



Australian Government
**Rural Industries Research and
Development Corporation**

THE NEW CROP INDUSTRIES HANDBOOK

*Edited for the Rural Industries R&D Corporation
by Sue Salvin, Max Bourke AM and Tony Byrne*



Asian vegetables



Wildflowers



Native foods



Fruits and berries



Herbs and spices



Essential oils



Nuts



Grains and legumes



Miscellaneous crops

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The New Crop Industries Handbook

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Foreword



Farmers today, both those in existing businesses and new entrants, live in an environment where they by necessity have to keep an eye on new opportunities.

Changes in commodity prices or new value chain opportunities, let alone changes in types of food or new products, demand a flexible approach to farming. Many crops themselves have a “fashion” element where a new variety of fruit or vegetable can be “in” for a period then “out” with the market. Consumers expect farmers to be able to continue to meet their needs in both food and fibre when they follow these new trends.

As well, diversification of cropping opportunities, within the limits of good business sense, provides an essential part of risk management in modern farming.

The Rural Industries Research and Development Corporation is tasked, within a number of its programs, with assisting agribusiness and the food industries to stay ahead of changes by looking at new crops and their management and potential in the food and fibre industries. Some of these crops are aimed at Australian markets, others are aimed at a mix of domestic and export.

Undertaking the research and supporting industries searching for new products is only the first stage of this work. Unless the work is communicated to the widest possible audience the potential of these new crops will never be fully realised.

This book is aimed at consolidating much of the recent research information into a handy format for those searching for the latest information on new crops. I am sure it will prove to be as valuable to both potential and existing farmers as the first edition.

Senator the Hon. Judith Troeth
Parliamentary Secretary to the Minister for
Agriculture, Fisheries and Forestry

September 2004

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Preface

Each month almost a million visitors go to the RIRDC website. There they surf through or research over 1,000 reports. One of the most visited areas, and consistently so over many years, has been our publication *The New Rural Industries* and the popularity of this site is confirmed by the continuous demand for, and sales of, the hard copy of this book.

Two of my predecessors, Mr Keith Hyde and Mr Peter Core, were responsible for the production of *The New Rural Industries*—the first edition of this publication—which proved to be an excellent initiative. Each week our research managers receive numerous inquiries, which often follow from people looking at this publication either in hard copy or on-line, so the editors believed it was essential to bring out a new and fully revised edition.

Now we are updating the contents but because it has grown we are splitting it into a “new crops” and a “new animals” format. We have also included updated financial indicators for some crops, using the same models as those used in the previous two volumes of *The New Rural Industries Financial Indicators*.

This handbook will also differ from the first by being released as a CD as well as hard copy, which will provide substantial cost savings for those purchasing that format, and offers users easy searchability.

Each chapter in the book aims to provide a comprehensive introduction to a particular crop, but it is important to repeat the caveats in the previous edition. Potential investors and industry advisors should make their own more detailed inquiries about a crop or industry before making decisions or providing advice about them. While every effort has been made to ensure the accuracy of information in each chapter, the markets are changing and new information is becoming available regularly.

Further, the fact that a crop has been included in this book should not be regarded as an automatic

endorsement of its prospects. A decision to invest in a new crop industry depends very much on an individual’s circumstances and, while success is not guaranteed, there are some important factors that must be taken into account if there is to be any chance of success. The first two chapters in this publication are essential reading for a better understanding of what is involved in considering a new crop investment.

The authors of the individual chapters have been chosen from among research or industry agribusiness experts with an intimate knowledge of the crop they are writing about. The chapters have also been reviewed by others with close knowledge of the industry or crop.

The editorial work for the publication was done by Sue Salvin of Hassall and Associates, assisted by Max Bourke AM and Tony Byrne, the two RIRDC Research Managers responsible for new crop programs. The design and layout of the book was undertaken by RIRDC’s publishing team, Cecile Ferguson and Martin Field. I would also like to thank the many authors who contributed their time and expertise to this publication.

This book is further evidence of RIRDC’s commitment to communication and accessibility of information. It is meant to inform both future economic activity and further research. We hope it is also an interesting read.

Simon Hearn
Managing Director
Rural Industries Research and Development
Corporation

September 2004

Abbreviations

ACIAR	Australian Centre for International Agricultural Research
AMGA	Australian Mushroom Growers Association
ANPI	Australian Native Produce Industries
APVMA	Australian Pesticides and Veterinary Medicine Authority
AQIS	Australian Quarantine and Inspection Service
ASTA	American Spice Trade Association
BCR	benefit cost ratio
CITES	Convention on International Trade in Endangered Species
CQU	Central Queensland University
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CTAHR	College of Tropical Agriculture and Human Resources (University of Hawaii)
DGB	dry green bean
DOOR	Do Our Own Research
DOTARS	Department of Transport and Regional Services
DPIWE	Department of Primary Industries, Water and Environment (Tasmania)
FAO	Food and Agriculture Organisation
FEMA	Flavour and Extract Manufacturers Association
GLA	gamma linolenic acid
GRAS	generally recognised as safe
HACCP	Hazard Analysis and Critical Control Point
HAL	Horticulture Australia Limited
HPLC	High Performance Liquid Chromatography
IFEAT	International Federation of Essential Oils and Aroma Trades
IGC	International Ginseng Conference
IPM	integrated pest management
IRR	internal rate of return
NIDP	New Industries Development Program
NIS	nut-in-shell
NORADA	Northern Rivers Agricultural Development Association
NPV	net present value
PBR	Plant Breeders' Rights
PIRSA	Primary Industries and Resources SA
PTT	Perigord Truffles of Tasmania
QDPI&F	Queensland Department of Primary Industries and Fisheries
RIRDC	Rural Industries Research and Development Corporation
STS	silver thiosulphate
SWOT	strengths, weaknesses, opportunities and threats
TGA	Therapeutic Goods Administration of Australia
TLC	Thin Layer Chromatography
UTS	University of Technology, Sydney

New crops

**Rob Fletcher
and Ray Collins**

Introduction

This chapter discusses the nature of new crops and some of the key factors involved in making decisions about them. The next chapter illustrates the new crop development process by describing a set of courses that help new entrants work through these decisions.

New crops defined

New crop industries usually involve new species or varieties, new locations or technologies for producing a product, new markets or some combination of these factors. For example, the seedless melon industry is based on new varieties and much of its production is in new locations; freekah wheat involves a new adaptation of ancient technology; and the Asian vegetable industry in Australia is based on new markets for existing products.

Several of Australia's current major industries have been developed from new crops since 1950. They include cotton, mushroom, lupin, sunflower, broccoli, soybean, melon, canola, triticale, avocado, macadamia, chickpea, mango, kiwifruit and almond. Most of these were previously grown successfully overseas or perhaps on a small scale somewhere else

within Australia. To be successful in their current areas, they needed breeding, new or modified production systems and/or exposure to markets.

New crops, supply chains and consumers

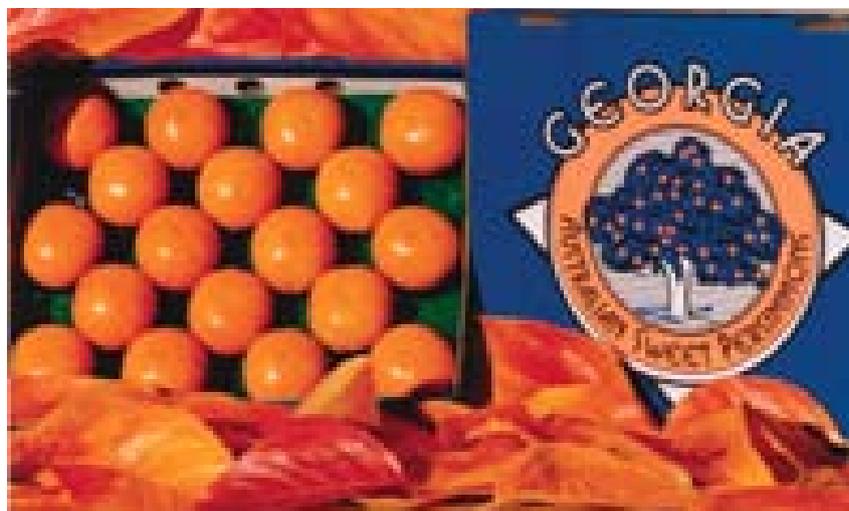
Successful new industries need satisfied consumers. Consumers will be satisfied when the products they purchase meet their needs at a price that represents, to them, value for money. This price must cover the growing, harvesting, processing and marketing costs of the product, as well as the profit margins for each business in the chain between the producer and the consumer.

The chain of firms that produces the raw material, converts it into a saleable product and makes it available to the consumer is called a supply chain. Each business in a supply chain does something

for the final product and is paid accordingly. So supply chains *have* to exist, if only to ensure that the product gets from the producer to the consumer.

If firms in a supply chain consciously manage their interacting activities for the benefit of the consumer, greater consumer satisfaction can be achieved along with greater benefits for the members of the supply chain. This is a business strategy called supply chain management and it has been shown to be a highly effective way for firms in new crop industries to organise themselves.

For example, the Australian non-astringent persimmon industry has a core group, the Australian Persimmon Export Company, which has built its own supply chain based on the involvement of chain partners such as exporters and importers, and a clear focus on what the consumer wants.



The Australian Persimmon Export Company is owned and managed by the growers and a marketer. (Source: *Options for Change—new ideas for Australian farmers*, RIRDC pub. no. 03/030)



At this level, successful new crop development is about people and how they can improve their individual results by working together

It began by 12 growers getting together to discuss how they could work together instead of competing against each other in the marketplace. In many new industries it is common for growers to meet to discuss issues of mutual interest. These meetings can become the stimulus for the first stage of supply chain building, simply by shifting the focus to questions about which firms, technologies and systems the new industry will have to deal with so that its product can reach and satisfy consumers. Working cooperatively with the right firms downstream of the producer is essential in creating and sharing the benefits from adopting a supply chain management strategy.

At this level, successful new crop development is about people and how they can improve their individual results by working together.

Learning to work together pays dividends because it leads to stronger relationships at all levels of the supply chain. Stronger relationships allow problems to be solved more easily, initiatives to be taken between chain partners and joint strategies to be developed

to counter competition. In a new crop industry, these activities are especially important because they have the potential to flow through to increase consumer satisfaction and sustain the new crop's advantages for everyone in the supply chain.

Thus, by building stronger relationships and ensuring satisfied consumers, effective supply chain management can contribute to the success of a new crop venture. Developing a successful business around a new crop is as much about the effectiveness of people working together as it is about the effectiveness of the product itself.

In the following sections we explore what attracts people to new crops, some of the challenges involved with developing a new crop or a new product, what risk is and how it is managed and the benefits of collaboration.

Throughout these sections, the focus is on the central role of people and their decision-making processes. In the next chapter, we provide details of some of the resources available to assist with the new crop development process.

A supply chain is the chain of firms that produces the raw material, converts it into a saleable product and makes it available to the consumer. By building stronger relationships and ensuring satisfied consumers, effective supply chain management can contribute to the success of a new crop venture.

Facing up to the new crop decision

Why the interest in new crops?

The reasons that people are attracted to new crops vary widely. The issues discussed below have become evident from the responses given by hundreds of participants in Do Our Own Research (DOOR) Marketing short courses conducted throughout Australasia over the past six years and more than 100 conferences and workshops addressed by the authors over that period.

I want a change

The most frequently declared purpose among Australian new crop developers has been their desire to introduce changes to the way they manage their farms, the supply chains in which they operate or their lifestyles before change is forced on them. Increasing numbers of people are also coming from the cities, seeking a "sea change" or "change of life".

While curiosity drives much new crop activity, the pursuit of a new crop as a hobby can provide a change from everyday activity but it does not have the same profit motive as a commercial business. Hobbies are for pleasure, and the pursuit of pleasure usually costs money.

I want to improve

When Australian new crop developers have been asked why they want to make a change (that is, when asked the “purpose of their purpose”), they have usually indicated that they want to make money.

There have been some new crop schemes in the past that have provided significant returns for promoters. Such entrepreneurs have attracted attention because their idea is unusual, but their products have often not satisfied the consumer for very long. These products are unable to sustain a presence in the market because they are not attractive enough to consumers or cannot be marketed at a value-for-money price.

In a similar way, new crops have also often featured in tax-driven schemes. Such schemes have sometimes failed to produce a viable product in the market, perhaps because the promoters and/or the managers responsible did not have the skills, motivation or desire to properly nurture the development of the product’s supply chain.

While they can provide short-term benefits to a small number of people, neither of these two approaches to new crop development amounts to improvement in any long-term sense.

New crop developers have often indicated that their businesses should be performing better than they are; new crops are therefore sought to stabilise or improve rural incomes.

New crops have also been targeted as possible solutions during reorganisation in a primary industry sector—for example, as

alternative enterprises to the dairy, tobacco or sugar industries in some areas.

I want to create some benefit

When Australian new crop developers have been asked why they want to make money, they have frequently indicated that they wish to provide some sustainable long-term benefit, which is not necessarily just for themselves.

Such purposes have included the establishment of a new sustainable rural industry for a region or the improvement of the value of their business assets before they are eventually transferred to the next generation.

I expect it will be worthwhile

It is possible to examine whether an interest in new crops is worthwhile by testing the crop’s future purpose. This assumes that the current, realistic new crop aims will be achieved in the time frame allowed. Looking back from the future, once achieved, was it worth the effort?

For example, assume the purpose among the members of a horticultural supply chain is to build up to a \$1 million turnover over 15 years. If achieved, would it seem worthwhile after this time, given the initial investment required, the effort expended over 15 years and the risks taken?

Table 1. Challenges of new crops and new products compared with existing crops

<i>Existing crop—product already traded</i>	<i>Existing crop—new product</i>
<p>Improving the way the crop is grown and harvested</p> <p>Making the product available to more consumers who are likely to want it</p>	<p>Improving the way the crop is grown and harvested</p> <p>Finding out from potential consumers what they want in the new product</p> <p>Making the new product fit the consumer’s needs as closely as possible</p> <p>Organising the supply chain for the new product to get it to market</p> <p>Making the product available to more consumers who are likely to want it</p>
<i>New crop—product already traded</i>	<i>New crop—new product</i>
<p>Establishing an efficient way to grow and harvest the crop</p> <p>Finding out from current consumers what they like about the product and finding ways that the new crop can offer them more benefits</p> <p>Organising the supply chain for the new product to get it to market</p> <p>Making the product available to more consumers who are likely to want it</p>	<p>Making sensible alternative crop choices available to farmers so they can diversify their farming systems</p> <p>Establishing an efficient way to grow and harvest the crop</p> <p>Finding out from potential consumers what they want in the new product</p> <p>Making the new product fit the consumer’s needs as closely as possible</p> <p>Organising the supply chain for the new product to get it to market</p> <p>Making the product available to more consumers who are likely to want it</p>

To have any hope of hitting a target, we must aim at it. The aim of new crop development is to be profitable.

This needs to be realistically stated and it should become the focus of planning. If we eventually hit the target, was it worth the trouble?

New crops and new products: know the challenges

Among the Australian new crops mentioned in the introduction, all but lupin and macadamia had previously been grown and traded in a market somewhere.

Such experience was helpful in making them commercial here. In each case, although there was still a major marketing challenge to be resolved, there was at least existing knowledge about the crop's production requirements.

Developers of new crops that do not have a previous growing and trading history face the greatest challenges of all, as outlined in Table 1. However, if successful, they also have significant profit potential.

Better information leads to better decisions

“Information” can be envisaged as one point in a continuous range from media reports to wisdom (Figure 1).

Each point in the range varies in availability (vertical axis) and usefulness (horizontal axis). Media

reports are plentiful and of little relevance to specific new crop businesses. Wisdom is very useful but much harder to find.

In the field of new crop development there is no shortage of media reports and hunches, but there is a distinct lack of reliable data, information and knowledge. This is partially because of the nature of the problems being addressed and partially because some people believe that if they keep data, information and knowledge to themselves and do not share it they have an advantage over others.

The advantages of becoming more competitive through cooperation are addressed below.

New crops are often promoted using the news media as a form of publicity. It can be the first time that many people have heard of a particular crop and they can find the new crop interesting. However, the factual content or relevance of such media reports will vary.

The circumstances of most media reports mean that the information

is only relevant to those featured in the report.

Interesting new crop ideas are extremely plentiful and by themselves add little commercial value to an enterprise.

So, in such an uncertain environment, while it is clear that decisions need to be based on the best possible information, problems can only be solved by testing possible solutions through trial and error.

The difficulty with this approach is that the successful commercialisation of a new crop does not depend on a single factor with a single solution. It consists of a great many factors operating together across the entire supply chain from producer to consumer.

The need to deal with such complexity, even on a trial-and-error basis, brings the solution once again back to starting with the best possible information and the best possible people and accepting the additional challenge of managing a higher than usual level of risk.

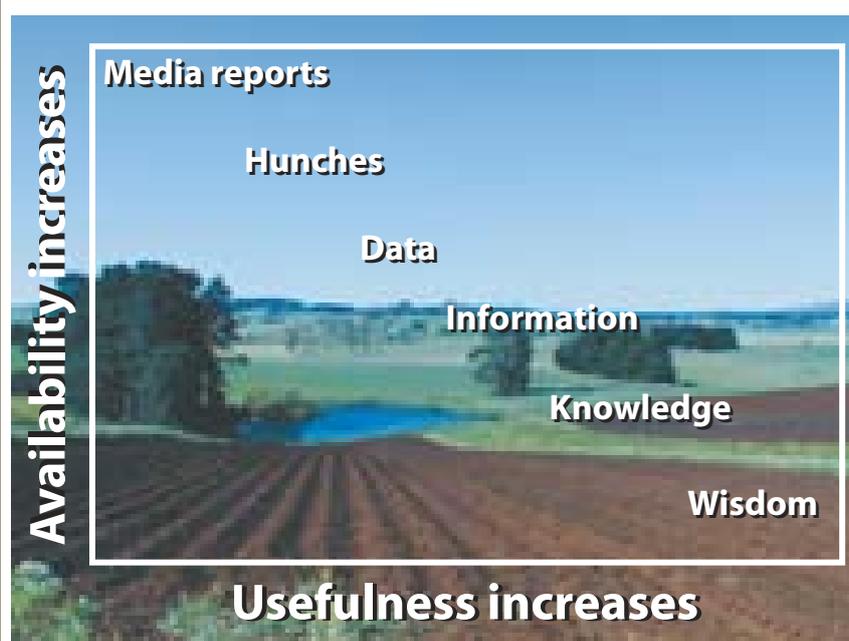


Figure 1. The continuum from media reports to wisdom in relation to availability and usefulness

New crop information is of no value unless it can apply to our specific new crop supply chain. We need to be our own experts since we know our own part of the supply chain. We must not act independently of the chain and we must be conscious of the risks involved for all chain participants.

Acknowledging and managing risk

Risk is the chance of injury or loss. The level of risk depends on the chance of the injury or loss actually occurring and its impact when it does.

Injury or loss can be internal or external to the new crop business. If it is internal, it arises from production problems or difficulties with the planning for the business or the management of its people. If it is external, it results from problems with the market in which the product is traded, the supply chain to which the business belongs or the economic and political environment in which the business operates.

External risk factors usually have the greater influence on the ultimate commercial success of the new crop product.

Attempts to estimate external risk by imagining the future can provide some benefit in preparing for future management action but have less validity if the product is new.

External risk factors are best investigated through having a product in the market.

By following the 13 step commercialisation process outlined below, new crop supply chain members can enter a market with a product, under a strict set of benchmark and monitoring conditions, and test its appeal to the consumer directly. The steps are as follows:

1. the proposal of the new crop by those willing to commit themselves financially to such development
2. acknowledgment that new crop development is a high risk adventure
3. recognition of the need to protect intellectual property rights

4. assessment of the appeal of the new crop product to the potential purchaser, using all relevant available criteria with an indication of those criteria for which no information is available
5. a theoretical assessment of the production potential of the new crop using all relevant available criteria with an indication of those criteria for which no information is available
6. establishment of an integrated development group comprising producers, processors, distribution and marketing partners with research providers in a facilitation role
7. agreement within the group on resource requirements, expected outcomes, action plans to achieve them and proposed distribution of any profits
8. establishment of a process of project monitoring to identify and resolve problems quickly and efficiently
9. establishment of economic benchmarks and an agreement to abandon the proposed development if these have not been met
10. establishment of a system of review to determine whether the development is worthwhile and to analyse the critical contributions for success or failure
11. trial production for trial marketing
12. trial production for trial processing and packaging
13. experimental production, using properly designed scientific trials.



A range of Australian Desert Limes products at a farmers' market in Brisbane (Photo: Australian Desert Limes, 2003)

What are the “best bets”?

Attempting to predict which new crops are likely to be commercially successful in a general sense is probably a waste of resources. New crop options that can become “best bets” for one person can be rejected by another.

There are no generic best bets because new crop commercialisation systems behave chaotically, just like weather systems and market systems. Such chaotic systems:

- are in a state of continuous change
- are influenced by a large number of factors, each of which is changing as well
- are strongly influenced by interactions among these factors
- have feedback and regulatory mechanisms so that past behaviour can influence future behaviour.

One of the main reasons that the future behaviour of a chaotic system, such as a new crop supply chain, is very difficult to predict is because very small changes can influence outcomes in a major way. However, it is a mistake to conclude that because a system is chaotic there is no point in trying to manage it. On the contrary, managers who are better at making best bet decisions can prosper in such environments.

One way to improve the chances of making best bet decisions in new crop development is to base such decisions on the best possible information, evaluated in a non-emotional way, and to make these decisions in collaboration with other members of the supply chain.



Workshop for farmers to examine agronomic and soil information
(Source: Petheram, J., *A Manual of Tools for Participatory R&D in Dryland Cropping Areas*, RIRDC pub. no. 00/132)

Such an approach reflects the findings of Collins (2003), who showed that the three major impediments to success in new crop industries are lack of reliable information, lack of an orientation to the market, and lack of collective behaviour.

The courses described in the following chapter help participants build a personal best bet list of new crops.

Then, having made the decision about which crop to become involved with, they help managers to learn what is required to ‘hand craft’ their own supply chain as a way of improving their new crop enterprise’s chances of success.

The choice of “best bet” new crops must be left to the participants. Best bets are influenced by self-motivation and the ability to learn and should be based on objective analysis in collaboration with other members of the supply chain. Wishful thinking and excitement over the rare and unusual is a personal response that rarely translates to enduring market success.

Cooperating to compete

Some new crop developers work alone; others choose to work in groups. Those who work alone are often successful by keeping information to themselves and, in the short-term at least, profit from their way of growing and marketing the new crop.

However, because no business can operate independently of the supply chain for its product, sooner or later the success of the individual attracts competitors whose objective is to copy successful systems.

Frequently, once the “secrets” of the individual have been learned, the system is easy to copy and intense competition between individual firms is the result.

Such competition usually reduces the returns to all competing firms and, if one partner competes to gain an advantage over the other, future hopes of cooperation are severely diminished.

On the other hand, new crop developers can choose to work collaboratively and they can choose to consider the whole supply chain as the “field” for their work.

Then it becomes possible to generate and share a far greater range of data, information and knowledge and ultimately to improve the chances of success for everyone by making better decisions.

The case of the Australian Persimmon Export Company, for example, shows that over the longer term cooperation produces the most beneficial outcomes.

There are currently a number of other new crop groups in industries such as bamboo, native flowers, tropical fruits and vegetables who are exploring ways of becoming more competitive through cooperation and adopting a whole of supply chain strategy.

The downside of collaboration is the need to manage interpersonal relationships and the dynamics of a group of people trying to jointly solve a common problem.

However, these are exactly the same skills that will be required in the ongoing management of the supply chain for the new crop product.

So collaboration can also provide a learning opportunity that will continue to pay off commercially.

Learning how to cooperate to become more competitive is the aim of the “Forming and Managing Supply Chains in Agribusiness” short course described in the next chapter.

Key references (see page 13)

About the authors



Dr Rob Fletcher teaches biology and plant breeding at the University of Queensland Gatton. His research interests for the past 14 years have focused on commercial innovation in the establishment of new rural industries. He manages the Australian New Crops Website (www.newcrops.uq.edu.au) and has facilitated short courses and spoken at conferences and workshops on new rural industries throughout Australia and overseas.



Dr Ray Collins is Associate Professor in Agribusiness in the School of Natural and Rural Systems Management at the University of Queensland. His teaching and research focus on new agribusiness enterprises, supply chain management and export development strategies. Over the last 15 years Ray has worked with new rural industries as both researcher and consultant. His contribution to the

Australian persimmon industry is sometimes quoted as a model of how a new export-oriented horticultural industry can guide its own future. Ray is a recipient of the University of Queensland Excellence in Teaching Award and two International Collaborative Research Awards.

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The new crop development process

**Rob Fletcher
and Ray Collins**

Introduction

The previous chapter described some of the main factors involved in decisions about investing in new crops, focusing particularly on the importance of understanding markets and building a supply chain. This chapter provides more detail about new crop development by outlining the content of three courses available to assist and encourage commercialisation of new crop products.

The DOOR marketing short course

The DOOR (Do Our Own Research) Marketing short course comprises a two-day workshop for groups of up to 30 motivated new rural industry participants (producers to consumers) at a time.

The principles behind the DOOR Marketing course can be summarised as follows:

- New crop participants cast themselves as experts in their own farming systems or supply chain components and cooperate with others to find solutions.
- Participants need to focus on their principal motivation.
- There is no pre-determined outcome.
- Participants own the outcomes themselves.

The course assists new crop participants in determining whether their selected new crop product warrants investment in the types of strategic plan prepared in the Fresh Fields short course, described below.

The DOOR Marketing program consists of the following:

1. *Introduction of participants to each other*

Psychological research has indicated that primary producers tend to be “loners”. Production dominates their minds. It can therefore be difficult for them at first to think laterally or

that is, “past the farm-gate” —and to collaborate in new crops planning along the supply chain. Experience with DOOR Marketing and similar short courses throughout Australia indicates that once participants understand who else is involved in a course they have no trouble collaborating or planning together.

At the commencement of the course, participants provide their names, affiliations, reasons for attending and expectations for the course. Each person also nominates a new crop or rural industry on which to focus her or his attention.

The facilitator vigorously interacts with all participants during these introductions and subtly encourages the participants to interact with one another as well.

As a result, each participant knows something about every other participant since they have all been able to speak about themselves. Each participant also experiences the difficulties of publicly committing to a single new crop for the course.

Participants in DOOR Marketing realise they all share the same problem; namely, they want to do better through designing their own future.



DOOR participants discussing quandong grafting techniques at the Blue Bush Cafe at the Arid Land Botanic Gardens, Port Augusta



2. The 10 steps for planning

The 10 steps for planning were originally developed in response to inquiries from individuals wanting to know about best bets among new crops, but they have also come to be useful in the DOOR Marketing short course.

The exercise provides an introduction to the issues relevant to new crop development and demonstrates for participants the usefulness of sharing problem solving with others.

The questions relating to each of the planning steps are shown in Table 1.

3. Systems exercise

To encourage systems thinking, a series of generic questions has been designed to target each participant's future scenario, inquiring about:

- likely information sources
- the participants' principal motivations
- the physical and economic environment
- the availability of colleagues and partners
- the types of inputs required, including equipment and technology
- the outcomes sought.

Four scenarios have been used:

- wishful thinking
- reality
- the local modifications needed
- the likely action plans.

This exercise encourages lateral thinking and encourages each

Table 1. The 10 steps for planning

Step	Question
1. The participant's current situation	Are you a contented person?
2. The participant's principal motivation for change	What is your interest in new crops?
3. Personal skills	What do you enjoy doing?
4. Commitment	Have you chosen a new crop to which you are willing to commit money and time?
5. Information available	Do you have easy access to germplasm and useful information?
6. New crop supply chain	How do you describe the new crop product to be sold?
7. Market research	What is the marketability of the new crop product?
8. Production	Will the new crop grow in your area?
9. Personal factors	Are you contemplating forming a group to grow and market the new crop product?
10. Economics	Have you formed a group already and if so, what is its structure and how will it function?

participant to consider likely relevant sources of information for the modification of her or his farming and supply chain system.

4. A brainstorming session on the types of information required

Participants cooperate in a brainstorming exercise to identify the types of information required to bring their new crop developments to reality. After the session, each type of information is classified as a marketing, economic, research and/or production issue and the marketing issues are ranked for perceived importance among the participants.

Brainstorming is also a useful tactic to encourage new crop developers to think laterally, since no criticism or discussion is permitted following any contributions.

Often, possible solutions to problems which appear to be difficult to surmount

can be discarded before the implications are properly analysed; brainstorming among motivated individuals extends the range of possibilities in problem solving.

5. Strategic marketing management

Strategic marketing management asks the question: "What market conditions are necessary to stimulate the commercialisation of new crop products?"

The questions in Table 2 comprise the outline of the "homework" for participants and, once attempted, permit the completion of the SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis during the second day of the DOOR Marketing short course.

During the brainstorming session, it is invariably external issues that predominate, with market research perceived as more important than consumers, competition or the business environment (Table 2).

Table 2. The outline for a strategic marketing management investigation for a new crop participant

External factors	
Customers	Who are our customers?
	Are the customers a uniform group?
	Will the product satisfy our customers' needs?
	What is our customers' motivation in buying the product?
Competitors	What are our customers' unmet needs?
	Who are our current and potential competitors?
	Is our product likely to encourage fierce competition in the market?
Market analysis	Are our competitors a uniform group?
	What are the characteristics of our competitors?
	What is the size of the market?
	How long is the product life-cycle expected to be?
	What will the profitability of the market be?
	What are the cost structures along the supply chain?
	What distribution channels will be used for our product?
	What are the overall market trends?
	Are there any key success factors within the industry requiring attention?
	Environment
Is it possible to develop optimistic, realistic or pessimistic scenarios?	
What areas of information are currently limited, requiring attention?	
Internal factors	
Performance	What measures for profitability and performance should we use?
Strategic options	What kinds of strategies have we used in the past?
	Do the strategies need to change in the future?
	What is our company's sustainable competitive advantage?
	What are our problems?
	How will these problems be overcome?
	What are the financial resources available?
	What business are we in?
	What type of enterprise are we?
	What is our strategic vision?

Source: Adapted from Aaker (1995).

6. SWOT analysis

The core activity of the DOOR Marketing course is preparing for the SWOT analysis of new crop products, the products having been chosen by the participants themselves.

There has usually been a break of two-days to seven weeks between the first and second days of the course so that participants can complete their "homework" in preparation for the SWOT.

The second meeting of the course commences with another introduction session with similar questions to those asked on the first day, focusing on this occasion on new crop products and the outcomes of the homework.

The SWOT analysis is then completed (Table 3).

The focus in the SWOT analysis is not on picking winners, but on qualitative identification of any flaws in a proposal.

The intention is to find a reason to throw every proposal away; those that are not thrown away can be considered for potential commercialisation.

Only the clear boxes in Table 3 need to be considered (the others are not relevant) and fatal flaws are marked with a hash sign.

If participants identify any threats in terms of customer demand, current market price, industry trends or production factors or any weaknesses in terms of expected returns, then their proposals cannot be considered viable.

Table 3. SWOT analysis conducted at the DOOR marketing short course

Factors	Internal factors		External factors	
	STRENGTH	WEAKNESS	OPPORTUNITY	THREAT
Customer demand				#
Competition				
Start-up costs				
Current market price				#
Expected returns		#		
Industry trends				#
Promotional strategies				
Distribution strategies				
Experience				
Resources				
Commercialisation				
Production factors				#

Source: Fletcher et al. (1997).

Approximately 90% of the initial proposals from participants in DOOR Marketing short courses so far conducted throughout Australasia have been abandoned as a result of such findings.

Most participants have then repeated the process, focusing on other products from the same new crop and/or other new crop species.

The Fresh Fields short course

The Fresh Fields short course uses the same principles as the DOOR Marketing short course. New crop developers plan strategies for their businesses, leading to the creation of business and marketing plans. The course was designed to assist people whose new crop product ideas survived the DOOR Marketing SWOT analysis described above. In a sense, it helps participants build a personal best bet list of new crops.

The Fresh Fields program focuses on the business satisfying its customers' needs profitably and consists of the following:

- identifying the needs of each member of the supply chain
- understanding the way that these needs will be met
- setting realistic targets
- identifying a process to follow
- analysing the businesses with which to deal
- establishing priorities
- selecting future actions to take
- creating a plan to follow.

The forming and managing supply chains in agribusiness learning package

The Forming and Managing Supply Chains in Agribusiness learning package helps managers to learn what is required to “hand craft” their own supply chain as a way of improving their new crop enterprise’s chances of success. The package would be of interest to anyone in the new crop development process, but is specially targeted at those who are close to the full commercialisation stage.

Comprising a workshop, CD and workbook, the package was developed out of a need expressed by large numbers of applicants for funding under the Federal Government’s New Industries Development Program (NIDP), run by the Australian Government Department of Agriculture, Fisheries and Forestry. These applicants often had a clear idea of the product or service they were developing but very poorly thought out strategies to ensure that the supply chain that would deliver their product to consumers would do so competitively and at a profit.

The learning package is a joint venture between NIDP and the University of Queensland. Its aims are:

- to demonstrate the need for a whole-of-supply-chain perspective on new enterprise development
- to show how a supply chain can be hand crafted
- to ensure that new enterprise developers know what must be managed, and how, in making their supply chains as competitive as possible.



Horticultural workers planting native seedlings at Yuruga Nursery, Mareeba, Queensland

The CD contains formal instructional material that is heavily supported by recorded interviews where practising managers recount their own experiences and strategies in respect of each supply chain learning principle. Thus the CD is oriented towards learning from the experiences of others. It also contains the downloadable workbook, two complete case studies of supply chain management in action in new enterprise development, a library of additional reading resources and a list of contacts for further information.

Participants usually begin by attending a one-day workshop where they are introduced to the CD and workbook, and begin working on their own new enterprise's supply chain.

Having their own copy of the CD and being familiar with how to use it as a learning tool means that they can then work towards developing supply chain strategies in their own time and with prospective chain partners. Using the workbook to record what they

are thinking and doing brings a level of discipline and structure to the process, and creates a record for future evaluation of progress.

These workshops are organised through NIDP or the University of Queensland.

Conclusions

The future viability of new crop options cannot be predicted accurately because biophysical, marketing, economic and human systems often behave chaotically.

Rather than trying to predict winners, members of new crop industries can use the resources outlined above to collectively focus on their goals and pursue them in ways that improve their chances of making best bet decisions. This will involve identifying consumer needs, clearly defining the new crop product, establishing the human and technical components of the supply chain and entering a commercial market, once appropriate benchmarks for investment, growth and returns have been set.

Such an approach can be applied to firms in any new crop industry. At a collective level this can also provide a framework for the industry to determine its needs in terms of future research and development.

Some new crop industries will eventually prove to be commercially significant over large areas, but trying to predict in advance which ones will achieve this level of success has proven to be a waste of resources.

A new crop industry's most valuable resource is its people.



Joe Zappala, tropical fruit grower, Mareeba Queensland

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Medicinal herb products are a growing market in Australia and around the world

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