The DOOR Manual for Plant Nurseries

Reprint – information current in 1996

Let's Do Our Own Research

The DOOR way to practical solutions

REPRINT INFORMATION – PLEASE READ!

For updated information please call 13 25 23 or visit the website www.deedi.qld.gov.au

This publication has been reprinted as a digital book without any changes to the content published in 1996. We advise readers to take particular note of the areas most likely to be out-of-date and so requiring further research:

- Contacts—many of the contact details may have changed and there could be several new contacts available. The industry organisation may be able to assist you to find the information or services you require.
- Organisation names—most government agencies referred to in this publication have had name changes. Contact the Business Information Centre on 13 25 23 or the industry organisation to find out the current name and contact details for these agencies.
- Additional information—many other sources of information are now available. Contact an agronomist, Business Information Centre on 13 25 23 or the industry organisation for other suggested reading.

Even with these limitations we believe this information kit provides important and valuable information for intending and existing growers.

This publication was last revised in 1996. The information is not current and the accuracy of the information cannot be guaranteed by the State of Queensland.

This information has been made available to assist users involved in the nursery and garden industry wishing to conduct their own research. This information is not to be used or relied upon by users for any purpose which may expose the user or any other person to loss or damage. Users should conduct their own inquiries and rely on their own independent professional advice.

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Queensland Government

Evaluation and Decisions, Cost-Benefit

C. J. Carson and J. Page

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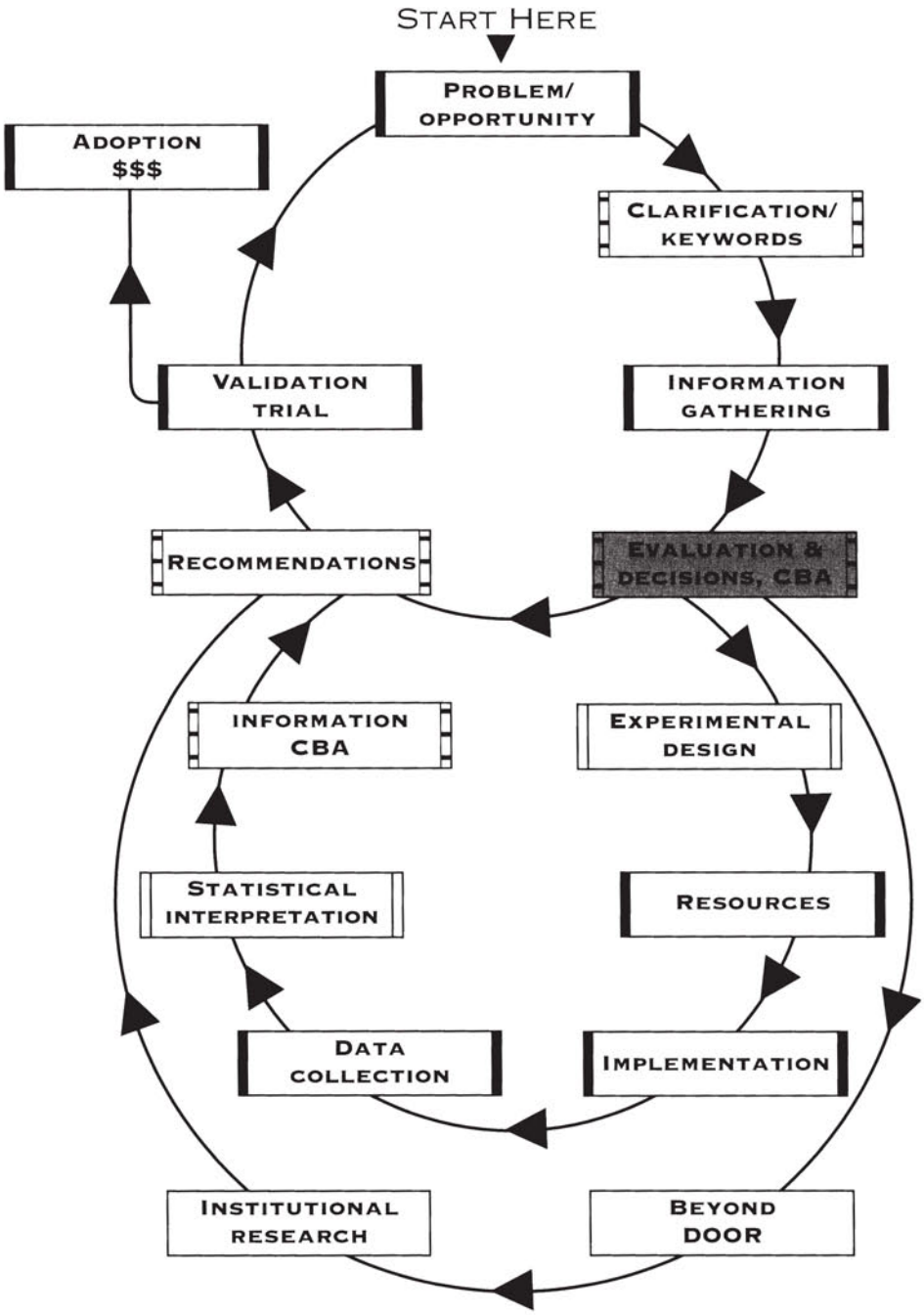
DOOR
Implementation Cycle



Legend

Chapter topic

Action Key

- Consultant only
- Joint
- Operator only

CBA = cost–benefit analysis

4.1 INTRODUCTION

Once all the information has been gathered, it needs to be sifted and analysed before you can proceed. This is a key step in the DOOR implementation cycle because at this point the decision is made whether to set up an experiment or not. From here, an experimental design can be developed or you may decide that the information you have gathered is enough to help you develop recommendations.

This section shows how to logically evaluate the information gathered so far. The cost-benefit analysis section explains an important technique to help decide whether to proceed or not.

4.2 EVALUATION AND DECISIONS

4.2.1 THE SEARCH FOR A SOLUTION

Having clearly defined the problem and gathered relevant information, you are now in a strong position to begin the next step of the DOOR cycle: generating possible solutions. Keep an open mind at this stage.

At the end of this process you may not only have a range of possible alternatives, but you may have completely redefined the boundaries of the problem. Creativity, lateral thinking, general knowledge and your external information networks all have a role to play (see appendix 7).

4.2.2 GENERATING POTENTIAL SOLUTIONS

Brainstorming

Get a suitable group together and explain the situation. Ask participants for their ideas, including the weird and wonderful ones. Group members can build on these ideas, but should be not allowed to criticise them at this stage. This dynamic process can rapidly arrive at a large number of alternatives to be evaluated in the next stage of the problem-solving cycle.

Checkerboard

The checkerboard approach allows you to systematically look at all possible alternatives. For example, you suspect that one of three sprays you are using in a tank mix, either alone or in combination, could be responsible for the marginal yellowing of the lower leaves of some nursery lines. What are the possibilities?

The following illustrates the possible combinations of the sprays used.

		SPRAYS		
		A	B	C
SPRAYS	A	A	AB	AC
	B	—	B	BC
	C	—	—	C

Or is it the combination of all three — ABC?

4.2 EVALUATION AND DECISIONS

4.2.1 THE SEARCH FOR A SOLUTION

- Generate a number of alternatives.
- Think creatively, use your own knowledge and seek advice.

4.2.2 GENERATING POTENTIAL SOLUTIONS

- Brainstorming is a creative group process.
- Checkerboard systems look at all possible alternatives.
- Card sorting helps evaluate categories, sequences problems and resolves spatial relationships.
- Word associations trigger the memory.

Card sorting

A large number of alternatives can be sorted into categories to be evaluated on a group basis before individual options are selected. Cards or adhesive labels can be written on. Write each activity or aim on a card or label, then place them in sequences or groups (or other patterns) depending on the problem. This activity can help clarify the situation.

Word associations

Words can trigger memory associations that help to identify problems. A list of words and phrases that can be used as a starter in word association exercises is included in appendix 8.

4.2.3

EVALUATING POTENTIAL SOLUTIONS

- Decide the criteria on which to base decisions.
- There are lots of ways of making group decisions.

4.2.3 EVALUATING POTENTIAL SOLUTIONS

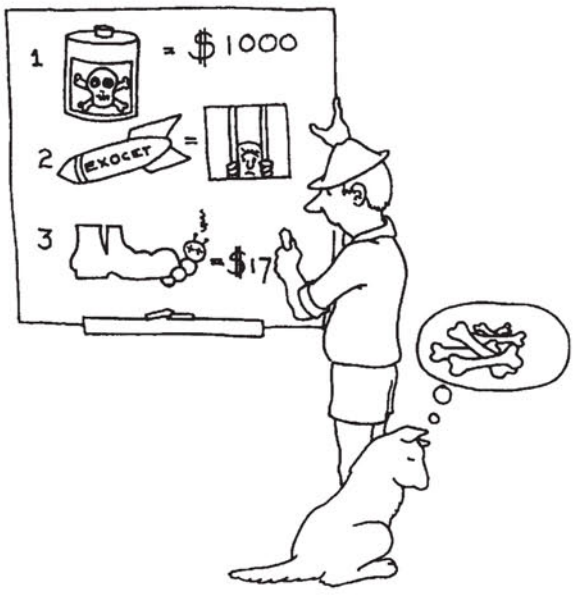
Having identified various potential solutions, consider which of these alternatives is most suitable.

What are the advantages and disadvantages of different solutions? On what criteria will you base your decision? Cost-effectiveness? Time to implement? Legality? Space needed? How would you rank the alternatives?

Group decision making

What do the other stakeholders think? Canvassing the views of staff who may be called upon to implement the new practices can be valuable. Group decisions can be reached using various techniques, including:

- consensus (everyone agrees)
- testing more than one idea
- building a more suitable solution from a number of suggestions
- eliminating least-favoured alternatives (according to your criteria) or those with the highest risk of a poor result
- ranking or voting (the majority wins, the minority loses).



4.3 Cost–benefit analysis and project prioritisation

4.3.1 Overview

Research is undertaken to evaluate a potential solution(s) and to answer the question, "Will this option solve my problem or improve my productivity?". Before proceeding you need to look at whether the project is likely to be cost-effective.

Nurseries are very complex businesses and it is unreasonable to expect a simple method of evaluation as described here to produce all the answers needed to make decisions about research priorities. Despite this reservation the technique offered will help to clarify many nursery research issues.

Before starting a research project, address the following three questions:

- Will the research pay?
- Is this the best use of my limited research resource?
- Can I afford it? (i.e. Do I have the resources to complete the project?)

Answer the first question by using a profit budget. Profit budgets weed out the doubtful propositions and improve the chance of a profitable result. They also help identify the key elements of a profitable outcome which, in turn, helps to clarify the important research issues for your business. They also provide motivation to get the job completed.

If a research proposal is particularly large, or specially important, it is vital that resources be available to complete it: hence the need for a budget. Such budgets are used to estimate the net cash flow or the impact on labour, nursery space, etc.

The questions above are distinct yet equally important — all need a "Yes" response before an activity or investment is pursued.

4.3.2 Comparison of profit and cash flow

Don't be trapped into thinking that questions about profit and cash flow are the same thing. Profit represents a firm's overall goal of wealth creation, while cash flow shows how the wealth is used over time. A positive or negative annual cash flow tells us very little about the wealth-creating ability of a business or investment because it ignores many elements of wealth creation (e.g. changes in capital values, changes in inventories, rate of return on investment, etc.). However, the cash flow does indicate how well the business is surviving in the short term.

Normally a focus on profit will generate a "long-term gain for a short-term pain" whereas a focus on cash flow will produce a "long-term pain for a short-term gain". Table 4.1 compares some important characteristics of profit and cash flow.

4.3 Cost–benefit analysis and project prioritisation

4.3.1 Overview

- Prepare a profit budget to find out if the research will pay.
- Prepare a cash-flow budget to find out if you can afford to complete the project.

4.3.2 Comparison of profit and cash flow

- Profit and cash flow are not the same.

Table 4.1 A comparison of profit and cash flow

Profit	Cash flow
Important	Urgent
Strategic, visionary	Tactical
Long term	Short term
Proactive	Reactive
About the creation of wealth	About the use of wealth
Thriving	Surviving
Conservative — considers changes in asset values when they are incurred	Exploitative — ignores changes in asset values except when they are "cashed in"
Challenging, non-limiting, positive	Limiting, passive

Businesses that are struggling tend to focus on cash flow — the need to have cash to cover accounts due, interest and repayments is urgent. Resources are shuffled around in a tactical way in response to new emergencies and the planning horizon is short term.

This raises the question: "Are struggling businesses struggling because of their short term tactical focus or are they forced to adopt this focus because they are struggling?" .Table 4.1 aids the decison about whether the project is of short- or long-term benefit.This information could persuade a lender to supply the necessary funds to proceed with the project.

4.3.3

PARTIAL BUDGETING

- Partial budgets are a simple way of looking at the profit and cash-flow implications of research projects.
- Use the formats provided to explore partial budget implications.

4.3.3

PARTIAL BUDGETING

Partial budgeting is a simplified way to generate answers to the "Does it pay?" and "Can I afford it?" questions. A partial budget, as the name implies, looks at part of the business.The parts examined are the components that change as a consequence of the decision being evaluated.

Two partial budget formats are offered in tables 4.2 and 4.3. Table 4.2 is used to calculate the change in net profit associated with an investment in a research project and table 4.3 is used to examine the impacts on cash flow. An example of some of the items considered in a partial profit budget is shown in table 4.2.

If you are not familiar with the format of partial budgets, the best way to gain skills, knowledge and insight is to have a go at preparing them using the formats provided and then discuss your conclusions. Photocopy the formats in appendix 9 and use them to examine the profit and cash-flow implications of research projects recently completed or being considered. The formats can be copied onto a computer as a spreadsheet so that the computer can do the calculations.

Partial budgets may not provide an adequate answer. Sometimes it is necessary to look at whole farm impacts. Sometimes other budgetary procedures, such as discounted cash-flow budget, or even a risk analysis model, may be required to give the confidence required to pursue a project. This is increasingly the case with the type of projects pursued by the DPI Queensland.

The recent release of *Greenhouse Cost Accounting* by Dr Robin Brumfield of Rutgers University may help with the evaluation of some of the more complex issues facing nurseries.

Now that the problem or opportunity has been defined, researched, and evaluated, it is time to plan the experiment.

Table 4.2 Partial profit budget format (see proforma in appendix 9)

ADVANTAGES ASSOCIATED WITH THE RESEARCH		
a] Income increase due to research	**CAPITAL**	**ANNUAL INCOME & EXPENSE**
1. Yield gain due to quicker growth		
2. Price gain due to better size, quality, consistency, type etc.		
3. Production increase due to better use of space, new practices etc.		
b] Expense decrease due to research		
1. Due to lower inputs		
2. Lower capital investment i.e. expressed as lower depreciation		
3. Lower interest cost due to reduced investment in working and fixed capital		
c] Total benefits (a + b)		
DISADVANTAGES ASSOCIATED WITH THE RESEARCH		
d] Increase in expense		
1. Depreciation of the research investment spread over the life of benefits		
2. Increase in interest		
3. Increase in repairs and maintenance due to development		
4. Additional labour & other input costs associated with new treatment, process, etc.		
e] Decrease in income		
1. Loss of income from displaced activities		
2. Loss of income due to lower production associated with new focus on quality		
f] Total disadvantage (d+e)		
NET PROFIT GAIN DUE TO RESEARCH (C-F)		

Table 4.3 Partial cash flow budget of format (see proforma in appendix 9)

PERIOD	1	2	3	4	5	6	7	8	9	10	11	12
ADVANTAGES ASSOCIATED WITH THE RESEARCH												
a] Cash inflow increase due to research												
b] Cash outflow decrease due to research												
c] Total increase (a + b)												
DISADVANTAGES ASSOCIATED WITH THE RESEARCH												
d] Increase in cash outflows												
e] Decrease in cash inflows												
f] Total decrease (d+e)												
NET GAIN DUE TO RESEARCH (C-F)												