen** is an upright, annual to 150 cm tall, often with a red stem. It has bluish-green, alternate leaves 2–5 cm long with a lighter underside. Flowers are very small, pale-green and densely packed along irregularly-branched stem tips. The branches become shorter towards the tip. Small, dark seeds form within the granular-looking flower parts. It flowers in spring and summer.


**Fat hen:** long, greenish flower clusters

**Desert goosefoot** is a small, perennial bush with a woody crown and soft branches to 30 cm tall. Its bluish-green leaves are 1–2 cm long, thick and slightly spoon-shaped. Flowers are small, inconspicuous and occur in granular, greyish spikes up to 3 cm long in spring and summer. Fruits are 2 mm in diameter, five-lobed, densely packed on the stem tip and contain one black seed each.


**Desert goosefoot:** bluish bush; soft leaves

### Land types

Fat hen is found in disturbed areas of Mitchell grass downs, adjacent to roadsides. Desert goosefoot grows on a range of soils in box country.

### Grazing notes

Fat hen is often found in a colony. Desert goosefoot usually occurs as scattered plants. Both can be useful forage plants although desert goosefoot tends to shed its leaves in dry weather and fat hen can taint milk.


**Desert goosefoot:** greyish, round, clustered flowers

## Green crumbweed

*Dysphania rhadinostachyum*

### Description

Yellowish-green, annual forb with stems to 20 cm tall. Seedling growth is prostrate and leaves are 10–25 mm long and have wavy edges. Later, numerous erect, unbranched, crumbly seed heads appear. These are characteristic of this plant. The individual flowers are inconspicuous and densely packed along the erect (up to 12 cm long) spikes. Each downy, green fruit encloses a tiny, shiny, reddish-black seed.

### Land types

Common in box and mulga country on sandy red earths and on hard ridges. It is often seen on roadsides.

### Grazing notes

Not palatable. Scattered plants are conspicuous by their bright yellow-green foliage.

DJC

**Green crumbweed:** yellow-green forb; erect, unbranched, crumbly seed heads

# Climbing saltbush

***Einadia nutans***

## Description

Fine-stemmed, trailing and climbing, perennial forb with a woody base. Hairless, bluish-green leaves up to 3 cm long join the stem in pairs and often have expanded lobes at the base. Flowers are small, inconspicuous and clustered in small groups in leaf axils and at stem ends. Red to orange berries are distinctively fleshy and flattened, occur in small groups and are 2–3 mm in diameter. Flowering occurs mostly in warmer months.

## Land types

Grows on a wide range of lighter soils, especially in mulga country, and in disturbed areas. Often grows in close association with trees and shrubs.

JJB

**Climbing saltbush:** red, fleshy, segmented berries

## Grazing notes

Useful forage, although it is only a minor component of native pastures. A similar looking plant without red berries occurs in the east of the region.

RGS

**Climbing saltbush:** fine-stemmed, perennial forb

# Ruby saltbush

## *Enchylaena tomentosa*

### Description

Dense, perennial, bushy shrub to 90 cm high. Small, fleshy leaves which may be hairy, are cylindrical and 6–20 mm long with a pointy apex. They are densely packed along the stem. Flowers are tiny and inconspicuous in the leaf axils but they produce conspicuous, 5 mm wide, flattened, juicy, purple, red or yellow berries. It grows and flowers all year, mainly during warmer months. Fruits ripen in small numbers over an extended period.

### Land types

Can be found in most land and soil types but is most common in brigalow country.

DJC

**Ruby saltbush:** red, juicy fruits

### Grazing notes/poisonous potential

Not normally grazed when other forage is plentiful, however it provides useful reserves during droughts. Although high levels of leaf oxalates have been recorded, large quantities have been eaten without problems. It is not a major component of pastures.

DJC

**Ruby saltbush:** bushy shrub with woolly stems and small, cylindrical leaves

## Small-leaved cottonbush

***Maireana microphylla***

Other common name:
**Eastern cottonbush**

## Silky bluebush

***Maireana villosa***

### Description

These plants are small, upright, perennial bushes that usually bear distinctive 'winged' fruits close to the stems. They grow all year round and have densely-arranged, short, cylindrical leaves. The flowers are inconspicuous and the fruits are often mistaken for flowers. Fruits form in leaf axils in the upper 5–20 cm of the stem. They are flat, oval, 4–7 mm in diameter, with a wavy, translucent, outer edge (wing) and distinct centre.

**Small-leaved cottonbush** grows to 1 m high and has deep-green leaves and branches. Leaves are only 2–5 mm long. The fruits are 2–4 mm diameter and lie in leaf axils. They are green, turning dark-brown when ripe and often lack the outer wings. Flowering occurs in spring and autumn.

RGS

**Small-leaved cottonbush:** large bush; tiny leaves

JRM

**Silky bluebush:** woolly stems; fruits in leaf axils

**Silky bluebush** grows to 40 cm tall, has slender, hairy, woody branches and small, hairy, flattened, oblong leaves to 12 mm long. Fruits grow 4–7 mm diameter and their colour changes with age from light-cream through pink to black. Fruiting can be so prolific and wings so wide that the upper branches appear to be packed with flowers. Flowering occurs all year round.

### Land types

Small-leaved cottonbush grows on soils from grey cracking clays to red earths and sandy duplex soils in Mitchell grass and box country. Silky bluebush prefers gravelly red soils and hard ridge country and is commonly found in mulga country and on ridges in box country.

### Grazing notes

These plants are rarely grazed by stock except when little other feed is available. Silky bluebush can provide useful drought forage.

# Soda bush

## *Neobassia proceriflora*

### Description

Upright, perennial, fleshy forb growing to 30 cm tall. It has small, alternate, succulent, pointed leaves to 20 mm long and deep-red stems. The whole plant is normally covered in long, downy, white hairs. The plant bears small, solitary flowers from leaf axils in summer. The fruits are elongated, 6–8 mm long with several small points at the tip and the lower part hugs the stem.

### Land types

Soda bush prefers clay soils in saline or scalded areas. It is found in many land types in the far west of the region particularly on gidyea country and where the pasture has been overgrazed. The plant is commonly found around yards.

### Grazing notes/poisonous potential

A palatable plant often grazed without ill effect. However, it can be poisonous. Poisoning occurs mainly with hungry, inexperienced stock, particularly after travelling or being released from yards.

*For further information see Oxalate poisoning in Chapter 3.*

JAM

**Soda bush:** erect bush; bluish fleshy leaves; red stems

# Soft roly-poly

***Salsola kali***

Other common name:
**Buckbush**

## Description

Annual or biennial bush to 70 cm tall. Although soft when young, the stems and leaves become more rigid and spiky as they mature. The hairless, fleshy leaves are 1–2 mm in diameter, cylindrical, grow to 3 cm long and end in a prickly point. Flowers are inconspicuous and occur singly in the upper leaf axils. They develop into small, circular fruiting bodies, 5–7 mm in diameter, that have a broad, wavy, whitish wing all around. In the far west of the region, a form of the plant occurs which has tight, knobby clusters of leaves and fruits on the branches. Roly-poly germinates rapidly following spring and summer rains. Once established the plant stays green and grows for up to two years before maturity when it breaks off at the root. The dead bush is then easily blown along by the wind—a 'tumbleweed'.

DRH

**Soft roly-poly:** leaves become sharp when dry

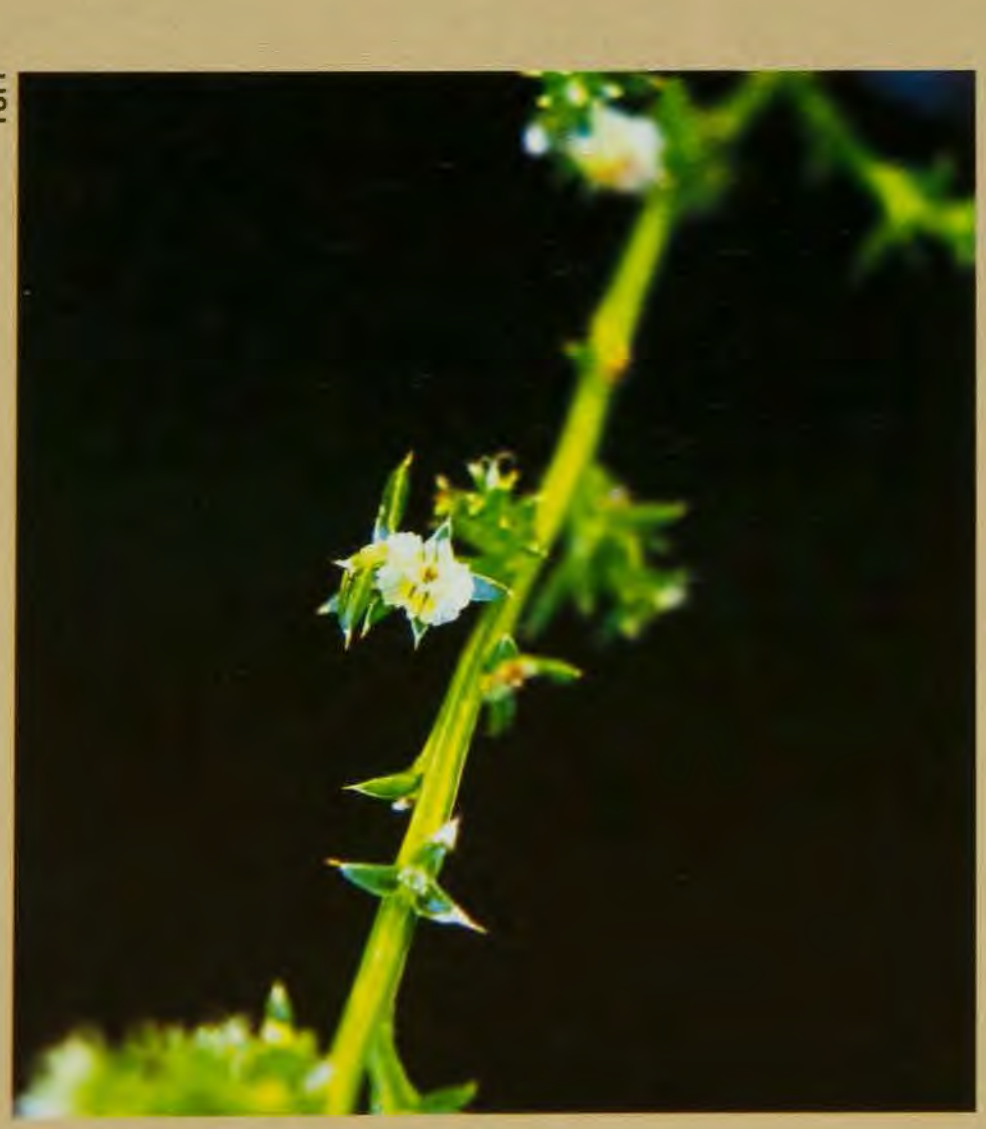
## Land types

Occurs on a wide range of soil types, especially on clays in box, Mitchell grass, brigalow–belah and gidyea country.

## Grazing notes/poisonous potential

Is eaten by sheep and cattle without ill effect when it is young. Moderate grazing by sheep can suppress young roly-poly in grassy pastures. It is less acceptable to stock when mature. As a coloniser of overgrazed and disturbed areas, it provides useful cover beneath which more palatable species can establish if grazing pressure is light. It can cause oxalate poisoning when little other feed is available and stock are hungry. Death from poisoning is not common.

*For further information see Oxalate poisoning in Chapter 3.*



TJH

**Soft roly-poly:** pale, winged fruits

## Yellow copperburr

*Sclerolaena anisacanthoides*

## Goathead burr

*Sclerolaena bicornis*

## Galvanised burr

*Sclerolaena birchii*

## Woolly copperburr

*Sclerolaena lanicuspis*

## Black roly-poly

*Sclerolaena muricata*

DJC

**Galvanised burr:** typical bush

DJC

**Galvanised burr:** sharp spines; dense white hairs

### Description

These plants are low-growing, spiny, woody perennial bushes up to 1 m tall. Except for galvanised burr and black roly-poly they all have narrow, fleshy, cylindrical leaves. Their flowers are small and inconspicuous and develop into spiny fruits in the leaf axils. They have different numbers, sizes and arrangements of spines on their burrs. Seeds germinate in autumn and flowering occurs in early summer. They live for two to four years.

**Yellow copperburr** grows to 30 cm tall, is hairless, has bluish-green succulent leaves 5–10 mm long and urn-shaped, pale-yellow fruits 3–4 mm long with five or six very short, blunt spines at the tip.

**Goathead burr** grows to 60 cm tall and has its upper branches covered with woolly, white hairs. Its leaves are 10–25 mm long, fleshy and 2–3 mm thick. Large, white, woolly burrs are 4–7 mm long and have two large spines, 10–15 mm long.

DJC

**Yellow copperburr:** small, fleshy leaves

JJB

**Goathead burr:** large, white burrs

**Galvanised burr** starts as a straggly plant which grows into a round bush to 1 m tall. Its stems are covered with short, white, woolly hairs. The leaves are hairy, blue-green, 12–22 mm long, 3–5 mm wide and tongue-shaped. Its burrs have four or five spines about 5 mm long. At times, a virus causes abnormal growth resulting in densely-packed, leafy, spineless clumps in the canopy of older bushes.

**Woolly copperburr** grows only to 20 cm tall, is covered in long, grey hairs and often has reddish-tinged foliage. Its small burrs are covered with long, brown hairs and have three to six blunt spines which are 4–6 mm long.

**Black roly-poly** grows into a large, rounded clump up to 90 cm tall. It has dark, blue-green leaves when young which turn yellowish-green with age. Leaves are 10–12 mm long, 2–3 mm wide and often have scattered hairs. Its burrs are yellow, hairless and have five spines of differing lengths, the longest to 10 mm long.

## Land types

These plants are early colonisers of bare, eroded and disturbed areas.

Yellow copperburr is found on clay soils in box country, often on clay pans and scalded areas.

Goathead burr is found in many land types on clay loam soils and often occurs on river frontages and alluvial plains.

Galvanised burr occurs most often on sandy and gravelly soils—especially sandy duplex soils in box, mulga and frontage country. It is often prominent at the end of droughts in a range of land types.

Woolly copperburr occurs only in lower-rainfall mulga country in the far west of the region.

Black roly-poly is found on clay and loam soils, particularly in degraded pastures or abandoned cultivation in Mitchell grass, box, brigalow and frontage country.

JRM

**Woolly copperburr:** small blue bush; long, fine hairs; blunt spines

## Grazing notes/poisonous potential

Dense stands of these plants indicate a recent history of disturbance by drought and/or overgrazing. The plants increase in a run of wet winters after drier summers, however dense stands are short-lived and with good summers and moderate grazing can disappear within two to three years. These plants are very useful in the first stage of colonising bare ground as they stabilise soil and provide ground cover and protection from grazing for newly emerging, more useful forage plants.

Burrs in wool can cause problems at shearing but their presence has little effect on wool values as they are easily removed during processing. Galvanised burr is the worst wool contaminator. Sheep graze the plants when little else is available, especially when young. Yellow copperburr can be poisonous if a large amount is consumed, however it is fairly unpalatable and stock losses are unlikely to occur. Woolly copperburr is more palatable than the others and is often considered a good forage plant, especially in the early growth stage.

DJC

**Black roly-poly:** large spines

JAM

**Black roly-poly:** blue-green, prickly bush with five spines on each burr

# Grey rattlepod

***Crotalaria dissitiflora***

## Description

Upright or bushy, perennial legume to 30 cm high with a woody base and thick underground stems (rhizomes). Young stems are covered with silvery hairs. The grey-green leaves have three leaflets at the end of a long stalk and two small, narrow stipules where they meet the stem. Each leaflet is 2–4 cm long and 1 cm wide. The bright-yellow, pea-shaped flowers are 1 cm long and clustered towards the tops of the flower stems. The elongated pods are 25 mm long, plump with an upturned point and hang in groups from the stems. They are sparsely hairy, turn brown when ripe and contain approximately 15 kidney-shaped seeds. The rhizomes enable it to respond quickly after rain or severe disturbance. It grows during warmer months and flowers in spring and summer.

## Land types

Grows mainly on clay soils particularly in brigalow, Mitchell grass and box country. It is common in disturbed areas such as roadsides.

TJH

**Grey rattlepod:** pea-shaped flowers; curved pods

## Grazing notes/poisonous potential

Although not normally eaten in large amounts, grey rattlepod has been suspected of poisoning sheep and causing scouring in grazing stock, especially horses. Other species of rattlepod can cause cumulative liver damage, walkabout disease in horses and emaciation and weakness in cattle and sheep.

JAM

**Grey rattlepod:** showy yellow flowers

# Slender tick trefoil

## *Desmodium varians*

### Description

Small, perennial legume with a strong taproot. Each leaf has three leaflets of varying length and breadth, mostly 2–3 cm x 5–6 mm wide. Leaves are dark-green with much-branched veins. Flowers are inconspicuous, pale-cream or pale-pink, and pea-shaped but the pods are very characteristic. They are green, 2–4 cm long, covered in small, hooked hairs and segmented with a smooth, downward curved upper edge and a scalloped lower edge. When almost ripe they turn yellow then pale-brown and at any time may catch by the hooks on clothing or fur. The whole pod or a single segment or group of segments may pull off at one time. Each segment is rounded in outline, flat, non-woody, 3–4 mm across and contains one pale-brown or yellow seed. Slender tick trefoil is most obvious in good summers and after fire.

Note: Slender tick trefoil may be confused with some *Glycine* spp. but glycines have small, purple flowers and non-segmented pods that have both edges straight. Glycine pods turn almost black when ripe and burst open with a twisting action and release very dark seeds.

### Land types

Occurs mostly in box country but often occurs under large trees in mulga, brigalow, and Mitchell grass country.

RGS

**Slender tick trefoil:** three leaflets; segmented pods

### Grazing notes

Once seedlings establish a good taproot, the plant is very resistant to grazing. It will readily re-sprout from the taproot below ground level if defoliated or burnt. It is rarely abundant in pastures and is continuously grazed where sheep have regular access.

## Glycine pea

*Glycine tabacina*

## Woolly glycine

*Glycine tomentella*

ERA

**Woolly glycine:** purple pea flower; three hairy leaflets

### Description

Glycines are trailing or climbing, perennial legumes with stems to 2 m long. Their leaves are made up of three leaflets on a longer stalk and these have a pair of small stipules at the stem junction. They have small, purple, pea-shaped flowers and slender, slightly-flattened, bean-like pods, 2–5 cm long. Flowers may occur in elongated groups on erect stalks or singly in the junction of the leaf and stem.

Glycines grow and flower during the warmer months.

TJH

**Glycine pea:** simple, thin pod

**Woolly glycine** has a covering of rusty-brown hairs on all parts of the plant. Its leaflets are 1.5–3 cm long and 1 cm wide with a generally rounded shape. Pods are 3–4 mm wide and 1–3 mm long.

**Glycine pea** leaves are longer (3–5 cm) and narrower (4–8 mm). Its pods are 2–3 mm wide and up to 5 cm long.

### Land types

Found on a wide range of land types, but common on the sandier soils in box, mulga and pine country. Woolly glycine prefers sandy soils, while glycine pea grows predominantly on clay but also sandy soils.

### Grazing notes

The glycines are native legumes which occur as scattered plants in many native pastures and have a higher protein content than many other pasture forages. They can survive light grazing and are palatable and nutritious for stock. They rarely form a high proportion of the pastures.

DRH

**Woolly glycine:** three rounded leaflets; hairy

# Native indigo

*Indigofera linifolia*

## Description

Normally an annual legume but will live longer in good seasons. It has a woody base with stems to 30 cm long that can be either prostrate or nearly upright. The leaves are simple, narrow, tapering, 1–3 cm long and covered with white hairs that hug the surface. Flowers are small, pea-like, bright-pink to red and form clusters at each leaf axil. The most distinctive feature of native indigo is its small, spherical, grey pod, 2 mm in diameter containing one seed. Growth and flowering occurs during the warm season.

## Land types

Grows in sandy soils in box, pine and mulga country.

## Grazing notes/poisonous potential

Never produces much bulk. Little is known about the palatability and toxicity of this plant, however, many other *Indigofera* spp. are known to be very toxic. It is eaten by sheep.

JAM

**Native indigo:** pinkish pea flowers; pods clustered on stems

# Birdsville indigo

*Indigofera linnaei*

## Description

Prostrate, perennial legume with hairy stems to 40 cm long. The leaves are 1.5–2.5 cm long, over 1 cm wide and made up of five to nine, grey-green, hairy, oval-shaped leaflets in two rows. The flowers are small, pea-like, pinkish-red and crowded into short arms near the stem. The cylindrical pods are up to 5 mm long, contain two seeds and occur in groups. The plant is one of the first to shoot following rain.

## Land types

Grows in sandy and loamy soils in mulga, box and ironbark country. It occurs as scattered plants, and can be prevalent around waters and other trampled areas.

## Grazing notes/poisonous potential

Although eaten readily and without apparent ill effect by sheep and cattle, Birdsville indigo is responsible for Birdsville disease in horses. This disease can occur following rains which are sufficient for the growth of Birdsville indigo but are not enough to encourage grass growth. Horses lose condition and become lethargic, dull and uncoordinated. Rear hooves often become worn from constant dragging. When driven, affected horses may exhibit tight, uncoordinated circling spasms, suddenly lose control and collapse and die.

There is no treatment for Birdsville disease. Horses should be removed from infested areas or paddocks grazed by sheep before horses are introduced.

JAM

**Birdsville indigo:** pinkish pea flowers; each pod contains two seeds

## Cut-leaf medic

*Medicago laciniata*

## Burr medic

*Medicago polymorpha*

### Description

Medics are annual, sprawling legumes with stems up to 50 cm long. Their hairless leaves are made up of three leaflets; the middle leaflet on a stalk which is longer than those of the other two leaflets. They both have small, yellow, pea-like flowers and coiled, spiny pods, 5–8 mm in diameter. Medics germinate in autumn, grow in the cooler months of the year and flower in spring. They are introduced plants that have now become naturalised in the region.

TJH

**Cut-leaf medic:** irregular leaf tips

**Cut-leaf medic** has very ragged edges on each leaflet and paler flowers. Its burr tends to be globular and almost spherical.

**Burr medic** leaflets have a smoother leaf margin with only a slightly serrated edge. The burr is normally fairly flat.

### Land types

Cut-leaf medic grows on more fertile loams, and on red clays in all land types. Burr medic is found on heavy clay soils, especially in Mitchell grass and frontage country.

TJH

**Burr medic:** coiled pod; small, yellow flowers

TJH

**Burr medic:** three rounded leaflets; spiky burr

### Grazing notes/poisonous potential

Both medics grow in abundance in wet winters. Burr medic can only tolerate moderate drought and frost but is capable of growing and setting seed in most winters.

The medics are palatable and nutritious, and are efficient nitrogen-fixing legumes which improves their protein levels. When abundant, they can cause bloating in stock and the burrs cause vegetable contamination in fleeces. Burr medic may occasionally cause trefoil dermatitis in very wet winters when the plant is lush and abundant. All stock are susceptible but merino lambs and newly-shorn sheep are the most affected. However, the benefits of both medics to animal production and nitrogen fixation far outweigh any disadvantages.

*For further information see Photosensitisation in Chapter 3.*

# Emu foot

***Psoralea tenax***

## Description

Weakly perennial legume with a variable growth habit depending on seasonal conditions. It can be sprawling with stems to 50 cm or upright to 30 cm. It has dark-green, stalked leaves with five to seven leaflets radiating like fingers from the same point. The leaflets are 4–7 cm long and 5–7 mm wide. The flowers are small, purple, pea-shaped and are loosely arranged along stalks to 20 cm long, that arise in the leaf axils. Each flower sets a single, round, black seed in a small egg-shaped pod 3 mm in diameter. Emu foot germinates with late summer or spring rains and can grow slowly through winter. It flowers from late winter to early summer.

## Land types

Grows on heavy clay soils in box and Mitchell grass country. It is a widespread legume in native pastures.

## Grazing notes

Provides a palatable and useful forage scattered throughout pastures. It can grow well at any time of year and become locally abundant in good seasons. It has caused intestinal blockages in sheep by forming fibre balls.

DJC

**Emu foot:** distinctive lobed leaves

TJH

**Emu foot:** round seed pods with single seed

# Rhynchosia

## *Rhynchosia minima*

Other common name:
**Rhyncho**

### Description

Trailing or twining, perennial legume with brown stems up to 2 m long. Each leaf consists of three similar, roundish leaflets each to 3 cm long and almost as broad. There are hairy and smooth-leafed forms. Flowers are widely arranged on an erect stalk up to 15 cm long and are yellow, pea-like and less than 1 cm long. The fruit is a flattened, sticky, hairy pod, 1.5–2 cm long, slightly curved, and containing one or two smooth, freckled seeds. It flowers in spring and summer. Ripe pods shatter before fully dry.

### Land types

Found in Mitchell grass country on heavy cracking clay soils. It is also often found on heavy soils of other land types, particularly in fertile sites, along watercourses and beneath large trees.

TJH

**Rhynchosia:** pods have one or two seeds

### Grazing notes

Rhynchosia often loses its leaves in winter, but makes good growth with favourable summer rains. Individual plants only survive for two to three years. Although seldom abundant in a pasture, rhynchosia is moderately palatable. It is reported to be more salt-tolerant than most herbaceous legumes.

JAM

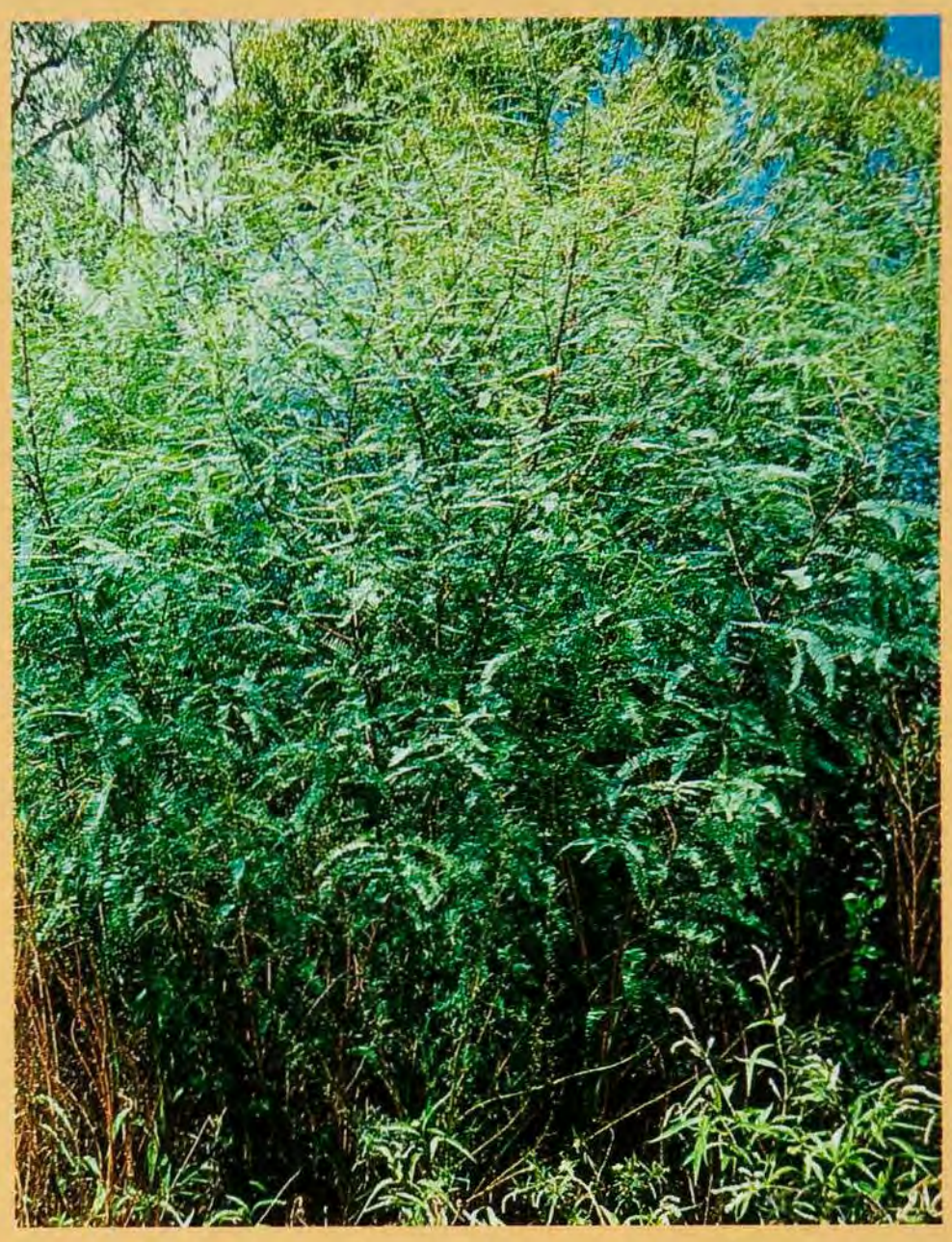
**Rhynchosia:** roundish leaflets; small, yellow flowers

# Sesbania pea

## *Sesbania cannabina*

### Description

Hairless, sparsely-leafed, erect, annual, leguminous shrub up to 2 m tall. The main stem is often reddish. Leaves arise alternately from stems and branches, each made up of 20–30 pairs of small, blunt-ended leaflets 10 mm long. The flowers grow in small groups on distinct stalks. They are pea-shaped, yellow with purplish blotches and grow to about 10 mm long. Pods are long (12–18 cm), slender, smooth, cylindrical and contain numerous oblong, brown seeds, 2–3 mm long. Ripe pods shatter lengthways.



ERA

**Sesbania pea:** erect shrub; multiple small leaflets

TJH

**Sesbania pea:** yellow pea flowers

A summer grower which nodulates freely and sets many hard seeds, the plants dry off and leaves fall quickly at maturity. Sesbania pea can be confused with Budda pea (*Aeschynomene indica*) as both grow in the same habitat and appear similar when young. However, their pods differ markedly. Budda pea has a shorter, (3–8 cm) flattened pod with a chain of segments which readily break into woody, single-seeded units.

### Land types

Occurs on wet or waterlogged areas of most land types but mainly on clay soils. Patches grow along roadsides after good summer rain.

### Grazing notes

Readily eaten by stock when young but avoided once pods start to set. It does not reshoot freely if heavily grazed while young. It matures rapidly and sheds leaf while stock still have access to green grass, so it is not a significant forage. It is common in irrigated cotton paddocks.

# FABACEAE

## Gilgai Darling pea

***Swainsona campylantha***

## Smooth Darling pea

***Swainsona galegifolia***

## Hairy Darling pea

***Swainsona greyana***

## Dwarf Darling pea

***Swainsona luteola***

## Small-leaved Darling pea

***Swainsona microphylla***

DJC

***Swainsona* species:** bright pinkish pea flowers

### Description

Darling peas are trailing to semi-erect, perennial legumes with stems to 60 cm long. They have leaves with many leaflets. Pea-shaped flowers occur on long spikes and are mostly pink or bright purple, but can be yellow to red. Pods are generally plump with a beak at the tip. They grow between autumn and spring, flowering in spring. There are 20 species of Darling pea in the region and most are similar to one of these photographs *(see table on page 104 for identifying features).*

JAM

**Gilgai Darling pea:** semi-erect legume

### Land types

The Darling peas occur mainly in wetter areas in most land types. Gilgai Darling pea is often found in gilgais on heavier soils in mulga, box, Mitchell grass, brigalow–belah and frontage country. Small-leaved Darling pea grows on lighter soils and sand dunes in box and mulga country. Smooth, hairy and dwarf Darling peas occur on heavy clays.

### Grazing notes/poisonous potential

Darling peas are sparingly grazed. Smooth, dwarf and hairy Darling peas cause Darling pea poisoning in animals which actively select them in their diet. Affected animals are said to be 'pea-struck'.

All stock are susceptible, and all parts of the plant are poisonous at all growth stages. Signs take several weeks to develop. They include loss of condition and nervous signs

| Plant | Shape & height | Leaflets | Flowers | Pods |
|---|---|---|---|---|
| **Gilgai Darling pea** | sprawling to erect<br>60 cm | 3 to 7 per leaf<br>10–45 mm x 2–4 mm<br>hairless | 7–8 mm long<br>3 to 14 per flower stalk<br>flower stalk 7 to 10 cm | 2–4.5 cm x 5–7 mm<br>smooth |
| **Smooth Darling pea** | sprawling to erect<br>60 cm–1 m | 19 to 25 per leaf<br>6–20 mm x 2–8 mm<br>slight notch at tip | 12–16 mm long<br>20 per flower stalk<br>flower stalk 20 cm | 5 cm x 1.5 cm<br>hairless and<br>leathery |
| **Hairy Darling pea** | erect<br>70 cm–1.5 m | 11 to 21 per leaf<br>6–25 mm x 2–10 mm<br>hairy undersurface | 15–20 mm long<br>12 to 30 per flower stalk<br>flower stalk 10–40 cm | 3–5 cm x 1.5–2 cm<br>hairless |
| **Dwarf Darling pea** | prostrate or erect<br>10–30 cm | 7 to 17 per leaf<br>6–20 mm x 3–10 mm<br>hairy undersurface | 6 –8 mm long<br>5 to 15 per flower stalk<br>flower stalk 3–8 cm | 2–3.5 cm x 3–5 mm<br>hairless or with a<br>few hairs |
| **Small-leaved Darling pea** | small prostrate<br>to semi-erect<br>15–60 cm | 21 to 41 per leaf<br>2–5 mm x 1.5–4 mm<br>rounded & notched<br>at tip, leaflets smaller<br>at apex of leaf | 4–7 mm long<br>10 to 20 per flower stalk<br>flower stalk 10–20 cm | 5–10 mm x 4.5 mm<br>plump and hairy |

ERA

**Smooth Darling pea:** can cause poisoning

such as being easily excited, head-shaking, staring eyes and uncoordinated gait. Severely affected animals die within four months from either misadventure or the poison. Sheep may lose condition but not show signs of nerve damage and pregnant cows may abort or deliver short-lived calves.

Stock can recover if removed at the first sign of poisoning. Pregnant animals should not be put into pastures containing Darling pea, but dry animals can graze for a month before serious effects occur. Stock rotation every four weeks is useful provided stock are put into a paddock free of Darling pea. The rotation for horses is two weeks on and four weeks off.

DRH

**Small-leaved Darling pea:** hairy pods

# Spurred vetch

***Vicia monantha***

## Description

Scrambling or climbing, annual legume which can produce a thick mat over other vegetation. Each leaf is 5–8 cm long and composed of five to eight pairs of narrow, oblong leaflets, 5–25 mm long. The leaves end in thin, twisted, grasping arms called tendrils. It has pale-purplish, pea-shaped flowers to 15 mm long. The fruit is a smooth, flattened pod 6–8 mm wide and up to 35 mm long.

Spurred vetch grows abundantly during the cooler months. It flowers in spring, produces seed pods and dies in early summer.

## Land types

Occurs in most land types with fertile, non-acid soils particularly in Mitchell grass country. It also grows in areas which receive extra water and is common on roadside soil mounds.

## Grazing notes

It rarely becomes a major component in pastures, becoming abundant only in small patches. It is palatable to stock and has negligible bloat risk.

RGS

**Spurred vetch:** scrambling legume; large, flat pods

# Native sensitive plant

*Neptunia gracilis*

## Description

Trailing, perennial legume, (sometimes a small, woody shrub) to 30 cm high with hairless, trailing stems up to 1 m long. Leaves branch twice between the stem and the individual leaflets. They are touch sensitive, 2–4 cm long and 3 cm wide. There are up to six pairs of secondary leaflets each consisting of up to 12 pairs of small (3–10 mm), narrow leaflets. Flowers are loosely clustered into small (1 cm diameter), pale-yellow, globular heads at the end of a 4–13 cm stalk with one or two tiny leaflets midway along it. They ripen into bunches of three to ten, flat, brown pods, 2–3 cm long and 8–10 mm wide, with up to eight seeds in each.

Native sensitive plant is a warm season plant and flowers in summer. It sheds most of its leaves after frosting or in drought. There are several apparent varieties, one with red stalks and bluish leaves and a pale mid-vein region. Another has yellowish-green colouring over the entire leaf surface.

TJH

**Native sensitive plant:** bunched flat pods

## Land types

Grows on heavy clay soils in Mitchell grass country and on alluvial flats in box woodland country.

## Grazing notes

Very common and widespread and not very palatable to stock.

ERA

**Native sensitive plant:** multiple fine leaflets; terminal yellow flowers

# Desert Chinese lantern

## *Abutilon leucopetalum*

Other common name:
**Flannel weed**

### Description

Annual, upright, woody forb to 90 cm tall. It has heart-shaped leaves about 5 cm long arranged alternately on long stalks. Velvety leaves are covered with downy, white hairs and have serrated edges. Flowers are yellow and hibiscus-like, 3 cm long with five petals joining at the base to form a short tube. They occur singly in leaf axils and produce oval fruits 8–15 mm across with seven to ten radially-arranged segments. Mature fruits split open slightly and have a distinctive bell shape. Seeds are brown, kidney-shaped with dimpled surfaces. Desert Chinese lantern grows in the warmer months from spring to autumn.

CJE

**Desert Chinese lantern:** erect woody forb

### Land types

Mainly found in red, sandy to clay-loam soils in box country.

### Grazing notes

Relatively unpalatable to stock; can dominate pastures near stock camps.

# Hill hibiscus

***Hibiscus sturtii***

## Description

Grey-green, perennial forb or small bush to 30 cm tall and 80 cm in diameter. Stems are covered in short, rusty-brown hairs. Leaves are 3–5 cm long, broadly toothed on 2 cm long stalks. There are numerous minute, star-shaped hairs on the leaves and stems. The flowers are pink to purple with a dark basal area on the petals. Fruits occur on short stalks and are silky, globular, five-compartmented capsules 8–10 mm long. They split open when ripe and are surrounded by seven to eight short, green projections. Plant grows during the warmer months and flowers in summer.

TJH

**Hill hibiscus:** toothed leaf margins

## Land types

Mainly confined to sandy acid soils of pine and mulga country.

## Grazing notes

Moderately palatable and can provide useful forage in mulga country.

TJH

**Hill hibiscus:** large pinkish flowers; fine hairs on stems and leaves

# Bladder ketmia

*Hibiscus trionum*

## Description

Erect annual forb to 60 cm tall with numerous minute, star-shaped hairs on its leaves and stems. Leaves are deeply divided into three to five lobes, which are again deeply indented. Unopened flower buds are Chinese lantern-like, 15–20 mm long, have five segments and distinct red veins on each segment. Flowers are pale yellow-orange or cream with a blotch of purple at the base. Petals are 25–30 mm long. The fruit is a five-segmented, globular, hairy capsule 1.5 cm long which splits open at the top when ripe. Black seeds are hairless and smooth. It grows during the warmer months, flowers in summer and is a prolific seeder.

JAR

**Bladder ketmia:** erect forb; large lobed leaves

## Land types

Prefers grey clays in brigalow–belah and Mitchell grass country and in areas where periodic flooding occurs. It is common in cultivation on these soils.

## Grazing notes

Moderately palatable but does not last after flowering. It is often a weed in cultivation but is not aggressive.

TJH

**Bladder ketmia:** large, creamy flowers with purple bases; five-segmented fruits

# Small-flowered mallow

***Malva parviflora***

Other common name:
**Marshmallow**

## Description

Semi-upright, biennial forb to 50 cm tall. Its large, broad (5–12 cm) wavy, dark-green leaves grow on purple or red stems. There is a pair of very small, thin stipules, 2–3 mm long in each leaf axil. Small, white flowers, 8–10 mm across, grow on short stalks in the leaf axils. Flattish, round seed capsules are up to 10 mm wide and are distinctly wrinkled on the upper surface. Growth occurs in cooler months and flowering is in autumn to spring. Each fruit is surrounded by five green, leaf-like structures.

## Land types

Well adapted to disturbed areas such as around buildings, stock and house yards. It favours moist, high-fertility areas.

TJH

**Small-flowered mallow:** flowers in leaf axils

JAM

**Small-flowered mallow:** wavy, lobed leaves

## Grazing notes/poisonous potential

Abundant during wet winters. It is eaten by stock and can provide bulk where the plants grow thickly.

However, the plant can be toxic to sheep, cattle, horses and poultry. Poisonings usually occur where large amounts of the plant have been consumed by hungry stock which are then driven. Younger stock, especially lambs, are most susceptible. Signs include sluggishness, stiff gait, staggering, arched back with the hind legs tucked up under the body and outstretched neck. If stock continue to be driven they will slow or stop, begin to tremble, develop increased heart rate and shallow, rapid breathing. They may sweat profusely and collapse.

Affected animals will recover if rested early. If they continue to be driven, deaths may continue for a few days after they were first affected. Where extensive stands occur, older stock should graze the area first. Ewes and lambs which have grazed thick growths of the plant should not be yarded overnight.

*For further information see Nitrate–nitrite poisoning in Chapter 3.*

# Spiked malvastrum

*Malvastrum americanum*

JRM

**Spiked malvastrum:** flower clusters

## Description

Upright, perennial forb to 50 cm tall. The leaves are alternate and yellowish-green, 2–5 cm long, 1–1.5 cm wide and have serrated edges. The leaves and stems are rough and covered in short, pale, star-shaped hairs. The plant develops club-shaped clusters (2–6 cm long and 1 cm wide) of small, orange flowers on the end of each stem and branch. It grows all year round but becomes leafless in winter.

## Land types

Prefers clay soils especially where periodic ponding of runoff occurs. It can be found in gilgais in brigalow–belah country and is widespread on clay soils of Mitchell grass, frontage and box country.

## Grazing notes

Often occurs in overgrazed sites and can become abundant after poor summer rains. It is ignored by stock if other feed is available.

TJH

**Spiked malvastrum:** erect forb; pointed hairy leaves

# MALVACEAE

**Flannel weed**
***Sida cordifolia***

**Corrugated sida**
***Sida corrugata***

**Ridge sida**
***Sida cunninghamii***

**Pin sida**
***Sida fibulifera***

**Fine sida**
***Sida filiformis***

**Lifesaver burr**
***Sida platycalyx***

Other common name:
**Ring burr**

**Shrub sida**
***Sida rohlenae***

**Spiked sida**
***Sida subspicata***

**High sida**
***Sida trichopoda***

ERA

**Flannel weed:** large, velvety leaves

## Description

Sidas are very common perennial forbs with tough, flexible, woody stems and thick, hairy-surfaced leaves. They have symmetrical, yellow flowers with five petals. The flowers mostly appear singularly on short stems in leaf axils or in groups at the end of the stem. Fruits are small, oval, segmented, flattened and may have sharp spines on the tip of each segment. Seeds are kidney-shaped, 2–4 mm long.

Sidas can be separated into 'erect' and 'prostrate' flannel weeds based on their growth form.

The following table shows the key distinguishing features of the major sidas of the region.

ERA

**Corrugated sida:** prostrate; serrated leaves

# MALVACEAE

| Plant | Plant size and shape | Flower stalks | Flowers | Seed size, shape and prickles | Leaf characteristics |
|---|---|---|---|---|---|
| **Erect flannel weeds** | | | | | |
| **Flannel weed** | upright to 1 m | short, 3–5 mm | in clusters of small flowers | a prickle on each seed | velvety, large, oval up to 5 cm long and 4 cm wide |
| **Lifesaver burr** | spreading bush to 30 cm tall | thick, 2–3 cm stalk from leaf axil | single flower 1.5 cm across on each stalk | large doughnut-shaped, prickly, 2–3 cm wide | large, almost circular, to 4 cm long |
| **Shrub sida** | upright to 70 cm tall | thin, 2–3 cm stalk from leaf axil | single flower on each flower stalk | a prickle on each seed | flat-tipped and 2–5 cm x 0.5–1 cm |
| **Spiked sida** | upright to 70–90 cm tall with drooping ends to stems | very short | clusters of small flowers | no prickle on seeds | 3–6 cm long 2–3 cm wide yellowish |
| **High sida** | upright to 60 cm | thin, 2–3 cm stalk from leaf axil | single flower on each flower stalk | no prickle on seeds | flat-tipped, dark-green 1–3 cm x 3–8 mm |
| **Prostrate flannel weeds (trailing stems)** | | | | | |
| **Corrugated sida** | prostrate stems to 20 cm long | thick and 1–3 cm long | single flower on each flower stalk | no prickle on seeds | small, variable 20–30 mm x 7–12 mm |
| **Ridge sida** | prostrate stems to 30 cm long | 5–25 cm long | 3 to 6 flowers on each flower stalk | no prickle on seeds | bluish, 3–5 cm x 1–2 cm |
| **Pin sida** | prostrate stems to 40 cm long | 1–2 cm long | 3 to 6 flowers on each flower stalk | no prickle on seeds | greenish, 2–3 cm x 5–12 mm |
| **Fine sida** | prostrate stems to 80 cm long | thin and 3–4 cm long | single flower on each flower stalk | no prickle on seeds | bluish, 2–3.5 cm x 7–10 mm |

## Land types

Flannel weed does not show a preference for any land type and is found throughout the region. Corrugated sida is found on most soils except heavy clays or deep sands.

Pin sida and high sida prefer alluvial flood plain soils and are often found in frontage and box country. High sida also grows on heavy clays and is found in Mitchell grass country.

JRM

**Lifesaver burr:** large leaves; doughnut-shaped fruit

DRH

**Ridge sida:** prostrate forb

Shrub sida, fine sida and spiked sida prefer sandy soils in box, pine and soft mulga country. Lifesaver burr is restricted to red sandy soils in box and mulga country. Ridge sida grows mainly on red earth and gravelly soils in hard mulga and box country, and is less common than fine sida in soft mulga country.

## Grazing notes

Sidas grow in abundance after heavy summer rains, especially in disturbed or overgrazed country. They produce new growth after spring and summer rains and flower from late spring through summer. They shed much of their leaf in dry winters, but always retain some green leaf. In profusion they are indicators of poor pasture condition.

JRM

**Shrub sida:** erect woody forb; large single flowers

JAM

**Pin sida:** prostrate forb

JAM

**Pin sida:** yellow flowers on short stems

# MALVACEAE

DRH

**Spiked sida:** velvety leaves, pale-coloured on underside

TJH

**Spiked sida:** erect forb

All the prostrate flannel weeds are reasonably palatable to stock, especially in dry seasons when only old, dry grass remains. The palatable sidas (ridge, corrugated, pin and fine) can produce good feed bulk and are a useful forage source. The erect flannel weeds—except for lifesaver burr—are not grazed very much in normal seasons. Flannel weed, lifesaver burr and spiked sida are only grazed when there is no other feed available. The sharp pointed awns on the seeds of shrub sida can cause death in sheep. The mature fruits of lifesaver burr cause problems in wool processing.

TJH

**High sida:** yellow flowers; segmented fruits

TJH

**High sida:** erect bush; fine leaves

# Blue trumpet

*Brunoniella australis*

## Description

Prostrate perennial forb with stems to 30 cm long and fleshy roots. Its opposite leaves are oval, 1.5–4 cm long, with a strong mid-vein, and often hairy. It grows in a rosette when young and produces blue, trumpet-shaped flowers close to the stem in the leaf axils. Flowers are 2–2.5 cm long. Fruits are oblong capsules to 1.5 cm long. It grows year round if moisture exists and flowers in spring and summer.

## Land types

Found most commonly in box country.

## Grazing notes

Due to its prostrate habit is best suited for sheep. Although palatable, it does not provide much bulk. A very drought-tolerant plant.

DJC



**Blue trumpet:** spreading forb; small, blue flowers on short stalks in leaf axils

# White parsnip

*Trachymene ochracea*

# Blue parsnip

*Trachymene cyanantha*

Other common name:
**Wild parsnip**

JRM

**White parsnip:** round flower clusters

## Description

**White parsnip** is an upright, annual or biennial forb to 60 cm tall. Most leaves are 4–5 cm across and exist in a basal rosette. They are divided into three to five main lobes with toothed margins or smaller minor lobes. Flowers are white and grouped into clusters 1 cm across on long, branched stalks. Leaf-like structures occur wherever branching occurs on the seed head.

**Blue parsnip** is a prostrate or slightly upright, annual or biennial forb to 45 cm tall. Leaves are deeply lobed and 5–7 cm long. Flowers are pale to deep-blue and form clusters 1–2 cm wide.

Both plants grow best during cooler months and flower in spring.

JRM

**White parsnip:** erect forb; large lobed leaves

## Land types

Found mainly on red soils in mulga and box country in the west of the region.

## Grazing notes/poisonous potential

Large numbers of wild parsnip can occur in overgrazed areas during years of late summer or autumn rain. It is eaten when little other feed is available and is most poisonous when fruiting or flowering during spring.

Wild parsnip has two different effects on sheep:

- If driven fast after eating the plant, young sheep may stagger and die suddenly. Other signs include diarrhoea, paleness and blueness in the skin. On post-mortem, accumulations of fluid in the chest and around the heart can be found.
- Lambs with malformed legs, mainly fore limbs ('bent-leg') may be born to ewes that graze areas containing wild parsnip in the spring, if these areas have been spelled during the winter. If pastures are grazed during winter, bent-leg is not so likely to occur. Pregnant ewes should be denied access to wild parsnip when it is in flower or seed during spring. There is no treatment for affected animals. Ewes on pastures that have produced bent-leg lambs may become infertile.

# Caustic vine

***Sarcostemma viminale* subsp. *australe***

## Description

Sprawling/climbing perennial shrub to 2 m tall. It has no obvious leaves and consists of smooth, jointed, pencil-sized, succulent stems about 5–8 mm thick. The grey-green stems contain milky sap. The cream-coloured flowers which are not often seen are 5–8 mm across, star-shaped and waxy, and appear in clusters from the stem joints. The fruits are narrow, 11 cm long pods which split lengthwise to release the seeds. Seeds are flat with a tuft of silky hairs at one end.

Caustic vine can be confused with *Euphorbia sarcostemmoides* which has a similar overall appearance, but the fruits are small and rounded and seeds are without silky hairs.

## Land types

Found mainly on stony areas associated with hard mulga and gidyea country, it is restricted to the western part of the district.

## Grazing notes/poisonous potential

Most often found as scattered bushes and rarely grazed by stock except when feed is scarce or fresh shoots occur.

Poisoned stock appear restless, stagger and collapse on their side with rapid breathing, outstretched neck and paddling. Their jaws may be clamped shut and they may vomit or salivate heavily. Death may take several days.

Management includes keeping hungry stock away from infested pastures when there is little feed available. It can be controlled by mechanical removal; however the sap can cause irritation and severe burning of skin and eyes.

JAM



**Caustic vine:** succulent, cylindrical stems

## Paterson's curse

***Echium plantagineum***

Other common name:
**Salvation Jane**

### Description

Annual forb with erect flower stems to 40 cm tall. It has two distinct growth stages. An early rosette grows up to 60 cm diameter, with rough, hairy leaves 30 cm long and 6–10 cm wide. Later, the plant sends up flower heads 40 cm tall. Both leaves and flower stalk are covered in short, white to black hairs. The flowers are tubular, 3 cm long and a deep purple-blue. Seed pods, 2 mm long are black.

The plant has a long, deep-red taproot. It grows during cooler months and flowers in spring. It is a prolific seeder.

### Land types

Uncommon in the region at present, it favours disturbed areas and sandy soils. Paterson's curse is a serious weed in winter rainfall areas. Found in the Goondiwindi district it can be transported through grain and hay. It is most suited to box, pine and mulga country.

### Grazing notes/poisonous potential

Undesirable plant although young growth is readily eaten by stock in the absence of other more palatable plants. Mature stems are ignored. It has provided feed in areas made unproductive by previous overgrazing. However, once established it prevents re-establishment of more desirable pasture species.

When eaten for more than one season, extra stresses on stock can cause poisoning

DRH

**Paterson's curse:** erect stems; large, hairy leaves

through liver damage (jaundice, loss of condition and photosensitisation) or the sudden release of liver copper stores causing chronic copper poisoning (jaundice, anaemia, dark reddish-brown urine, and rapid death). Horses can develop Walkabout disease after consuming the plant.

Stock should not be allowed access to large stands of Paterson's curse for long periods. Herbicides are an effective method of control. Establishment should be prevented by good pasture management.

*For more information see Photosensitisation and Pyrrolizidine alkaloid poisoning in Chapter 3.*

# Blue heliotrope

## *Heliotropium amplexicaule*

### Description

Prostrate perennial with a deep taproot and sturdy horizontal underground stems (rhizomes). Above-ground stems are also sturdy, much-branched with foliage up to 30 cm high. The leaves are hairy, alternate along stems, dull-green, and stalkless with the leaf base clasping the stem. They grow to 8 cm long and to 12 mm wide and taper at both ends. The edge of the leaf is undulating and the leaf surface is crumpled and covered in long and short hairs which give it a rough feel. The flowers are small, 6 mm long, blue to purple with a yellow throat. They occur in a row at the ends of the branches in crowded, curled, one-sided spikes. The flower stalks straighten as the fruits are formed and ripen from the base towards the tip. Seeds are small, dark and wrinkled. The plant grows and flowers year round, but is most obvious in spring and autumn.

### Land types

Common on deep red loamy soils, particularly in disturbed areas, roadsides and degraded pastures.

DJC

**Blue heliotrope:** small purplish flowers on stem tips

### Grazing notes/poisonous potential

Once established in an area, the plant is an aggressive coloniser of heavily-grazed pastures in poor condition. A healthy pasture discourages the spread of this plant. Shallow cultivation tends to spread the plant further.

The plant is rarely eaten. Poisoning has been suspected in sheep which graze the plant over successive seasons. Confirmed cases of cattle poisoning have occurred when the plant is abundant. There is no effective treatment for poisoned stock.

*For further information see Pyrrolizidine alkaloid poisoning in Chapter 3.*

DJC

**Blue heliotrope:** sprawling perennial; tapering leaves

# Turnip weed

***Rapistrum rugosum***

## Description

Rigid, upright, annual forb to 1 m tall. The leaf is rough and size decreases from large, lobed leaves at the base to smaller, toothed upper leaves. It has small, yellow flowers in clusters on the ends of branched stems at the plant's top. It is a winter grower that emerges early in autumn after rains, grows through winter and flowers in spring. Pods are 1 cm long, with one to three seeds. They have two segments—a basal, globular part and a beaked uppersection—and do not split or break up when ripe. The whole plant has a strong, turnip-like odour when it is crushed or in flower.

## Land types

Found on most heavy soils in disturbed and overgrazed areas in Mitchell grass, brigalow–belah and box woodlands. Particularly common in regions where crops are grown.

DJC

**Turnip weed:** clustered small, yellow flowers

## Grazing notes

Infests open or ungrazed native pastures when poor seasons are followed by good winter rainfall. The young plant is palatable. If eaten in large quantities it will taint the milk and meat of animals. Maintaining a pasture in good condition provides competition for turnip weed and will reduce its numbers. Herbicides are commonly used to control this plant.

DJC

**Turnip weed:** erect forb; large, lobed basal leaves

# Blue pincushion

***Brunonia australis***

Other common name:
**Wild cornflower**

## Description

Greyish-leafed, short-lived perennial. Silky, hairy leaves form a rosette and are 4–10 cm long and 5–15 mm wide. Distinctive blue flowers are clustered into heads 15–20 mm wide at the end of leafless stalks as tall as 30 cm. It is most noticeable when flowering in late spring and early summer.

## Land types

Occurs mostly on sand plains and stony ridges in mulga country.

## Grazing notes

Grazed by stock, however it rarely occurs in large enough stands to form a major part of the diet.

RGS

**Blue pincushion:** basal hairy leaves; clustered blue flowers on long, erect stems

# Native bluebell

***Wahlenbergia gracilis***

## Description

Starts as a rosette of small leaves and then sends up numerous, fine, almost leafless flower stalks up to 40 cm tall. Basal leaves are up to 4 cm x 1 cm with wavy margins. Stem leaves are smaller, pointed and slightly hairy. Several widely-spaced flowers open in sequence on each flower head. Flowers are blue and bell-shaped with three to five lobes. Seed pods are 3–8 mm long with five small points projecting from the wide top. Numerous minute, brown seeds ripen inside. Germination occurs during cooler months and flowering occurs in spring. Plants can live for several years.

## Land types

Grows in sandy or loamy duplex soils in box, pine and soft mulga country.

JAM

**Native bluebell:** fine, erect flowering stems

## Grazing notes

Is a good forage for sheep but rarely occurs in large quantities.

TJH

**Native bluebell:** blue, bell-shaped flower has five distinct bluish lobes

# Australian bindweed

## *Convolvulus erubescens*

### Description

Perennial forb with a thickened taproot and twining or creeping stems to 1 m long. Leaves are grey-green to silvery-green stalked, to 5 cm long and though variable in shape, are commonly spade-shaped, often with deep lobes. Flowers are pink or white, funnel-shaped, 1–2 cm across and grow on slender stalks from leaf axils. The fruit is egg-shaped, 4–6 mm in diameter with a small stalk on top, and contains four, warty-surfaced seeds. It grows and flowers during the warmer months.

### Land types

Occurs on most land types.

### Grazing notes

Readily grazed although rarely abundant.

DRH

**Australian bindweed**: sprawling vine; lobed leaves; pinkish flowers

# Tropical speedwell

## *Evolvulus alsinoides*

### Description

Small, hairy, perennial, semi-erect or trailing forb with slender stems to 45 cm long. The alternate leaves are greyish, small (1.5–3 cm long) and densely hairy, especially underneath. Flowers are blue, 7–9 mm across, bell-shaped, on short stalks in the leaf axils. The fruit is a pale, smooth, globular capsule, 4 mm across and containing four smooth, dark seeds. Growing after favourable rains, tropical speedwell usually flowers in spring.

### Land types

Found mainly in box, pine and mulga country on most soil types except heavy clays.

CJE

**Tropical speedwell:** bluish flowers on short stalks

### Grazing notes

Although palatable, tropical speedwell rarely contributes much forage. It is very common in box, pine and mulga country but never dominant.

CJE

**Tropical speedwell:** sprawling forb with fine stems; leaves have silky hairs

# Weir vine

*Ipomoea calobra*

## Description

Vigorous, perennial, trailing vine with large, roundish or heart-shaped leaves 10–15 cm across. Leaves have long stalks and are arranged alternately on thick stems which grow to 4 m long. It has large, woody roots and underground tubers, and large, showy pink-mauve, trumpet-shaped flowers up to 8 cm across. Fruits are round, 2 cm in diameter and contain four large seeds. The plant dies back to its tuber in autumn and regrows from tuber or seed in spring. Flowering occurs after rain throughout summer and spring.

## Land types

Found on red sandy soils of mulga and box country in the south between Roma and St George. It may become common following pulling and burning.

## Grazing notes/poisonous potential

Toxic to sheep, cattle and horses at all growth stages, especially when sheep graze it in spring before other forage grows. Grazing of weir vine is addictive and once stock have started, they actively seek it out.

Sheep have shown signs of poisoning after eating the plant for five weeks, and horses after two weeks. Loss of condition, unsteady gait, tense and arched rear quarters, nose pointing to the sky, muscular twitching and trembling are the main signs. Brain damage causes stock to appear blind, and walk into obstacles. Increased urine output and frequency occurs in later stages. Recovery is often possible if animals are removed while only showing early signs. Continued consumption results in permanent damage. Death occurs from starvation or thirst. Animals often die of misadventure before advanced signs appear. There is no treatment—prevention is the only approach. Destroy the vines and keep livestock out of paddocks which contain extensive stands.

Management of weir vine country is best achieved by removing sheep and cattle within four weeks (horses within two weeks) of when they start grazing the plant. For a minimum of four weeks, put stock onto heavier country where weir vine doesn't grow. They can then be allowed back onto weir vine-affected country for the time periods mentioned above.

TJH



**Weir vine:** sprawling with showy pinkish flowers

## Cow vine

*Ipomoea lonchophylla*

JAR

**Cow vine:** white flowers on short stems; round fruits

### Description

Creeping, annual forb with rough stems to 1 m long. Alternate leaves are commonly pale-green, simple, oblong, 5 cm long and 2 cm wide; but can grow to 10 cm. White flowers in leaf axils are trumpet-shaped to 9 mm long and 1 cm across, with five, long, green arms protruding from beneath each one. The hairless, globular fruit is 8–9 mm across and contains three or four dark, slightly downy seeds that are 2–3 mm across. Growth and flowering occur in summer.

### Land type

Grows mainly on heavy clays of flood plains and Mitchell grass country.

### Grazing notes/poisonous potential

Palatable to stock, it is usually present when other feed is also abundant so does not form a significant part of the diet. It has been suspected of poisoning stock but no conclusive evidence is available.

DRH

**Cow vine:** sprawling forb with long, rough stems

## Mother-of-millions

***Bryophyllum tubiflorum***

## Hybrid mother-of-millions

***Bryophyllum daigremontianum x Bryophyllum tubiflorum***

### Description

Mother-of-millions and hybrid mother-of-millions are upright, succulent forbs to 90 cm tall. They are cactus-like plants with fleshy, spotted leaves, 6–8 cm long. The leaves of the hybrid are boat-shaped and 1–2 cm wide with toothed margins while the other has tubular leaves, 3 mm wide with a cluster of round flaps at the leaf tip. Flowers are orange to red, trumpet-shaped, 2–4 cm long and clumped at the top of stems. Tear drop-shaped pods 1 cm long, in four parts form within the floral remnants. Seed are brown and minute. The plants grow all year round and flower in mid-winter.

### Land types

Grow in extensive, but isolated stands often on poor soils in cypress pine or box country. Also found in brigalow country and along watercourses.

DJC

**Mother-of-millions:** clustered trumpet-like flowers

DJC

**Mother-of-millions:** erect forb with succulent leaves

### Grazing notes/poisonous potential

These introduced ornamentals spread by seed and by taking root from dropped leaves making mechanical control measures inappropriate. However, plants can be killed by burning or with chemicals.

Although generally ignored by stock, they sometimes seek it out, especially when the plant is flowering or starting to dry off during winter or early spring. Cattle have been poisoned during cold weather and after only very limited access to the plant, especially when there was little other feed. The plant is highly toxic to most animals. On post-mortem flowers can be found in the rumen.

*Further information see Cardiac glycoside poisoning in Chapter 3.*

# Prickly paddymelon

## *Cucumis myriocarpus*

### Description

Annual vine with slender, branched, sprawling stems to 150 cm long. The stems are green to yellowish-green with coarse hairs. The leaves are alternate on stems, shortly hairy, rough and deeply divided into narrow lobes, each with one prominent central vein and numerous side veins. Leaves grow on slender stalks to 6 cm long. The pale-yellow flowers grow to 6 mm in diameter and occur on stalks in the leaf axils. Flowers are either female or male but look similar. Fruits are spherical and 2–3 cm in diameter, covered with soft spines which become stiffer as the fruit ripens. Ripe fruits are a deep-yellow colour. Seeds are embedded in a pale-green pulp.

### Land types

Occurs on most land types in the region on clay and loam soils, in depressions and on seasonally flooded flats.

DJC

**Prickly paddymelon:** sprawling vine; yellow flowers

### Grazing notes/poisonous potential

The plant is generally unpalatable to stock, however losses have occurred after ingestion of ripe fruits. Small doses produce diarrhoea and larger doses cause rapid death. Children have been poisoned after eating the fruits.

RAMcK

**Prickly paddymelon:** round, striped fruits with soft prickles

# Caustic weed

***Euphorbia drummondii***

## Description

Small, hairless, prostrate, spreading and taprooted, annual forb to 30 cm in diameter. Its leaves are 3–6 mm long, reddish or bluish-green and joined to the thin stems in pairs. The stems have a reddish tinge and contain a milky sap. The fruits are tiny, three-compartmented, rounded capsules, 1.5 mm in diameter and on very short stalks in the leaf axils. It grows and flowers in the warmer months. There are several other *Euphorbia* spp. very similar to this one in the region.

## Land types

Occurs on all land types often as a weed in disturbed areas.

## Grazing notes/poisonous potential

Palatable to stock and in the paddock it may be eaten freely without ill effect. However, reports of stock poisoning have occurred in travelling sheep or sheep newly introduced into paddocks containing large amounts of this plant.

*For further information see Cyanide poisoning in Chapter 3.*

DJC



**Caustic weed:** prostrate forb; bluish-green leaves; small, three-segmented fruits

# Blue crowfoot

***Erodium crinitum***

Other common name:
**Blue storksbill**

## Description

Sprawling or bushy, annual forb which grows to 90 cm tall. Leaves of young plants often grow in a rosette, but later leaves on the stems are opposite. The leaves are wavy, hairy, three-lobed and grow on stalks 3–10 cm long. Its blue flowers are about 1 cm long and grow in bunches of two to six on a stalk 2–7 cm long. These give rise to very erect, green, 'storksbill-shaped' seed pods, 4–7 cm long. When ripe, the fruit springs apart into a maypole arrangement of seeds. Each dark-brown seed is sharp-pointed with a corkscrew tail several centimetres long. It grows in winter and flowers in late spring.

## Land types

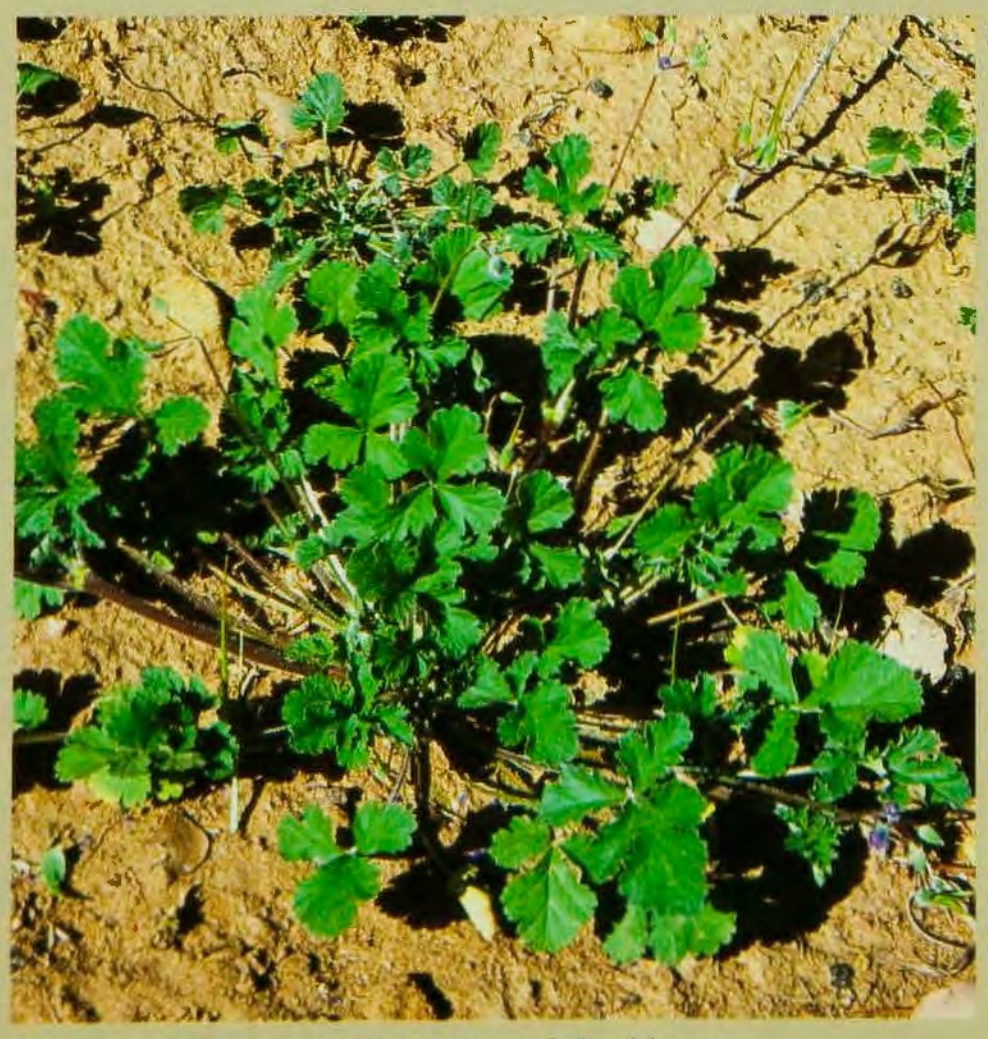
Found on red sandy soils in box, mulga and pine country. It is common on roadside earth mounds.

DJC

**Blue crowfoot:** 'storksbill-shaped' seed pods

## Grazing notes

In wet winters, blue crowfoot produces a large amount of high quality, palatable forage which is readily grazed by stock. Dry seeds are sharp-pointed and can cause vegetable fault in wool. Its fodder value outweighs the adverse effect of the seeds on wool value.



DJC

**Blue crowfoot:** sprawling, wavy, lobed leaves

# GOODENIACEAE

## Silky goodenia

***Goodenia fascicularis***

## Smooth goodenia

***Goodenia glabra***

### Description

Goodenias have distinctive, yellow, five-petalled flowers. The two upper petals grow on a different plane from the three lower ones and often stand vertically like ears.

Silky goodenia is a perennial forb with mostly basal leaves and upright, downy stems to 30 cm long. Leaves are semi-erect, slightly hairy and grow to 10 cm long. Pale-yellow flowers, on stalks to 7 cm long, are silver-hairy on the outside. The fruit is an egg-shaped capsule 5–9 mm long, packed with flat, brown seeds each encircled by a white wing, 1 mm wide. Silky goodenia grows in all but the coldest months and flowers in warmer months.

Smooth goodenia is a short-lived, perennial, prostrate forb to 60 cm in diameter. The early leaves are thick, dark-green, hairless, 8–15 cm long and 8–15 mm wide and broadly 'toothed' on the edges. At flowering, many prostrate stems 10–20 cm long grow out from the rosette with smaller alternate leaves 1–3 cm long. Flowers are on short stalks to 3 mm long. They are 12–18 mm long, deep-yellow, with purple markings. The fruit is green, cylindrical, 7–10 mm long and contains yellow, flat, warty-surfaced seeds. Smooth goodenia grows mainly during autumn and spring and flowers throughout the year.

JAM

**Silky goodenia:** soft, erect forb

### Land types

Silky goodenia occurs over a wide range of land types. Smooth goodenia is found on hill slopes and in gravelly loam soils and sand plains in mulga and box country.

DJC

**Silky goodenia:** five yellow petals on two planes

# GOODENIACEAE

## Grazing notes

Both goodenias are highly regarded forage species although they do not produce much bulk. Silky goodenia is a common component of many pastures and is often found in localised patches. It has a strong root system which can produce green growth in dry times. Smooth goodenia rarely occurs in abundance but commonly pioneers bare ground after fires or droughts. It traps windblown sand and seeds very well.

JRM

**Smooth goodenia:** spreading, prostrate forb; hairless, toothed leaves; yellow flowers

# Smooth velleia

*Velleia glabrata*

Other common name:
**Pee-the-bed**

## Description

Annual, relatively hairless forb with upright, forked smooth stems to 50 cm long emerging from a basal group of leaves up to 10 cm long. Most basal leaves are prostrate and have toothed edges. Lobed, leaf-like structures grow below each seed head branch and each flower. Flowers are yellow with five asymmetrically-shaped petals, 12–14 mm long. The fruit is a small, globular capsule, 5 mm in diameter, packed with circular winged seeds, 4–5 mm diameter. Smooth velleia is a cool season plant which flowers from late winter to early spring.

## Land types

Occurs in mulga, box and pine country and prefers red, acid sandy or sandy loam soils in flat run-on areas.

## Grazing notes

Normally only lightly scattered through most pastures providing little bulk in the diet. However, in wet winters it can carpet bare ground. It is palatable and can be nutritious, and allows excellent animal performance in wet winters.

JRM

**Smooth velleia:** erect forb; flowers have five yellow, irregular petals

# Mulga nettle

***Haloragis odontocarpa***

Other common name:
**Raspweed**

## Description

Upright, annual or short-lived, perennial forb growing to 80 cm tall. It has sturdy, angular, distinctly red stems and leaves with serrated edges. Toothed leaves are 3–8 cm long and up to 1.5 cm wide. Leaves are arranged in opposite pairs in young plants but later expand singly along the stems on alternate sides.

Flowers are not obvious, but fruits are noticeable along the top few centimetres of each stem. They are brown, woody, four-angled, 3–5 mm long and often have a small wing at each corner. A cool season plant, it can grow prolifically in wet winters. Flowering occurs in spring.

## Land types

Confined mainly to red sand plains in soft mulga country but can also be found in sandy box and hard mulga country. It prefers open or lightly timbered places.

## Grazing notes

Very valuable winter forage plant in mulga country. It is highly palatable and nutritious and can be found in dense stands, especially in old ash. Sheep consuming mulga nettle will pass yellow to deep-red urine without ill effect.

JRM

**Mulga nettle:** erect forb; red, angular stems with numerous flowers on tips

# Mintweed

***Salvia reflexa***

## Description

Upright, greyish-green annual forb to 60 cm tall. Leaves are 2–5 cm long, opposite, hairy, on short stalks, and when crushed they give off a strong mint smell. Flowers are pale-blue, 7–8 mm long and grouped along the upper section of the stems. Empty seed pods, about 2 mm in diameter are pale-brown and stay on the plant long after the round, black seeds have fallen out. Germination usually occurs in spring with flowering in summer through autumn.

## Land types

Prefers cracking clays in Mitchell grass and brigalow–belah country, and it can also be found on alluvial soils. The plant likes extra moisture, so can be found around well-watered areas on any soil type.

## Grazing notes/poisonous potential

Can occur in large patches or as scattered plants throughout a pasture. It cannot survive in a dense, grassy pasture and is mostly found in lower condition or weakened pastures and in disturbed areas. The plant's smell discourages stock from grazing it. It is only eaten when little other feed is available.

Mintweed is declared noxious in Queensland. It is a serious weed of cultivation.

Mintweed affects hungry, inexperienced stock given access to lush stands of the plant when other feed is scarce. Poisoning is due to nitrates in the plants which build up when it is growing in high nitrogen soils, when the plant wilts and during overcast weather. Stock can be fed hay before being allowed access to mintweed-infested pastures if problems are anticipated. Stands of mintweed can be sprayed, or the area allowed to spell to allow competitive pasture plants to regenerate.

*For further information see Nitrate–nitrite poisoning in Chapter 3.*

TJH

**Mintweed:** strong mint smell when crushed

TJH

**Mintweed:** spike of pale flowers

# Tarvine

## *Boerhavia dominii*

### Description

Spreading, vine-like perennial forb with pink stems up to 100 cm long. Leaves are opposite, hairless, 1–6 cm long and 5–10 mm wide, green or purplish on top and paler underneath. Small, pink flowers, 2–3 mm long grow singly or in groups on slender, 3–8 cm long stalks which rise from the leaf axils. Fruits are pear or barrel-shaped, 3 mm long, five-ribbed, and sticky-haired. Tarvine grows mainly in summer and flowering occurs in warmer months.

### Land types

Grows in all land types. Varieties in northern Mitchell grass country are much larger and may be a different species.

CJE

**Tarvine:** small, pinkish flowers on stalks

### Grazing notes

Palatable to stock and a useful summer forage when in sufficient quantities. It dies back to the base in cold winters and responds readily to summer rains. It is drought-resistant if plants are still young and have a well-established crown.

CJE

**Tarvine:** sprawling, prostrate vine; wavy, irregular leaf margins; purplish-green upper surface

# Yellow wood sorrel

***Oxalis corniculata***

## Description

Semi-upright, short-lived, taprooted, perennial forb to 30 cm tall. The taproot is pink to orange in colour. Leaves are pale-green, shamrock-shaped and consist of three, heart-shaped leaflets at the end of slender, pink stalks. Young plants have densely-packed leaves at the crown. Older plants have alternate leaf arrangement along stems and small stipules. Yellow flowers, 7 mm across, have five evenly spaced, simple petals. Fruits are an angular cylindrical shape and bluntly pointed. They are warty-surfaced and five-chambered, 1.5–2 cm long, 4 mm wide and usually held very erect. Seeds are small, brown and scatter widely when the pods shatter.

## Land types

Grows in all land types provided adequate shade and moisture are available. Common in open forest areas.

## Grazing notes/poisonous potential

Generally grows as scattered plants throughout a pasture, and may become abundant after wet winters. Yellow wood sorrel is bitter and unpalatable but has been known to poison very hungry, travelling sheep. However this is rare in this region.

*For further information see Oxalate poisoning in Chapter 3.*

JRM

**Yellow wood sorrel:** three heart-shaped, folded leaflets per leaf; flowers have five yellow petals

# Mexican poppy

## *Argemone ochroleuca*

### Description

Upright, annual, thistle-like forb to 120 cm tall. The pale, blue-green leaves are large (up to 12 cm x 5 cm), hairless and deeply-lobed. They have sharp spines on most lobes. Initially leaves are prostrate and in a rosette. Later they become alternate along the stems. It has large, pale-yellow, poppy-like flowers, 3–7 cm across with six petals. Pods are oblong, 2–5 cm long, 1.5 cm wide, covered in curved spines and split open at the top when ripe. They contain numerous round, dark seeds about 1.5 mm in diameter. Seedlings often appear in early spring and most flowering occurs in summer.

### Land types

Most common on sandy alluvial soils and disturbed areas in box and mulga country.

### Grazing notes/poisonous potential

Rarely eaten by stock and cases of poisoning are few. Fowls can be poisoned by eating grain contaminated with Mexican poppy seeds. It is a weed of disturbed sandy areas, including cultivation.

JAM

**Mexican poppy:** large, pale-yellow flowers

# PLANTAGINACEAE

## Sago weed

***Plantago cunninghamii***

## Dark sago weed

***Plantago drummondii***

## Lamb's tongue

***Plantago lanceolata***

Other common name:
**Plantain**

### Description

These plants are low-growing, annual forbs to 30 cm tall when flowering. They are similar and have soft, long, greyish leaves confined to a basal rosette. The flowers are in spikes to 10 cm on long, unbranched stalks and the fruits are small oval capsules, 2–5 mm long. The cream pollen sacs are very obvious during flowering. They are cool season plants growing from autumn through to spring.

TJH

**Sago weed:** hairy basal leaves

**Sago weed** has grey-green, hairy leaves to 10 cm long and 2 cm wide. The fruits are up to 3 mm long and 2 mm wide.

**Dark sago weed** has darker flower spikes than sago weed and larger seed capsules to 5 mm long and 3 mm in diameter.

JAM

**Dark sago weed:** erect, leafless seeding stems

**Lamb's tongue** has prominently-veined, often shiny leaves to 20 cm long and 3 cm wide. Seed capsules are 4 mm long.

DRH

**Lamb's tongue:** five-veined, hairy basal leaves

### Land types

Sago weed generally grows best in Mitchell grass country while the other two grow in most land types.

### Grazing notes

May become prolific in wet winters especially following a dry spell. They are palatable to stock and provide very useful forage. Lamb's tongue is common in disturbed areas such as roadsides.

# Goathead burr

***Emex australis***

Other common name:
**Spiny emex**

## Description

Hairless, spreading, usually prostrate, annual forb with a large taproot. It has thick (4–6 mm) trailing stems to 75 cm long which are often red. Leaves are alternate and dark-green, 8–13 cm long, 2–8 cm across and broadly club-shaped with wavy margins on a 1–10 cm long stalk. Flowers are inconspicuous in leaf axils. It has sharp, triangular-shaped burrs 7–9 mm long, with three prominent spines each 3–5 mm long. Burrs occur either singly or in clusters of two to three in the leaf axils. The plant grows and flowers in the winter and spring months.

## Land types

Common on the hard-setting soils of pine, mulga and box country and favours well grazed or disturbed areas. It can establish on massive, hard-surfaced loams.

## Grazing notes/poisonous potential

Easily spread, nuisance plant possessing sharp burrs which can puncture tyres and boots, and cause lameness in dogs and sheep. The wounds caused to the feet of sheep can result in 'blackleg' infections. Stock rarely eat this plant, and it is poisonous containing high levels of oxalates.

*For further information see Oxalate poisoning in Chapter 3.*

DRH

**Goathead burr:** prostrate, spreading forb with sharp, triangular, three-spined burrs

# Broadleaf parakeelya

*Calandrinia balonensis*

## Description

Succulent, annual forb growing in clumps to 35 cm in diameter. Leaves are 5–15 cm long, 5–7 mm thick and close to the ground. It has dark-pink flowers 2–3 cm across with five petals and a pale-yellow centre with lots of pollen sacs. The fruits are spherical, 7–9 mm across, filled with numerous small, dark seeds. The plant can grow well into summer when moisture is available but grows mostly between autumn and spring. It flowers in spring or autumn.

## Land types

This plant is found mainly on deep sandy soils. It is most common in soft mulga, pine and box country, but can also be found in hard mulga country in wet winters.

## Grazing notes

A palatable and useful forage but not often a major forage source. For a short time, stock may use it as a substitute for drinking water.

RGS

**Broadleaf parakeelya:** spreading, succulent basal leaves; large, purplish flowers

# PORTULACACEAE

## Pigweed

***Portulaca oleracea***

### Description

Low, sprawling, hairless, succulent, annual forb to 60 cm diameter. Leaves are smooth, roundish, 7–15 mm long, wider at the top than the base. The leaves may arise in pairs (opposite) or individually (alternate) along the reddish, fleshy, thick (2–5 mm) stems and are often clustered near the tips of stems. The plant produces small, bright-yellow flowers, 1 cm diameter with four to six petals each. Fruits are globular, 4–6 mm across and the top splits off to release numerous small, black seeds. Seeds may be set in cooler weather without flowers opening. Grows mainly in mid-summer.

### Land types

Grows in disturbed areas on all soil types. It is common along roadsides.

### Grazing notes/poisonous potential

Forms extensive stands in disturbed or heavily-grazed areas and in stock yards. It is palatable and can be eaten as part of a mixed diet. However, oxalate and/or nitrate poisoning occurs when hungry or travelling stock eat it alone.

Hungry stock should be fed hay before being moved to areas dominated by pigweed. If stock must be yarded into areas of dense pigweed, ensure they are packed tight enough to trample it. Lambs must not be able to escape through the rails into adjoining yards where they can eat fresh pigweed. Use mesh if necessary.

*For further information see Oxalate and Nitrate–nitrite poisoning in Chapter 3.*

DRH

**Pigweed:** sprawling, reddish stems; fleshy leaves; yellow flowers

# Fierce thornapple

*Datura ferox*

# Common thornapple

*Datura stramonium*

## Description

Thornapples are upright, annual forbs to 150 cm tall. They have large, alternate, dark-green, toothed leaves to 10 cm long, which have a pungent smell when crushed. Thornapple flowers emerge singly in the forks of branches. They are white, trumpet-shaped and almost as long as the leaves. After flowering, the plant produces large fruits about 4 cm long covered in spines. Species are distinguished by the number and size of the spines. Fruits split open to release large, black seeds. The plants are summer growing and can become a significant problem in wet seasons. Fierce thornapple has 40 to 60 stout spines per fruit. Common thornapple has more than 100 spines on each fruit.

TJH

**Fierce thornapple:** large-toothed leaves

## Land types

Occur in most land types with fertile soils. They are common on disturbed areas such as around stock camps, yards and buildings and in cultivation and roadsides.

## Grazing notes/poisonous potential

All plant parts are poisonous to livestock and humans. The plants are rarely grazed due to the bitter taste and pungent odour emitted by the foliage although cattle may heavily graze the leaves occasionally without ill effect. Poisonings mainly occur from fodder containing thornapple seed or plant parts. Signs include excessive thirst, depressed breathing, convulsions, paralysis, coma and death. However, these signs vary enormously. Many cases of poisoning are non-fatal and removal of animals from areas containing these plants often results in recovery.

Inexperienced and hungry stock should be kept away from infested pastures. These plants are declared and should be removed when found. Treating the plants with herbicides can increase their palatability and thus increase the risk of poisoning, so remove stock until plants are dead.

DJC

**Fierce thornapple:** large, spiny fruits

# Wild tobacco

## *Nicotiana megalosiphon*

DRH

**Wild tobacco:** long, creamy-white, tubular flowers

### Description

Upright, annual forb to 70 cm tall. Leaves are large, 10–20 cm x 2–6 cm, felty with smooth margins and occur mostly at the plant base. Flowers are white or creamy-coloured, slender, 3 mm wide and tubular, growing to 7 cm long. They are widely spaced and fragrant, especially in the evenings. Fruits are about 1 cm long and contain hundreds of minute, brown seeds. The plant grows and flowers during the warmer months.

### Land types

Found in most land types, particularly in mulga, box and brigalow–belah country, and especially in areas with extra run-on water or ash from fires.

RDL

**Wild tobacco:** erect; large basal leaves

### Grazing notes/poisonous potential

Poisonings occur when hungry or travelling stock are given access to green tobacco plants, especially when little other feed is available. Symptoms include stilted gait, muscle trembling, collapse and kicking, followed by death. There may be dilated pupils and diarrhoea prior to death.

Affected stock should be allowed to rest and recuperate. Animals still alive after 16 hours usually survive. Stock should not be allowed access to pastures containing wild tobacco, especially if little other green feed is available.

# SOLANACEAE

## Potato bush

***Solanum ellipticum***

## Potato weed

***Solanum esuriale***

Other common names:
**Quena, Wild tomato**

DJC

**Potato weed:** purple flowers; round fruits

### Description

Both of these plants are perennial forbs with star-shaped, purple, five-petalled flowers with yellow centres. The fruits are fleshy, globular berries, 10–15 mm across.

JAM

**Potato bush:** furry leaves; mid-vein spines

**Potato bush** grows to 40 cm high and has hairy, prickly, sprawling branches. Leaves grow to 10 cm long and to 4 cm wide and often have long, thin, brown spines on their stalk and mid-vein. Flowers are 25–30 mm in diameter and occur in groups of three to seven in the leaf axils. The fruit is greenish, and turns brown when ripe. Leaf shape and prickliness is very variable in potato bush.

**Potato weed** grows to 30 cm, is often single-stemmed and erect, and usually has small prickles towards the base of stems. The leaves are velvety, 15–50 mm long, 4–20 mm wide with wavy margins. Flowers are 15–20 mm in diameter and occur in clusters of two to three on a common stalk. The ripe, yellow fruit has drooping stalks and does not split open.

### Land types

Potato bush grows on a range of soils and can be common in mulga, box and red belah country. Potato weed is most commonly found on clay/clay-loam soils particularly in disturbed areas in Mitchell grass country.

### Grazing notes/poisonous potential

Neither of these plants is palatable to stock. The ripe fruits are palatable to sheep and are readily eaten. Both are suspected of causing humpyback, especially in wethers and rams in good condition and in full wool when they are being mustered during summer heat.

Affected sheep lag behind the mob, develop a stilted, short-stepping gait and arched back, and may eventually collapse. Forced movement usually kills affected animals. These animals should be left to rest and picked up in a vehicle and shorn, after which survival is normal. Flocks often affected by humpyback should not be mustered in very hot weather. A change of shearing time to cooler weather should be considered.

# THYMELAEACEAE

## Pimelea

***Pimelea elongata***

## Desert riceflower

***Pimelea simplex***

## Spiked riceflower

***Pimelea trichostachya***

Other common name:
**Flaxweed**

### Description

These pimeleas are slender, erect, annual plants with alternate, narrow, yellowish-green or blue-green leaves. The small flowers have no conspicuous petals and occur in spikes at the stem ends. Fruits are small, hairy and one-seeded. Growth occurs in cooler months and flowering may be prolonged from spring into early summer.

JAM

**Pimelea:** erect plant with long flower spikes

JAM

**Desert riceflower:** red stems; small flower spikes

Pimelea grows to 70 cm tall and has yellow-brown stems at the base. The leaves grow to 2 cm long and have very few hairs. The flowers are arranged in spikes which can grow to 15 cm long. The flowers, fruit and stalks are all covered in short, flattened hairs.

Desert riceflower grows to 60 cm tall and has red stem bases. The young, hairy leaves grow to 3 cm long when mature. Flowers, covered in fine, short hairs are arranged in small, dense spikes up to 2 cm in length, but usually 1 cm.

Spiked riceflower grows to 80 cm tall and has yellowish-green stems turning brown at the base. Leaves are bluish, hairless and grow to 25 mm long. Flowers are arranged in spikes up to 15 cm long. Flower-stalks and flowers are covered in long, silky hairs.

### Land types

Spiked riceflower is the most widespread of these plants and grows mainly on sandy-surfaced soils and on rocky outcrops in box, pine and mulga country. Desert riceflower prefers clay soils in Mitchell grass and brigalow–belah country. Pimelea is found mainly in mulga country, particularly in depressions.

# THYMELAEACEAE

## Grazing notes/poisonous potential

Pimeleas can form extensive stands after good autumn/winter rains following poor summer rainfall and reduced competition from grasses. Overstocking reduces grass competition against pimeleas. A good, dense, grazed buffel pasture will not suppress growth of pimelea in wet winters. Although very unpalatable, pimelea may be eaten when stock are hungry and practically nothing else is available. Under these circumstances, stock can develop diarrhoea and may die. Hungry sheep or cattle should not be allowed access to areas where there are large stands of green pimeleas if there is little other feed available.

Eating or inhaling dry pimelea fragments by cattle can cause large, watery swellings in the brisket and below the lower jaw, loss of condition, anaemia and sometimes diarrhoea. These signs often occur after the plant breaks down and is no longer evident as toxins persist in dry plant fragments until after substantial rain. This is known as St George's disease. As soon as early signs of pimelea poisoning develop, cattle must be removed to country that is free from pimelea to allow recovery. There is no effective treatment for St George's disease. It may be feasible to use herbicides on young plants in dense populations.

TJH

**Spiked riceflower:** bluish, hairless leaves; elongated, white flower heads

# Common verbena

*Verbena officinalis*

## Description

Common verbena is an upright, perennial forb to 70 cm tall. It has rough-surfaced, square stems. Leaves are opposite and sparsely arranged on the stem, narrow, 2–7 cm long with the lower ones toothed. Flower heads at the top of the plant consist of loosely arranged, long, thin branches (up to 20 cm long) with numerous small, pinkish-purple flowers. Individual flowers are 3 mm long, five-lobed, tubular with an expanded mouth. Plants are evergreen but grow and flower in the warmer months.

## Land types

Prefers loamy soils and shady areas, but grows in box, frontage, Mitchell grass and brigalow–belah country.

## Grazing notes

Rarely conspicuous in the region's native pastures but often seen on close inspection. It is unpalatable and undesirable.

DJC

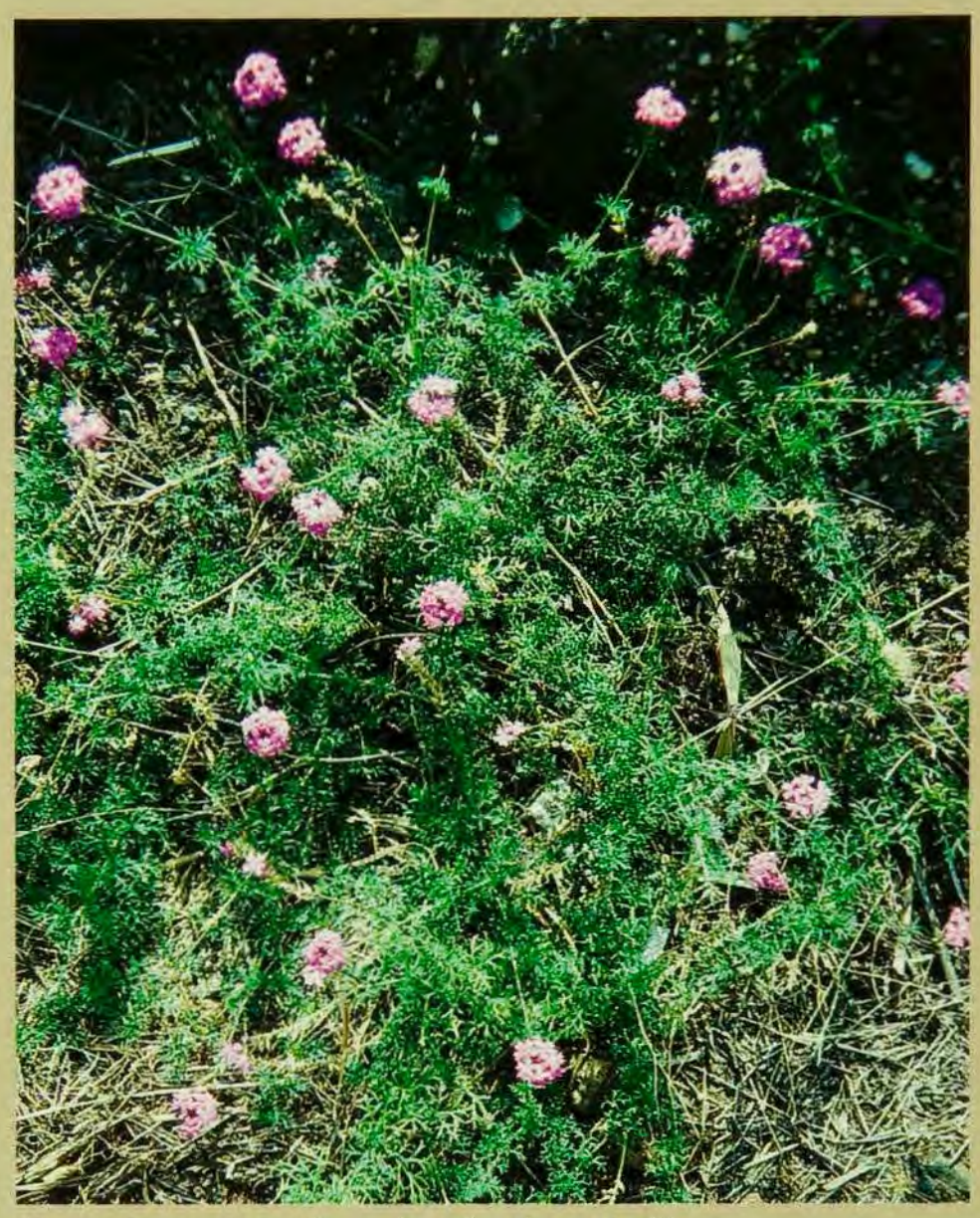
**Common verbena:** small pink flowers on long, thin branches

# Mayne's pest

***Verbena tenuisecta***

## Description

Trailing, short-lived perennial forb with stems to 40 cm long. The leaves are deeply-dissected, slightly hairy and arranged in pairs opposite each other on the stem. The flowers are pink to purple with a white centre and form dense clusters at stem ends. Some plants have all white flowers. Each flower consists of a petal tube about 12 mm long which expands into four to five lobes and is then about 1 cm across. Heads become less clumped as the seeds ripen. Each fruit is oblong, 4 mm long and covered by green flower bases. It is an evergreen plant growing in the warmer months.



DJC

**Mayne's pest:** trailing; deeply-dissected leaves

## Land types

Prefers sandy soils in box, pine and mulga country, but grows in most land types with acid soils.

## Grazing notes

A vigorous coloniser of bare areas, it can dominate overgrazed pastures and choke out more desirable pasture plants. It flowers in spring and germinates mostly in autumn. It is unpalatable and undesirable, but is sometimes eaten by sheep when no other green feed exists in winter.

# Caltrop

## *Tribulus terrestris*

Other common names:
**Goathead, Cat-head**

### Description

Trailing, summer-growing, annual forb with pinkish-orange stems to 2 m long. The leaves are arranged in pairs and consist of four to ten pairs of smaller leaflets arranged in two rows. Deep-yellow, five-petalled flowers to 15 mm in diameter are borne singly on short stalks in leaf axils. In late summer, these develop into thorny, cat-head shaped burrs, 6–12 mm across. Each burr has five segments with two long spines on each. There are several subspecies which vary in hairiness and burr shape. Growth and flowering occur in warmer months.

### Land types

Grows on all soil types, and is most common in open downs, box woodland and pine country in rundown pastures. It can be the dominant plant along roads and in degraded pastures.

JAM

**Caltrop:** yellow flowers with five petals

### Grazing notes/poisonous potential

Rarely grazed except when little other feed is available. It can either cause staggers (mainly only seen in southern States) or photosensitisation in sheep and goats. Photosensitisation mainly occurs after animals eat wilted plants during hot weather and is the main form of poisoning caused by this plant in Queensland.

Infested pastures should not be grazed, particularly when little other feed is available and especially during hot weather when the plants are wilted. Affected stock should be moved quietly from infested paddocks into the shade. They may or may not recover depending on the amount of liver damage.

*For further information see Photosensitisation in Chapter 3.*

DJC

**Caltrop:** burrs segmented; two spines on each

# Common twinleaf

## *Zygophyllum apiculatum*

Other common name:
**Gall weed**

DRH

**Common twinleaf:** yellow flowers; five-angled pods

### Description

Upright or bushy, succulent forb growing to 40 cm tall. The hairless leaves are opposite and each consists of two rounded, fleshy leaflets 1–3 cm long and positioned in a Y-shape at the end of a short, wide stalk. The flowers are deep-yellow, 1 cm across and have five petals. The fruits are five-angled, bell-shaped pods. Common twinleaf grows during the cooler months.

### Land types

Occurs on heavy grey clays in brigalow and gidyea country and on some stony skeletal soils.

### Grazing notes

Although bitter when green, it is palatable to sheep when dry.

DRH

**Common twinleaf:** succulent, hairless forb with fleshy, Y-shaped leaves

# Mulga fern

## *Cheilanthes sieberi*

### Description

Small, perennial fern, upright to 25 cm tall. The leaves (fronds) are deeply dissected, not very hairy and grow on thin, dark-brown stalks from a rough, dark underground stem just below the soil surface. It can grow throughout the year, producing new green fronds after rain and then dying back to below ground as conditions dry. It spreads slowly via the underground stems but may reproduce by spores dispersed from the fruiting bodies on the underside of the fronds.

### Land types

Found in a range of different land types with light, acid soils, it is most common on rocky or sandy-loam soils in mulga, box woodland and pine country. It is often most conspicuous in shady spots near fallen timber where moisture lasts longer after rain.

### Grazing notes/poisonous potential

Mulga fern is one of the first plants to produce green vegetation after rain and can therefore cause poisoning in starving sheep and cattle. They will graze mulga fern and become poisoned if little other feed is available.

Acutely-poisoned cattle suffer a bone marrow-destroying disease leading to extensive haemorrhage and discharges flecked with blood from the nose; other symptoms are blood in faeces; haemorrhages under the membranes of the nose, mouth, rectum and vagina; anaemia and fever. Prolonged consumption by cattle over several years can cause bladder tumours. This chronic form of poisoning is characterised by blood in the urine, anaemia and wasting.


**Mulga fern:** erect, deeply-dissected leaves

Mulga fern poisoning in sheep causes similar signs to nardoo poisoning (*see Common nardoo p. 154 for details*).

Acute poisoning can be avoided by denying hungry stock access to large amounts of the plant. To avoid the chronic form of the disease in cattle, minimise their access to infested pastures as there is no cure. Sheep may be sometimes saved by intravenous injections of thiamine (vitamin B1).

# MARSILEACEAE

## Common nardoo

***Marsilea drummondii***

### Description

Perennial fern to 20 cm tall which often carpets the ground in places where water lies after rain. It has rounded, hairy, shamrock-like leaves (fronds), 1–3 cm across with four leaflets. Leaves grow on long, thin stalks from underground stems and their size depends on how prolonged the wet conditions are. The oval-shaped fruit (spore sacs) form close to the ground as conditions dry and are hairy, pale brown, 5–10 mm long on a short stalk. The minute spores are released as the above-ground material disintegrates. The plant lives on as an underground rhizome until the next flooding.

### Land types

Grows abundantly in flooded country and where water collects such as on the edges of gilgais, waterholes and roadsides. Prefers clay soils or silty areas on red soils.

### Grazing notes/poisonous potential

High in fibre and tannins and is not normally palatable. Poisoning can occur when stock, especially sheep and horses graze near-pure stands after the flooded depressions in which it grows dry out and the surrounding pasture is eaten out. The plant affects the brain and nervous system and signs in sheep are similar to those caused by mulga fern poisoning. There are two forms of poisoning:

- In the paddock, affected sheep tend to separate from the mob, appear to be blind, shake their heads and collapse. They then grind their teeth, froth at the mouth and tremble. These sheep die within two days.
- When being mustered, affected sheep show signs of difficulty in breathing and then collapse and die within 6–12 hours.

Affected horses have poor muscle control, partial blindness and are sensitive to noise and touch. Prevent poisoning by keeping horses and sheep off large stands of nardoo when other feed becomes scarce. Animals can sometimes be saved by using intravenous thiamine (vitamin B1) injections.

TJH



**Common nardoo:** spreading fern; hairy, shamrock-like leaves

# Grass-like plants

**Lilies** (Liliaceae)

**Rushes** (Xanthorrhoeaceae; Typhaceae)

**Sedges** (Cyperaceae)

**Grasses** (Poaceae)

The grasses have been grouped so that plants that have similar seed head characteristics are on adjacent pages. Plants grouped close together do not necessarily have close genetic linkages.

# Native leek

***Bulbine bulbosa***

Other common name:
**Onion weed**

## Description

Fleshy, semi-upright, perennial forb to 50 cm tall. Its smooth, bluish leaves grow to 25 cm long and spread out like a grass from a central point. Leaves are thick, 1.5–3 mm, hollow, onion-like, shiny and soft. Yellow flowers are borne in clusters at the end of erect stems that are up to 20 cm long. Each flower is stalked, has six petals and is about 1–2 cm across. The fruits are globular, 5–7 mm across, green and borne on a stalk 1–2 cm long. Seeds are large, (2–3 mm diameter), dark and angular. During seed set the central axis of the seed head elongates considerably. The plant sometimes has a bulbous, underground crown. It is a cool season grower, shooting from the underground bulbs after autumn rains. It can continue some growth and flowering through summer.


**Native leek:** onion-like leaves; showy yellow flowers

## Land types

Found in damp areas on clay and loamy clay soils in most land types.

## Grazing notes

Acceptable to stock when young and may be heavily utilised, particularly in dry winters if little other forage is available.

## Woolly-headed matrush

*Lomandra leucocephala*

## Long-leaved matrush

*Lomandra longifolia*

Other common name:
**Spiny-headed matrush**

### Description

Matrushes are tough, tussocky, perennial, rush-like plants with flat leaves. The leaves grow to 80 cm long. The matrushes can grow all year round and flowering occurs from early spring to mid-summer. Plants are either male or female only. Both flower heads look similar from a distance.

**Woolly-headed matrush** has narrow, greyish leaves 2–3 mm wide with cottony threads hanging from the edges and a rounded tip. The flowers are in one to three small, globular heads, 1.5–2.5 cm in diameter on stalks shorter than the longest leaves. Each cluster consists of a compact group of white to cream flowers with a strong, sweet scent. The fruit is an oval capsule about 7 mm long, containing three seeds.

DJC

**Woolly-headed matrush:** oval flower cluster

DJC

**Woolly-headed matrush:** tufted, thick, grass-like leaves

# XANTHORRHOEACEAE

**Long-leaved matrush** has wider, flatter, shiny-green leaves to 8 mm wide with a ragged, two- to three-pointed tip. Its flower heads are 25–45 cm long (about half the leaf length) and consist of numerous short branches. Each branch is 8–15 cm long and bears clusters of small flowers and numerous needle-like prickles 1–2 cm long. Individual flowers are 3–4 mm long, cream to yellow coloured. Females produce shiny, brown fruits 5 mm long and 3 mm thick.

TJH

**Long-leaved matrush:** long, spiky flower heads

## Land types

Woolly-headed matrush occurs as scattered plants in sandier soils in box, ironbark, mulga and pine country, and on rocky hillsides. Long-leaved matrush is mostly found along creek banks in any land type.

## Grazing notes

These plants are usually avoided by stock but retain their greenness in winter and early in a drought. They are sometimes browsed when feed is scarce but their feed value is low due to their fibrous leaves.

TJH

**Long-leaved matrush:** tough-leaved tussock growing from rhizomes

# TYPHACEAE

## Bulrush

***Typha domingensis***

Other common name:
**Cumbungi**

### Description

Upright, perennial reed to 2.5 m tall with underground rhizomes 2 cm thick. It can grow in dense stands in dams and waterholes. Stems are round, 2 cm in diameter, with leaves in two rows along them. Leaves are smooth, straplike, 1–2 m long, 2–3 cm wide and generally held stiffly erect. Flowers are packed into dense, brownish, velvety, cylindrical spikes towards stem ends. The lower part sets the seeds and when mature is a distinctive, dark-brown cylinder, 12–30 cm long and 2 cm thick. The upper, pollen-bearing flower spike is 15–20 cm long, 10–15 mm thick, and falls away rapidly after pollination, leaving a bare, light-brown stalk above the cylinder of ripening seeds. Young seed heads have a carpet-like surface texture. The seeds are very small with large, white, feathery appendages. Bulrush is an evergreen water plant which grows from underground crowns in spring and early summer, flowers in summer and then dies back to the roots in winter if the water dries up.

### Land types

Grows in water on all soil types. It is a major weed in turkey nest dams and bore drains.

TJH

**Bulrush:** large, erect, semi-aquatic reed

### Grazing notes

Not palatable unless young and is not valuable fodder. It is a weed which grows in thick colonies, chokes channels and bore drains and blocks stock access to water. Where in abundance it causes stagnant water making herbicide control necessary. The light, fluffy seed is dispersed by the wind and can colonise distant wet areas.

# CYPERACEAE

## Giant sedge

***Cyperus exaltatus***

## Slender sedge

***Cyperus gracilis***

## Flat sedge

***Cyperus rigidellus***

Other common name:
**Nutgrasses**

### Description

The sedges are hairless, grass or rush-like, tussocky, erect, perennial plants which often grow in damp places. The shiny, unjointed stems often have triangular cross-sections and may be either hollow or solid. Green or brown flowers occur at the tops of stems above a whorl of two to four leaves which extend fairly horizontally. Sedges can grow year-round in response to rain, flowering mainly in warmer months.

JAM

**Giant sedge:** coarse, triangular stems

clustered but expand to five to ten rigid branches to 18 cm long, all coming from the same point. Sometimes this branching pattern is repeated twice. Each of these end in three to five stiff, brown, chaffy fingers, 2–6 cm long. There are 6 to 40 shiny, brown, oval seeds less than 1 mm long, along each of the terminal arms.

**Slender sedge** is a small, fine-leafed sedge which grows to 30 cm tall. Its dark-green, thin leaves are about 1 mm wide and up to 15 cm long but shorter than the flowering stems. Leaves and stems are brownish at the base. The greenish seed head has two to nine,

ERA

**Giant sedge:** long leaves at base of seed head

**Giant sedge** is a large, shiny, green plant which grows 1–2 m tall. Thick, flat leaves are 8–15 mm wide and 20–60 cm long. They are shiny, green and as long or longer than the flowering stem. Flower heads are initially

DRH

**Slender sedge:** soft, fine leaves

# CYPERACEAE

DRH

**Slender sedge:** long, basal flower bracts

short, flattened arms (5–10 mm x 2–3 mm) diverging from a common point. Seeds are brown, triangular, about 1 mm across with a flat top.

**Flat sedge** is a tufted plant with rough stems 1 mm thick growing to 30 cm tall. The leaves are narrow, 2–3 mm wide with roughened 'teeth' on the edges, curled near the tip and are often longer than the stems. The flower head is basically spherical with one or a few short, stiff branches plus two to four long, thin, leaf-like arms spreading out horizontally below them. Each branch is red to greenish, with 5 to 20 flattened seeds packed in two rows. Each seed is 2–3 mm long.

JRM

**Flat sedge:** longer leaves with rough edges

## Land types

Sedges are found on the edge of wet areas or seasonally flooded places, preferring alluvial clay soils. Slender sedge can also be found scattered throughout pine, ironbark and box country.

JRM

**Flat sedge:** short, compact flower heads

## Grazing notes

Coarse sedges are unpalatable except in drought times but others, particularly slender sedge, are grazed when green. Although not very competitive they can dominate wet areas.

# Common fringe-rush

***Fimbristylis dichotoma***

Other common name:
**Eight day grass**

## Description

Slender, grass-like, perennial sedge to 40 cm tall. Its stems are 1–2 mm thick, smooth, round and shiny. There is often a distinct white sheath around the base of each stem. It has narrow, 2–3 mm wide basal leaves of variable length between 4 cm and 12 cm long. The seed heads are borne at the ends of stems 10–15 cm long. They are sparsely branched with three to ten thin arms, 1–3 cm long. The seeds are densely packed at the end of each arm into oval-shaped, brown groups 4–10 mm long. Ripe seeds are about 1 mm long, tear-shaped, pale-coloured with a rumpled surface. Most growth occurs with late summer and autumn rains.


ERA

**Common fringe-rush:** soft, fine leaves

## Land types

Found mainly on sandy and river frontage areas in mulga, box, pine and ironbark country.

## Grazing notes

A widespread, palatable plant. The leaf dies quickly in dry weather, limiting its forage value.

# Queensland bluegrass

## *Dichanthium sericeum*

### Description

Similar in appearance to some other bluegrasses (*Bothriochloa* spp. and particularly pitted bluegrass). It is a leafy, erect, tufted perennial to 70 cm tall. The stalks are yellowish or reddish and the leaves bluish-coloured. The prominent ring of long, white hairs on stem joints is very characteristic. Some forms are very hairy all over and others are hairless except for the stem joints. The seed heads are bluish to grey, 4–8 cm long, hairy with longer, dark-brown bristles collected together at the tip before flowering and spreading when ripe. There are two to five arms in the head but they do not always spread apart, especially when young. The ripe seeds, 3–4 mm long and hairy, fall first from the tip and a small tuft is left at the top of the stem after all the seed has fallen. Flowering is most prolific in spring but can occur all summer if moisture is available. **Slender bluegrass** is a common red-stemmed, finer form than the typical broader-leafed, blue-green plant. Queensland bluegrass grows best after good spring rain and where extra moisture collects.

TJH

**Queensland bluegrass:** hairy stem nodes

ERA

**Queensland bluegrass:** two to five silky arms

### Land types

Grows best on clay soils of Mitchell grass, brigalow and box country. Slender bluegrass is more common on less fertile, loamy-surfaced duplex soils.

### Grazing notes

Queensland bluegrass is an indicator of good pasture condition in brigalow, Mitchell grass and box land types. It increases in high rainfall years in Mitchell grass downs. The plant is easily lost from overgrazed pastures or less fertile duplex soils. With careful management bluegrass can be re-established in a pasture and is an early coloniser of abandoned cultivation on clay soils.

It is a desirable and highly-valued forage plant which is very palatable when young and green. Its desirability is due to high leaf proportion compared to stem. Queensland bluegrass is not very drought tolerant, but the seed is resilient in dry spells.

## Forest bluegrass

*Bothriochloa bladhii*

## Pitted bluegrass

*Bothriochloa decipiens*

## Satintop

*Bothriochloa erianthoides*

## Desert bluegrass

*Bothriochloa ewartiana*

TJH

**Forest bluegrass:** soft, red, seed head arms

### Description

The *Bothriochloa* bluegrasses are tufted, perennial grasses growing to 120 cm tall. They have a variable seed head shape. Their foliage is usually distinctly blue-green in colour but red tipping is common when plants are stressed in cooler weather. The seed heads of young plants are similar in appearance to the *Dicanthium* bluegrasses, the latter tending to have longer hairs on the joints of the stems. Many fresh green *Bothriochloa* plants are aromatic when crushed while the *Dicanthium* plants are not. The bluegrasses are summer-growing plants and grow best in wet summers. They are not winter active.

**Forest bluegrass** is a bulky, big-leaved plant that grows to 120 cm tall. The stems are 3–4 mm thick with slightly hairy joints. Leaves are bluish-green but often reddish-tinged in dry seasons. They are 15–30 cm long, 4–7 mm wide and not normally twisted. The seed head is large, pyramid-shaped, dark-red and not obviously hairy. Seeds are small, hairy, 2–3 mm long, purplish, with a twisted bristle 1–2 cm long.

**Pitted bluegrass** is smaller than the other *Bothriochloa* bluegrasses but is more widespread. When mature, it has many leafless, yellow stems to 80 cm tall with dark, hairless joints. Leaves are concentrated near the crown, bluish, often twisted, 5–15 cm long and 2–4 mm wide. Young stems are coated in a loose, waxy coating that rubs off easily. The seed head is initially a pointed, narrow

TJH

**Forest bluegrass:** reddish when mature; aromatic

TJH

**Pitted bluegrass:** hairless, fine, waxy stems

spike. This later opens slightly into several pale, fluffy arms 5–8 cm long. Each seed has a single deep pit on the surface on one side.

TJH

**Pitted bluegrass:** a single pit in each seed

**Satintop** is a strongly-tufted, leafy plant that grows to 120 cm tall. The leaves are blue-green, 7–15 cm long, 5–10 mm wide and concentrated near the ground. Seed heads are on a long, very erect, sturdy stalk. They are initially a satiny spike, 5–10 cm long and mature into a very fluffy, white seed head with two or three erect arms. Seeds are yellowish and covered with masses of fluffy, white hairs.

TJH

**Satintop:** three to five fluffy, erect arms

**Desert bluegrass** is a leafy, yellow-stemmed plant that grows to 90 cm tall. The stems have a ring of short, white hairs on the joints. The leaves are 5–15 cm long and 3–5 mm wide, often weakly-curled and bunched on higher joints. It has a pale-pink seed head, with four to eight upward-pointing, hairy arms that are of similar length. Seeds are pale purple, 3–4 mm long, hairy, with a 10–20 mm long, twisted bristle.

## Land types

These plants vary in their soil preference. Forest bluegrass grows on a range of fertile soils, particularly in places where extra water is received—such as along watercourses, on creek frontages and especially roadsides in the south of the region. It can be locally dominant where sheep are excluded for many years. It is mostly absent from the Warrego region. Pitted bluegrass is common on less fertile and lighter soils, especially in the east of the region, and is often localised under large trees and on roadsides. It becomes widespread in good summers in box, ironbark and pine country and in the eastern better mulga country. Satintop grows only on heavy cracking clays such as on Mitchell grass downs and is never a dominant component. Desert bluegrass grows on sandy loams and light clays, but is not often abundant in this region. It is more common in the north of the region.

JAM

**Desert bluegrass:** pale stems; bunched leaves

TJH

**Desert bluegrass:** four to eight semi-erect arms

## Grazing notes

The *Bothriochloa* bluegrasses are mostly indicators of good pasture condition. However, a high proportion of pitted bluegrass can indicate a drop in condition on the more fertile soils. It is lower in palatability than forest bluegrass and has a high proportion of stem. Pitted bluegrass is very resistant to heavy grazing.

These bluegrasses are mostly palatable and drought resistant and are desirable in a pasture. Pitted bluegrass is the least palatable, while desert bluegrass has only fair palatability to cattle. Pitted bluegrass has low feed value in most years as it is stemmy, and in more arid regions can be prostrate until it seeds. Satintop tends to be sporadic in its growth, but others produce leafy growth most summers.

# Silky browntop

***Eulalia aurea***

## Description

Erect, unbranched, tussocky, perennial grass to 1 m tall. It has a sturdy crown, brown, hairless joints and hairless leaves of variable length (5–25 cm) with a distinct mid-vein. The seed head is distinctly dark, golden-brown and hairy with two to four arms and is held well above the foliage. These arms are about 4–6 cm long, 3–5 mm wide and densely packed with seeds. The seeds are clothed in brown hairs, 4–5 mm long with a 10–12 mm twisted bristle. The ripe seeds drop rapidly.

While there are some similarities with Queensland bluegrasses in the seed head structure, silky browntop has a distinctly silky, red-brown seed head. It is a warm season grass growing from early spring to late summer.

TJH

**Silky browntop:** two to four silky, hairy arms

TJH

**Silky browntop:** hairless, red-brown foliage

There are two forms: a sturdy, tall, blue-leafed type with very dark-brown seed heads which grows on heavy clay soils; and a smaller, green-leafed type with pale-brown seed heads and dark stem joints growing on less fertile soils. Leaves of both turn purplish-red when dry or frosted.

## Land types

Found in wetter sites such as on frontages in most land types. It is common but rarely dominant on heavy clay soils in Mitchell grass and box country, and becomes more abundant with good summer rain.

## Grazing notes

A palatable and nutritious grass before it begins to flower. The green-leafed type on infertile soils is not as palatable. In mulga country it is highly desirable. The plant is drought resistant and long lived, but in very wet seasons becomes rank and unpalatable. Seedling recruitment is not nearly as regular as it is with the bluegrasses.

# Black speargrass

## *Heteropogon contortus*

Other common name:
**Bunched speargrass**

### Description

A tussocky, perennial grass to 1 m tall. It has folded emerging leaves, 2–7 mm wide and 8–20 cm long, which grow close to the ground in spring and early summer. It then sends up flowering shoots bearing characteristic long, black-pointed seed heads, 10–15 cm long and 3 mm wide. When ripe the black, 5–10 cm long bristles on seeds twist and form tangled masses in the top of the pasture. The tips of the seeds are very sharp. Leaves are red-brown when mature. It is a warm season grass which flowers, sets seed and matures in late summer.

RGS

**Black speargrass:** coarse, red-brown leaves

### Land types

Grows in box and pine country, on sandy alluvial soils and in some sand plain areas of soft mulga. It is more common in the north of the district and along roadsides.

### Grazing notes

Widespread but not abundant in the district. Although fire tolerant it is not drought resistant. Burning black speargrass results in increased tillering and fresh, palatable regrowth. Annual burning can lead to an increase in its abundance and a decrease in desirable, yet fire-susceptible bluegrass plants. It is best discouraged through spelling and sowing buffel grass which, if carefully managed, can out-compete black speargrass on less fertile soils.

Black speargrass seeds are a problem in sheep country, but it is a valuable cattle feed. Heavy stands cause skin damage, severe vegetable fault in wool, and reduced production in sheep. It is a bulky, palatable grass especially when young and green, but sheep avoid mature green plants.

TJH

**Black speargrass:** matted, black seeds; long awns

# Grader grass

## *Themeda quadrivalvis*

### Description

Erect, tufted, introduced, annual grass that grows to 120 cm tall. It has reddish leaves and is very similar in appearance to kangaroo grass. The difference is in the flowers. Grader grass has long hairs growing out of glands on the outer part of each seed husk. It has a single, 3–5 cm long, coarse, curled bristle at the tip of each thin, dark-brown seed. Grader grass grows and flowers in warmer months.

### Land types

Found in disturbed areas and roadsides with loam soils in box, ironbark and pine country in the north of the region. It is considered a weed.

### Grazing notes

A strong coloniser of frequently overgrazed and burnt areas, out-competing desirable plants. It is palatable until flowering, but there is little leaf compared to the amount of coarse stem. Mature seed heads are sometimes grazed. It is spreading south from central Queensland.

TJH

**Grader grass:** hairy, leafy seed head

ERA

**Grader grass:** coarse, yellow stems; red leaves when mature

# Kangaroo grass

***Themeda triandra***

## Description

Erect, tufted, perennial grass to 150 cm tall. It ranges in colour from bluish or yellow-green when young to reddish or yellow-brown when mature. The leaf is quite well distributed along the stems and the seed heads often barely extend over the top of the foliage. Stems are yellow and have green, powdery-surfaced nodes. It has large, 20–50 cm long loose flower heads which are not obviously hairy, often reddish and with strongly drooping side branches. The seed is dark-brown and shiny, cylindrical, 8–10 mm long with a single, dark, twisted awn 3–5 cm long in the apex. Kangaroo grass is a warm season grass. Growth and flowering are mainly concentrated in spring and summer. Seeds ripen around Christmas. It is similar in appearance to the introduced weed, grader grass.

JAM

**Kangaroo grass:** leaves grow on erect, pale stems

TJH

**Kangaroo grass:** smooth husks; protruding awns

## Land types

Will grow on any soil that is not waterlogged and so occurs in box, ironbark, mulga, pine, and Mitchell grassland country. It is common in areas where extra moisture collects—such as drainage lines, where grazing is light and/or where fires occur regularly, such as railway lines, roadsides and cemeteries.

## Grazing notes

Mostly found scattered throughout pastures. Plentiful kangaroo grass indicates good pasture condition in soft mulga and box country. Heavy grazing will cause it to be lost from a pasture. While of only moderate nutritive value, it is very palatable when young. Grazing should be managed to use the feed before it becomes frosted. It is fire resistant and is adapted to regular burning. To encourage kangaroo grass, young plants should be allowed to seed by delaying grazing of them until late in the first growing season.

# Silkyheads

*Cymbopogon obtectus*

# Barbwire grass

*Cymbopogon refractus*

TJH

**Barbwire grass:** erect stems; spiky seed head

## Description

These are tussocky, perennial grasses with seed heads to 1 m tall. Both plants emit a strong odour when the foliage is crushed. Barbwire grass gives off a strong, gingery aroma; silkyheads, a citronella or lemony odour. Both have a distinctive 'barbwire' arrangement of young seed heads.

The leaves of **silkyheads** are bluish to purple, thin, hairless and strongly concentrated near the crown. Each leaf has a large, white, membranous flap, 2–3 mm long, where the leaf blade joins the stem. The mature seed heads are woolly, unbranched and made up of irregular clumps with leaf-like inclusions. Each seed is 5–6 mm long with many 5–7 mm long white hairs. These plants grow and flower mostly in summer. Silkyheads has bright yellow roots.

TJH

**Silkyheads:** white, fluffy seed heads

**Barbwire grass** has dark, hairless nodes. It also has its foliage concentrated in a dense tussock at the base of the plant, but the mature seed heads are hairless, waxy, dark-brown to purple. The seeds are woody, irregularly-shaped and slightly prickly if grasped.

## Land types

Found in box, ironbark, mulga and pine country, often on stony ridges. Barbwire grass is not found in the far west and silkyheads is rarely seen in the east of the region.

## Grazing notes

An indicator of pastures in good condition in pine country, but of poor condition in other land types. Because of the odours emitted, the older foliage of these plants is often unpalatable but stock will graze both plants when young. As these grasses age they become unpalatable and highly flammable when dry. These plants contribute little to livestock diets and are neither highly productive nor dominant in a pasture. While frost tolerant, they only thrive after good rains in warmer months.

T.J.H

**Barbwire grass:** irregular, spiky, reflexed seeds

# Small Flinders grass

*Iseilema membranaceum*

# Red Flinders grass

*Iseilema vaginiflorum*

## Description

Annual grasses, 20–40 cm tall, of either thin, erect habit or small, bushy habit (in very good summers). Plants are leafy with hairless, folded leaves (3–10 cm long) and weakly-jointed, thin stems. There is no obvious seed head on red Flinders grass. Small Flinder's grass has its seed head clustered in the forks of the leaves at the top of its branches. Both plants turn reddish when they hay off. They break up readily when dry. They are summer growers and will germinate any time outside the main winter period. Hybrids are common.

TJH

**Small Flinders grass:** seed head in fork of leaves

## Land types

Found on the heavy, alkaline, clay soils of Mitchell grass and brigalow–belah lands and on alluvial clays.

TJH

**Small Flinders grass:** mass of terminal seed heads; red appearance when mature

TJH

**Red Flinders grass:** red when mature

## Grazing notes

Moderately palatable and nutritious from young to seed head stage. They persist well in open Mitchell grass pasture unless continuous heavy grazing prevents seed set for a number of seasons. They regenerate annually in the inter-tussock spaces and normally set abundant seed. Dense stands have been used for making hay with urea added to the bales to improve its protein level. In the south of the region the presence of some Flinders grass indicates good pasture condition. In north-western areas of the region, however, a large proportion indicates fair to poor condition as the perennial grasses have been removed.

JAM

**Red Flinders grass:** flat seed heads with long awn

# Button grass

## *Dactyloctenium radulans*

### Description

Leafy, loose-tufted, annual with upward curving stems to 30 cm tall. The leaves are pale-green, sparsely hairy, 2–10 cm long with a tapering tip and often wrinkled. The seed head has four to six thick arms of even length, 1–3 cm long, tightly packed with flat seeds and with a sturdy 2–5 mm bristle at the tip of each arm. When ripe, these vertically-orientated seeds become rigid and slightly sharp-tipped. The plant often drops its seeds as whole arms and seeds gather in conspicuous piles around the base of the plant as it dries. Each segment on the arms has a pointed, pale, papery envelope around a single, reddish-brown, wrinkled grain, 0.5 mm across.

Button grass grows rapidly after summer rainfall and flowers in spring and summer. It can be a major component of regenerating pastures after a drought.

TJH

**Button grass:** compact, button-shaped seed head

JRM

**Button grass:** sprawling; distinct terminal seed heads

### Land types

Grows on all land types, particularly on lighter soils. It is found in abundance around disturbed areas and yards, especially where there are increased nutrient levels from manure.

### Grazing notes/poisonous potential

Desirable, fast-growing plant which provides early green pick then dies off by the end of summer. It is nutritious and palatable to stock when both green and dry. The fallen seed is eaten by sheep.

An abundance of button grass is an indicator of previous heavy grazing or drought and good summer rain. Fresh seeds need several years weathering before they are ready to germinate and even then they prefer an exposed site.

If hungry stock are allowed access to extensive new growth, nitrate poisoning can occur.

*For further information see Nitrate–nitrite poisoning in Chapter 3.*

# Native couch

## *Brachyachne convergens*

### Description

Annual, trailing grass with upright seed heads, growing to 30 cm tall. Leaves are pale-green, thin and hairless. The seed head has three to five, thin, finger-like branches, 3–5 cm long which are tightly packed with tiny, hairless, purplish seeds (when young) and turn a golden colour at maturity. The base of the flowering stems is often bent and it will root down at joints along the main stem. The distance between stem joints is 8–15 cm and the intervening stem often arches upwards and is never red like couch grass. The plant grows only in summer and looks like common lawn couch grass only taller and more spindly.

### Land types

Grows mainly on heavy soils in areas which are infrequently flooded or receive runoff water. Main land types are Mitchell grass, gidyea and coolibah country, and box country with grey clay soils. The plant is often found on edges of clay pans, disturbed areas, cultivation and along bore drains.

### Grazing notes/poisonous potential

Can grow and flower in a very short period but does not produce a great bulk of feed. It responds to early summer rains and is palatable to stock, particularly sheep.

This plant can be toxic to sheep, cattle and horses, especially hungry, travelling stock. The young plants are most toxic, especially after dew or rain. Well-fed stock are generally not affected.

*For further information see Cyanide poisoning in Chapter 3.*

ERA

**Native couch:** spreading grass with three to five arms on seed heads

# Green couch

## *Cynodon dactylon*

### Description

Spreading, introduced perennial grass, with running stems which root at the nodes and can form a dense mat. It is 10–30 cm tall when flowering. The leaves are small with a tuft of hairs where each joins the stem. Seed heads have three to four, thin, purplish arms, each 3–5 cm long borne at the ends of 10–15 cm long stems. The arms are tightly packed with small, hairless seeds and often have purple pollen sacs hanging from them for days after flowering. The stems are 1–2 mm thick and often shiny red or purple coloured. In this region couch grows all year round, moisture permitting, except in periods of heavy frost. Green couch flowers from summer to autumn. There are several closely related species which are similar, but have underground rhizomes as well as the above-ground runners.

DJC

**Green couch:** spreading, dense mat

### Land types

Prefers fertile and moist conditions with no real preference for land type. Green couch is commonly found in disturbed areas such as old cultivations, along drainage lines, bore drains, roadsides and around buildings. It is a serious weed in cultivation.

DJC

**Green couch:** fine seed head

### Grazing notes/poisonous potential

A desirable plant for binding soil for erosion protection. It is a common lawn grass. It can withstand very heavy grazing provided conditions stay moist, and may be the only plant remaining after native or sown pasture has been overgrazed. Green couch is not frost or fire tolerant but is a useful forage plant in favourable environmental niches. It may contain prussic acid and can cause poisoning when young if green growth is consumed in large amounts. However, it is rare for stock to be poisoned.

*For further information see Cyanide poisoning in Chapter 3.*

## Slender chloris

*Chloris divaricata*

## Comb chloris

*Chloris pectinata*

## Windmill grass

*Chloris truncata*

## Tall chloris

*Chloris ventricosa*

### Description

These grasses are mostly perennials but some may behave as annuals in drier localities. They are erect or have upright stems and sometimes root at the lower stem nodes (joints). Their young leaves are folded and stem bases flattened. They range in height from 15 cm to 90 cm and have seed heads consisting of 3 to 18 arms spreading from one point at the top of the stem. Seeds on the arms usually have prominent straight, thin bristles. These grasses are warm season growers and generally flower in summer and autumn, but in some cases they will start flowering in spring.

JAM

**Slender chloris:** long, fine hairs on seed head

JAM

**Comb chloris:** feathery arms on seed head

**Slender** and **comb chloris** are small grasses with four to eight thin, pink seed head arms and long hairs on each seed. **Comb chloris** is always tufted, has quite erect seed head stems, shorter arms (5–8 cm) and longer bristles (8–22 mm).

TJH

**Windmill grass:** dense basal leaf

**Slender chloris** has arms 10–18 cm long, seed bristles 3–7 mm long and short, creeping, leafy stolons. **Windmill grass** has a dense tuft of folded leaves with seed heads on short stems about as long as the seed head arms (12–20 cm). The seeds are regularly arranged along each arm and each has a distinctly flat top between the two apical hairs.

# POACEAE

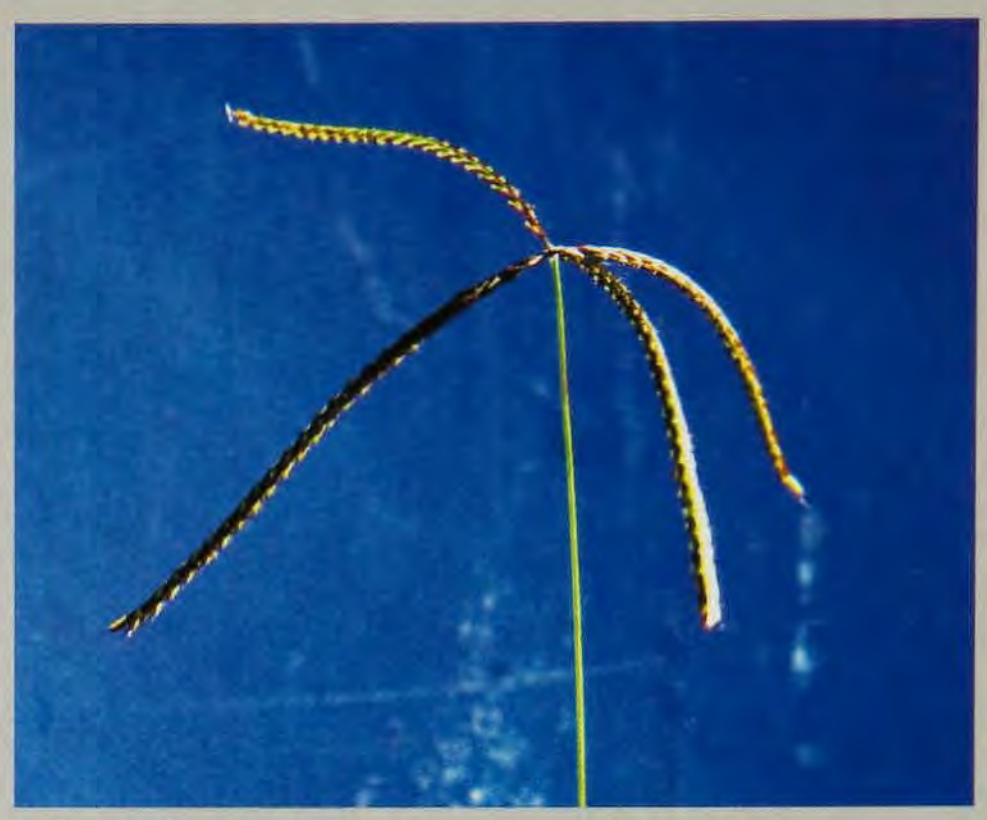
TJH

**Windmill grass:** flat tops on seeds

**Tall chloris** is a tufted plant with long stalks up to 90 cm high with dark-brown seed heads. The leaves are concentrated at the crown which is not strongly rooted. Seed head arms are 5–10 cm long, not prominently hairy, curve downward and have dark seeds in a neatly arranged row. Seeds are 3–5 mm long, plump and have a squared-off top with two short bristles.

## Land types

These grasses occur in most land types, and are common on duplex soils, hard-setting red earths and grey clay soils. They often grow in areas receiving run-on water; for example, in roadside drains. Most are colonisers of denuded areas, except tall chloris which only grows in lightly grazed pastures or under open timber.



TJH

**Tall chloris:** short, thick, drooping seed head arms

## Grazing notes

The chloris grasses are moderately palatable until flowering. They mature rapidly and become less acceptable to stock. Grazing encourages these grasses to produce fresh green growth. These grasses are valuable and provide good forage following spring rain. They provide valuable surface protection from rain and against water runoff, helping to prevent soil erosion. Tall chloris is the least common and least palatable.

RGS

**Tall chloris:** erect grass; basal tuft of leaves

## Common Rhodes grass

*Chloris gayana*

## Feathertop Rhodes grass

*Chloris virgata*

TJH

**Common Rhodes grass:** brownish arms on seed head

### Description

**Common Rhodes grass** is a creeping, introduced, perennial plant which grows 70–130 cm high depending on seasonal conditions. The leaf is dark or yellowish green. Stems are hairless, thick (4–7 mm), flattened and may run for several metres, rooting down at older joints. New crowns develop at these points and send up leafy, flowering stalks. The brown seed head has 5 to 17 arms, each 8–12 cm long. The seeds are 3–5 mm long, flattened, and have two fine, straight bristles, 2–10 mm long.

**Feathertop Rhodes grass** is an annual, 30–90 cm tall and a common weed on roadsides. Stem joints are hairless and sometimes very dark. The leaf is often bluish and stems (3–5 mm thick) often root down at the lower joints. The seed head is very hairy, usually white, and has five to ten arms each 5–10 cm long that often remain clustered and pointing upwards. Ripe seeds often turn black.

### Land types

Both Rhodes grasses grow well on roadsides. Common Rhodes grass prefers fertile, loamy soils and is widely sown as a pioneering pasture species. Feathertop Rhodes grows better on lighter soils, especially following overgrazing and disturbance.

TJH

**Common Rhodes grass:** leafy, flowering stalks

TJH

**Feathertop Rhodes grass:** clustered arms

## Grazing notes

Feathertop Rhodes is not very palatable and is a weed in cultivation and crops. Common Rhodes grass is a valuable short term, palatable, sown pasture which establishes easily but will not survive severe droughts on most soils. Grazing encourages production of fresh, green growth. It is fairly tolerant of frost and is used for waterways and soil conservation works on heavy clay soils. There are several commercial cultivars available which differ in their leaf size, palatability and seed head bristle length.

TJH

**Feathertop Rhodes grass:** not very palatable

## Curly windmill grass

*Enteropogon acicularis*

## Twirly windmill grass

*Enteropogon ramosus*

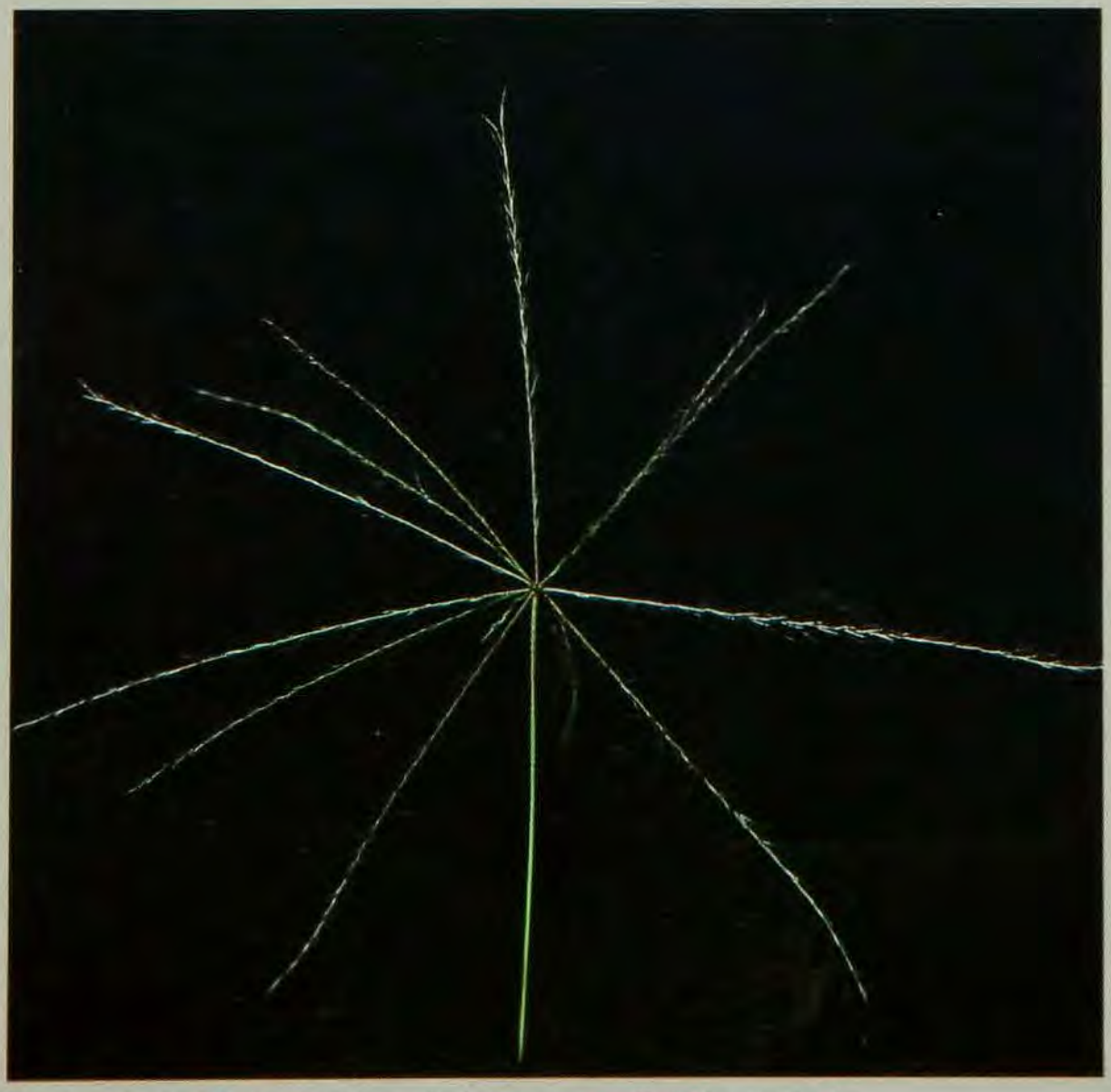
RGS

**Curly windmill grass:** bluish-green basal leaves

### Description

The windmill grasses are perennial, tussocky plants with windmill-shaped seed heads consisting of 3 to 20 arms spreading out from the stem tops. They have very knotty crowns. Both have long, thin seeds with two stiff bristles on each seed; seeds are widely spaced along the spreading seed head arms. One bristle extends 10–15 mm from the tip of the 5–10 mm long seed while the other curves out from halfway along the seed. They are warm season grasses which grow and flower from mid-spring to autumn.

**Curly windmill** grass has broad, often bluish, variably hairy leaves to 20 cm long and 3–5 mm wide. It does not grow as tall or as erect as twirly windmill grass and the dead leaves of curly windmill grass do not curl as tightly. Its seed head is larger with more arms (7 to 20) and longer arms (to 20 cm). It has a strong purple colouration on stressed leaves.



TJH

**Curly windmill grass:** long, hairy arms radiate irregularly

**Twirly windmill** grass is a very upright, stemmy grass to 1 m tall (usually 60 cm) with three to six arms each 5–10 cm long on the seed head. Its leaves are hairless, only 2–3 mm wide and they twirl like a corkscrew when dead.

## Land types

Mainly found in box, brigalow–belah, mulga and pine country on most soils from sandy loams to clay soils. Twirly windmill is more common on the heavier soils while curly is more common on the lighter soils. It is common to find these grasses around the base of box trees.

## Grazing notes

These grasses are flood and drought resistant. Although not a preferred species, they can tolerate heavy grazing, and curly windmill is especially useful in mulga country. In box country they are only eaten when there is little other palatable forage available. An abundance of curly windmill grass in association with the chloris windmill grasses indicates fair to poor pasture condition in box country due to overgrazing.

TJH

**Twirly windmill grass:** upright with curly leaves

# Umbrella canegrass

## *Leptochloa digitata*

### Description

Large, coarse, tussocky, upright, perennial grass to 2 m tall. It has dark-green, stemmy shoots and a pale-green to fawn-coloured Rhodes grass-shaped seed head, with 4 to 14 arms about 4–10 cm long. Small plants have short, rough, hairless leaves arising from stem nodes and a powdery-blue wax covering on the younger stems. Seeds are pale, 2–3 mm long, hairless and packed closely along the seed head arms. A warm season grower, it stays relatively green year round producing new growth when there is adequate soil moisture.

TJH

**Umbrella canegrass:** hairless seeds on short arms

### Land types

Prefers clay or alluvial soils and is usually found in Mitchell grass, frontage, brigalow–belah and box country. It grows in dense clumps in wetter areas, such as in watercourses, roadside tabledrains, around waterholes and in gilgais. It can grow in standing water.

TJH

**Umbrella canegrass:** tall and coarse

### Grazing notes

Palatability declines with age, as leaf material becomes fibrous and unpalatable. Stock actively seek out the young seed heads and the whole plant is grazed if no other forage is available. Thick stands can develop which interfere with mustering and harbour feral pigs.

## Spring grass

*Eriochloa crebra*

## Early spring grass

*Eriochloa pseudoacrotricha*

### Description

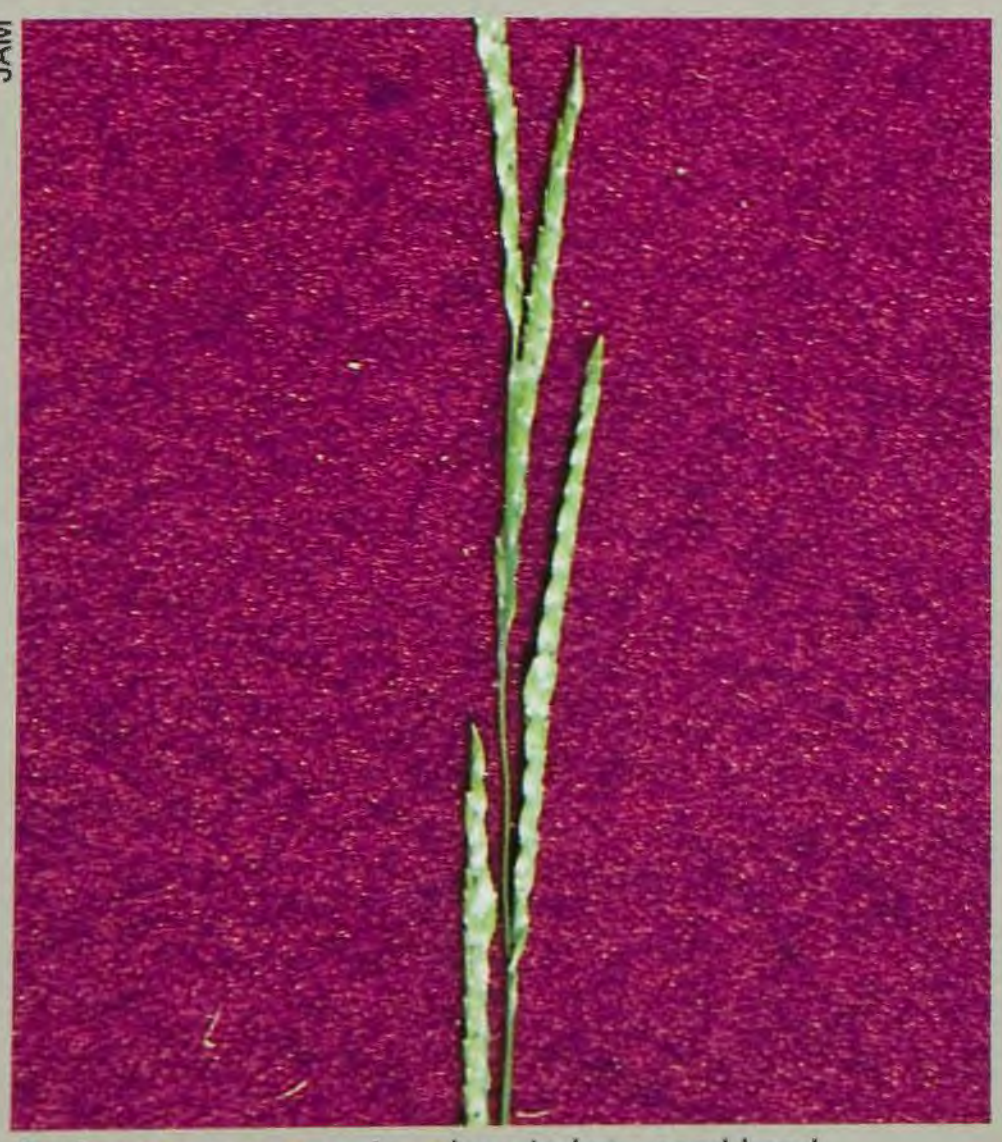
The spring grasses are upright, perennial grasses to 1 m tall. They have long, narrow seed heads, 10–25 cm long with three to eight short branches, 2–5 cm long, which droop outwards at their tips from the main axis. These grasses grow in spring and early summer.

**Early spring grass** commonly has branched stems 1–2 mm thick and its stem joints are swollen and furry. The leaves are yellowish-green, 4–12 cm by 4–7 mm, and sparsely hairy. Seeds are 4–6 mm long, pointed, with silky hairs on the lower half. Young seeds are green or purplish-brown turning straw-coloured when ripe. The ends of the seed head droop noticeably and the seed head frame persists long after all seed has fallen.

JAM

**Spring grass:** tall and erect with few branches

**Spring grass** is larger with thicker (2–4 mm), erect stems with the leaves concentrated near the base. Leaves are bluish and hairless, the stems nodes are hairless and the stem bases are smooth and white. The seed head is longer and the arms do not diverge from the main axis as much as early spring grass. Small, beadlike lumps remain on old heads where each seed was attached. Seeds are 4–7 mm long, tear-shaped with white hairs on the lower half.



JAM

**Spring grass:** arms stay close to long seed head

### Land types

Most commonly occur on heavy clay or clay loam soils in Mitchell grass, frontage and box country. Spring grass is often found in wetter areas such as roadside tabledrains. Early spring grass is found on most soils except in mulga country.

# POACEAE

TJH

**Early spring grass:** branched stems, furry nodes

TJH

**Early spring grass:** overlapping, pointed seeds

## Grazing notes

The spring grasses are a minor but significant component of native pastures. They are a palatable, useful fodder and can tolerate heavy grazing. Early spring grass can become abundant after good spring and summer rains in the southern parts of the region. It is an early coloniser of abandoned cultivation.

## Sabi grass

***Urochloa mosambicensis***

Other common name:
**Perennial urochloa**

## Liverseed grass

***Urochloa panicoides***

Other common name:
**Urochloa**

### Description

**Sabi grass** is an introduced perennial grass which has a variable habit, often trailing at first and then with erect, flowering stems to 1 m tall. It grows upright in dense stands. It has wide, pale-green, 5–20 cm long, hairy leaves and seed heads to 15 cm long. The seed heads consist of 4 to 12 clearly spaced branches closely lined with hairy seeds. Seeds are pale, oval, 3–5 mm long, flattened and with a rim of hairs.

TJH

**Sabi grass:** hairy, compact seeds on spreading arms

**Liverseed grass** is a trailing to semi-upright introduced annual grass to 60 cm tall. It has short (3–8 cm), soft, hairy leaves, 7–12 mm wide and seed heads to 10 cm long. The seed heads consist of two to seven branches up to 7 cm long of closely arranged, plump,

TJH

**Sabi grass:** grows upright in dense stands

TJH

**Liverseed grass**: tightly-packed, hairless seeds

bullet-shaped *hairless* seeds. The seeds drop quickly once ripe and may even ripen without pollination in dry times when the head fails to emerge from the terminal leaf on the stem.

These grasses are warm season growers which flower in summer and lose quality quickly once winter comes.

## Land types

Found mainly in disturbed and damp areas on clay and clay loam soils in Mitchell grass, box, brigalow–belah country and also on frontages in soft mulga country. They are often conspicuous along roadsides after good, early summer rain.

## Grazing notes/poisonous potential

Palatable and nutritious while green but less palatable once hayed off or frosted. Liverseed grass is a serious spring weed in cultivation on clay soils. Sabi grass is a commercially sown pasture grass in wetter and more tropical areas. These grasses do not persist under heavy continuous grazing. They have a short growth season. If frosted they turn white, sand-papery and disintegrate quickly. Liverseed grass has been suspected of causing nitrate poisoning in cattle.

*For further information see Nitrate–nitrite poisoning in Chapter 3.*

TJH



**Liverseed grass:** dark-green leaves with wavy margins

# Paspalum

## *Paspalum dilatatum*

TJH

**Paspalum:** seeds are often sticky

### Description

Introduced, tufted, perennial grass with very sturdy roots. Its leaves are 10–20 cm long, 8–12 mm wide, concentrated near the base and often have part of the margin crinkled. The leaves have a white, membranous flap, 2–3 mm long where they join the stem. They turn from dark-green to deep-purple in cold weather. The plant grows quite flat on the ground in winter and under grazing, but seed heads can stand up to 90 cm tall. The seed head consists of three to seven spreading, and often drooping, arms 3–8 cm long. Each is packed with round, flattened, purplish to green seeds, that are 3–4 mm across. Paspalum grows and flowers best during warmer months but in moist lawns and tank overflows may continue to grow through winter. Seeds are often infected with a sticky ergot fungus, so that instead of ripening to a flat, pale-brown seed, they develop into fat, orange or black lumps.

TJH

**Paspalum:** flattened seeds; drooping arms

### Land types

Occurs as small patches in most land types in wet areas such as drainage lines, waterholes, roadsides and around farm troughs and dams. It prefers clay, alluvial and loam soils of good fertility.

### Grazing notes/poisonous potential

Palatable and can withstand heavy grazing by stock. Seed heads that are infected with the ergot fungus are potentially poisonous. Livestock should be removed from pastures which have an abundance of ergot-infected paspalum in summer. This is not likely to occur in this region in natural pastures.

# Hairy armgrass

## *Brachiaria piligera*

### Description

Dark-green, sprawling, annual grass to 50 cm tall. The leaves are broad, hairless, 8–12 mm wide, 10–15 cm long and tapering from the base. Most leaves are held almost horizontal to the ground. The seed head has two to five branches which come off the main seed head stem alternately. These branches are 3–6 cm long and bend slightly downwards. The seeds are pale-green, plump, hairy, 3–4 mm long and widely spaced in a single row along each arm. Ripe seeds are a pale straw colour and drop quickly. Hairy armgrass is a quick- maturing, summer growing plant that thrives on plentiful, mid-summer rains.

### Land types

Found mainly on the red soils of mulga country and to a lesser extent on sandy soils in pine and box country.

RGS

**Hairy armgrass:** dark-green; sprawling

### Grazing notes

Very palatable and nutritious when green. It responds early after summer rains, but has no drought tolerance. This grass is not strongly competitive but can form extensive stands where an area has been disturbed.

RGS

**Hairy armgrass:** broad, hairless leaves

# Awnless barnyard grass

***Echinochloa colona***

Other common names:
**Barnyard grass, Zebra grass**

## Description

An annual, introduced grass which grows fairly flat in open pasture but upright in dense pasture. Lower joints send down roots in open pasture but upright stems grow to 40 cm tall and sometimes branch a little. Leaves are dark-green, hairless, broad, 7–20 cm long, flat and pointed, often with distinct purple banding. Seed heads have short, 1–2 cm arms at the base and are packed with plump seeds, 2–3 mm across which often have a purple tinge. A warm season grass, it grows in early spring and flowers in summer. A similar related grass is common barnyard grass which has a short bristle on each seed.

TJH

**Awnless barnyard grass:** purple bands on leaf

## Land types

Prefers moist, fertile, clay soil and is more common in disturbed areas or old cultivations in brigalow country. It also grows in wet areas along creeks, bore drains and in depressions.

## Grazing notes

A palatable, prolific seeder which often becomes a weed in cultivation. It is not persistent in drier areas and is uncommon in native pastures.

## Brigalow grass

***Paspalidium caespitosum***

## Box grass

***Paspalidium constrictum***

## Shot grass

***Paspalidium globoideum***

## Warrego summer grass

***Paspalidium jubiflorum***

## Rare panic

***Paspalidium rarum***

### Description

These grasses are mostly small-tufted, fairly stalky perennials to 60 cm tall (Warrego summer grass to 120 cm tall). Rare panic is an annual. They grow and flower in summer. Their seeds are distinctly round and hard when mature and resemble budgie seed.

RGS

**Box grass:** furry stem joints

TJH

**Box grass:** pale-green

**Brigalow grass** has 1–1.5 mm thick stems with hairless joints and thin, yellowish-green, fairly erect leaves, 10–15 cm long. Its seed head is long and narrow with seven to ten, short, well-spaced arms up to 2 cm long. Arms lie closely against the main seed head stem and bear small, tightly-packed seeds in two rows. Seeds are 2 mm long and 1.5 mm wide, hairless and fall when ripe.

**Box grass** is a sprawling plant with pale, furry stem joints and soft, bluish-green leaves 3–15 cm long and 2–4 mm wide. It has an irregular arrangement of seeds and arms along the main seed head stem which can be up to 25 cm long. Individual seeds are 2.5–3 mm long, pale-green and plump, turning straw-coloured when ripe before quickly dropping.

**Shot grass** is a larger, tufted grass which can be 10 cm across at the crown. Stems are smooth, hairless and unbranched. Leaves are hairless, 10–15 cm long and 3–6 mm wide compared with 2–4 mm for other *Paspalidium* grasses. It has a 6–30 cm long seed head with very large, plump seeds, 3–4 mm in diameter. Seed head arms are 2–5 cm long at the base of the seed head, with those at the top being very short.

TJH

**Brigalow grass:** hairless joints on stems

**Warrego summer grass** grows in small tussocks with erect, whitish green stems 1.5–2 mm thick and hairless, bluish leaves 3–7 mm wide and up to 25 cm long. It has a long (10–15 mm), narrow seed head with arms to 4 cm long which stay close to the main seed head stem. Lower branches are more widely spaced. It has smaller seeds (2–3 mm diameter) than shot grass and they are packed in two distinct rows on each side arm.

**Rare panic** is a small, relatively leafless, much-branched, sprawling annual with dark-green, shiny foliage. Leaves are only 3–10 cm long and 1–2 mm wide. Its seeds generally occur singularly along 5–12 cm long, unbranched seed heads that mingle with the upper leaves. Each seed is pale-green, 3 mm long, hairless, and drops as soon as it is ripe. A short bristle is left behind after each seed drops.

## Land types

Brigalow grass grows in brigalow–belah country, and other land types with alkaline clay soils.

Box grass prefers sandy-loam and red loam soils in box and mulga communities. It is often seen growing under trees and in accumulated litter and dirt in tree forks or hollow stems.

Shot grass and Warrego summer grass grow on heavy clay and loamy soils along frontage country. Shot grass also grows in Mitchell grass downs.

Rare panic prefers rocky, hilltop areas and is common in harder areas of mulga and brigalow–belah country. It grows best in wet summers.

These grasses can be found in wetter areas of most land types, especially in river frontage

TJH

**Shot grass:** tufted with large, plump seeds

TJH

**Shot grass:** long seed head

country and creek flats that experience occasional flooding. In western parts of the region only rare panic is common away from wet areas.

## Grazing notes

These grasses are moderately palatable and nutritious. They are indicator plants of fair to good condition in brigalow–belah country. They respond well to summer rains and flooding and provide green pick in dry winters. Brigalow grass also responds during mild, wet winters.

Except for rare panic, these plants are common in native pastures, though rarely dominant. Most are drought resistant and hold green leaf into dry times when they are well utilised. Shot grass is not as drought tolerant as the other perennials. Brigalow grass grows best under a timber cover and thins out after clearing.

DRH

**Warrego summer grass:** narrow seed head

ERA

**Rare panic:** small with unbranched seed heads

JAM

**Rare panic:** well-spaced seeds

# Annual setaria

## *Setaria surgens*

Other common name:
**Pigeon grass**

### Description

Small, erect, tufted, summer-growing, annual grass to 40 cm tall. The stems have smooth joints and fine, long, hairless, tapering leaves to about 3 mm wide. The plant has a bristly, compact, bottlewasher-like seed head about 4 cm long with pale, round seeds, 2–3 mm across. The seeds are held close to the stem and have 1 cm long, horizontal bristles around them. The bristles remain after the ripe seeds fall. The plant grows well after summer rains.

DJC

**Annual setaria:** bristly, cylindrical seed head

### Land types

Prefers sandy soils of pine, box and ironbark country, and is rarely common throughout the region.

### Grazing notes

Is palatable but matures quickly and provides little green feed after summer. It is not frequent in perennial grass pastures.

ERA

**Annual setaria:** tufted, summer-growing grass

# Buffel grass

*Cenchrus ciliaris*

## Description

Strongly tufted, introduced, perennial grass which grows to 1 m tall. It has a very sturdy root system and some strains spread short distances by underground stems (rhizomes). Young crown shoots and stems are red. It has swollen nodes, flat, wide leaves with scattered hairs near the stem. The bristly, cylindrical seed heads are 5–12 cm long and can vary from pale-green to dark-purple, depending on variety and maturity. The seed is 6–8 mm long and covered in numerous long bristles and hairs. It grows from summer to autumn and also in mild, wet winters. There are several commercial varieties differing in blueness of leaf colour, purpleness of the seeds and plant size. They do not crossbreed and maintain their genetic purity but commercial seed and pastures are often a mixture of types.

## Land types

Grows well on a range of soil types. It establishes readily on lighter soils and is common on alluvial soils and in box woodland and pine country. The tall, blue-leafed types, Biloela and Nunbank, grow better on clay soils while the smaller, purple seed head types, Gayndah and American, persist best on lighter soils. Buffel grass does not establish or persist well on acid, mulga soils or regularly flooded areas.

## Grazing notes/poisonous potential

Highly productive and relatively palatable. Although frost sensitive, it is drought resistant and provides early green pick after rain. Palatability declines with age but older plants still provide a good body of feed. In native pastures buffel grass is often found under

DJC



**Buffel grass:** dense, leafy tussock

trees where nutrient levels, particularly phosphorus, are higher. It establishes well if sown into a light covering of ash after clearing and burning scrub.

Pure stands of buffel grass can cause big head disease in horses. This problem can be overcome by giving horses a calcium supplement and/or access to other feed. Hungry sheep can suffer oxalate poisoning if allowed to consume large amounts of lush buffel grass.

*For further information see Oxalate poisoning and Big head disease of horses and donkeys in Chapter 3.*

TJH

**Buffel grass:** bristly, cylindrical seed heads

# Mossman River burr

## *Cenchrus echinatus*

### Description

Thick-stemmed, semi-erect annual grass to 60 cm tall. Its leaves are flat, 10–17 cm long, hairless and usually pale-green, but often tinged with purple. It has cylindrical, spike-like seed heads, 5–10 cm long composed of 20 to 30 large, spiny burrs 6–7 mm across. Stems may root at the lower nodes.

It is a warm season grass but can grow all year in frost-free areas where moisture is sufficient. It differs from sand burr (*Cenchrus incertus*) in the greater number of seed spines, the size of its leaves and stem, and the purple tinges to some plant parts.

TJH

**Mossman River burr:** spiny burr seeds

### Land types

Grows mainly on sandy soils in pine, box woodland and occasionally mulga country, preferring creek banks. It is also common around home gardens.

### Grazing notes

A native of America and can be a troublesome weed in new pastures, but is rarely abundant in established pastures. It is most common in disturbed areas. The burrs come off the head easily and can cause severe vegetable fault in wool and also irritation to the eyes, ears, tongues and feet of stock and dogs. It is palatable when young, but grows too little bulk to be useful forage.

# Sand burr

*Cenchrus incertus*

Other common name:
**Spiny burr grass**

## Description

Short-lived, erect, perennial, densely-tussocked grass to 30 cm tall. The leaves are folded as they emerge and they stay fairly erect. The seed head is pale-green, 2–8 cm long and often only emerges partly from the uppermost leaf of a stem. Seeds are pale-green, burr-like, 4–5 mm long and covered with coarse, sharply-pointed spines which point outwards at maturity.

## Land types

Grows on light-coloured sands in most land types. It is more common in the south of the region and responds rapidly to early summer rain.

## Grazing notes

A hardy grass which colonises open sandy areas, but can be choked out by dense buffel pastures. It causes burr contamination of wool and the burrs are painful to humans and dogs. It is a serious weed in irrigated horticultural crops and pastures.

DRH

**Sand burr:** spiny, burr-like seeds

# Northern barley grass

***Critesion murinum* subsp. *glaucum***

## Description

Small, introduced, erect, leafy, winter-growing, annual grass to 35 cm tall. Its leaves are flat, 5–6 mm wide, pointed and soft with two little extensions at the base clasped around the stem. The plant produces a dense, green, two-rowed, bristly seed head, 2–8 cm long and 1 cm wide. When ripe, the bristles curve outwards and the seeds break away from the main stem. Each 'seed' has three main parts and is rough to touch. The base is bluntly pointed and the nine long bristles are 15–30 mm long. It is a prolific seeder.

## Land types

Prefers the more fertile soils of Mitchell grass and brigalow country in the south of the region. It increases with improved nitrogen fertility in pastures and becomes a weed of cultivation and roadsides.

TJH

**Northern barley grass:** erect, leafy annual

## Grazing notes

Well-grazed during autumn and winter before the sharp bristles of the seed heads develop. The seeds penetrate the skin of sheep, particularly their mouths and eyes and can be fatal. They also cause vegetable contamination of wool. Sheep should be removed when barley grass is seeding. Herbicide spray topping can also be used to reduce this seed problem.

TJH

**Northern barley grass:** bristly seed head

TJH

**Northern barley grass:** seed

## Common bottlewashers

***Enneapogon avenaceus***

Other common name:
**Ridge bottlewashers**

## Slender bottlewashers

***Enneapogon gracilis***

## Niggerheads

***Enneapogon nigricans***

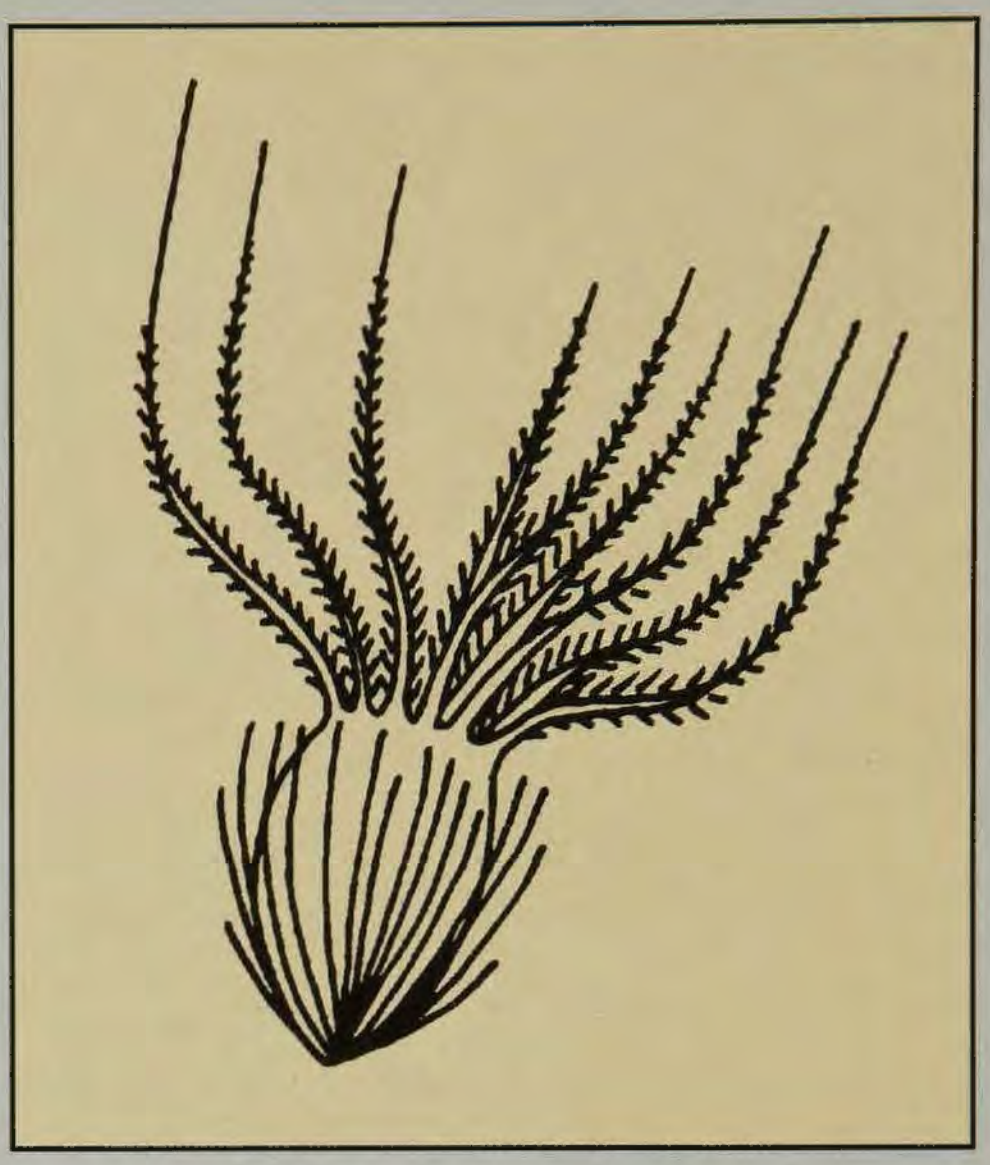
## Pale bottlewashers

***Enneapogon pallidus***

## Limestone bottlewashers

***Enneapogon polyphyllus***

Other common name:
**Nineawns**



**Enneapogon:** seed with crown of bristles

### Description

Upright, short-lived perennial tussock grasses to 50 cm tall. They generally have thin, pale-green, hairy leaves and stem joints and many have a soft seed head shaped like a bottlewasher. Seed colour ranges from green-black to white depending on growth stage and the particular plant. Within the seed head individual seeds are rounded, 4–6 mm long, and crowned by a ring of many outward curved bristles.

Most have dense, compact heads, but some have clear branches. On very stressed plants this branching is suppressed. It may be sometimes difficult to distinguish between the bottlewashers in the field.

The bottlewashers grow and flower in the warmer months. All are prolific seeders.

**Common** or **ridge bottlewashers** have small side branches on the seed head whose total length is 3–5 cm long and quite open when green. They are relatively small, 30 cm tall, weakly tufted plants. They commonly have sticky, hairy, grey-coloured leaves and bearded nodes caused by long hairs. Seeds are relatively large (7–9 mm long) and hairy.

JAM

**Common bottlewashers:** open seed head

# POACEAE

JAM

**Common bottlewashers:** seed head

**Slender bottlewashers** have only a small tussock and also have distinct, fairly dense side branches on the seed head. They grow slightly larger (40 cm) than common bottlewashers, are fine stemmed and have bearded stem joints. Leaves are green, slightly hairy and have roughened margins. Young seed heads are often pink. Seeds are 4–7 mm long.

TJH

**Slender bottlewashers:** bearded nodes

TJH

**Niggerheads:** green and mature seed heads

**Niggerheads** grow to 50 cm tall and have wiry, erect stems. Leaves are 7–14 cm long and 3–5 mm wide, hairy, sticky and often have purple tinting. Stem joints are hairy. The seed heads are cylindrical, compact (3–8 cm long), spike-like and dark green, turning black when mature. The seeds have vertical ribs on their surface below the ring of feathery bristles and they turn dark grey on maturity.

TJH

**Niggerheads:** dark, compact seed heads

**Pale bottlewashers** grow as erect, wiry, 50 cm tall tussocks. They have a compact, pale, conical seed head, 3–8 cm long. The small individual seeds have vertical ribs, are white and smaller (2–3 mm) than most others.

RGS

**Pale bottlewashers:** conical seed heads

**Limestone bottlewashers** grow 40 cm tall and have a dense tussock. Leaves are often sticky and stem nodes are green, hairy and swollen. They have a compact seed head 3–10 cm long with seeds 2–3 mm long that do not have all the awns coming from a single ring at the top. The body of the seeds is white and smooth with a tuft of long, white hairs at the very base.

## Land types

Common bottlewashers occur on most land types and are mostly found on well-drained soils. They also grow on lighter soil ridges in Mitchell grass country. Slender bottlewashers, niggerheads, pale bottlewashers and limestone bottlewashers grow on red earths and gravelly or sandy soils in box, mulga and pine country.

## Grazing notes

The bottlewashers produce reasonable quality forage, but bulk is low in most years. They are short lived, but are capable of being grazed at any time. They can provide nutritious, palatable, early green pick after rain, and are fairly persistent in drier conditions. They do not persist under heavy sheep grazing pressure. Dried-off plants have low palatability because the leaves are very hairy.

JAM

**Limestone bottlewashers:** swollen nodes; compact seed heads

# Long greybeard grass

## *Amphipogon caricinus*

### Description

Upright, densely-tufted perennial to 50 cm tall. Its leaves are mostly deep bluish-green, erect, hairless, 2–3 mm wide and 3–15 cm long. They are often inrolled and turn yellowy-orange when hayed off. The seed head is a fairly dense, cylindrical cluster about 2–4 cm long with many hairs. Seeds are 6–8 mm long, grey and covered with flattened, silky hairs. After the seeds have fallen, the seed head retains many small, grey, seed valves 4–5 mm long for a long time. Long greybeard grass grows in most months if moisture is available. In winter its new growth is prostrate.

### Land types

Found predominantly in soft and hard mulga country, on acid red soils. It is particularly common in the Nebine district south-east of Charleville.

### Grazing notes

An abundance of long greybeard grass may indicate poor pasture condition and can reflect overgrazing in soft mulga country. It may be grazed when green in winter or during periods of feed shortage, but it is unpalatable in summer and when hayed off. It is frost and drought tolerant. Heavily grazed plants are pyramid-shaped.

JRM

**Long greybeard grass:** densely-tufted

# Mulga oats

## *Monachather paradoxus*

### Description

Perennial, tufted grass to 70 cm (usually 30–40 cm) tall. Stems are 2–3 mm thick with pale, smooth, swollen joints. The leaves are deep-green, 10–25 cm by 5–9 mm, usually with numerous long, white hairs. Foliage is concentrated near the base of the plant. The erect seed heads are branched and have pointed groups of seeds, 8–12 mm long, shaped like oats when young, but maturing as large, fluffy bunches of dark-centred seed. Each seed is round, 2–3 mm across with two wide, papery awns, 7–10 mm long and a thin, dark bristle between them.

Mulga oats grows at almost any time of the year after rain, has prostrate stems in winter and erect ones in summer. Flowering is mostly in spring and autumn.

### Land types

Common on red earths and sands in soft and hard mulga country. The plant can also be found in pine and box country, especially where such land types are adjacent to mulga.

### Grazing notes

One of the most palatable and nutritious grasses in mulga areas. A high proportion of it indicates good pasture condition. It can also be very common for a few years after a major drought breaks as it regenerates well in bare, droughted pastures. It is almost as valuable as mulga Mitchell grass in mulga country.

JRM

**Mulga oats:** oat-shaped seed head groups

While drought and fire resistant, mulga oats is susceptible to overgrazing and is easily lost from a poorly-managed pasture. Seed set should be allowed every few years.

## Three-awned wanderrie

*Eriachne aristidea*

## Woollybutt wanderrie

*Eriachne helmsii*

Other common name:
**Buck wanderrie**

## Mountain wanderrie

*Eriachne mucronata*

Other common name:
**Rock grass**

JAM

**Three-awned wanderrie:** purplish seed heads

### Description

The wanderrie grasses are stalky, perennial, tufted grasses generally to 50 cm tall, with woollybutt wanderrie grass to 70 cm tall. They are mostly warm season growers although they can grow slowly through the cooler months. Flowering is from spring to autumn after good rains.

**Three-awned wanderrie** is a relatively short-lived, leafy plant with large, purple-tinted seed units on short, branched heads just at the top of the tussock. The leaves are 3–12 cm long, hairy and arise from stems with dark, swollen, hairy joints. The green seed units are 8–10 mm long, hairy with a sharp point and on individual fine stalks. On ripening, two fluffy seeds, 4–5 mm long are released from each.

**Woollybutt wanderrie** and **mountain wanderrie** grasses are similar looking plants with coarse, stalky growth and short, sharp, dark-green leaves, 3–5 mm long. The seed heads are loosely-branched, drooping and start off purplish then turn white and fluffy when mature. Each seed unit has two boat-shaped valves around the hairy, 4–6 mm long seeds. Woollybutt wanderrie has a less dense tussock, much sturdier stems (2–3 mm thick), and a woolly crown below the soil. The crown may be up to 30 cm in diameter. Mountain wanderrie has two forms differing in leaf width but always grows as a compact tuft, 20–50 cm across, with a crown base 3–10 cm across and stems 1–1.5 mm thick.

### Land types

Grow primarily in sandy soils of soft mulga country. They can also be found in pine country, especially where ironbark is present. Mountain wanderrie grass also grows on shallow, rocky ridge soils in hard mulga country. Three-awned wanderrie is common on roadside soil mounds in sandy red mulga country and pine country.

TJH

**Woollybutt wanderrie:** long, loose seed heads

## Grazing notes

The wanderrie grasses are generally only palatable when young and when all the other palatable grass has been eaten out. Wanderrie is quite seasonal in its importance but provides useful forage on sand dunes in some summers. Woollybutt wanderrie is capable of producing a large quantity of forage. It indicates fair condition in soft mulga country if it is common. Mountain wanderrie is an important component in hard mulga country in any condition and provides useful roughage in drought years.

CJE

**Mountain wanderrie:** dense tussock; small, open, hairy seed heads

# Red Natal grass

***Melinis repens***

## Description

Introduced, upright, short-lived perennial grass to 90 cm tall. Stems are often elbowed at the base, 2–3 mm thick with hairy joints. It has 5–25 cm long, soft, flat, bluish-green, hairy leaves. Leaf hairs have woollen bases. The open, much-branched, silky, pinkish-red seed heads are 7–20 cm long and 8–12 cm across and become paler and fluffy when mature. Individual seeds are tear-shaped, well-spaced, 3–5 mm long and have silky-looking hairs before ripening. These hairs fluff out on the ripe seed. It grows in the warmer months and flowers in summer.

## Land types

An early coloniser of disturbed areas and roadsides on lighter soils in box, pine and soft mulga country. It lines railway tracks.

TJH

**Red Natal grass:** fluffy, pinkish-red seed head

## Grazing notes

Palatable when young, but avoided when seeding. It is not very drought tolerant and is frost sensitive.

DRH

**Red Natal grass:** hairy nodes; seed heads turn white when mature

## Silky umbrella grass

*Digitaria ammophila*

## Finger panic

*Digitaria coenicola*

## Umbrella grass

*Digitaria divaricatissima*

JAM

**Finger panic:** hairs on stems

Other common name:
**Blowaway grass**

### Description

Tussocked, perennial grasses growing to 50 cm tall with flat, broad, soft basal leaves. Seed heads have a central axis, a basal whorl of arms 12–20 cm long and several other arms off the central axis. They are strongly warm season growing plants that flower mainly summer to autumn.

**Silky umbrella grass** and **umbrella grass** both have broad, soft, hairy, blue-grey leaves and large, branched, open seed heads, 30–50 cm long. The seeds are well spaced, 2–3 mm long and hairy. Umbrella grass seeds are slightly longer (4–5 mm), less hairy, have a more pointed tip and most leaves are held fairly erect. The seeds of silky umbrella grass are well-spaced, 2–3 mm long and very hairy; its leaves curve downwards from the stems.

JRM

**Silky umbrella grass:** large, open seed heads; discrete, white, hairy seeds

JAM

**Finger panic:** silky base

**Finger panic** has greyish, hairy leaves and hairy, branched stems. It has a large, spreading seed head with small seeds widely spaced along the branches. The central axis of the seed head is shorter than that of the other two and the basal branches don't spread out as early. The seeds are 4.5–5 mm long and minutely hairy. The base of the plant is noticeably silky.

## Land types

Silky umbrella grass grows in soft mulga sand plains and red box country. Finger panic is widespread on country with heavy clays and duplex soils. Umbrella grass is widely distributed except in mulga country.

## Grazing notes

Plants of this group usually indicate good pasture condition, especially on lighter soils. They are highly palatable while green, often selectively grazed and are desirable forage plants in native pastures. Silky umbrella grass is a pioneer plant after drought or overgrazing. These grasses are not resilient to heavy grazing due to their high crown. They are active summer growers and show fair drought resistance by producing leaf during dry times. Silky umbrella grass plants are relatively short lived (2–3 years).

Umbrella grass is not as palatable as the others but it has a much deeper, sturdier crown which is more resistant to grazing. After good summer seasons, the heads of all three blow away intact and accumulate against fences and shade belts.

TJH

**Umbrella grass:** long seed head arms

TJH

**Umbrella grass:** pointy seeds

# Cotton panic

***Digitaria brownii***

## Description

Small-leafed, tussocked, perennial grass with a dark, knotty crown underground. Leaves are bluish, soft and high in the canopy. Seed heads are distinctive when mature having very fluffy, pinkish-brown seeds, 2–4 mm long on zigzagged, slightly-weeping arms. There are two forms of cotton panic: the larger form being found in the higher rainfall parts of the region. The larger form has leaves 10–15 cm long and 4–7 mm wide, often with wrinkled sections on the margin. The fine-leafed form has leaves only 2–3 mm wide and 6–10 cm long that curl easily while still green.

## Land types

Found in a range of land types with particular abundance in box, mulga and pine country. The plant is rarely dominant in a pasture. The larger form is mostly in box, ironbark and pine country while the small form is found in mulga country, especially hard mulga in the far west of the region.

JRM

**Cotton panic:** fine, hairy tussock

## Grazing notes

Usually indicates good pasture condition. These two forms are highly palatable while green, often selectively grazed and are desirable forage plants in native pastures. They are active summer growers and show fair drought resistance by producing leaf during dry times.

JRM

**Cotton panic:** pinkish, fluffy seeds

## Native panic

***Panicum buncei***

## Green panic

***Panicum maximum* var. *trichoglume***

### Description

**Native panic** is a small, erect, slender, perennial grass with 2 mm thick stems up to 80 cm tall. Leaves are 10–20 cm by 2–5 mm, largely hairless and not abundant. The seed head is 15–30 cm long and branched with drooping upper arms. Seeds are 2 mm long, dark-brown, shiny and loosely enclosed in hairless, pale-green to reddish-brown, pointed valves, 3–5 mm long. Each seed has a fine, short, 1–3 mm long stalk below it.

**Green panic** is a robust, yellowish-green, introduced perennial grass which may reach 170 cm tall. The leaves and stems are roughly hairy. Stems are purple or green and are 4–7 mm thick. Leaves are 15–40 cm long and 7–15 mm wide with a large, white mid-vein and a 2–6 mm long membranous flap where the leaf blade joins the stem. The seed head is pale-green to purplish, much-branched and drooping when young. It can be 25–30 cm long with the seeds fairly closely arranged along branch ends. The branches on a ripe head stiffen and remain long after all seed has fallen. Seeds are pale, 2 mm long and fall inside pale-green, slightly larger valves, often with a short stalk below.

DRH



**Native panic:** numerous hairless seeds on drooping seed head arms

## Land types

Native panic is found scattered through brigalow and box country on clay and grey clay loam soils. Green panic is common on roadsides and stock routes on non-acid clay, loam and sandy soils. It is sown commercially on clay soils in regions to the east with higher rainfall, but was once used in most new brigalow pastures. It commonly colonises the drip ring under large eucalypt trees.

## Grazing notes/poisonous potential

Native panic offers little forage and is never a dominant species but is commonly noticed because of its large, drooping seed head.

Green panic is a very palatable pasture plant and highly valued. Unfortunately it demands high soil nitrogen and sulfur for high vigour and leaf quality and is not drought tolerant. Buffel grass will eventually swamp it out if they are planted together in a grazed pasture.

As with other panics, photosensitisation and oxalate poisoning are potential problems but there is normally an inadequate quantity of the panics in the pastures of the region for this to be a major concern.

*For further information see Photosensitisation and Oxalate poisoning in Chapter 3.*

TJH

**Green panic:** tall and erect; open seed head

DJC

**Green panic:** numerous, pale-green seeds

## Native millet

*Panicum decompositum*

## Hairy panic

*Panicum effusum*

## Yabila grass

*Panicum queenslandicum*

## Cane panic

*Panicum subxerophilum*

TJH

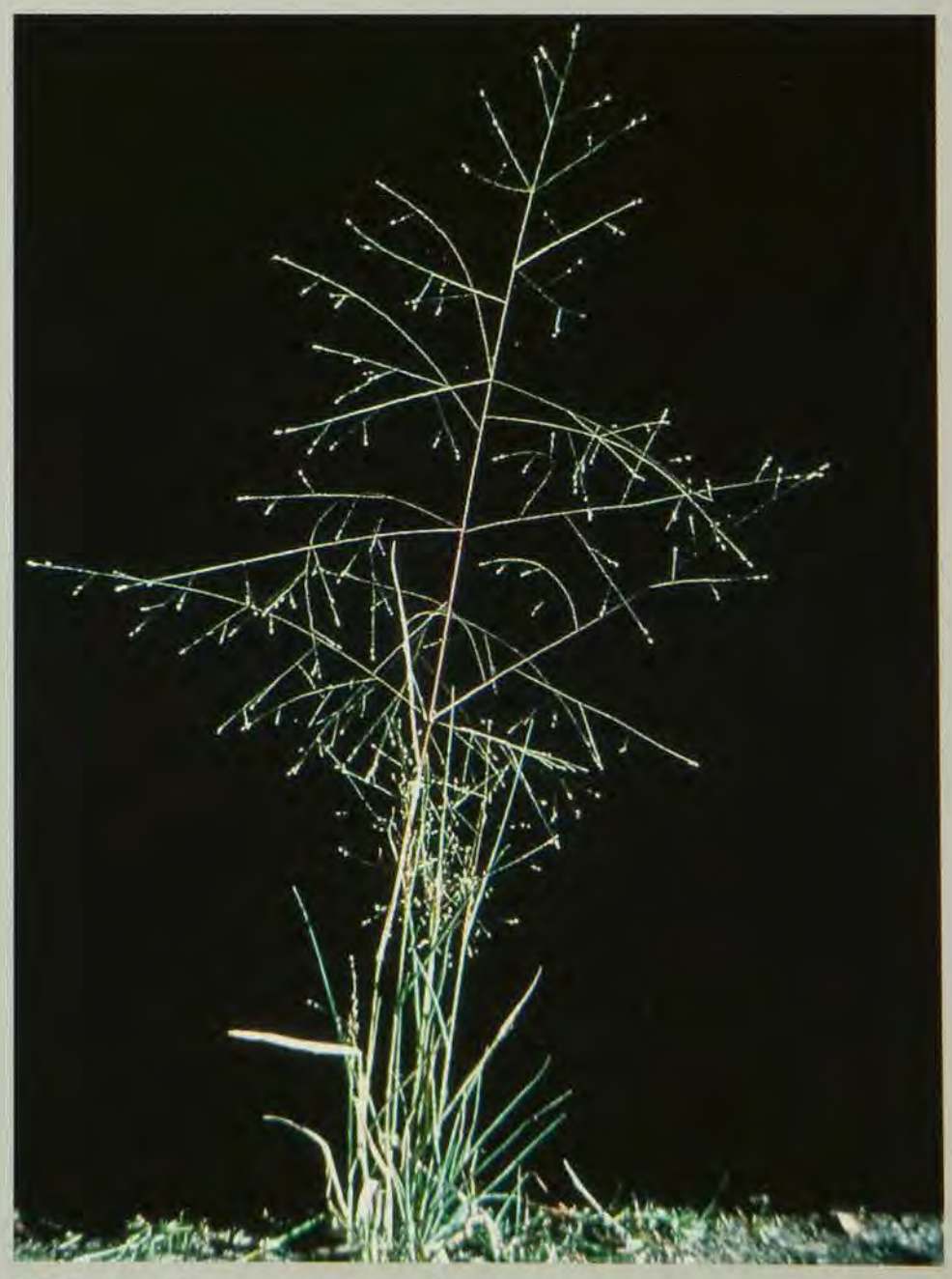
**Native millet:** coarse grass; large seed head

### Description

These grasses are upright, perennial grasses with very open, spreading, hairless seed heads made up of many fine branches and small seeds. All panic grasses are warm season growers and flower from spring to early autumn.

**Native millet** grows to 1 m high, has wide, hairless, light blue-green leaves, 10–35 cm long and 3–7 mm wide, with a distinct white mid-rib. The stems are quite erect, 3–6 mm thick and often hollow. The crown of the plant is smooth and white and usually only 5–10 cm in diameter. The seed head is very open, purplish, with small, widely-spaced, hairless seeds. Pollen sacs are deep orange. Ripe seeds are 1.5–2 mm long, shiny, dark-brown and fall as soon as they are ripe.

**Hairy panic** grows to 60 cm tall and is a smaller grass with characteristically rough, hairy, yellowish-green leaves and stems. Stems are 2–3 mm thick, semi-erect and bearing a purplish-brown, open, well-branched seed head. The seed head branches are sometimes symmetrically displayed. Seeds usually occur singly on a short stalk, 2 mm long, and are pale-brown and shiny. When ripe, the whole head often blows away with many seeds still attached.



ERA

**Hairy panic:** small with hairy leaves

**Yabila grass** is a leafy plant with a large crown, 15–25 cm across and grows to 1 m high. It has very erect, dull-green leaves only 2–4 mm wide, and much-branched, large seed heads up to 40 cm long with the lowest branches in a whorl of four. Seeds are pale-green, hairless, 3–5 mm long, pointed and often in groups of two or three. When mature, the whole head blows away with many pale-coloured seed valves still attached.

**Cane panic** is a rigid, dark-green, hairless grass with very little leaf. Its stems are 1.5–2 mm thick with smooth nodes. Leaf blades are 2–10 cm long, dark-green, often in-rolled, but snap off easily to expose the 2–3 mm long, membranous flap at the junction with the stem. The seed head is purple, much-branched with all branches initially semi-erect. The arms spread out after flowering and are stiff and rough to feel. Seeds are 2 mm long, shiny, dark-brown and widely spaced within the head. The whole head snaps off easily if disturbed or grazed.

JAR

**Yabila grass:** tufted with a large crown

## Land types

Native millet and yabila grass occur on heavy clay soils of Mitchell grass country, especially in areas that receive occasional flooding. Native millet also occurs on lighter soils in box country. Hairy panic and cane panic are more likely to be found on sandier soils in pine, mulga and box country. Hairy panic is also found on gravelly ridges in hard mulga country through to sandhill and flood plain country in the far west of the region.

## Grazing notes/poisonous potential

Apart from cane panic, panic grasses are useful summer grasses. They can produce a large amount of leafy, palatable forage after summer rains and some—such as hairy panic—can retain their leaf into mild winters. These grasses are especially palatable when young and before seeding. Yabila grass is not as palatable as the other panics. Cane panic and native millet tolerate heavy grazing but the other panics are sensitive to overgrazing. Most panics produce an abundance of seed but it drops quickly as individual flowers and seeds ripen over several weeks.

Panics can cause photosensitisation, especially in young sheep. This often occurs three to four days after grazing drought-stressed (wilted or stunted) stands and for up to two to six weeks after rain where sheep are grazing extensive stands of young, green growth.

*For further information see Photosensitisation in Chapter 3.*

## Hoop Mitchell grass

***Astrebla elymoides***

## Curly Mitchell grass

***Astrebla lappacea***

## Barley Mitchell grass

***Astrebla pectinata***

## Bull Mitchell grass

***Astrebla squarrosa***

JAM

(L to R): **Bull, barley, curly and hoop Mitchell grass**

### Description

The four Mitchell grasses are densely-tufted, summer-growing, perennial tussock grasses, 30–90 cm high. They can be separated on the size and arrangement of seeds along the seed head axis.

**Hoop Mitchell** is the second most frequent Mitchell grass in the region. It is normally only abundant in small areas. Without seed heads hoop looks similar to curly Mitchell. It has long, narrow, 2–3 mm wide seed heads on stems that are often more than 1 m long. The seeds are only 1–2 mm wide and have very short bristles. They are well spaced along the lower half of the stems and partly overlapping near the top. The stems 'hoop' or droop over to the ground and become distinctly golden in colour as they mature.

TJH

**Hoop Mitchell grass:** long, weeping seed heads; seeds small and widely-spaced

**Curly Mitchell**, the most common in the region, has bristly, overlapping, V-shaped seeds, 5–10 mm long and loosely arranged in two rows along the 8–30 cm long and 5–10 mm wide flower stem. The flower stem is mainly single, but may be divided into two in good seasons. Leaves are 10–25 cm long and 5–8 mm wide with a white collar at the stem, a tapered point and few hairs.

**Barley Mitchell** is rarely seen except in the driest parts of the region. It has a 2 cm wide, compact and densely-packed seed head. The seeds are in two rows with pale, papery awns all on one face of the head. There are no prickly bristles on it compared to bull and curly Mitchell. Vegetatively, the plants are similar to curly Mitchell, although many leaves have fine, 5–8 mm long hairs near where they join the stem.

**Bull Mitchell**, infrequently seen, has the most coarse and erect stems and leaf of the Mitchell grasses. It has 20–40 cm long leaves with a distinct, pale mid-vein and a thick, V-shaped cross-section at the base. The seed head is compact, unbranched, 10–14 cm long and 10–15 mm wide, and held well above the foliage like barley Mitchell. Seeds are similar to curly Mitchell except their spiky awns have a distinct small hook on the end. The seeds are also plumper and more hairy, densely and evenly packed in two rows on the side of the stem which remains erect at maturity.

## Land types

The grasses typically occur in Mitchell grass downs on grey, brown or black cracking clays. They are found less-commonly in brigalow–belah country and on small patches of heavy clay in box country. Bull Mitchell is only found in depressions in frontage country. It mostly grows in wetter areas.

Barley Mitchell is more common in the far south-west, near Cunnamulla, and around claypans.

JAM

**Curly Mitchell grass:** seeds arranged in two rows on flower stem

## Grazing notes

Mitchell grasses are among the most resilient grasses to grazing, drought and fire. However, extremes of these will destroy the Mitchell grass tussocks allowing an increase in undesirable whitespear and feathertop grasses, as well as annual grasses and forbs. Mitchell grasses do not like prolonged flooding. They are among Australia's most valuable native grasses. Lenient grazing following severe drought or flooding is required to allow tussock recovery, seed production and seedling establishment to regenerate a dense Mitchell grass pasture. Established plants are long lived but seeds do not have strong dormancy and will not live for long in a healthy pasture.

Mitchell grasses are palatable, producing a good quality green pick following summer rain. Dry feed stands over very well, but will decline in quality rapidly after winter rain, heavy dew or frosts. In very wet summers, the quality of the bulky growth is comparatively low because of a shortage of soil nitrogen.

JAR

**Bull Mitchell grass:** tall, robust grass

JAM

**Barley Mitchell grass:** upright seed heads

Mitchell grasses form a good, balanced pasture when mixed with some annual grasses (such as Flinders grass) and forbs (such as tarvine and cow vine).

Dense Mitchell grass stands can be used for harvesting seeds. Ploughing and cropping will quickly eliminate these grasses forever. If returning cultivated Mitchell grass downs to pasture, it is best to plant Mitchell grass seed rather than let old cultivations re-seed naturally.

# Mulga Mitchell grass

*Thyridolepis mitchelliana*

# Small mulga Mitchell grass

*Thyridolepis xerophila*

## Description

The mulga Mitchell grasses are upright, tufted, perennial grasses to 40 cm tall. Stems are furry with bearded, brown joints that can take root if the plant slumps over in wet years. The widely-spaced arrangement of the short, broad, pointed leaves on the stems is characteristic of these plants. Leaves are 2–10 cm long, 5–8 mm wide, deep-green and have a sparse row of hairs along the leaf margins. Seed heads are unbranched and 2–5 cm long with loosely-packed, hairy or bristly seeds. Seeds are tear-shaped, 4–6 mm long with a distinct beak and two valves that have a window in the sides.

RGS

**Mulga Mitchell grass:** typical seed head

DRH

**Small mulga Mitchell grass:** short, pointed leaves

Both plants are similar in appearance and pastoral value. The main difference is that small mulga Mitchell has a slightly shorter (by 1 mm) and less hairy seed and a less tufted growth habit. Also, it commonly spreads by rooting down at the stem joints. These grasses will grow all year if moisture is available. Plant growth is prostrate in winter and erect in summer.

## Land types

Prefer softer red earth and sandy soils and are mainly confined to mulga country. They can also be found in the lighter soils of box country and in pine country.

## Grazing notes

Mulga Mitchell grasses supply green pick all year when adequate soil moisture is available. They are a valuable winter feed in the mulga and provide a moderate bulk of palatable, highly nutritious fodder. The mulga Mitchell grasses are long-lived and indicate good pasture condition, especially in soft mulga country. They are fire, frost and drought tolerant but can only tolerate moderate grazing pressure.

TJH

**Small mulga Mitchell grass:** short leaves grow almost horizontally

# Small burrgrass

***Tragus australianus***

Other common name:
**Sock grass**

## Description

Small, annual grass with a prostrate rosette of leaves and upright seed heads to 20 cm tall. It has short, flat, twisted leaves, 3–8 cm long and up to 5 mm wide, often with wavy, short-spined margins. The seed head is a cylindrical spike, 7–15 cm long on a thin, unbranched, whitish stalk and is composed of numerous, small-spined burrs. Joints on the seed head stalk are hairless and black. Seeds are pale, 3 mm long, sharp-pointed and covered in curved spines that catch in socks. Small burrgrass is a warm season grass.

JRM

**Small burrgrass:** seeds with small spines

TJH

**Small burrgrass:** small annual grass

## Land types

Occurs on all soil types but is more common on light soils. Mostly found in pine, box and soft mulga country, it often occurs in disturbed areas such as around sheds and stock yards and abandoned cultivation.

## Grazing notes

Palatable when young and green and responds well to early spring rains following dry seasons. The plant has a short life cycle and disintegrates rapidly after flowering. The burr contributes to vegetable fault in wool and has no grazing value for cattle. It is a typical coloniser of overgrazed land.

# Poverty grass

## *Eremochloa bimaculata*

### Description

Short, mat-forming, perennial grass less than 30 cm tall. The yellow-green leaves are usually folded, hairless, 3–8 cm long and 3–4 mm wide. They grow in discontinuous clumps from underground rhizomes. Seed heads are 5–8 cm long and appear at the end of 5–15 cm long, unbranched stems. Seeds are closely packed in a disjointed single row with a downward-curved tip. Seeds are green, fringed with short, curved bristles on both edges, 3–4 mm long and 2–3 mm wide. The plant is summer growing and produces few seed heads.

RGS

**Poverty grass:** obvious bristles on seeds

### Land type

Occurs in the northern part of the region on sandy and loamy surfaced soils of pine and ironbark country. Inconspicuous.

### Grazing notes

Poverty grass is grazed. Overgrazing of more palatable perennial grasses leads to an increase in poverty grass.

ERA



**Poverty grass:** leafy; mat-forming

## Ray grass

*Sporobolus actinocladus*

## Fairy grass

*Sporobolus caroli*

### Description

Small, short-lived perennials with a dense crown of wide, slightly-hairy leaves. The seed heads rarely grow above 40 cm tall. Leaves are 5–10 cm long and 4–7 mm wide. They have very different shaped seed heads although seeds of both are tiny and hairless. **Ray grass** has a pyramid-shaped seed head with a whorl of arms 3–6 cm long at the base and a number of other shorter arms higher up the central axis. The arms are 1 mm thick and lined with tiny, grey seeds that squeeze their light-brown grain out when ripe. In calm weather these grains often cluster on the outside of the seed arms like small grains of sand.

DJC

**Ray grass:** pyramid-shaped seed head

**Fairy grass** seed head is very dark, much-branched with tiny single seeds on each fine branch tip. Initially it has a broom shape but eventually expands to an oval or rounded form, 25–45 cm long with extremely fine branches. The main stalk is often not erect and may even lie almost flat in spring and autumn. Both plants grow and ripen seed in warmer months.

TJH

**Ray grass:** dense crown of wide, slightly-hairy leaves

### Land types

Can be found on most land types but prefer wetter areas on clays or run-on areas on sandier soils.

### Grazing notes

Large amounts of this group of plants indicate poor condition in Mitchell grass, brigalow–belah and box woodland pastures. They are useful colonisers of scalded and eroded clay soils.

# POACEAE

TJH

**Fairy grass:** short grass; open, delicate seed head with small, black seeds

Fairy grass and ray grass, though palatable, produce little forage bulk except for short periods after good summer rains. They are valuable sheep fodder before they dry off. Ray grass is less palatable but a better claypan coloniser.

## Western rat's-tail grass

*Sporobolus creber*

## Slender rat's-tail grass

*Sporobolus elongatus*

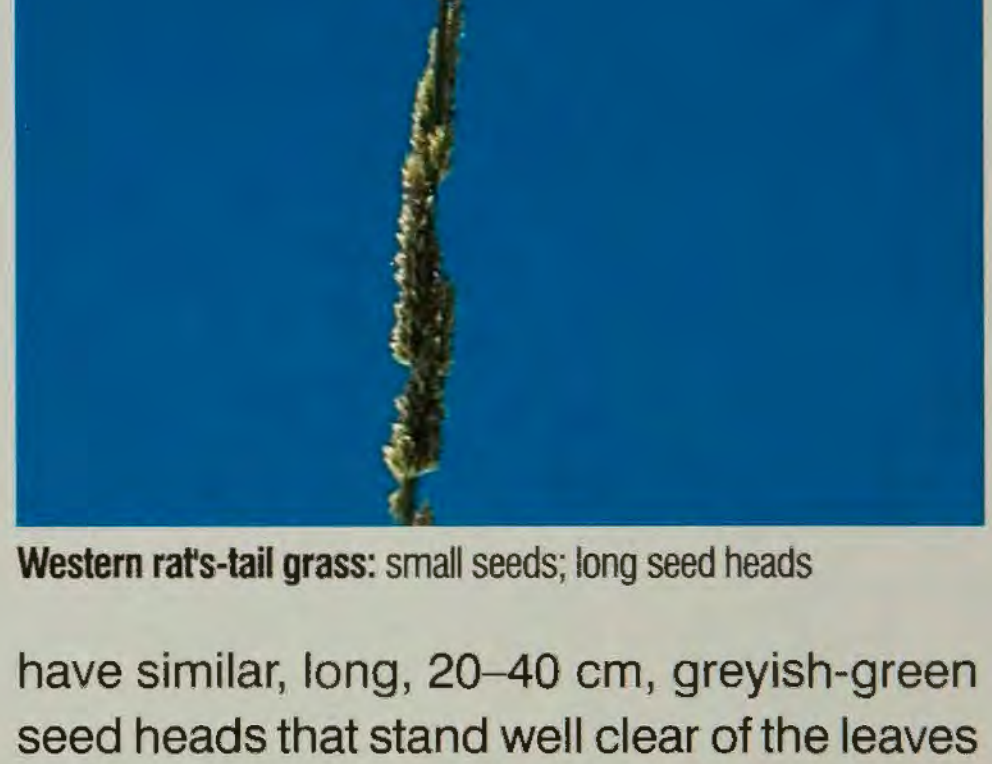
## Rat's-tail couch

*Sporobolus mitchellii*

### Description

These perennial plants all have thin, unbranched seed heads packed with very small, hairless seeds that squeeze their grains out of the flowers after ripening. They grow and seed in the warm months.

**Western rat's-tail** tends to occur in large, open, 10–50 cm diameter tufts with few leaves while **slender rat's tail** grows in small, dense, leafy tussocks 3–10 cm across. Western rat's-tail and slender rat's-tail grass



TJH

**Western rat's-tail grass:** small seeds; long seed heads

have similar, long, 20–40 cm, greyish-green seed heads that stand well clear of the leaves which are clustered at the plant crown. The seed head of western rat's-tail tends to droop outwards at the tip. Both have thin, hairless, often inrolled leaves.

**Rat's-tail couch** grows only 30 cm tall and forms an open mat because it spreads freely by stolons which root readily at the joints. Leaves are 3–9 cm long and 2–3 mm wide and often have a stiff, sharp tip. They are usually well spaced along the stolons and lack any red or purple tints. The very thin seed head is 3–12 cm long and pale-green initially, turning pale-brown as the seeds ripen.

DJC

**Western rat's-tail grass:** large tufts; few leaves

# POACEAE

ERA

**Slender rat's-tail:** small seeds often in clumps

JAM

**Rat's-tail couch:** short, dark-green leaves

## Land types

Western rat's-tail grows on Mitchell grass and box country on heavy cracking clays in the western Maranoa. Slender rat's-tail grows on grey loams in the east of the region. Rat's-tail couch grows on clays, along watercourses and in southern flood plains, and less commonly along bore drains.

## Grazing notes

Western rat's-tail has little forage value and is not usually abundant but may increase under persistent heavy stocking. Slender rat's-tail provides good green pick to sheep but is not abundant in most pastures where it occurs. Rat's-tail couch is not a preferred species because of the sharp leaf tips and its stalkiness. However, it is often green when other feed has dried off, providing useful sheep fodder at those times.

JAM

**Rat's-tail couch:** thin, pale-green seed head

# Five minute grass

***Tripogon loliiformis***

## Description

Very small, tussocked, perennial grass to 20 cm tall, but usually less than 10 cm. Tussocks are commonly 2–4 cm diameter and 6 cm tall, leafy, with remnants of a few old seed heads. It can grow year-round when moisture is available and re-shoots rapidly after rain. Leaves are less than 1 mm wide, curled, sometimes hairy and only 1–4 cm long. The plant has small, slender, hairless, spike-like seed heads, 6–15 cm long. Tiny, grey seeds are evenly packed along the head. The seed head turns pale and curls over as it ripens but the seeds hold on well. It is quick-responding after rain and disappears rapidly as conditions become dry. The plant flowers in spring and summer.

## Land types

Grows on most soil types except cracking clays. It is most common on sandy and loamy soils in soft mulga and box country and colonises well on bare and scalded areas and in shade.

## Grazing notes

A dominance of five minute grass indicates poor pasture condition in box and mulga country. Although palatable and nutritious when green and providing pick for sheep, it lacks forage bulk. It persists under heavy grazing and drought and is useful as an early coloniser.

TJH

**Five minute grass:** very small tuft; old seed heads visible

## Woollybutt
*Eragrostis eriopoda*

## Neverfail
*Eragrostis setifolia*

## Purple lovegrass
*Eragrostis lacunaria*

## Mulka
*Eragrostis dielsii*

## Stinkgrass
*Eragrostis cilianensis*

## Granite lovegrass
*Eragrostis molybdea*

## Weeping lovegrass
*Eragrostis parviflora*

## Dainty lovegrass
*Eragrostis microcarpa*

## Brown's lovegrass
*Eragrostis brownii*

## Clustered lovegrass
*Eragrostis elongata*

## Woodland lovegrass
*Eragrostis sororia*

### Description

The lovegrasses are a very widespread group of subtropical, semi-arid grasses with dozens of species in the region. They are often difficult to identify and those included here are examples of the more common forms. They are usually tufted, summer-growing annuals or perennials with smooth stems and stem nodes. They are sometimes stalky with a large proportion of seed head and are prolific seeders. The seed heads have discrete, densely-packed, flattened, lens-shaped groups of seeds (spikelets) in two overlapping rows on the ends of thin branches. The seeds in the spikelets are minute and look like fine sand. Arm arrangements within a seed head vary enormously as does the general openness of the seed head. In this book the species are subdivided into four management groups:

- tufted plants of the more arid regions with variable seed head packing
- plants with long, thin, purple seed head groups
- plants with well-branched seed heads and grey seed groups
- plants with fairly narrow, unbranched seed heads.

TJH

**Woollybutt:** spiky-leaved; woolly base

JAM

**Woollybutt:** seed heads

## Group 1:

**Tufted plants of the more arid regions with variable seed head packing**

**Woollybutt**, 25–50 cm tall, and **neverfail**, 20–40 cm tall, are both spiky-leaved, stalky, dark-green, perennial plants with erect, elongated seed heads and small, individual groups of seeds. Leaves are 2–8 cm long and 1 mm wide. Woollybutt has a large, distinct, white, woolly crown at ground level. Neverfail has a smooth crown and a similar shaped seed head which goes white when ripe. Seed groups are 3–12 mm long and 1.5–2 mm wide and, in woollybutt, are often tinged with purple.

JRM

**Neverfail:** spiky-leaved; smooth base

TJH

**Purple lovegrass:** fine, purple seed head

## Group 2:

**Plants with long, thin, purple seed head groups**

**Purple lovegrass** and **mulka** are both small, palatable plants, 30 cm or less tall. The purple seed heads have seeds in thin (1 mm wide), elongated groups, 1–3 cm long. Mulka is a poorly-leafed, short-lived, prostrate perennial or annual. It has long seed head groups in two distinct rows on either side of the main seed head stem which is often lying on the ground. Purple lovegrass is fine-stemmed, hairy-leafed, erect or sprawling and weakly perennial. The much-branched, purple seed head has seed groups, 4–25 mm long.

# POACEAE

JRM

**Mulka:** small, fine-stemmed grass

## Group 3:

### Plants with well-branched seed heads and grey seed groups

**Stinkgrass** is an annual, 40–50 cm tall. It has an unpleasant odour; fairly wide, pale-green leaves; dark green to purplish seed groups, 8–10 mm by 2–3 mm and often very dark nodes. It tends to grow in distinct patches. **Granite lovegrass** is a 40–70 cm tall perennial. Both grasses have well-branched seed heads with the seeds grouped into flat, large, broad groups, 5–10 mm long and 2–3 mm across. Granite lovegrass usually has hairy leaves concentrated in a sparse crown at ground level. The seed head of granite lovegrass is a large, open panicle with sturdy, stiff branches on long (25–40 cm) leafless stalks that readily pull off intact once ripe.

TJH

**Granite lovegrass:** hairy leaves; sparse crown

**Weeping lovegrass** is a 90 cm tall, fine, tufted annual. It is hairless and relatively leafless with many fine, 20–30 cm long arms on each seed head which weep over and have very small (2–3 mm by 1 mm), greyish-green groups of seeds on short, thin, secondary arms.

JRM

**Weeping lovegrass:** tall; open, drooping seed head

TJH

**Stinkgrass:** big seed head

TJH

**Stinkgrass:** many spikelets

JRM

**Dainty lovegrass:** pyramid-shaped seed head

**Dainty lovegrass** is a small, fine perennial to 50 cm tall, with a strong, leafy tussock. Stems and leaves are slightly hairy, leaves grow 5–12 cm long. The seed head is greyish-green, pyramid-shaped, 5–20 cm long with unbranched side arms. The lowest arms are 5–6 cm long and in a horizontal whorl at the base of the erect, main seed head stem. Seeds are greyish, minute and densely packed along each arm.

ERA

**Brown's lovegrass:** very pale seed heads

## Group 4:

### Plants with fairly narrow, unbranched seed heads

**Brown's lovegrass**, a perennial to 40 cm tall, has very pale, narrow, erect seed heads with tightly packed seed groups held close to the main stem. Brown's lovegrass seed heads have an uninterrupted arrangement up the main axis, while clustered lovegrass heads are unevenly arranged.

JRM

**Clustered lovegrass:** clustered seed head

**Clustered lovegrass** is a small, densely-tufted, short-lived perennial with fine stems and hairless leaves. Leaves may grow up to 25 cm long and 4 mm wide but are mostly 5–10 cm long and semi-erect. The seed heads start as dense clusters of short, pale seed groups low in the crown. These then elongate rapidly on stems 4–16 cm long that bear along them elliptical groups of seeds, 3–8 mm long and 2 mm wide. Seed groups are mostly yellowish-green, sometimes with purplish tints.

**Woodland lovegrass** is a small, hairless, bluish-leafed plant with an irregular, narrow seed head, 6–15 cm long and tinted with pink. The leaves are 5–10 cm long and 2–4 mm wide and often have a distinct, white mid-vein. The seeds are arranged in

ERA

**Woodland lovegrass:** typical pinkish seeds

quite large groups shaped like a small, narrow guitar pick on very short stalks off the main seed head stem. Ripe seeds shed first from the tip of each group producing a notched appearance in the older groups.

## Land types

The lovegrasses are mainly found in the loamy and sandy soils of box, ironbark, mulga and pine country. Brown's, clustered, dainty, granite and woodland lovegrasses are common in box and ironbark country. Stinkgrass grows on clay loam soils in disturbed areas—especially abandoned cultivation. Mulka and woollybutt are more common in mulga country in the western parts of the region. Woollybutt prefers sandy soils while mulka grows in silty run-on areas. Purple lovegrass is mostly found on red sandy soils in a variety of land types. Weeping lovegrass often grows on the edge of wetter areas such as road tabledrains in all types of country—the extra water is more important than soil type. Neverfail prefers heavier clay soils of frontage country and gilgais in lighter soils.

## Grazing notes

A predominance of the lovegrasses can indicate poorer pasture condition in box, ironbark and pine country. An increased abundance of woollybutt in soft mulga country can indicate a drop in pasture condition in this land type also. Neverfail, mulka and woollybutt are useful pasture plants in the west of the region but a dominance of any of these indicates degraded pasture.

New growth of most lovegrasses, except for stinkgrass, is grazed, but plants rapidly become stemmy and are ignored by stock when mature. In drier, western parts of the district they provide useful dry season and drought feed. Purple lovegrass is the most palatable of this group, and woollybutt is a valuable forage species. Woollybutt withstands persistent grazing, but is difficult to re-establish if grazed out. New growth can be encouraged by a cool season burn on moist soil. A hot burn when the soil is dry is likely to kill woollybutt.

Granite lovegrass has little leaf and is unpalatable and undesirable.

Woodland, dainty, clustered and Brown's lovegrass are all moderately palatable when green although relatively unproductive. They occur on less fertile soils where valuable natural grasses have little persistence, so are regarded as useful plants.

TJH

***Eragrostis*:** typical spikelets

# Sticky spinifex

*Triodia marginata*

# Buck spinifex

*Triodia mitchellii*

## Description

Slow-growing, perennial grasses that form large, dense, spiky tussocks or mounds up to 2 m in diameter. They have stiff, coarse leaves, 15–35 cm long and 2–3 mm wide, and sticky flowers with a strong honey smell. The seed head stem of spinifex plants is very erect, 50–100 cm long with well-branched heads at the top. Heads are 10–20 cm long with numerous oval to heart-shaped clumps of yellow to purplish seeds. These plants are green all year round and flower in response to heavy rain.

**Sticky spinifex** has a considerable amount of sticky resin on the leaf bases and its seed groups are much broader (4–6 mm) than those of buck spinifex. The base of the last leaf below the seed head turns pale and curls back from the stem as it dries. Seeds are straw coloured, 4–8 mm long and 2 mm wide, slightly hairy at the base but rarely contain grain. **Buck spinifex** is very similar to sticky spinifex except that the old, uppermost leaf does not fold back from the stem and there is less resin on the stems. Its seed head is thinner and has smaller seed groups.

## Land types

There are many species of spinifex and they are found only in Australia. The two spinifex plants described in this region grow in isolated dense colonies on sandy soils on pine, box and mulga and ironbark country. Sticky spinifex is found mainly in the Charleville area. Areas of buck spinifex form a minor land unit within pine country.

## Grazing notes

Drought tolerant and useful as drought fodder. They compete with more desirable grazing plants. Spinifex is highly flammable, even when green. It is often burnt to provide fresh growth and to control woody weeds. Horses eat the seed heads, but other stock avoid the plant unless very hungry. It is possible to eliminate spinifex from pasture by persistent heavy grazing with sheep after burning but this ultimately leads to other environmental damage. The coastal spinifex used for beach reclamation is not related.

DRH

**Buck spinifex:** discrete, spiky, round tussocks

# Golden beard grass

## *Chrysopogon fallax*

### Description

Yellowish-green, leafy, tussock to mat-forming perennial grass with leaves concentrated at the base. The upright seed heads extend to 120 cm tall. Stems and foliage of a single plant may rise from the ground as a tussock or in widely scattered places (often as a ring), or as a mat up to 4 m diameter. The plant's main growing points are on underground rhizomes. This characteristic means that the plant will often appear as a diffuse patch rather than as a compact plant. It has a characteristic stringy or fibrous butt underground. The leaves are 15–25 cm by 2–4 mm, narrow, rough and slightly curled. Golden beard grass has a spreading, much-branched seeding head up to 15 cm long, which is normally well clear of the foliage. Main branches arise in whorls. The flowers are purplish to light-brown with bright-yellow pollen sacs. The seeds are 7–9 mm long with a 2–4 cm bent bristle. Ripe seeds fall off easily and the seed head stalk breaks off very readily when ripe. It is a warm season grass and flowers from spring to autumn but only after good rains.

TJH

**Golden beard grass:** open seed head

RGS

**Golden beard grass:** drooping, leafy base

### Land types

Grows in box, ironbark and pine country, on a wide range of soils. It also occurs in soft mulga country and on flood plains as isolated plants.

### Grazing notes

Palatable and provides good quality forage, though it lacks bulk and its nutritive value drops markedly at maturity. The plant has a strong root system and is very resistant to drought and grazing. During prolonged droughts it shrivels up and the aboveground parts disappear until good rains return. When it is found in large stands it can indicate overutilisation of the pasture. Pigs often dig up the roots.

# Rough speargrass

## *Stipa scabra*

### Description

Annual or short-lived perennial species with very thin, rough, erect leaves and small, very dense tussocks. The stems grow very erect to 70–100 cm high; the leaves are 10–20 cm by 1–1.5 mm and are concentrated near the crown. Seed heads are yellowish-green with numerous long, thin seeds that weep over at the top in some cases. Ripe seeds are dark-brown, 8–12 mm long, sharp-pointed with a sturdy 3–7 cm long corkscrew-like bristle at the top and a tuft of brown hairs at the sharp end. Rough speargrass is a cool season grower that germinates or starts growth in autumn and flowers in spring.

TJH

**Rough speargrass:** single curly awn on seeds

DRH

**Rough speargrass:** erect tussocks

### Land types

More common in the southern part of the region because of the higher winter rainfall. Rough speargrass grows on duplex and red earth soils in mulga, box and pine country. It is found particularly under box trees in mulga country around Charleville.

### Grazing notes

Produces good feed when young and can be stimulated to produce more leaf and have its seed set suppressed by heavy grazing in early spring. It produces seeds which cause severe vegetable fault in wool. During high humidity or when the seeds become wet they can 'corkscrew' into the ground and become buried. They also 'corkscrew' into the softer flesh and eyes of animals causing distress, irritation and sores. This plant is undesirable in sheep pastures but provides valuable green grass in wet winters. If possible, keep sheep out of heavily-infested paddocks when the seed is setting. Seed set can be minimised in dense stands by spraying with a weak concentration of glyphosate herbicide at the early flowering stage.

# Slender bamboo grass

*Stipa verticillata*

## Description

Relatively leafless, dark-green, cane-like perennial which grows to 150 cm tall. Stems are 2–3 mm thick, smooth and very erect. Leaves are small, narrow and pointed when present but break off readily. Small tufts of leaves at a high joint on the stem are common. The seed head is a pale-green, (sometimes purple-flecked) mass, 20–40 cm long and 5–10 cm wide, of soft, fine-twisted seeds. The seeds are small (2.5 mm), not sharply pointed and have a fine, twisted bristle 2–5 cm long. Slender bamboo does not have a strong seasonal pattern to its growth.

## Land types

Common in the eastern part of the region because of the higher winter rainfall. It grows particularly under tree cover in brigalow and myall country and on creek banks in all land types.

## Grazing notes

Generally poorly grazed by stock. A high proportion of it indicates an absence of fires and either continuous cattle grazing or prolonged periods of no grazing in the recent past.

DJC

**Slender bamboo grass:** open, weeping seed head; single-awned seed

# Purple plume grass

***Triraphis mollis***

## Description

Purple plume grass is a tufted, stalky, upright perennial grass to 70 cm tall. It has narrow leaves 8–30 cm long, with two tufts of hairs where they join the stem. The conspicuous feature is long, dense, feathery, unbranched seed heads, 6–25 cm by 1–2 cm which are often distinctly purple. The tips of large seed heads usually bend outwards. Seeds are densely packed on seed heads and are very thin, 4–5 mm long, with three fine, straight hairs, 5–7 mm long, atop each one. Ripe seeds are pale and produced in abundance. Purple plume grass grows in warmer months and flowers from spring to autumn.

## Land types

Occurs in western soft mulga country on sandy soils. It can also be prominent in sandhill country and on sand dunes in flood plain country.

JAM

**Purple plume grass:** dense, feathery seed heads

## Grazing notes/poisonous potential

Rarely an important species, but can become dominant in pastures as it is seldom grazed. Dense, lush stands may cause poisoning of hungry sheep when there is no alternative feed.

*For further information see Cyanide poisoning in Chapter 3.*

JAM

**Purple plume grass:** tufted, stalky perennial

# Comet grass

***Perotis rara***

## Description

Very small, annual grass with a crown of short, prostrate leaves and seed heads to 20 cm tall when seeding. Leaves are 2–4 cm long with scattered, coarse hairs on the margins. It has long, reddish, open, unbranched, Christmas tree-shaped seed heads, 10–20 cm long and 3–4 cm wide. The seeds have two long, thin, straight awns 2–4 cm long and are held horizontal before ripening and then bend downwards and fade in colour as they mature. The point of each seed is moderately sharp. Seed heads vary between upright and almost prostrate depending on growing conditions. Comet grass only grows in the late spring and summer period. It flowers late in summer and dies off in early autumn as conditions cool.

## Land types

Prefers sandy and duplex soils in box, mulga and pine country.

## Grazing notes

Produces little leaf material so is not a significant source of forage for cattle or sheep. It is useful as a colonising grass in pasture recovering from drought. Where green plants occur in bulk they are palatable and nutritious for a short time until the seed head appears. It has a distinct appearance in the early flowering stage when the seed head is deep pink.

DRH

**Comet grass:** reddish, open, Christmas tree-shaped seed head

## Jericho wiregrass

***Aristida jerichoensis***

## Curled wiregrass

***Aristida platychaeta***

## Purple wiregrass

***Aristida ramosa***

## Dark wiregrass

***Aristida calycina***

## Feathertop wiregrass

***Aristida latifolia***

## Kerosene grass

***Aristida contorta***

## White speargrass

***Aristida leptopoda***

## Many-headed wiregrass

***Aristida caput-medusae***

Other common name for this group:
**Three-awns**

### Description

The wiregrasses are strongly-tufted, upright, wiry, mainly perennial, warm season growers. They have hairless stems and a sparse amount of leaf. They range from 30–120 cm tall and flower rapidly after spring or early summer rain.

TJH

**Jericho wiregrass:** upright, coarse stems

The wiregrasses have three distinct, hair-like bristles (awns) in a triangular layout coming from the top of a thin, sharp-pointed seed. The seeds differ in shape and size, the degree of twisting of the bristles and also the length of the awns. No other common grasses have this three-awn shape. They have the potential to be weeds in overgrazed pastures and abandoned cultivations. Several dozen species occur in the region and many are hard to tell apart.

Most of the common wiregrasses in the region can be classified into three groups based on their seed heads, with one other group for the rest:

- Plants with long, narrow seed heads without widely-spread branches; seeds have awns less than 3 cm long
- Plants that have open seed heads with a few short branches; seeds have short awns
- Plants with awns greater than 3 cm long; awns are tightly *twisted* around each other for up to 3 cm directly above the seed
- other wiregrasses.

ERA

**Jericho wiregrass:** long, thin seed head

## Group 1:

### Plants with long, narrow seed heads without widely-spread branches; seeds have awns less than 3 cm long

Most species in the region fit into this group. **Jericho wiregrass** has two varieties: one with fine stems to 40 cm high; the other with coarse stems to 90 cm high. Both have tough wiry stems and small seeds (4–7 mm) with short, even-lengthed awns, 12–25 mm long. The 5–25 cm long head has small branches held close to the stem giving a dense spike-like appearance. Its seeds are green to purplish when developing and become straw-coloured with maturity. The plant has a bluish-green leaf when growing and some lower stem branching. Stem joints are reddish or purple and slightly swollen and the crown of young plants is often pinkish.

**Curled wiregrass** grows to 35 cm tall. It is upright, greyish-green in colour and has fine stems and leaves. It has small seeds and fine, curly leaves at the base and lower third of the plant. The seed head is 5–15 cm long and quite densely packed with seeds. Seeds are 5–6 mm long with three equal-length awns, 8–12 mm long, that twist at right angles to the seed axis when ripe.

TJH

TJH

**Curled wiregrass:** fine, curly lower leaves

**Purple wiregrass** grows to 70 cm tall. It is upright and wiry with much-branched stems. Leaves are greyish green, 3–15 cm long, flat at the base, in-rolled and pointed. Stem joints are deep-purple. It has unbranched seed heads, 8–25 cm long, with widely-spaced, fairly small (8–12 mm) seeds with equal-lengthed awns, 10–20 mm long. The young seeds are purple and ripe seeds are fawn coloured.

ERA

**Purple wiregrass:** purple stem joints

# POACEAE

ERA

**Dark wiregrass:** open, branched seed heads

TJH

**Dark wiregrass:** purple seeds

## Group 2:

**Plants that have open seed heads with a few short branches; seeds have short awns**

**Dark wiregrass** grows to 60 cm tall. The stems have darkened and thickened nodes and the plant produces little leaf. It is coarse and wiry, with purplish seed heads, 12–20 cm long, which are loosely packed with seeds. Seed heads have a spike-like shape when young, becoming distinctly stiffly-branched and open when mature. There is a distinct lump where each seed head arm joins the central stem. The plant has small to medium seeds, 6–14 mm long, and awns 8–25 mm long. Seeds have dark spots on them and are 1 mm thick.

## Group 3:

**Plants with awns greater than 3 cm long; awns are tightly *twisted* around each other for up to 3 cm directly above the seed**

**Feathertop wiregrass** is an upright, relatively leafy wiregrass growing to 90 cm tall. Leaves are greyish-green and at maturity the dead leaves curl strongly at the base of the plant. The seed head is 12–45 cm long with several to many drooping arms (all on one side) bearing lots of medium-sized seeds, 7–11 mm long. The seeds have long awns (25–40 mm) and a twisted column section (3–17 mm long) between them and the sharp seed. The awns and twisted column tend to be longer on plants growing in Mitchell grass country.

JAM

**Feathertop wiregrass:** feathery, weeping seed heads

**Kerosene grass** has thin stems and grows to 30 cm high. Its seed heads are mixed with the thin, 3–6 cm long, upper leaves. The young seed head has purple flecks on the seeds and it turns golden-yellow at maturity. Seeds (5–7 mm long) have large, spreading awns, often 5 cm long and a twisted column 10–20 mm long between them and the seed. The ripe seed snaps easily off the column below the awns. Unlike the other wiregrasses, this plant normally grows as an annual.

TJH

**White speargrass:** dark-green and wiry

## Group 4: Other wiregrasses

**White speargrass** grows to 60 cm tall. It is a dark-green, wiry, open-tussocked grass with a very low crown. The almost spherical-shaped seed heads are large and open, stiff-branched, growing to about 25 cm wide and long with mostly one seed per branch. Its 9–16 mm long seeds have stiff awns, 10–20 mm long, which spread wide apart when ripe. Ripe seed heads blow away intact and often accumulate against fences.

TJH

**Kerosene grass:** bunched grass; long awns on seeds

TJH

**White speargrass:** large, open seed head

# POACEAE

ERA

**Many-headed wiregrass:** wiry stems; brush-like seed head

TJH

**Many-headed wiregrass:** short, horizontal branches

**Many-headed wiregrass** grows to 50 cm tall. It is upright, tufted, many-branched and very wiry with almost leafless stems. The seed head is short (2–5 cm long), brush-like with very short, horizontal branches and numerous small seeds. The seeds are small, 6–10 mm long, purplish when the plant is green, with short, 6–15 mm awns which turn straw-coloured when mature. There is a distinct swelling where the short arms meet the central seed head axis.

## Land types

Most wiregrasses grow on light and stony soils which are often of low fertility. Feathertop, whitespear and curled wiregrasses are the exception. Wiregrasses may become abundant where pastures are overgrazed.

White speargrass occurs exclusively and feathertop is common on cracking clay soils of Mitchell grass downs. A form of feathertop with shorter awns also grows on loams and light clay soils in box country. Curled wiregrass prefers grey clay and loamy soils in box and ironbark country.

Kerosene grass prefers deep sandy soil in ironbark country in the north of the region and can also be found on sandy red soils in soft mulga and sand plain country in the west of the region. Jericho wiregrass is common on sandy-surfaced soils and mulga red earths.

Dark wiregrass and curled wiregrass are more frequent on the medium-textured soils of box and ironbark country.

Purple wiregrass prefers poor or lighter soils in box woodland and ironbark country.

It is more common in cattle country in the north of the region and cypress pine in the far east.

Many-headed wiregrass grows on shallow and infertile soils in lancewood, pine and ironbark country.

## Grazing notes

Wiregrasses have a high proportion of stem and seeds compared to leaf. They mature rapidly and become unpalatable to stock. Young plants and regrowth after burning are grazed. Their seed causes severe vegetable fault (shive) in wool. The seed also causes irritation to the mouths and eyes of stock and some types can penetrate the skin of sheep. This results in heavy discounts to wool, skin and sheep values. Because they are unpalatable, dense wiregrass pastures can induce overgrazing of sweeter adjacent land, higher worm burdens and weaner ill-thrift.

An abundance of wiregrass is usually indicative of poor pasture condition on most land types but on the lighter soils of ironbark and pine country they are a large natural component of the native pastures. Wiregrasses can provide drought feed, but they are not desirable in normal seasons.

Cattle are better able to graze wiregrasses than sheep. Sheep only graze the younger green leaves allowing the plant to set seed and build up in the pasture. A number of years of cattle-only grazing has reversed the wiregrass build-up on some properties. This occurs where the species involved has a relatively short individual plant lifespan; such as feathertop and Jericho wiregrasses. Species like white speargrass and purple wiregrass that are long-lived plants will not be controlled as easily by this grazing system.

White speargrass and wiregrass seed contamination in wool can be reduced by:

- shearing prior to seed set and having sheep in short wool in country prone to grass seed problems
- stocking white speargrass country heavily during the growing season to reduce seed set
- removing sheep and stocking heavily with cattle to graze the grass down and knock the seed off the wiregrass before the sheep return
- slashing small areas in the paddocks or slashing tracks through it.

# CHAPTER 7

# Plant identification services

While this book covers the main pasture plants of southern inland Queensland, many other species may be found by the keen observer. Some of these you may be able to identify yourself; to identify others, you may need assistance from the Department of Primary Industries and Queensland Herbarium.

# PLANT IDENTIFICATION SERVICES

*Identifying plants yourself*

Plants in a genetic group usually have similarities. If the plant resembles, but is not a good match for one described in this book, it is likely to be related. Record the first part of the botanical name of a similar plant and look in other books for its relatives. Failing that, try searching under the family name at the top of the page.

*Collecting a sample to send away for identification*

It is often not possible to identify a specimen from leaves alone, so collect a representative plant. For grasses and small herbage collect the whole plant with flowers and/or seed heads. For trees, bushes and larger herbage, collect about 20–30 cm of the branch or stem with leaves, flowers and/or fruits attached.

Identification of eucalypts is often only possible if the sample includes buds, fruits and both juvenile and adult leaves. If buds and fruits are not available, a photograph of the plant showing the base of the tree can be very useful, since the amount of rough bark present is very characteristic of species.

Fresh samples need to be dried by pressing between newspaper sheets. The paper may need to be changed every few days until the plant is dry.

The sample will then keep until it is convenient to have it identified, either by taking it to a DPI office or sending it packed flat in newspaper and between cardboard to the Herbarium.

It is necessary for some notes to accompany each sample. These should include the:

- date of collection
- location
- type of soil and surrounding vegetation
- height and growth habit of the plant
- flower colour (as flowers sometimes fade once dried)
- bark description of trees

Keep a duplicate of each specimen as samples are not normally returned. Number each sample and its corresponding duplicate. This allows the reply to be transferred to each kept specimen. A fee may be charged if large numbers of samples are submitted without prior arrangement because resources for such work are very limited.

Send samples to:

Identification and Advisory Service
Queensland Herbarium
Meiers Road
INDOOROOPILLY QLD 4068

# GLOSSARY

**Alluvial**

Soil type produced by sediments deposited from fresh water. Alluvial soil often occurs in frontage country and along watercourses.

**Alternate leaf arrangement**

An arrangement in which the successive leaves are attached singly to the stem and NOT directly across from each other (compare with *opposite leaf arrangement; see page 39, question 3*).

**Amaranths**

Plants of the family Amaranthaceae which include joyweeds, foxtails, khaki burr.

**Annual**

A plant that normally completes its life cycle (germination, growth, seeding and death) in one growing season.

**Awn**

A long bristle or filament protruding from a seed. It may be straight or twisted. There may be one or several awns on the one seed (*see Figure 5.2, page 37*).

**Axil**

The fork formed at the junction of two plant parts; e.g. where a leaf joins the stem *(see Figure 5.1, page 36)*.

**Biennial**

A plant whose life cycle spreads over two years. In the first year it germinates and grows vegetatively, and in the second year it flowers, seeds and dies.

**Chenopod**

Plants of the family Chenopodiaceae, including annual saltbush, desert goosefoot, climbing saltbush.

**Column (seed structure)**

An elongated, usually twisted, cylindrical seed structure below the awn. It is used mostly when describing *Aristida* seeds; e.g. feathertop, wiregrass (*see page 48, question 36*).

**Daisy**

Plant of the family Asteraceae, including daisy burrs, yellow everlasting daisy, wild sunflower.

**Duplex**

A soil type (usually a sandy or sandy-loam surface soil over a clay subsoil) with two distinctly different textured layers. The upper layer has much less clay (it is often sandy) and may be lighter or darker coloured than the clay subsoil.

**Ferns**

Plants which bear tiny spores instead of seeds. They have two separate life forms: one being microscopic and therefore not generally noticed; and the other being fern-like. Examples are nardoo and mulga fern.

**Flannel weeds**

Plants of the family Malvaceae, including desert Chinese lantern, sidas, small-flowered mallow.

**Forb**

A herbaceous, non-woody plant, (often annual) but not a grass, sedge or rush.

**Gilgai**

A regularly-occurring depression, often oval-shaped, in heavy clay soil country; e.g. brigalow country. Long, linear gilgais run down slopes in some clay soils in box and Mitchell grass country.

**Grasses**

Plants of the family Poaceae which have long, thin leaves and no petals on their flowers; e.g. wiregrasses, buffel grass, kangaroo grass.

**Herbage**

Winter-growing, annual forbs (non-grasses); e.g. crowfoot, medics, lamb's tongues.

**Inflorescence**

A grouping of the seeds and/or flowers of a plant, usually at the top of a branch or stem. In grasses this is often called the seed head (*see Figure 5.1, page 36*).

**Involucre**

Overlapping, scale-like structures surrounding or beneath a compound flower or flower-head; e.g. sunflowers, daisies.

**Legume**

Plants of the super-family Leguminosae that often have the potential to capture atmospheric nitrogen in root nodules to enhance their growth; including plants of the cassia, acacia and pea families.

**Lobed**

The shape of a plant part (usually leaves or flowers) where rounded segments are not totally separated from each other (*see Figure 5.1, page 36*).

**Margin**

The outer edge of a plant part.

**Nodes**

A thickened stem joint of grasses at which leaves, shoots or roots may emerge (*see Figure 5.2, page 37*).

**Opposite leaf**

An arrangement where leaves occur in regular pairs directly across the stem from each other (compare with *alternate leaf arrangement; see page 39, question 3*).

**Perennial**

A plant that normally lives for more than two years. A strongly perennial plant can live for at least six to eight years and may seed every year, depending on rainfall.

**pH**

A system of classifying relative acidity or alkalinity on a scale of 1 to 14 where 7 is neutral. Below 7 the pH is more acid closer to 1 and above 7 it is more alkaline. pH is commonly used in reference to soil and water.

**Prostrate**

Stems growing flat on the ground.

**Rhizome**

A thick, jointed, root-like stem, growing horizontally beneath the ground and from which above-ground stems will grow (*see Figure 5.1, page 36*).

**Rosette**

A circular cluster of leaves, usually close to the ground.

**Rushes**

Coarse, grass-like plants usually found in wetter places such as along creek banks. They are usually larger than sedges.

**Serrated**

Toothed edge to a plant part (*see Figure 5.1, page 36*).

**Sedges**

Hairless, thick-leaved, grass-like plants which are often small and in moist sites; e.g. nut grass.

**Softwood scrub**

A species-rich scrub of fertile soils, which often occurs in gullies on hillsides and includes bottle trees, flame trees, scrub wilgas, alphitonias and supple jacks.

**Species**

A group of interbreeding plants among which there are no major distinctive, consistent differences in form, flowers or seeds.

**Spike**

A seed head without branches. Flowers or seeds are attached directly to a central stem (*see page 47, questions 33a, 33b*).

**Stipules**

A pair of 'wings' or small leaf-like structures positioned either side of the leaf stalk at its junction with the stem; e.g. on burr medic (*see page 41, question 12*).

**Spp.**

Refers to more than one species in a general group of similar species; e.g. *Bothriochloa* spp. = more than one *Bothriochloa* species.

**Stolon**

An above-ground, horizontal stem which roots down at the joints (*see Figures 5.1 and 5.2, pages 36, 37*).

**Succulent**

A fleshy, thick-leaved plant which stores water in its leaves, e.g. pigweed.

**Tendrils**

Long, slender, often curled appendages extending from a stem or leaf.

**Truncated**

Cut off or square at top. It often refers to leaf shape.

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# INDEX

## C

Native pastures cover 90% of Queensland. They support our beef and sheep industries, provide forage and shelter for native animals and protect the valuable soils. It is therefore vital that they are effectively managed.

This book identifies the more common pasture plants of southern inland Queensland and provides additional information that will assist land managers with management decisions. It includes an easy-to-use plant identification key and features colour photographs to assist in the identification of plants.

*Pasture Plants of Southern Inland Queensland* is a valuable resource for landholders, conservationists and anyone with an interest in native pasture plants.

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