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AN INVESTIGATION OF PEANUT STORAGE PESTS IN QUEENSLAND

1. INTRODUCTION, SPECIES AND PEST STATUS

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SUMMARY

The problems associated with pest infestation in nut-in-shell peanut (*Arachis hypogaea* L.) storage at Kingaroy, Queensland, are described and discussed. This storage handles approximately 80% of the Queensland crop and has a silo capacity of 12,000 tons. *Tribolium castaneum* (Herbst.), *Oryzaephilus mercator* Fauv. and *Cadra cautella* (Walk.) were the major pests; their occurrence in bag stacks and silo storage is considered, and remedial measures including protectant use and aeration are outlined.

A list of the arthropod fauna associated with stored peanuts in Queensland is given.

I. INTRODUCTION

A survey was made during 1961-62 of the problems associated with storage of peanuts (*Arachis hypogaea* L.) as nut-in-shell, at the Peanut Marketing Board silos at Kingaroy, where the major part of the Queensland crop was stored.

Three general problems were apparent, viz. hygiene, bag storage and silo storage. Hygiene, though serious, is self-explanatory and will not be considered here. Bag and silo storage, particularly the latter, are discussed in some detail and provisional assessments made of methods of controlling pest infestations. Later papers will cover detailed investigations of these methods.

An annotated list of the arthropods associated with stored peanuts during this survey and previous and subsequent investigations is given in an appendix.

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II. EARLY STORAGE PEST INVESTIGATIONS

The following information has been abstracted from unpublished Department of Primary Industries records covering the period before the present investigation. In many instances specimens were not available for checking species identifications.

After erection of the original silo block in 1928, "moths" were recorded first as a problem in 1932. Following an intake of high moisture content peanuts in 1938, there was a serious outbreak of *Cadra cautella* (Walk.), *Tribolium confusum* Jacq. du Val (presumably *T. castaneum* [Herbst.]) and *Oryzaephilus surinamensis* (L.) (presumably *O. mercator* Fauv.), reaching a peak in February 1939. Mites were prevalent and were recorded as forming large heaps beneath outlet chutes of bins. Investigations of the efficacy of carbon disulphide as a fumigant were made.

During 1941-1943 considerable attention was focussed on the insect problem stemming from concern over wartime food supplies. Detailed investigations of losses caused by insects and shell breakage and of their inter-relationships were made. *C. cautella* was present in large numbers from November to February, with the main peak in early January, and considerable migration of larvae was recorded from bins in January and February. Thereafter numbers dropped and overwintering occurred as larvae and pupae. *T. castaneum,* and to a lesser extent *O. mercator,* were present in considerable numbers. An occasional record of *Pyralis farinalis* (L.) was made. *Tenebroides mauritanicus* (L.) and *Carpophilus dimidiatus* (F.) were prevalent; *T. mauritanicus* was restricted to bins but full-grown larvae of *C. dimidiatus* moved in large numbers from outlets to the concrete basement. *Laemophloeus minutus* (Oliv.) (= *Cryptolestes pusillus* [Schönherr]) was present as a general infestation throughout the silos. Flights of the psocid *Lachesiella* were recorded around lamps and the parasites *"Amorphota ephestie",* (Cam.) (= *Nevorgilla canescens* (Gravenhorst), not subsequently collected), *Microbracon hebetor* (Say) and unidentified bethylid wasps were listed. The anthocorid *Lyctocoris campestris* (F.) was described as being present in 30–40% of damaged nuts: *L. campestris* has not been recorded subsequently and no specimens referring to the above record were available; it is presumed, therefore, that the records refer to *Xylocoris flavipes* (Reuter), a common species in the silos. Investigations of the efficacy of screening bins with hessian covers, and of paraffin/pyrethrum sprays applied to the top surface of bins at regular intervals (Anon. 1941, 1942, 1943), were made. Neither method came into use.

III. GENERAL CONSIDERATIONS

The peanut industry in Queensland was consolidated in 1924 by the formation of the Peanut Marketing Board, which progressively became responsible for storage, shelling and marketing of the entire crop. This entailed provision at Kingaroy of nut-in-shell storage facilities, which have been gradually increased since 1928 to the present 12,000 tons, consisting of 63 vertical concrete bins of 7,000 three-bushel bags (170 tons) capacity and 36 interspace bins of 1,700 bags (40 tons) capacity arranged in three blocks. A normal crop may be in excess of 20,000 tons, while in 1959, a peak year, 28,000 tons were handled. The balance of the crop over silo capacity is stacked as received in bags in the open on dunnage with temporary roofing until silo space is available. There is no provision for storage of kernels other than to meet immediate needs. Two outside depots are maintained, one at Rockhampton to serve central Queensland and the other at Atherton in North Queensland. These depots handle crops grown in their respective areas and turn over approximately 5,000 tons per year. Storage is in bag stacks in sheds. The present investigations concern Kingaroy primarily.

Intake extended from March to September. Moisture content was approximately 12%, with nut temperatures of 70–85°F. Ambient winter temperatures at Kingaroy may be low and summer temperatures high. Most of the annual average rainfall of 33·52 in. (1953-1963) was recorded in the early months of the year, though storms and moderate falls occurred at other times (Figure 1).

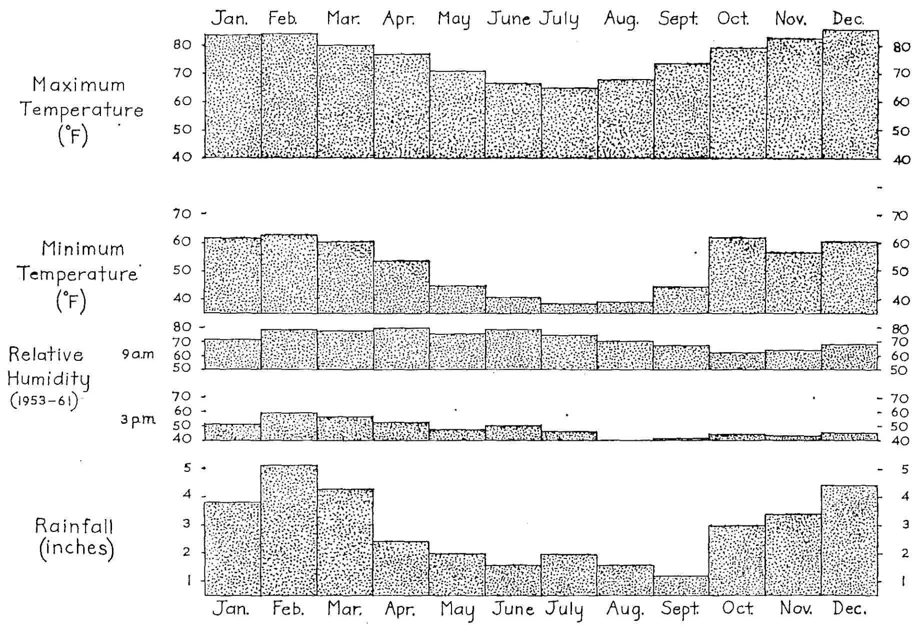

Fig. 1.—The mean maximum and minimum temperatures, relative humidities (at 9 a.m. and 3 p.m.) and monthly rainfall from records at the Post Office, Kingaroy, adjacent to the Peanut Marketing Board silo storage.

Three-bushel bags owned by the authority were used to bring nut-in-shell to storage. These may have been used four or five times and usually the bales of empty bags were fumigated before despatch to farms. The bags, however, were sometimes used for grain storage and handling on the farm until required for peanuts and became infested with the full range of grain pests which were present on most farms. This was probably responsible for the frequent recording of such species as *Sitophilus oryzae* (L.) and *Rhizopertha dominica* F. in bag stacks and silos.

Insect control in silos has depended on periodic fumigation with methyl bromide without recirculation. This is done when infestations become severe. Costs per ton have been of the order of 2s. 6d. to 3s.

The pest problem, if not given adequate attention, can be serious. Direct losses from insect feeding are significant, involving downgrading of kernels and increased cost of sorting. Indirect losses result from moisture spoilage caused by heavy infestations, contamination of graded kernels and nut-in-shell consigned to buyers, and occasionally the annoyance to staff of outbreaks of irritant acarines.

IV. BAG STORAGE

Nut-in-shell stored in bag stacks was dried to 8–9% moisture content (60–70% relative humidity equilibrium) before being cut to bulk. Infestations were heavy in stacks, depending particularly on the proportion of broken nuts present. *T. castaneum, O. mercator, C. cautella* and sometimes *Plodia interpunctella* (Hübn.) were the major pest species. Where moisture was present at the edges in lower layers, *C. dimidiatus* particularly, *Typhaea stercorea* L. and other mould feeders appeared. Similarly, these species infested wet loads included in the stack. A dermapteran *Anisolabis* sp. also moved into these lower layers, often in considerable numbers. Where nut debris was present, common additions to the fauna were *P. farinalis* and *Sathrobrota badia* Hodges. *Cryptolestes* species were uncommon in bag stacks.

As infestations developed, predators, particularly *X. flavipes,* and parasites, for example *M. hebetor,* built up to large numbers. Acarines, particularly *Tyrophagus putrescentiae* Schrank, *Melichares tarsalis* (Berl.) and in the damp layers *Rhizoglyphus echinopus* (F. and R.), became prevalent. These usually were associated with *Cheyletus malaccensis* Oud., *Cheletomorpha lepidoptorum* (Shaw) and the pseudoscorpion *Withius subruber* (Simon).

The storage of nut-in-shell in bag stacks, though often accompanied by light to medium infestations, did not occasion significant drop in quality of nuts from insect activity unless there were high proportions of cracked and broken nuts. The problem became serious only when there were abnormally high intakes and stacks were left undisturbed for long periods before silo space became available.

Methyl bromide fumigation methods are available (Brown 1959) and these combined with general hygiene to prevent or delay infestation should prove adequate under present circumstances.

V. SILO STORAGE

Silos are constructed of concrete and outside walls are exposed to the elements. As bins heated, condensation was severe at bintops, particularly on supporting steel girders, and the inside of exposed walls. Moulds were serious in sweating bins. Moisture and temperature could be controlled to a limited extent by opening man-hole covers to allow escape of heated moist air and by turning bins, or by shelling immediately.

After filling, the first species to become established were *C. cautella* and sometimes *P. interpunctella.* *C. cautella* was considerably more important and usually the dominant phycitid present. Larval and adult numbers were low in winter, building up to population peaks in midsummer (January–February), when larval migrations from bins were common. At that time adult numbers were high, but the next generation of larvae was comparatively small, with a high proportion of dead larvae present. Similar mortality was reported in unpublished Departmental records in 1941-1943 and was attributed to various climatic factors and to use of insecticides in the vicinity. Examination of larvae indicated that the protozoan *Mattesia dispora* Naville may have been a contributory factor (Martin and Champ 1964). The extent to which this was dependent on climatic and/or density factors is under examination at present, but *M. dispora* was certainly endemic and almost 100% infections in live and dead larvae were recorded in late summer after the January peak. Other contributory factors were the parasite *M. hebetor,* which appeared also after the January peak, and the less specific predators *X. flavipes* and *M. tarsalis,* whose numbers increased with the general population build-up. Other acarines (principally *T. putrescentiae* and its predator *C. malaccensis*) also tended to follow phycitid trends.

T. castaneum and *O. mercator* appeared soon after the phycitids, and built up quickly to large numbers (10,000 per 2-lb surface sample). Population densities were highest at the surface and decreased with depth in the bulk. Parasites and predators, particularly *X. flavipes,* again operated. The protozoan *Farinocystis tribolii* Weiser was recorded from *T. castaneum* (Martin and Champ 1964) but did not operate significantly in population build-ups.

Cryptolestes species were common but did not appear in numbers in surface layers unless general populations were high. From specimens collected in 1942-1943 it appears that *C. pusillus* was the dominant species at that time. This species has not been recorded in the current survey, in which *C. pusilloides* (Steel and Howe) appears the most abundant. The earliest record of *C. pusilloides* in peanuts is 1962. *C. ferrugineus* (Steph.) has been recorded once from heavily infested bins in 1961. The comparative frequency of *Cryptolestes* species in collections from stored products in Queensland is not known but it seems probable that *C. pusilloides* is more prevalent than previously. *C. pusilloides* is not new to Queensland, as a mixed series of 48 specimens of *C. pusilloides* and *C. pusillus* was obtained in June 1911 from an infestation in a bag of wheat stored in the Department of Agriculture and Stock, Brisbane (see Lefkovitch 1963).

T. mauritanicus, once regarded a major pest (unpublished Departmental records), appeared in small numbers in most bins but reached higher densities only in high moisture content bins. Under these conditions, *Alphitobius* species also increased in numbers.

Where sweating occurred, *C. dimidiatus* thrived. As the nuts deteriorated under the damp conditions, high populations developed and there was considerable migration of larvae through outlets in the bottom of the bins. After bins with nuts caked to walls were emptied, high populations of *C. dimidiatus* remained in the residues and continued breeding as long as suitable media were present. Fogging bins with lindane, dieldrin and malathion did not overcome the problem.

Examples of the development sequence of species in untreated newly filled bins are given in Tables 2 and 5 of the second paper in this series (Champ and Cribb 1965).

Direct damage to kernels of cracked and broken nuts was probably the most important source of loss in silos by increasing the proportion of kernels down-graded from edible to oil. Heating from insect activity caused serious moisture accumulations both at the top of bins and on exposed walls; the resulting growth of fungi discoloured shells and lowered grading percentages for nut-in-shell. In wet areas nuts were completely destroyed. Fungus feeding insects contributed to the general infestation activity. Where high moisture content loads above 12% were included in silos, sweating followed quickly without insect activity but created conditions more suitable for insect attack.

Integrated problems of moisture and insect control exist. A desirable ameliorant is aeration.

Figure 2 shows, for July 1962 to June 1963, the number of hours per day when temperatures were below specied maxima (40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95°F) and humidities above 85% for these periods. These data indicate that temperature control may be possible for a large part of the year but only to a limited extent in summer, when insect population peaks could be expected. It would be possible, however, to maintain bulks at or below 70°F during the critical period November to March. This would considerably reduce the activity of the major pests, *T. castaneum, O. mercator* and *C. cautella.* For the remainder of the year a bulk temperature of 65°F in October and 60°F from April to September would be possible. Winter intake would be of great assistance in initial control. With reference to moisture control, aeration would allow temperatures to be equalized through the bulk to prevent moisture accumulation, particularly in bins with exposed walls. Concurrently there would be equalizing of moisture through the bulk if some batches of high moisture content nuts were loaded with drier batches. Leakage of water from the outside of exposed bin walls may be a problem.

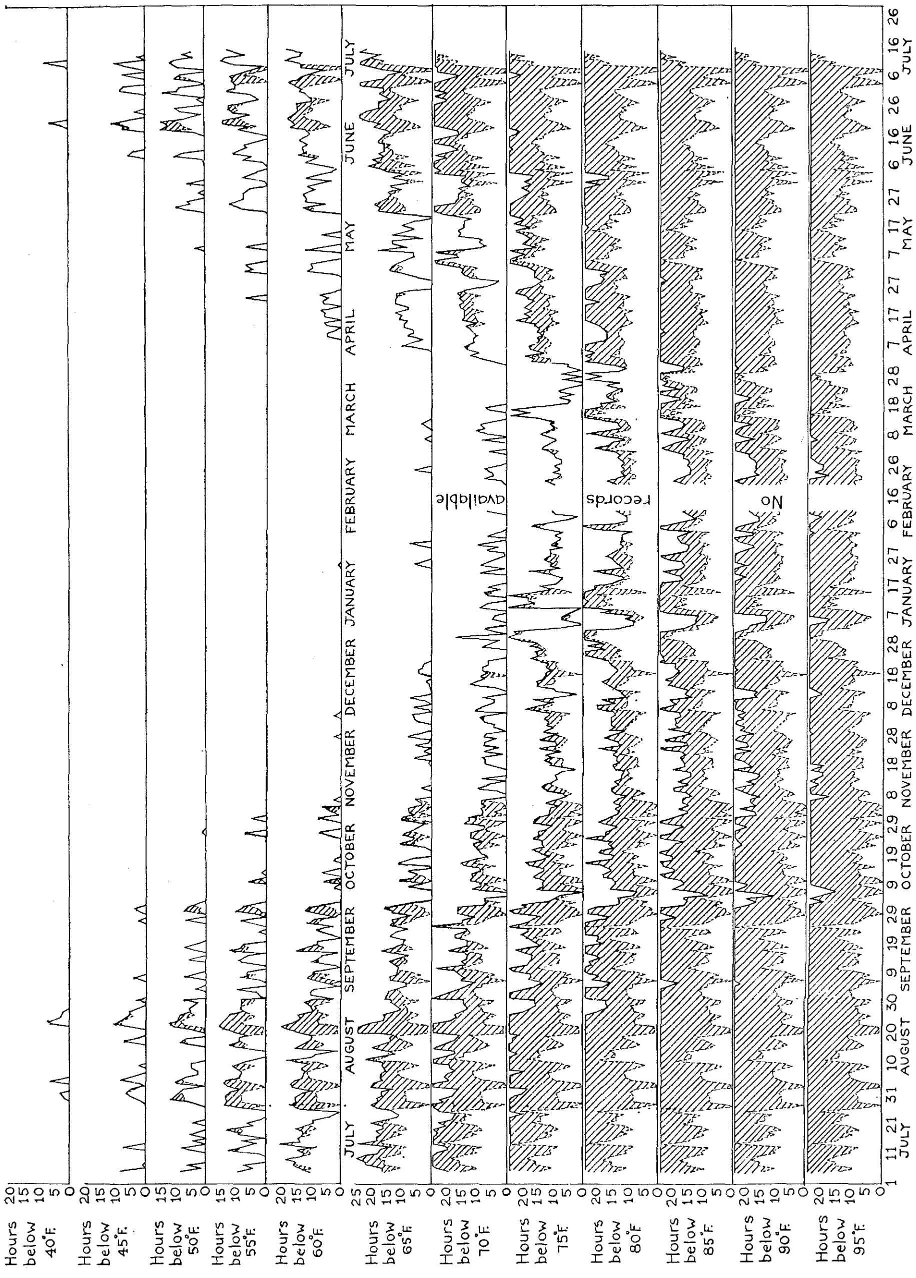

Fig. 2.—The number of hours per day from July 1962 to June 1963 when temperatures were below 40°F to 85°F (unbroken line) and when the corresponding humidity was above 85% (broken line). The area cross-hatched between the two lines represents the maximum possible time in hours when aeration could be used at the particular temperature. A limit of 75% humidity would considerably reduce the period available for aeration.

Control with residual insecticides as clean-up sprays and as protectants is desirable as a short-term measure to reduce pest populations generally in the storage and possibly as a supplement to aeration. Such treatment is preferable to the current fumigation, which must be done over extended holiday periods so as not to interfere with normal activities in the silo buildings. An investigation of aeration potential considered in conjunction with recirculation fumigation and protectant use is warranted.

VI. DISCUSSION

The major pests in stored peanuts in southern Queensland are *T. castaneum, O. mercator* and *C. cautella.* Minor pests which can assume importance are *Cryptolestes* species, *P. interpunctella* and *C. dimidiatus.*

The problems of bag storage are not serious and existing methods are adequate. Silo storage, however, invariably becomes heavily infested with pests.

Malathion has been found a suitable protectant for use against the pests of silo storage and this is reported in the following paper. (Champ and Cribb 1965). The integration of aeration into protectant use and its potential as an independent control method are currently being investigated.

VII. ACKNOWLEDGEMENTS

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APPENDIX

Annotated List of Arthropods Associated with Stored Peanuts in Queensland

The species herein recorded were found associated with stored peanuts during the course of the survey carried out during 1961-62 and in subsequent sampling of populations in control investigations. This has been supplemented from material held in the arthropod collection of the Entomology Section of the Department of Primary Industries. In all instances specimens have been sighted by the author. Identifications other than by the author are acknowledged: material identified through the Commonwealth Institute of Entomology are so noted (CIE). The year listed is the earliest authenticated record at the locality given.

ARACHNIDA

Cheliferidae

Withius subruber (Simon 1879)
Kingaroy 1961. A common predator in heavy infestation complexes.

Tyroglyphidae

Tyrophagus putrescentiae (Schrank 1781)
Kingaroy 1961. The most common mite in stored products in Queensland, frequently present in large numbers. Large aggregations occur beneath outlets of infested bins. *Cheyletus malaccensis* Oud. is usually associated.
Caloglyphus krameri (Berlese 1881)
Kingaroy 1961. Common in damp locations. Heteromorphic males, females and hypopi recorded.
Rhizoglyphus echinopus (Fumouze and Robin 1868)
Kingaroy 1962. Common in damp locations.

Scutacaridae

Acarophenax tribolii Newstead and Duvall 1918
Kingaroy 1962. Occasionally associated with *Tribolium castaneum* Herbst. infestations. Only females recorded.

Pyemotidae

Pyemotes ventricosus (Newport 1850)
Kingaroy 1962. Common in heavy infestations.

Cheyletidae

Cheletomorpha lepidoptorum (Shaw 1794)
Kingaroy 1962. Commonly associated with *Tyrophagus putrescentiae.*
Cheyletus eruditus Schrank 1781
Kingaroy 1962. Occasionally recorded in peanuts.
Cheyletus malaccensis Oudemans 1903
Kingaroy 1961. Very common, associated with *Tyrophagus putrescentiae.* All males heteromorphic.

Macrochelidae
Macrocheles muscaedomesticae (Scopoli 1772)
Kingaroy 1961. Common. Associated with Diptera in sweating, mouldy situations, for example breeding *Diploneura* (*Dohrniphora*) *cornuta* Bigot.

Aceosejidae
Melichares (*Blattisocius*) *tarsalis* (Berlese 1918)
Kingaroy 1962. Very common predator.

Ameroseiidae
Kleemania plumosus (Oudemans 1902)
Kingaroy 1962. Occasionally recorded associated with Tyroglyphids.

Uropodidae
Leiodinychus krameri (G. and R. Canestrini 1882)
Kingaroy 1961. Common.

INSECTA

Hemiptera

Anthocoridae
Xylocoris flavipes (Reuter 1875)
Kingaroy 1961 (det. T. E. Woodward 1962). Common predator, often occurring in large numbers. Active fliers in enclosed spaces when populations are large.
Xylocoris queenslandicus Gross 1954
Kingaroy 1962. Considerably less common than *Xylocoris flavipes* and never occurring in large aggregations.

Coleoptera

Staphylinidae
Atheta sp.
Kingaroy 1962 (CIE det. R. D. Pope 1963). Common in spillage, particularly when damp.

Trogositidae
Tenebroides mauritanicus (Linnaeus 1758)
Kingaroy 1942, Atherton 1950. Common in bin storage at high moisture contents.

Dermestidae
Anthrenus verbasci (Linnaeus 1767)
Kingaroy 1961 (CIE, det. R. D. Pope 1963). Occasionally scavenging in established infestations.

Anobiidae
Lasioderma serricorne (Fabricius 1792)
Brisbane 1928, Kingaroy 1962. Common.
Stegobium paniceum (Linnaeus 1761)
Kingaroy 1963. Occasionally recorded.

Ptinidae

Mezium americanum (Laporte 1840)

Kingaroy 1961. A common scavenger. Early records of *Mezium affine* Boie in Queensland were of *Mezium americanum.*

Bostrychidae

Rhizopertha dominica Fabricius 1792

Kingaroy 1963. Occasionally recorded. An incidental species probably carried in dirty sacks from farms.

Nitidulidae

Carpophilus dimidiatus (Fabricius 1792)

Kingaroy 1938 (CIE, det. R. D. Pope 1963), Atherton 1950, Rockhampton 1963. Common in damp debris and in bins where sweating occurs, usually breeding in mouldy areas on inside of exposed walls. Migration of full-grown larvae in large numbers occurs from bottoms of infested bins.

Carpophilus hemipterus (Linnaeus 1758)

Kingaroy 1938. Recorded once, Dec. 1938.

Carpophilus mutilatus Erichson 1843

Kingaroy 1939 (CIE, det. R. D. Pope 1963). Recorded once, 28.ii.39.

Cucujidae

Cryptolestes pusillus (Schönherr 1817)

Kingaroy 1943 (CIE, det. L. P. Lefkovitch 1963), Atherton 1950 (CIE, det. L. P. Lefkovitch 1963). Most early records of *Cryptolestes* probably refer to this species.

Cryptolestes ferrugineus (Stephens 1831)

Kingaroy 1961 (CIE, det. R. D. Pope 1961). Comparative frequency of *Cryptolestes* species not known.

Cryptolestes pusilloides (Steel and Howe 1952)

Kingaroy 1962 (CIE, det. L. P. Lefkovitch 1963). Apparently common.

Oryzaephilus surinamensis (Linnaeus 1758)

Kingaroy 1961. Not common. Possibly carried on dirty sacks from farms. *Oryzaephilus surinamensis* and *Oryzaephilus mercator* Fauv. were not separated in Queensland records before 1958 and hence earlier descriptions of infestations refer to this species.

Oryzaephilus mercator Fauvel 1889

Kingaroy 1939, Brisbane 1940, Atherton 1962, Rockhampton 1962. A major pest.

Ahasverus advena Waltl. 1832

Kingaroy 1962. Occasionally recorded.

Lathridiidae

Corticaria adelaidae Blackburn 1891

Kingaroy 1962 (CIE, det. R. D. Pope 1962). Common in damp debris and freshly harvested material.

Mycetophagidae

Litargus balteatus Leconte 1856

Kingaroy 1962 (CIE, det. R. D. Pope 1963). Common in damp peanuts and debris.

Typhaea stercorea Linnaeus 1758

Kingaroy 1960 (CIE, det. R. D. Pope 1962). Common in damp peanuts and in farmers' deliveries to storage.

Tenebrionidae

Tenebrio molitor Linnaeus 1758

Kingaroy 1963. The only record. Probably carried on sacks from farms.

Tribolium castaneum (Herbst. 1797)

Brisbane 1921, Kingaroy 1939, Atherton 1950, Rockhampton 1962. A major pest.

Tribolium confusum Jacquelin du Val 1868

Kingaroy 1942, Atherton 1950. Incidental and rarely recorded. Probably from farm contamination.

Gnathocerus cornutus (Fabricius 1798)

Atherton 1950, Kingaroy 1963. Incidental as *Tribolium confusum.*

Alphitobius laevigatus (Fabricius 1781)

Kingaroy 1929. *Alphitobius* species are common in damp peanuts and debris.

Alphitobius diaperinus Panzer 1797

Kingaroy 1929, Atherton 1962 (CIE, det. E. A. J. Duffy 1963).

Anthicidae

Anthicus sp.

Kingaroy 1962 (CIE, det. E. A. J. Duffy 1963). Occasionally recorded in exposed situations.

Curculionidae

Sitophilus oryzae (Linnaeus 1763)

Kingaroy 1962. Incidental though occurring regularly as isolated individuals in examinations of large numbers of samples.

Lepidoptera

Cosmopterygidae

Sathrobrota badia Hodges 1962

Kingaroy 1964 (det. I.F.B. Common 1964). Common in trash and spillage. This species was previously confused in Queensland with *Pyroderces rileyi* Wals.

Phycitidae

Plodia interpunctella (Hübner (1810)—(1813))

Atherton 1950 (CIE, det. P. E. S. Whalley 1963), Kingaroy 1961, Rockhampton 1963. A major pest but usually confined to localized areas and not achieving the general infestation levels of *Cadra cautella* (Walk.)

Cadra cautella (Walker 1863)
Kingaroy 1935 (CIE, det. M. Shaffer 1963), Toowoomba 1942 (CIE, det. M. Shaffer 1963), Rockhampton 1963. A major pest present in all unprotected storages, often in large numbers.

Corcyra cephalonica (Stainton 1866)
Bowen 1942, Rockhampton 1962 (CIE, det. P. E. S. Whalley 1963). A pest in northern storages.

Pyralidae
Pyralis farinalis (Linnaeus 1758)
Kingaroy 1962. Occasionally recorded in silos and spillage beneath bag stacks.

Hymenoptera

Braconidae
Microbracon hebetor (Say 1836)
Kingaroy 1961, 1962 (CIE, det. R. D. Eady 1963). Common in phycitid infestations, often in large numbers.

Scelionidae
Scelio sp.
Kingaroy 1962 (CIE, det. G. E. J. Nixon 1963). The only record. Specimen damaged.

Bethylidae
Cephalonomia tarsalis (Ashmead 1893)
Toowoomba 1942 (CIE, det. G. E. J. Nixon 1962), Kingaroy 1962 (CIE, det. G. E. J. Nixon 1963). Associated with heavy infestations of *Oryzaephilus mercator*.

Rhabdepyris zeae Turner and Waterson 1921
Kingaroy 1962 (CIE, det. G. E. J. Nixon 1963). Common. Associated here with heavy infestation complexes containing *Tribolium castaneum* and *Cryptolestes* species.

Encyrtidae
Zeteticontus sp.
Kingaroy 1962 (CIE, det. R. D. Eady 1963). Occasional record.

Pteromalidae
Anisopteromalus calandrae (Howard 1881)
Kingaroy 1962 (CIE, det. G. J. Kerrich 1963). Common.

Diptera

Scatopsidae
Scatopse sp.
Kingaroy 1962 (CIE, det. R. W. Crosskey 1963).

S. ? fuscipes Mg.
Kingaroy 1962 (CIE, det. R. W. Crosskey 1963). *Scatopse* species are recorded frequently in silo infestations.

Scenopinidae
Scenopinus sp.
Kingaroy 1962. Larvae only; no adults have been taken.

Phoridae
Diploneura (Dohrinophora) cornuta Bigot
Kingaroy 1961 (CIE, det. C. N. Colyer 1962). Commonly breeding in surface wet patches of sweating bins.

Dermaptera

Labiduridae
Anisolabis sp.
Kingaroy 1962 (CIE, det. P. Newman 1963). Often found in lower layers of stacked, bagged nut-in-shell when near ground.

Psocoptera

Psocoptera are very common in stored peanuts, particularly in material that has been held in storage for some time. Extensive mould growth, particularly under conditions of heavy infestations by major pest species, provides an ideal habitat. Little is known of the relative abundance in Queensland storages of the species listed.

Liposcelidae
Liposcelis entomophilus (Enderlein 1907)
Kingaroy 1963 (CIE, det. J. V. Pearman 1962).
Liposcelis bostrychophilus Badonnel 1931
Kingaroy 1962 (det. C. N. Smithers 1964).
Liposcelis pubescens Broadhead 1947
Kingaroy 1962 (det. C. N. Smithers 1964).
Liposcelis subfuscus Broadhead 1947
Kingaroy 1961 (det. C. N. Smithers 1964).

Pachytroctidae
Pachytroctes sp.
Kingaroy 1962 (det. C. N. Smithers 1964).

Lachesillidae
Lachesilla sp.
Kingaroy 1962 (det. C. N. Smithers 1964). Recorded in 1942 from Kingaroy but no specimens available.

Peripsocidae
Ectopsocus sp.
Kingaroy 1963 (det. C. N. Smithers 1964).

Elipsocidae
Propsocus pulchripennis (Perkins 1889)
Kingaroy 1962 (det. C. N. Smithers 1964).

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