Skill needs now and in the future in the rural industry

Wool Production
Production Horticulture
Viticulture
Cotton Production

Produced by the Rural Industry Working Group

For the Honourable Dr David Kemp MP
Minister for Education, Training and Youth Affairs

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Logos on front cover:
NFF, RSA, National Industry Skills Initiative

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Foreword

I have much pleasure in presenting this report on skill needs in the rural industry to the Honourable Dr David Kemp MP, Minister for Education, Training and Youth Affairs.

The Australian rural industry is recognised internationally as one of the most efficient, innovative and globally aware industries. It remains one of Australia's most productive industries, with some $26 billion of export income, which represents around 25 per cent of all merchandise exports. Importantly, a significant number of people work in the industry.

This report is, of necessity, confined to an analysis of four major commodity sectors—wool, production horticulture, viticulture and cotton. I would strongly suggest, however, that many of the issues and recommendations raised in the report could be considered as being applicable across all sectors of the industry.

The report concludes that there is an increasing demand for both skilled and semi-skilled labour throughout the industry to meet the changing market demands that will be required in the twenty-first century.

The Rural Industry Working Group comprised key industry representatives from each of the sectors working with industry-related government agencies to identify specific issues associated with investment in training, skill sets and gaps, and labour shortages. The work undertaken included extensive research, focus groups and analysis of responses to the industry questionnaire, which have provided the basis for the recommendations outlined in this report. These recommendations provide a framework for action aimed at meeting skill needs now and in the future.

I would like to express my appreciation and acknowledge the efforts of the Working Group for their professionalism, commitment and personal contribution to this important project. I would particularly like to thank the National Centre for Vocational Education Research for their valuable input and assistance in the production of this report.

My thanks go to Dr Kemp for his support in initiating this valuable work for the rural industry and I commend it to government and industry.

Wayne Cornish
Vice President National Farmers' Federation
Chair Rural Industry Working Group

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Glossary of terms

Certificates I-IV

A set of qualifications awarded in the vocational education and training sector and recognised under the Australian Qualifications Framework (AQF). The four levels of certificate recognise increasing levels of skill.

Cross-sectoral and cross-industry

Cross-sector refers to issues or themes within rural industries and cross-industry refers to issues or themes across different industries, for example rural, engineering, hospitality, tourism.

FarmBis

The Farm Business Improvement Program (FarmBis) is a partnership between the Commonwealth and State governments and aims to enhance the business and natural resource management skills of Australia's primary producers through providing funding for education and training.

Group Training Companies (GTCs)

A company which employs apprentices and trainees, and places them with one or more host employers who are usually small to medium-sized businesses. The host employers provide on-the-job training and experience, while the Group Training Company organises off-the-job training and handles recruitment, rotation and payroll.

Labour Hire Companies

Labour hire companies source and provide short-term casual contract labour to employers on an as needs basis.

Multiskilling

Training workers in a number of skills, enabling them to perform a variety of tasks or functions across traditional boundaries.

New Apprenticeships

An umbrella term for the new national apprenticeship and traineeship arrangements which came into effect on 1 January 1998. The main characteristics of New Apprenticeships include a contract of training between the employer and New Apprentice (apprentice or trainee), public funding and support for employers, choice of training provider, a wider range of occupations and industries, competency-based training using national Training Packages, apprenticeships in schools and a continued role for Group Training Companies.

New Apprenticeship Centres (NACs)

An organisation providing advice and assistance to New Apprentices and employers with training arrangements, training agreements and financial incentives under the New Apprenticeships system.

Qualification

Certification awarded to a person on successful completion of a course in recognition of having achieved particular knowledge, skill or competencies.

Recognition of Current Competencies (RCC)

The acknowledgment of competencies currently held by a person, acquired through training, work or life experience. More commonly known as Recognition of Prior Learning.

Recognition of Prior Learning (RPL)

The acknowledgment of a person's skill and knowledge acquired through previous training, work or life experience, which may be used to grant status or credit in a training course or module.

Skill

An ability to perform a particular mental or physical activity which may be developed by training or practice.

Skill gaps

Imply a need for upskilling within the existing enterprises and workforce.

Skills passport

A record of the competencies possessed by a person and recognised through formal assessment. Proposed but not formally implemented in Australia.

Skill shortages

Occur when skilled jobs are hard to fill at reasonable wages and conditions.

Stakeholder

A person or organisation with an interest or concern in something. In VET, the stakeholders include governments, purchasers of training, providers of training, industry, industry training advisory bodies, clients and the community.

State/Territory training profile/plan

A report which outlines the planned or actual provision of publicly funded vocational education and training in a State or Territory. Plans are also sent to ANTA and are used in determining Commonwealth funding to States and Territories for vocational education and training.

Training brokerage

An organisation involved with the identification of training needs for industry and employers, and who arrange appropriate training delivery solutions. For example, some regional development boards and labour hire companies currently carry out this function.

Training culture

An environment in which training is seen as important and is closely linked with business strategy, particularly in creating competitive advantage for an enterprise. Opportunities are given to all employees to participate in training to develop their skills and competencies.

Training Package

An integrated set of nationally endorsed standards, guidelines and qualifications for training, assessing and recognising people's skills; developed by industry to meet the training needs of an industry or group of industries. Training Packages consist of core endorsed components of competency standards, assessment guidelines and qualifications, and optional non-endorsed components of support materials such as learning strategies, assessment resources and professional development materials.

Upskilling

Improving skills, e.g. by further training.

VET-in-Schools

A program which allows students to combine vocational studies with their general education curriculum. Students participating in VET-in-Schools continue to work towards their Senior Secondary School Certificate, while the VET component of their studies gives them credit towards a nationally recognised VET qualification.

Vocational Education and Training (VET)

Post-compulsory education and training, excluding degree and higher level programs delivered by higher education institutions, which provides people with occupational or work-related knowledge and skills.

Executive summary

In 1999 the Minister for Education, Training and Youth Affairs, the Hon. Dr David Kemp MP, established an industry led process designed to determine the steps that industry and government could take separately, and in partnership, to address industry skill issues. Three industries were investigated initially – engineering, automotive and electrotechnology - and reports from the respective Working Groups were delivered to Dr Kemp at an Industry Skills Forum in April 2000. At the Forum, Dr Kemp announced that three further industries – building and construction, food trades and rural industries – would be reviewed in a similar process. This report outlines the initiatives, outcomes and recommendations from the Rural Industry Working Group.

The terms of reference of the investigation were to:

- conduct research and find evidence of the employer benefits of investing in training
- identify the skill set needs of designated industry-occupational areas now and in the future (3-5 years), including skill sets that are common across industry
- identify the barriers and impediments to satisfying these skill needs
- recommend short, medium and long term initiatives and solutions.

The purpose of this report is to provide:

- the Minister for Education, Training and Youth Affairs with information on skill related issues within the rural industry
- recommendations which will form the basis for development of a rural industry action plan
- information on skills and related issues within rural industry generally for employers, industry groups, government agencies and registered training organisations.

The report has been developed through a combination of examining recent research, data analysis of available statistics, consultations with industry and training providers and analysis of questionnaires sent to industry practitioners. The analysis focussed on the sectors of wool growing, production horticulture, viticulture and cotton growing. The Working Group conducted an investigation into skill needs across these four sectors of the rural industry and strategies were developed to address them.

While there have been a number of changes to the training system in recent years not all of these have been effectively utilised by the rural industry.

The current VET system is based on a nationally consistent Australian Recognition Framework. The elements, including Training Packages (containing qualifications, competencies and assessment procedures), registered training organisations, training agreements and New Apprenticeships, provide a solid foundation for effectively meeting industry training needs.

Themes were identified for improving vocational education and training across rural areas including the involvement of local planning agencies such as regional development boards, the importance of training intermediaries, increasing the awareness of careers in rural industries to young people in both rural and metropolitan areas, encouraging training for productivity and income gains, and overcoming cost, delivery and assessment problems. Training has a role in encouraging greater adoption of innovative farming and business practices.

This report identifies a range of views and perceptions concerning skill related issues. It is a valuable insight into the factors which hinder skill development in an industry that is predominantly comprised of small businesses in regional and remote locations.

Benefits of investment in training

The research highlighted several important factors about returns to training for enterprises:

- returns on training investments are nearly always positive and sometimes very high
- returns to training come in many different forms; in addition to increases in labour productivity and profitability, these include higher levels of value-added activities, innovation and better and more flexible forms of work organisation
- returns to training are highest when it focusses on specific business needs
- training acts as a support mechanism for other changes in firms.

There is evidence of under-investment in training in rural industries because many smaller farms are unable to capture the long-term return on the investment in training an employee if they are unable to employ people continuously, or on a full-time basis.

Current and future skill needs

Both skill gaps and skill shortages were identified in rural industries. Skill gaps imply a need for upskilling within the existing enterprises and workforce, while skill shortages occur when skilled job vacancies are hard to fill at reasonable wages and conditions.

Specific skill gaps and skill shortages were identified in the four rural industry sectors under analysis, and a number of factors were identified that influence the supply and demand of skills in rural industries. These include differential changes in output and productivity across industry sectors, variations in employment prospects and farm incomes, an ongoing need for replacement and improvement in the skill base because of the age and gender profile of the workforce, poor technology uptake and a range of education and training needs. Training needs related to on-farm training in language, literacy and numeracy and new farming methods and technologies, training in finance and management, new management skills and office practices and more flexibility in Training Packages. There is a need to implement the available flexibilities in arrangements for New Apprenticeships in the rural industry. There is also a need for cross-sectoral or cross-occupational training and cross-industry vocational training.

Barriers to satisfying skill needs

A number of industry issues, vocational education and training system issues and skilling and reskilling issues were identified as barriers to meeting skill needs.

Industry issues

While farmers endorse the benefits of training, opportunities for training are not consistent with farm employment patterns, which in general are not continuous or full-time. There is poor communication about training options to farmers.

There is a need for training products to be consistent and integrated between the *recognised* and *unrecognised* training sectors and for linkages to be developed between the two sectors (ie

the *formal* VET sector associated with qualifications and the *informal* system of training usually involving short courses not linked to VET and qualifications).

Vocational educational and training system issues

A number of potential planning, participation and pathway-related barriers to satisfying skill needs in the rural industry exist in the VET system. These include:

- the need for VET planning to address strategic skill needs
- gaps in VET participation that tend to undermine skill solutions
- the different training needs of specific rural industries
- inadequate pathways to skills and qualifications which are disadvantaging rural industry.

The industry recognises the value of recent reforms to the VET system and the issues raised by industry are in the context of achieving a fully integrated and nationally consistent approach.

The effectiveness of New Apprenticeships is currently being impaired by differences across States and Territories in administrative arrangements and interpretation of policies and employer incentives. The system would be greatly enhanced by a consistent approach to flexible training delivery including user choice, assessment procedures and employer incentive regimes across State/Territory jurisdictions. While VET-in-Schools programs have been embraced by industry, enhancements to the system, particularly national consistency, are required to improve their effectiveness.

Skilling and reskilling issues

There is a need for reskilling and upskilling amongst existing farmers to bridge skill gaps in a number of industry sectors.

Initiatives and solutions

A range of key objectives were identified by the Working Group as a means to address the issues identified as impacting on skill needs. The objectives are to:

- market and promote training to industry
- attune the VET system to the training needs of rural industry
- maximise flexibilities in the system to make New Apprenticeships work more effectively for rural industry
- develop young people for careers in the industry
- address skill gaps and shortages.

A range of strategies were recommended, and the Working Group identified roles for industry, government and training providers, as a means to achieve these objectives.

Introduction

Background

In September 1999 the Minister for Education, Training and Youth Affairs, the Hon. Dr David Kemp MP, convened a meeting with the Australian Chamber of Commerce and Industry (ACCI), the Australian industry Group (AiG) and the Business Council of Australia (BCA) to discuss issues relating to skill shortages.

In November 1999, the Minister established the industry led National Industry Skills Initiative to determine the steps industry and government could take separately, and in partnership, to address industry skill issues.

Three industries were investigated initially—engineering, automotive and electrotechnology. Reports from the Working Groups of these initiatives were delivered to Dr Kemp at an Industry Skills Forum in Melbourne in April 2000. Action plans for these industries are being implemented based on report recommendations.

At the April Forum Dr Kemp announced that three further industries—building and construction, food trades and rural industries—would be reviewed by a similar process. This report outlines the initiatives, outcomes and recommendations of the industry Working Group which reviewed the rural industry.

A National Industry Skills Initiative steering committee was also appointed by Dr Kemp to examine cross-industry issues emerging from the findings of the Working Groups. Acknowledging specific issues belonging to each group, the first round of the National Industry Skills Initiative identified twelve themes common to all industries. These relate to adopting the learning culture, improving the industry image, promoting careers, reviewing the activities of New Apprenticeship Centres, promoting new training pathways, recognising prior learning, retraining the workforce, improving workplace relations, streamlining regulatory frameworks, reviewing employer incentives, migration issues, and boosting information and analysis.

The methods and common issues emerging from the three previous Working Groups were also a useful reference for the rural investigation.

Terms of reference

The terms of reference for the Rural Industry Working Group were to:

- conduct research and find evidence of the employer benefits of investment in training
- identify the skill set needs of designated industry-occupational areas now and in the future (3–5 years), including skill sets common across the industry
- identify the barriers and impediments to satisfying these skill needs
- recommend short, medium and long-term initiatives and solutions.

The findings included in this report are based on statistics and data on supply and demand for skills in the industry and related employment issues, existing research and various papers and reports, a questionnaire and consultations with industry.

Working Group membership

A diverse Working Group representing the four industry sectors and a range of organisations was established to oversee this project. Mr Wayne Cornish, Vice President, National Farmers' Federation chaired the Working Group. It included representatives from the:

- National Farmers' Federation (NFF)
- Wool, production horticulture, viticulture and cotton industries
- Department of Education, Training and Youth Affairs (DETYA)
- Queensland Fruit and Vegetable Growers' Association (QFGA)
- Victorian Farmers' Federation (VFF)
- Western Australian Farmers' Federation (WAFF)
- Pastoralists' and Graziers' Association of Western Australia (PGAWA)
- Rural Training Council of Australia (RTCA)
- National Centre for Vocational Education Research (NCVER)
- Australian National Training Authority (ANTA)
- Enterprise and Career Education Foundation (ECEF) - formerly Australian Student Traineeship Foundation
- Department of Employment, Workplace Relations and Small Business (DEWRSB)
- Agriculture, Fisheries and Forestry Australia (AFFA)
- Australian Bureau of Agriculture Research Economics (ABARE)
- Australian Workers' Union (AWU)
- Rural Skills Australia (RSA)

The composition of the Working Group is included at appendix F.

Scope of the analysis

The analysis focussed on the sectors of:

- wool growing
- production horticulture
- viticulture
- cotton growing

These sectors represented two contrasting areas of fibre production (from a small base, cotton is growing as wool declines) and two contrasting areas of crop production (from a small base, viticulture is growing faster than most areas of horticulture). While recognising the great diversity of production horticulture, the analysis did not restrict itself to defined horticultural sub-sectors.

The chosen sectors did not sit neatly in conventional industry and occupational groups and definitive employment and training statistics were not available. For those reasons, it was useful to line up the sectors as far as possible against standard industry (*Australian and New Zealand standard industrial classification* [ANZSIC]) and occupational (*Australian standard classification of occupations* [ASCO]) classifications. In this way a benchmark was provided for the analysis.

The sectors represent about 30 per cent of total employment in the relevant Agriculture, Forestry and Fishing Division of ANZSIC, approximately as follows:

- wool growing is spread across the group grain, sheep and beef cattle farming, including parts of grain–sheep and grain–beef cattle growing, sheep–beef cattle growing, and sheep growing. It also takes in shearing services
- production horticulture takes in most of the ANZSIC group horticulture and fruit growing, particularly cut flower growing, vegetable growing, apple and pear growing, stone fruit growing, and fruit growing not elsewhere classified
- viticulture, which also comes under the horticulture and fruit growing group, is mainly represented by the class grape growing
- cotton growing is an ANZSIC class within other crop growing. In our terms, the industry also takes in the class cotton ginning.

At the 1996 census (NCVER 1998), and again in 1999 labour force survey figures, over 75 per cent of those employed in agriculture, forestry and fishing could be described in very broad ASCO occupational terms as 'farmers' (over 50 per cent) or 'farm hands' (over 20 per cent). The sectors under study have similar occupational clusters.

For those sectors, the skills represented by the following ASCO farming groups and occupations appear to be most relevant, either in part or in whole:

- mixed crop and livestock farmers
- livestock farmers, particularly mixed livestock, and sheep farmers
- crop farmers, particularly fruit and nut growers, vegetable growers, and crop farmers not elsewhere classified (which includes cotton)
- farm overseers, and also shearers
- farm hands, particularly general farm hands; fruit, vegetable or nut farm hands; and shearing shed hands
- agricultural and horticultural labourers not elsewhere classified

Evidently, these ASCO groups and occupations only relate approximately to the actual farming labour markets that might be found in farming enterprises in the study sectors. However, by enabling some degree of access to the available employment and training statistics, they are a step along the way to defining specific labour markets and 'skill sets' of interest to the rural industry.

Tertiary-level skills, which might apply to farmers and to other skilled (marketing, technical) occupations useful to production in the sectors, were not ruled out.

Purpose

The purpose of this report is to provide:

- the Minister for Education, Training and Youth Affairs with information on skill related issues within the rural industry
- recommendations which will form the basis for development of a rural industry action plan
- information on skills and related issues within rural industry generally for employers, industry groups, government agencies and registered training organisations.

This report identifies a range of views and perceptions concerning skill related issues. It is a valuable insight into the factors which hinder skill development in an industry that is predominantly comprised of small businesses in regional and remote locations.

Methodology

The aim of this report is to consider the skill requirements of the rural industry, to identify current and projected skill needs in four rural industry sectors, to consider critical issues and reasons for identified shortages, and to provide recommendations and strategies for addressing key issues.

This report has been developed through a combination of research of existing material, data analysis of available statistics, consultations with industry and training providers and an analysis of a questionnaire sent to industry practitioners.

In order to address the terms of reference, the Working Group considered an industry analysis paper focussing on the benefits of enterprise and rural training, industry output and employment trends for each sector of study, an education and training analysis as well as a skills and supply–demand analysis. This research identified a range of critical emerging issues, which directed the focus for industry consultations.

Information elicited from the industry consultations identified specific skill needs, perceived barriers to satisfying needs and possible solutions to key issues within each industry sector. The Working Group was presented with the results of the industry consultations and key findings from all research at a meeting held in December 2000.

Existing research

Significant reports were examined including papers submitted by:

- Australian National Training Authority
- Commonwealth Department of Education, Training and Youth Affairs
- Australian Chamber of Commerce and Industry
- Australian industry Group
- National and State/Territory rural industry training advisory boards (ITABs)

Also examined were:

- Co-operative Research Centre (CRC) for viticulture, wine and grape industry personnel education, training and assessment needs analysis (draft report)
- ANTA Food Processing Industry Training Package review

The full list of references can be found in appendix G.

Data analysis

Statistics and data examined in the preparation of this report were principally sourced from the:

- National Centre for Vocational Education Research
- Department of Employment, Workplace Relations and Small Business
- Australian Bureau of Agricultural and Resource Economics
- Australian Bureau of Statistics

Industry consultations

Industry consultations were undertaken during September–October 2000 based on decisions taken at the Working Group meeting held in Melbourne, August 2000.

A questionnaire was developed by NCVER and subsequently modified based on input from industry, particularly the National Farmers' Federation and its member bodies. The questionnaire was designed to gather information on a range of issues including skill needs and skill gaps, careers, pathways and education and training. The questionnaire was distributed by facsimile with the help of various industry organisations and Working Group members. Nationally, 60 responses were received across the wool, production horticulture (mainly banana, citrus, apple and pear) and viticulture industries.

Focus groups were also held across Australia with the cotton, production horticulture and viticulture industries to identify industry attitudes to a range of issues relating to employment and training generally, and skill needs in particular.

Responses to the questionnaire and focus groups are integrated throughout the body of this report. Key issues from the industry consultations are included at appendix D and cross-sectoral issues identified from the questionnaire are included at appendix E.

The results of the industry consultations provide an important snapshot of critical issues related to skill needs within the industry. These will form the basis by which government and industry will be able to work together to address the issues raised.

The consultation process for each sector occurred as follows:

Wool

Questionnaires were distributed across New South Wales, South Australia, Western Australia and Tasmania.

Various media articles and issues related to skill needs in the shearing industry were sourced.

Production horticulture

An industry focus group was held in New South Wales and questionnaires distributed widely throughout Queensland and South Australia.

Consultations occurred with the:

- Virginia Horticulture Centre, the results from their recently conducted industry focus groups being applicable to this project
- Apple and Pear Growers' Association
- Riverland Horticultural Council
- Adelaide Hills Regional Development Board
- South East Area Consultative Committee

Viticulture

Industry focus groups were held in South Australia and New South Wales, and questionnaires distributed in New South Wales, Victoria and South Australia. Questionnaires were distributed to regional managers from Southcorp Wines.

Cotton

An industry focus group was held in New South Wales (covering Queensland and New South Wales regions) and training providers were consulted.

Key findings

This chapter reports the key findings of the Working Group. The findings summarise the results of an industry analysis conducted by the Working Group and consultations held with the industry. The findings identify issues relevant to enterprise and rural training, agricultural industry output and productivity, vocational education and training (VET), New Apprenticeships, young people and career paths, upskilling of existing workers and skill gaps and shortages. More detailed information can be found in the appendices to this report.

Enterprise and rural training

The Working Group identified the following key findings on enterprise and rural training:

- Skill training is valuable at all levels of the enterprise, especially when the training is related to specific business problems or innovations.
- Australian rural industries have a relatively low qualification profile and its low education and technology uptake is adversely affecting productivity and profit. At the farm level, informal unrecognised training, such as short course training conducted by State Departments of Agriculture, is much more common than training that is recognised and which leads to a national qualification.
- The rural industry considers that training provides a return on investment. However, while farmers are able to capture the return on their own training and that of family members, many are unable to capture the long-term return on investment in the training of employees because few farms are able to employ people continuously or on a full-time basis.
- Information about training is fragmented. Industry representatives indicated a need for consistency and integration of training products between the recognised and unrecognised training sectors.
- Industry representatives identified a need to bridge the gap between recognised and unrecognised training and increase co-operation between the training and rural sectors.
- Many farmers are unaware of the reforms that have taken place in training, are unaware of New Apprenticeships, competencies, or how to utilise Training Packages.

Output and productivity

The Working Group identified the following key findings based on rural industry output and productivity:

- Although the value of rural industry output has grown faster than the average of all industry sectors over the past five years, the longer-term trend for the industry is of fluctuating employment. ANTA, in its 1997–2006 projections for vocational education and training, applies an employment projection that the rural industry will have small negative growth.
- Rural industry employment growth is moving out of inland areas to near-metropolitan and coastal areas. Broadacre farming is growing more slowly than horticulture and fruit growing.
- Agricultural productivity growth managed to keep ahead of declining terms of trade during the 1990s. Productivity growth is predominantly attributable to *top-performing farms*, which are larger and distinguished by identifiable management characteristics.

There is now a strong reliance on off-farm income with this being the major source of income for the average broadacre farm family for most years through the 1990s.

- Wool growing performance and productivity has declined over the 1990s, as small or pastoral woolgrowers fall further behind the productivity benchmarks set by top-performing farms. Training has a role in encouraging greater adoption of necessary innovative business practices such as new technology, improved genetics, leasing and share farming.
- Horticulture has doubled in value over the past ten years and employment has grown by 20 per cent since 1995. Exports have increased significantly, but quarantine and tariff issues in export markets may inhibit further export development.
- There has been a doubling of employment in viticulture over the last decade, driven particularly by growth in export demand for wine.
- There has been a substantial increase in cotton production during the 1990s, attributable to an increase in acreage planted to cotton.

Vocational education and training

The Working Group identified the following key findings relating to vocational education and training:

- Rural and remote areas have good rates of VET participation but are below average in secondary education and post-school education generally. School retention rates (at age 16) near metropolitan and coastal areas are higher than in inland areas.
- Comparing VET *graduate* numbers in agriculture-related courses to broadly equivalent VET *enrolment* numbers, agriculture students in VET appear to have only moderate levels of course completion.
- Only about 20 per cent of the agricultural workforce has skilled vocational or higher level qualifications compared to nearly 40 per cent of the general workforce. In Europe and the USA, both the agricultural workforce and the general workforce have higher levels of qualifications than the Australian agricultural workforce.
- Research identifies themes for improving VET across rural/regional areas. These are: involvement of local planning agencies such as regional development boards; the importance of training intermediaries (New Apprenticeship Centres); raising the career image and training awareness to young people in both rural and metropolitan areas; encouraging training for productivity and income gains; and overcoming cost, delivery and assessment problems.
- There are low proportions of rural VET students in distance education, despite a nominally good spread of public sector and private VET providers to meet the dispersed training needs. Limited access to technology and internet facilities may play a part in this.
- Greater synergies between VET providers, higher education providers, industry and 'centres of excellence' may be needed to address the range of training needs within the industry.
- VET enrolments in the rural industry are quite variable by qualification level and length of course by State/Territory.
- Although the number of New Apprenticeships in the rural industry have grown, non-contract pathways to skills and qualifications are important. The balance between these two avenues is a significant issue, as contract-based training does not always meet the needs of the farming sector.

- The industry is seeking more flexibility from registered training organisations in how training is delivered, the timing of courses and release times, and suggests that more training should be delivered on the farm.
- Local solutions work best in terms of providing employment and training for Indigenous Australians particularly when a mentoring program focussing on cultural differences is included in the program.
- The variable quality of telecommunications in rural Australia is hampering the delivery of education and training. Poor and non-existent, or expensive, internet and communication provision in remote areas is an impediment to accessing on-line training.
- The industry has identified a need for the documentation of available training products with a full overview of training courses available and a list of providers.
- With different assessment practices being used across the country, concern has been raised across all four industry sectors about the quality of assessment. There is a view in the industry that current practices allow anyone to do a module in assessment and then become a workplace assessor with no set standard in place. Industry representatives viewed this procedure as a major pitfall in the current training system and commented that farmers should be trainers but not assessors. It was suggested that a national auditing process is required to ensure that quality outcomes are obtained from training.
- The industry has identified a need for cross-sector industry training, as many casual or seasonal jobs could be transformed into multi-skilled full-time jobs if people have been trained across occupations such as shearing, shed hands, pruners, fruit and vegetable pickers and packers. Training programs are required in basic skills across industry sectors. A 'generic' pass or skill passport could be used to identify and confirm existing training in these basic skills.
- The industry has identified a need for multi-skilling because of productivity improvements which have occurred in all sectors. With increased mechanisation there is a need for operational skills such as tractor-driving, which have sophisticated on-board computers, as well as manual skills such as pruning or fencing.
- The rural sector appears to be just maintaining its proportional share of State/Territory VET funding. Notably, some States are making specific funding arrangements for growth in horticulture and viticulture. This is not the situation facing the declining sector of wool growing.
- The sectors of study do not reflect the generally good uptake of the Agriculture and Horticulture Training Packages. While the sectors of study comprise about 30 per cent of total agriculture employment, enrolments for qualifications related to these sectors appear to represent a rather lower percentage (about 10 per cent) of all Agricultural and Horticultural Training Package enrolments.
- Since few people are undertaking viticulture qualifications at graduate level, the viticulture industry sector has identified that there is a need for a specific pathway for viticulturists wishing to upgrade their skills from AQF III to degree level and beyond.
- The cotton industry sector has identified a need for additional competency standards to be developed to make up an appropriate Certificate II course in cotton.

The training system and New Apprenticeships

The Working Group identified the following key findings relating to the operation of the training system and New Apprenticeships:

- The industry is concerned about a range of issues in the context of achieving a fully integrated and nationally consistent VET system. While acknowledging the capacity of the New Apprenticeship system to meet the current and emerging needs of the rural

industry, the effectiveness of New Apprenticeships for the rural industry is being impaired by systemic inconsistencies and policy interpretations. The system would be greatly enhanced by a consistent approach to flexible training delivery, assessment procedures and employer incentive regimes across State/Territory jurisdictions. The variations in regulations and complexity of process across States is an issue that needs to be addressed, particularly as State policy is determined in capital cities which are perceived to have little relevance to rural and remote regions. The Working Group acknowledges a review of national consistency is currently underway by ANTA/MINCO, and due consideration must be given to the identified specific issues relating to national consistency for rural and regional areas.

- Group Training Companies (GTCs) are not operating effectively in rural Australia because of thin markets. While some funding is provided to Group Training Companies to operate in rural areas, barriers still exist. Most Group Training Companies still operate within the boundaries of larger regional centres and do not service rural areas outside these centres because of the higher costs involved with large distance travel.
- Employers are unable to access employer incentives for adult New Apprentices who hold a qualification at AQF level III or higher in an unrelated field. This is acting to preclude people retraining in areas of high demand such as viticulture if they have been previously employed in a declining industry.
- Few farms are able to employ someone either full-time or on a continuous basis for reasons such as improvements in farm practices, increased mechanisation and associated technological applications, and reduced farm profitability.
- While many farmers would like to employ a New Apprentice they are unable to offer continuity of employment for the term of the contract of training.
- Some labor hire companies have been able to offer full-time employment to workers by developing a regional seasonal calendar and grouping employment across a farm sector. In addition, the recently developed Harvest Trail concept is being heavily promoted. However, farmers have indicated that cross-sectoral training is essential if this mechanism is to continue successfully in the long-term.

Young people and career paths

The Working Group identified the following key findings relevant to young people and career paths in the industry:

- VET-in-Schools has been embraced by all sectors as a valuable initiative to encourage young people to pursue a career in agriculture or horticulture. However, a number of problems were identified with the program, including occupational health and safety issues, legislative requirements governing workers' compensation and insurance cover for people too young to hold a driver's licence.
- There are poor connections between schools and industry, poor quality of careers advice, lack of qualified teachers and inconsistent assessment procedures.
- Generally, there is a poor image of the industry among young people.
- The industry considers that there is a need to improve the marketing of careers and career paths available in the rural industry, particularly to encourage young people to pursue and maintain a career in the industry.
- The definition of an adult differs between State and federal awards. The different classification of an adult between awards can act as an incentive or a disincentive to employment.

Upskilling of existing workers

The Working Group identified the following key findings on the upskilling of the existing workforce in the rural industry:

- Recognition of prior learning (RPL) and recognition of current competencies (RCC) have been embraced by the industry and both are proving to be important avenues for encouraging farmers and existing employees to upgrade skills. Cotton, viticulture and production horticulture sectors are utilising the mechanism as a means of retraining workers and are conducting skill audits prior to RPL. In many instances, FarmBis funding has been the funding mechanism used to conduct skill audits.
- There is a high uptake among farmers in all sectors in quality assurance (QA) training integral to implementation of QA programs. Industry representatives indicated a need for rationalisation of QA training which is currently fragmented.
- The industry considers that delivery of training on the job is important, particularly in relation to chemical usage and occupational health and safety-related areas.
- There is a need for language, literacy and numeracy training programs with training conducted on farms, particularly in relation to chemical usage terminology.
- The industry considers that there is a need for training in finance and management for the existing workforce, many of whom have agricultural qualifications.
- Many farmers are interested in upgrading their skills and learning new management and office practices associated with computing.
- The wool industry sector considers that there is a need for on-farm-delivered training in new farming methods and technologies in the wool industry in areas such as mechanised methods of shearing, robotics, chemical defleecing and the use of the laserscan.
- The wool industry sector considers that a more flexible Agriculture Training Package, that better recognises and rewards the skills of trainees and includes wool classing and management training for experienced shearers, is required.

Skill gaps and shortages

In this report the term *skill gaps* implies a need for up-skilling within the existing enterprises and workforce, while *skill shortages* occur when skilled job vacancies are hard to fill at reasonable wages and conditions. The Working Group identified the following key findings on skill gaps and skill needs.

- The age and qualification profiles of the workforce suggest skill gaps. Skill gaps are more prevalent in the sectors under consideration than skill shortages. Labour shortages are a difficulty for harvest periods and for some specific skills.
- In recent years only about a quarter of university graduates and just over half of all VET graduates from agriculture-related fields go directly into farm employment. Male VET graduates have higher full-time employment rates than females.
- Women are more likely than men to work off-farm, and are more likely than men to be employed in professions rather than in the rural industry.
- Skilled farming occupations have lower unemployment rates than unskilled occupations. However, despite low unemployment rates in skilled farming occupations, there is evidence of low farm incomes and a low-to-moderate job outlook.
- State/Territory VET and industry training plans commonly respond to the skill gaps and needs in the rural industry by proposing and delivering cross-sectoral training in business, marketing and technical skills. Informal training avenues (FarmBis) are still very important.

- In addition to maximising the value of VET, ways should found to transmit an understanding of best practice and innovative management at the farm enterprise level.
- There is evidence that solutions to labour shortages in the rural industry cannot be detached from initiatives to improve overall career paths and industry appeal.
- The industry has identified that there are seasonal labour shortages across Australia. These problems are compounded by infrastructure problems such as housing availability and transport costs.
- Despite identified skill gaps amongst farmers, there is a low uptake in training in some sectors such as the wool industry.
- Large productivity and profit gaps between best and worst farm performers point to substantial skill gaps in technical and business planning in all sectors. However, this is a particular issue in mixed broadacre farming and wool growing, both of which have declining or negative cash surpluses at farm level.
- The industry has identified that there are skill shortages for shearers and shed hands throughout Australia as older people leave the occupation and few young people are entering the industry.
- The production horticulture industry sector has identified that there are skill shortages with a diverse range of skills in demand varying according to product and region. Skill needs include high-level orchard management skills, plantation skills, knowledge of banana industry practices and seasonal labour skills for packing sheds.
- The viticulture industry has identified that there are skill needs throughout Australia at the middle management level, including overseers, supervisors and vineyard managers. Skill gaps also exist at the middle management level because of the rapid development of the sector. Some managers have been promoted without the necessary skills or training.
- The cotton industry has identified that there are skill shortages for agronomists throughout Australia.

Common rural cross-sectoral issues

The following broad issues were identified as common across all four sectors:

Problems with New Apprenticeships, including:

- general lack of knowledge about New Apprenticeships by the industry
- systemic inflexibilities associated with the training system that impairs the effective operation of New Apprenticeships
- inflexibility of many registered training organisations timetabling structures to take account of peak seasonal workloads such as harvesting, planting or shearing
- lack of continuous work
- too much paper work.

The image of the rural industry is poor and there is difficulty attracting and retaining skilled employees. The development of career pathways and promotion of career information and training opportunities is important.

Infrastructure problems including access to new technologies (i.e. internet) and accommodation availability in regional areas for seasonal workforces.

The industry has a lack of knowledge about training and upskilling opportunities, particularly the benefits associated with Recognition of Prior Learning-Recognition Current Competencies.

Benefits of investment in training

Introduction

This chapter relates to the first term of reference and summarises the findings of the Working Group on research and evidence of employer benefits of training investment. In general, both international and Australian studies of enterprise returns on training investment indicate that firms recoup their investments in training many times over in raised productivity and enterprise performance.

International studies of enterprise training benefits have found that enterprises operating below their labour productivity levels have raised productivity over a three-year period by implementing employee-training programs (Bartel 1994, 1995). Extensive training programs have played a major role in assisting enterprises to make significant improvements in raising their productivity, quality and overall performance levels. High performance work practices tend to require more skills.

In 1999, the Australian industry Group released *Training to compete* (Allen Consulting Group 1999). The report argues the importance of effective training to stimulate innovation in Australian industry, and the growing importance of generic or 'soft' skills and intermediate skills in the enterprise. The research shows a strong link between training and competitiveness for innovative or best-performing enterprises and that skills acquired as a result of training will be attractive to potential investors.

Studies of returns on training investments in Australia are comparatively rare. However, some recent studies demonstrate the benefits of higher skill and qualification profiles in industry, and particularly the benefits of ongoing, applied or 'modular' training (McDonald & Moy; Maglen, Hopkins & Burke, forthcoming; Blandy, Dockery, Hawke & Webser, forthcoming; Doucouliagos & Sgro, forthcoming).

The results are solid evidence, across a range of sectors, that training investments can yield very high levels of returns for firms. This work is to form the basis of a campaign by the Australian National Training Authority to persuade Australian enterprises of the wisdom of investing in the training of their employees. The research has highlighted several important factors about returns to training.

Returns on training investments—positive and often very high

There are real and tangible returns for businesses investing in the training of their employees. The nature and extent of the return varies according to the type of training undertaken, and the nature of the problem being addressed through training. There is a strong case to promote to all business owners that investments in training pay for themselves quickly in terms of higher levels of performance, profitability and flexibility. There are trade-offs between business and government investment in training for (existing) workers.

Kinds of returns to training

The returns to training investments are not always increases in labour productivity or profitability. Farmers need to be aware of the different returns to training investments and a means of measuring these needs to be developed.

For example, higher levels of value-added activities result from higher levels of skill. There may be greater flexibility among employees who can perform a range of tasks. Overhead costs to the firm may fall because of more efficient use of existing facilities, lower consumable costs and reduced human resource expenses. Finally, there may be greater capacity to innovate by adopting new technology and introducing better forms of work organisation.

Returns to training are highest when focussing on specific business needs

The rural industry is primarily comprised of small businesses and owner-operators. Therefore the family farm needs to be considered as a small business. Typically, training pays when it is focussed on a specific business problem. Short and sharp training also pays higher returns than training more long-term and general in nature. Training also yields higher returns when linked to innovation, particularly technological change. The more closely training is linked to a specific issue in the business, the greater the levels of return.

Training acts as a support mechanism for other changes in firms

Training does not act alone to improve the performance of firms. It also allows firms to introduce other changes more successfully. Training encourages a positive response from employees to the introduction of new technology and minimises any resistance to change so that new techniques can be introduced at a faster rate.

Firms may experience considerable productivity benefits from the introduction of new technologies, but fail to fully realise benefits unless employees have been trained properly for the changes, for example, for new equipment. Training pays its highest dividend to firms when linked to 'bundles' of other innovative practices such as new ways of working and new forms of organisational structure.

Training benefits in Australian rural industries

International studies of rural education and training emphasise that farm productivity can be increased through the successful transfer of technology. Higher levels of farmer education and training (whether or not specifically in agricultural studies) assist this process. Conversely, in a recent Australian study (Wool Taskforce 1999) low productivity and profit are associated with poor education and poor 'uptake of proven technologies'.

Higher levels of education among farmers increase their ability to employ new technologies and realise higher levels of farm productivity. Those with non-agricultural qualifications are able to earn off-farm income to enhance the overall profitability of the enterprise.

Research has shown that education improves productivity by improving the quality of labour. However, international studies found that larger farms can support greater levels of training for employees because of their greater profitability and higher asset values. In Australia, larger farms account for a high proportion of the value of agricultural output (RIRDC 1998).

Australian work sponsored by the National Farmers' Federation (Kilpatrick 1997) makes a strong case that education and training can increase profitability of farms. Kilpatrick shows

that, in general, farmers with higher levels of qualifications run more profitable (higher operating surplus) farms. However, when correlated against cash operating surpluses, the relationship between education and farm profitability does not hold—perhaps as a result of the greater levels of debt on larger farms (RIRDC 1998).

The asset size of the farm from small (under $500 000) to large (over $1million) is an important influence on farm profitability. It appears that for larger farms, those with higher qualifications earn higher profits, but qualification levels make no difference to the profitability of smaller farms. In small and medium-sized farms, those with higher levels of qualifications are unlikely to be more profitable or to make smaller losses than farmers without qualifications.

Furthermore, for small farms, levels of qualifications appear to have little or no impact on farm performance. This could relate to the higher average age and greater farming experience of those with few qualifications. Thus, education may be substituted by farming experience in smaller but not for larger farms. The great majority of Australian farm employment still resides in very small farms. Small enterprises generally (Billett & Cooper 1998) are known to be less intensive trainers and less knowledgeable users of the training system.

Kilpatrick also reports that, although only three per cent of farms are involved in formal training through the education system, 80 per cent of farms are involved in non-formal training, including seminars and attendance at field days, the most likely forms of training participation. She concludes that farms with larger asset values and profits are most likely to be involved in formal and non-formal training. Thus, as is typical for the small business community, an ability to support training is a key factor in attendance. For medium-sized and large farms, attendance at ten or more training events is associated with higher profitability.

This raises the important issue of the balance between formal and non-formal training in the rural industry, or indeed the right balance between formal vocational training for qualifications and shorter non-award training courses. RIRDC (1998) argues that farmer education needs are 'dynamic' and should embrace on and off-farm activities.

Respondents to an industry questionnaire conducted by the Working Group indicated that they viewed training as providing a return on investment. Less than ten per cent of questionnaire respondents did not believe that investing in training provided a return on that investment to their business.

However, industry consultations conducted by the Working Group indicated that while farmers are able to capture the return on their own training and that of family members, they believe that they are unable to capture the long-term return on investment in the training of employees because few farms are able to employ people continuously or on a full-time basis.

Key message

Training investments can yield high returns for firms and small business, particularly when training is related to a specific issue. Higher levels of education among farmers increase their ability to employ new technologies and realise higher levels of farm productivity. However, larger farms can support greater levels of training for employees because of their greater profitability and higher asset values. Smaller farms are unable to capture the long-term return on the investment in training an employee if they are unable to employ people continuously, or on a full-time basis. Consequently, there is evidence of under-investment in training in rural industries

because many farmers are unable to capture the potential benefits of their investment in training.

Current and future skill needs

The second term of reference for the Working Group requested the identification of the current and future skill needs of the industry. The Working Group agreed that while its primary charter relates to rural skills needs now and in the future, it also had a particular interest in skill shortages, skill gaps and labour shortages.

Defining the scope of skills

In this report the term *skill gaps* implies a need for upskilling within the existing enterprises and workforce, while *skill shortages* occur when skilled jobs are hard to fill at reasonable wages and conditions.

The Department of Employment, Workplace Relations and Small Business defines ***skill shortages*** as 'employers having difficulty filling vacancies in recognised occupations or specialisations at reasonable levels of pay, conditions and location' (DEWRSB 1999).

A Victorian dairy industry report (Centre for Workplace Culture Change 1999) broadens the concept of skill shortages to that of ***skill gaps***. A similar concept is found in the UK Department of Education and Employment (DfEE 1998) task force report and in other recent DfEE work. The DfEE defines a skill gap as a 'deficiency' in employee skills that reduces business performance, and which may or may not be manifested in current recruitment difficulties (skill shortages). Skill gaps may be filled by finding new skilled people, or by upgrading the skills of existing workers.

Another recent DfEE paper (Haskel & Holt 1999) tends to bridge the difference between skill shortages and skill gaps. However, the point is made that estimates of skill shortages tend to underestimate the damage to the economy, as enterprises may eliminate the shortages over the longer run by adopting a 'lower skill technology', at a significant cost to productivity and performance.

A similar point is made by Curtain (1996), who suggests that Australia is locked into a 'low skills–low quality' cycle, paying insufficient attention to the need for high-level intermediate skills in export-exposed sectors of industry. This assessment is particularly relevant to Australia's rural industries and emphasises the need for upgrading of skills.

Factors influencing the supply and demand of skills

Output and productivity

Rural industry productivity growth managed to keep ahead of declining terms of trade during the 1990s. Productivity growth is predominantly attributable to *top-performing farms,* which are larger and distinguished by identifiable management characteristics. There has also been a growing reliance on off-farm income, particularly for broadacre family farms during the 1990s.

Across each of the four sectors:

- Wool growing performance and productivity has declined over the 1990s, as small or specialist woolgrowers have fallen further behind the productivity benchmarks

established by top-performing farms. Training has a role in encouraging greater adoption of necessary innovative business practices, such as new technology, improved genetics, leasing and share farming.

- Horticulture has doubled in value over the past ten years and employment has grown 20 per cent since 1995. Exports have increased significantly, but quarantine and tariff issues in export markets may inhibit further export development in some areas.
- There has been a doubling of employment in viticulture over the last decade, which can in part be attributed to growth in export demand for wine.
- There has been a substantial increase in cotton production during the 1990s. This can be largely attributed to an increase in acreage planted to cotton.

Employment prospects

There are over 100 000 businesses or farms in Australian agriculture (ABS 1989; ABS 1995). Although large farms may dominate production, the average enterprise employs fewer than five people. The average broadacre farm employs 2.5 persons on a full-time equivalent basis and the average dairy farm employs 3.1 persons. This tends to explain why broad ASCO categories classify over 50 per cent of the workforce as *farmers* and another 20 per cent as *farm hands*.

This means that employment, unemployment, earnings, and any other indicators of supply and demand must be treated with caution, as there are different labour markets for the older 'farmers' or owners and the 'farm hands' or workers. Some employment indicators are relevant to both farm owners and workers, whereas others tend to focus primarily on workers.

Unlike many professions and trades, the jump from the junior to the senior category will often require large acquisition of property (lease or purchase of land) as well as the acquisition of skill. While the Department of Employment, Workplace Relations and Small Business (DEWRSB) research and the Australian Bureau of Statistics (ABS) statistics give some indication of the labour market prospects for more experienced workers, the information is at a higher level of aggregation than that specific to the sectors under study.

The DEWRSB publication and online product *Job outlook* rates the job prospects for farmers, farm overseers, farm hands and wool, hide and skin classers as limited due to projected steady or declining employment, high unemployment for unskilled rural occupations and low labour turnover for most rural occupations (except farm hands). Prospects for shearers, rural trainees, jackeroos and jilleroos are rated as average. These prospect ratings are averages for Australia and may not reflect the labour market in particular regions. Furthermore, there are many specialised skill requirements in rural occupations and employers may be experiencing difficulty in recruiting particular skills and experience.

Skilled farming occupations have lower unemployment rates than unskilled. However, despite low unemployment rates in skilled farming occupations there is evidence of low farm incomes and a low-to-moderate job outlook. Only modest proportions of university and VET graduates from the rural industry fields of study go directly into farm employment. Male VET graduates have higher full-time employment rates than females.

Age and gender profile of the workforce

While aggregate output and employment growth may be fairly stable, the industry's age and skill profiles indicate an ongoing need for replacement and improvement of the skill base as well as succession planning.

Using 1992–93 ABARE figures, the average farm operator is aged 53. Using 1997 ABS figures, NCVER (1998) estimates that nearly half the agricultural workforce is over 45 and over half lack a formal post-school qualification. The agricultural workforce is also characterised as a 'relatively old, Australian-born male' and combines the age and qualification profiles to warn of 'looming skill shortages'.

Technology uptake

Low productivity and profit are associated with 'poor uptake of proven technologies', specifically with lack of education and increasing age. This in itself is evidence of 'skill gaps'.

Education and training

The industry has identified a need for:

- language, literacy and numeracy training programs with training conducted on farms, particularly in relation to chemical usage terminology
- on-farm training in new farming methods and technologies, particularly in the wool industry (including mechanised methods of shearing, robotics, chemical defleecing and the use of the laserscan)
- more flexibility within Training Packages, particularly for the wool industry which requires better recognition and rewarding the skills of trainees. The package should include wool classing competencies and management and business skills training for experienced shearers and woolgrowers
- training in finance and management for the existing workforce, many of whom have agricultural qualifications
- new management skills and office practices associated with computing

Opportunities for cross-sectoral or cross-occupational training should be extended to cross-industry vocational training; for example, combinations of rural industry occupations and tourism occupations that might make up viable occupational pathways and increase off-farm income. Under the provisions for customisation of Training Packages, this type of cross-industry training is easier to organise.

Identified skill gaps and shortages

The overall indications from the research and industry consultations are that skill shortages, skill gaps and labour shortages vary in importance across each of the four sectors under study.

A variety of overlapping skill and labour difficulties are identified. In some cases the issues raised are closer to skill gaps, with the suggestion that improved training and career structures might help close the gaps and raise productivity.

Skill shortages

The Department of Employment, Workplace Relations and Small Business publication, *Job futures* (DEWRSB 1999), and *Job outlook* online (DEWRSB 2000) identify no skill shortages in recognised rural occupations. It is noted, however, that the main source of vacancy survey data is captured from the metropolitan newspapers, and the skilled vacancy survey omits the rural press and rural job markets. The DEWRSB skill shortage assessment program includes contact with both metropolitan and non-metropolitan employers, and shortage ratings for

metropolitan and regional areas. Rural occupations are not included, but could be examined in future if skill shortages for the industry become more pronounced.

The industry has identified that there are skill shortages for shearers and shed hands throughout Australia as older people leave the occupation and few young people are entering the industry.

The industry has identified that there are skill shortages in production horticulture with a diverse range of skills in demand varying according to product and region. Skill needs include high level orchard-management skills, plantation skills, knowledge of industry practices and seasonal labour skills for packing sheds.

The viticulture industry has identified that there are skill shortages (and gaps) throughout Australia at the middle management level including overseers, supervisors and vineyard managers.

Horticulture and viticulture skills and associated training needs are already acknowledged as priorities in some State VET plans, and to some extent these could be regarded as 'skill shortages'. The ITABs are calling for widespread modules of short training rather than specific occupational training, primarily to address skill shortages, but also to ease labour shortages.

The cotton industry has identified that there are chronic skill shortages throughout Australia for agronomists.

Skill gaps

The Working Group discussed problems which are more identifiable as skill gaps, calling for upskilling of existing workers (whether owners or employees), particularly in areas of technical, marketing and management skills of the modern farm enterprise.

State/Territory VET and industry training plans commonly respond to skill gaps in the rural industry by proposing and delivering cross-sectoral training in business, marketing and technical skills. Informal training avenues (FarmBis) are still very important in this respect.

The viticulture industry has identified skill gaps throughout Australia at the middle management level in viticulture. This has occurred because many people have been promoted to management levels without the necessary skills or training due to the rapid development within the sector over recent years.

Labour shortages

In wool growing, but also again in horticulture, some of the difficulties identified more closely resemble labour shortages, the seasonality of the work making it harder to reduce turnover and retain labour all year round.

The National Harvest Trail Working Group is one recent effort to address horticultural labour shortages by providing a more secure year-round 'trail' of employment across different regions and harvests. One finding of the Harvest Trail work is that the solutions to the labour shortages cannot be detached from those relating to career paths and skill gaps.

As AFFA notes in its 1999 submission to Harvest Trail, another incentive to enter the horticultural market would be 'career paths, so that harvesting and other tasks in these sectors are not simply perceived to provide casual work of a heavy physical nature'. Similarly, in the case of wool growing, the Wool Taskforce has emphasised that labour shortage problems have arisen as a result of poor business skills in the industry rather than its being an ageing industry or one characterised by high labour turnover.

Key message

Although agricultural output has grown faster than average over the past five years, the longer-term trend is of fluctuating employment. Employment growth is moving out of inland areas, where employment in agriculture is more than 30 per cent of total employment, to near-metropolitan and coastal areas, resulting in a net migration of people and a disproportionate net migration loss of 15-24 year olds.

Skill gaps are more prevalent in the four sectors under consideration than skill shortages, although areas of specific skill shortages in viticulture and cotton are identified.

The age and qualification profiles of the workforce suggest skill gaps. Large productivity and profit gaps between best and worst performing farms point to substantial skill gaps in technical and business planning in all sectors.

The industry has identified that seasonal labour shortages exist across Australia. Labour shortages are a particular difficulty for harvest periods and in some specific skills areas. These problems are compounded by infrastructure issues such as housing availability and transport costs. An attempt to address this problem has been the development of the Harvest Trail concept.

There is evidence that solutions to labour shortages in the rural industry cannot be separated from initiatives to improve overall career paths and industry appeal. Innovative enterprise skill models and improved career paths may be a solution to skill and labour shortages.

In addition to maximising the value of training, ways should found to transmit an understanding of best practice, innovative management and succession planning at the farm enterprise level.

Barriers to satisfying skill needs

The third term of reference for the Working Group was identification of the barriers and impediments to satisfying identified skill needs. In responding to this term of reference this chapter draws on the results of the research and industry consultations. More detailed findings can be found in appendix D.

Identified industry issues

A number of issues were identified by the industry as barriers to meeting skill needs.

While it would appear that farmers endorse the benefits of training, they are unable to take full advantage of training opportunities because of poor marketing and communication relating to training and inconsistent or overlapping training products inappropriate for farm employment or not providing recognised training.

Training opportunities inappropriate for farm employment

One of the most significant enterprise barriers to training is that it is perceived not to suit employment in the rural industry, an industry which is characterised by predominantly casual or seasonal employment, except for family or core members of the farm business. In particular, horticulturists reported they are unable to realise the return on training investment for casual or seasonal employees.

The inconsistency between training and employment is highlighted in a number of the research findings relating to educational participation and qualification.

- Rural and remote areas have good rates of VET participation but are below average in secondary education and post school education generally.
- Comparing VET *graduate* numbers in agriculture-related courses to broadly equivalent VET *enrolment* numbers, agriculture students in VET appear to have only moderate levels of course completion.
- Rural and remote areas have comparatively good rates of VET participation, but not qualification, perhaps indicating a discouragement effect.
- Only about 20 per cent of our agricultural workforce have skilled or higher qualifications, well below the general Australian workforce and some OECD agricultural workforces.

While noting some additional incentives are available for rural/regional programs, industry representatives commented that there was not enough recognition by policy-makers of the costs associated with the large distances from training providers to farms, and between farms and training locations. Many hidden costs associated with travelling large distances , for employers, trainees and training providers, are often not taken into account. In cotton farming, for example, there may be a 400km distance between trainees in a region. Group Training Companies are not targetting rural areas because of the travel and distance problems and associated costs.

There are issues concerning occupational health and safety training, and insurance cover for young inexperienced drivers. Safety concerns with assessing the skills of young or inexperienced trainees using vehicles, plant and equipment (cotton growing) or chemicals (viticulture) on farms were mentioned. Woolgrowers commented on the safety issues

associated with employing young people and the need for basic safety training before they start working on farms.

Poor communication about training options

Industry representatives are concerned about fragmented training information. Many farmers are unaware of developments in training reform and, in particular, are not aware of Training Packages, competency standards or New Apprenticeships.

Although New Apprenticeships are being promoted through advertising campaigns, including a rural focus, about 25 per cent of respondents to the questionnaire that was distributed as part of the industry consultations were not aware of New Apprenticeships. About 30 per cent were not aware that recognition of prior learning and current competencies could be undertaken by skilled, unqualified farmers through a registered training organisation. This is a concern given New Apprenticeships have been marketed heavily since their inception in 1996, at which time RPL and RCC were already an integral part of the training system.

In regions where farmers are aware of the reforms to training there is strong support for initiatives such as:

- RPL utilising skills audits provided through FarmBis
- on-the-job training
- training for existing workers
- school-based New Apprenticeships
- quality assurance training.

Although there is a unified national VET system, difficulties arise because of a proliferation of short training courses that are not aligned with the Training Packages. Recognised training is delivered by the VET sector. Unrecognised training may be delivered through Commonwealth and State agriculture agencies (including funded activities under the FarmBis program) or private sector firms. Unfortunately for the consumers, there does not always appear to be a developed, co-operative relationship between these sectors, although a delivery principle of the FarmBis program is that over time activities under the program be linked to industry competency standards.

In the cotton industry, farmers said they were being confused by the large number of short courses (usually unrecognised in the VET system) as opposed to fewer longer courses (recognised). In these circumstances, it is more difficult for farmers to determine which option or course is best.

Nevertheless, there are examples of effective co-operation. FarmBis can be used in a way that complements the vocational system or provides training in non-vocational skills. An example can be found in the Virginia region of SA where skill audits were being conducted for horticulture farmers. These farmers can subsequently seek recognition of their competencies at the local TAFE college or registered training organisation as part of a qualification.

Industry representatives are concerned about the practicalities of clear communication of training options.

VET system issues

In the VET system as it stands there are potential planning, participation, and pathway-related barriers to satisfying skill needs in the rural industry.

VET planning and strategic skill needs

People in rural and remote areas have relatively good rates of VET participation compared to those in urban and metropolitan areas. They participate in VET at higher levels than their proportional representation in the population.

The rural sector is just maintaining its proportional share of State/Territory VET funding, relative to agriculture's five per cent share of total employment. This is a reasonable result, given that ANTA forecasts for 2000 assume that rural industries will have a small negative annual rate of employment growth over 1997–2006.

However, the Working Group were concerned about the reliance on ABS Labour Force Statistics based on broad ASCO classifications that preclude inclusion of part-time, seasonal or family labour and do not accurately reflect the occupational groupings of the rural industry. These components of the rural industry labour force are not captured in the statistics used to determine VET funding allocations, yet training is required for this labour. This has implications for future funding and accurate monitoring of industry training needs and priorities.

Notably, some States are making specific funding arrangements for growth in horticulture and viticulture. This is not the situation facing the declining wool sector. Historically, woolgrowers were levied for the provision of shearer and shedhand training. This ceased during the restructuring of the wool industry in the early 1990s and responsibility for funding training transferred to State Training Authorities.

On the basis of the industry consultations, a variety of skill gaps and shortages have been identified in *all* sectors of study. Skill gaps and shortages must be identified in the planning processes culminating in the State VET plans for 2001 and beyond. In this way skill needs for the future will be accommodated.

Gaps in VET participation tend to undermine skill solutions

Despite relatively high VET participation rates in rural and remote areas, there are significant gaps in VET participation and completion rates of VET courses and qualifications which may undermine skill solutions for the rural industry.

Completion rates of VET qualifications are less favourable in rural areas than they are nationally. In terms of skilled and higher qualifications, the rural industry workforce has only about half the qualification rate (20 per cent) of the workforce generally (40 per cent). Only modest proportions of rural industry-related VET and university graduates enter farming. This suggests a need to boost rates of study, or cut rates of attrition, in rural-related post-secondary study.

Only low proportions of rural VET students enrol in distance education, although there is, generally speaking, a large number and good spread of training providers nationally and regionally to meet their needs. Poor internet and telecommunications facilities are hampering training provision in rural and remote areas. Improvements in these facilities are needed to boost the contribution of distance learning to skill solutions.

By way of example, viticulturists suggested the development of a bridging program—from certificate to diploma/degree level—and commented that this program should include a distance education mode.

Finally, the four sectors appear to have relatively low rates of participation in study towards relevant qualifications from the Agriculture and Horticulture Training Packages, a situation

consistent with the industry consultation findings of specific skill gaps and skill shortages in skilled occupations and in higher technical skills within all the sectors of study.

Inadequate pathways to skills and qualifications

Because their needs differ from those of conventional industries and conventional employment patterns served by the VET sector, the rural industry and its farmers are not well served by the training sector.

This industry is comprised of small and widely dispersed enterprises that can offer relatively little in the way of full-time year-round employment. However, the industry consultations depict the industry as being presented with fairly routine supply-side training solutions and pathways in which not enough had been done to adjust to the specific needs of the industry.

A basic issue is that training information and products are being presented poorly or unsympathetically. Training information is fragmented and industry representatives indicated a need for consistency and integration of training products between the recognised and unrecognised training sectors. The industry has identified a need for the documentation of available training products with a full overview of training courses available and a list of providers.

Difficulties with competencies and assessment, the basic building blocks of the Training Packages, were also evident. It is important these issues are addressed when Training Packages are reviewed. Cotton growers, for example, felt that the language of training providers and competencies was too technical and that farmers were alienated by the jargon. Furthermore, the growers did not feel ownership of the competencies that had been developed. The main Certificate III for cotton in the Agriculture Training Package was too technical and high-level for entry-level training into the industry.

Similarly, in viticulture, growers were confused by the existence of two Training Packages, neither of which dovetailed with their needs. The Agriculture and Horticulture Training Packages target smaller or mixed viticulture–horticulture operations, whereas the Food Processing Training Package targets mixed winery–vineyards. Neither seemed focussed on medium and larger vineyards and the needs of their viticulturists.

The VET statistics compiled in the research confirm that non-New Apprenticeship pathways to skills and qualifications are used and valued in the rural industry. For example, viticulture employees are undertaking TAFE courses to upgrade their skills and qualifications. There is a need to understand and promote these kinds of pathways.

There is a need also for greater synergies between VET and higher education providers to address the range of training needs in industry. Viticulturists have identified a need for a pathway for certificate-level viticulturists to upgrade to diploma and degree level.

New Apprenticeships and related issues

Within the rural industry there is a general lack of awareness of New Apprenticeships. Recent Commonwealth marketing initiatives are attempting to redress this issue, including a specific campaign targetting rural and regional areas.

Where farmers are aware of the scheme, its effectiveness is being impaired by significant systemic impediments and inconsistencies with administration and policy interpretation relating to employer incentives.

The system would be greatly enhanced by a consistent approach to flexible training delivery by registered training organisations, consistent assessment procedures and a simpler

administrative process across State/Territory jurisdictions. There is a general perception amongst industry that the supply side is struggling to adapt to the industry pattern of small enterprises spread over large distances. Industry commented on the limited choice of training providers that are available to an employer of a New Apprentice. Moreover, there are no employer incentives attuned to seasonal-casual farm employment.

Some of the concerns raised here are similar to the national consistency issues recently raised with ANTA by industry and training providers generally—in the context of achieving a fully integrated VET system. Industry perceives difficulties with mutual recognition (of courses and qualifications across State boundaries), variable quality of training providers, unavailability of endorsed Training Packages, and complexity in navigating the administration of New Apprenticeships.

Respondents to the cross-sectoral questionnaire conducted by the Working Group said that they would value the presence of a reliable regional training broker who could brief them on career, training and skill opportunities.

If anything, increasing mechanisation and decreasing profitability are further reducing farm capacity to offer continuous employment. This further impacts farmers' capacity to directly offer New Apprenticeships.

Unfortunately, Group Training Companies are not filling the gap by hosting full-time training opportunities that would rotate New Apprentices among various farm employers. While Group Training Companies operate in the larger regional centres, they are not operating effectively in other parts of rural Australia because (according to many industry views) they do not have the desire or financial incentives available that would counter the distance and travel costs and problems associated with thin markets.

Viticulturists commented on the lack of group training arrangements to compensate for the seasonal nature of vineyard work. They wanted casual New Apprenticeships to be available, while noting that some States appeared to have stand-down provisions, which would prevent casual employment of New Apprentices. The lower age of adult classification and wages in some State awards (relative to the Federal award) was seen as something of a disincentive for employing young New Apprentices.

In wool growing, employers suggested that multi-skilling courses, increased on-the-job training, and the creation of local job co-ordinators, could assist with problems associated with casual employment.

Where rural and farm employers do take on New Apprentices, they find that the administrative provisions are complex and uncoordinated and do not reflect the 'one stop shop' intent of New Apprenticeship Centres. This criticism also arises in the current review of the Food Processing Training Package (as used in viticulture).

Particular difficulties and lengthy delays were mentioned (in cotton growing, for example) with the sign-up process and the generation of effective training provision once the sign-up is complete. Respondents to the cross-sectoral questionnaire commented on the large amount of paperwork associated with New Apprenticeships, inconvenient off-the-job training which clashed with peak workloads, poor quality teaching and delivery, and indifferent resource materials.

Training delivery and assessment

Industry sought more flexibility in training delivery, timing, and course release times, including far greater access to distance learning for basic qualifications and for upskilling.

A particular issue is the need for cross-industry training and multi-skilling so that casual, seasonal jobs can become year-round jobs. In some regions, labour-hire companies had been able to offer full-time employment by developing seasonal employment calendars in regions and grouping jobs across a farm sector. Although this was a welcome development, industry noted that improvements in the quality of the cross-industry training would be required if it were to be sustainable in the long term. A skills passport was suggested by industry to record and confirm competencies achieved that could be used across different industry sectors.

Similarly, increased RPL–RCC was welcomed in cotton growing and horticulture, although the technicalities of the system would then tend to discourage farmers from building fresh competencies and skills into their initial RPL–RCC qualifications.

A positive development in cotton growing is that the Best Management Process is being used to conduct farm skill audits preparatory to RPL–RCC. This practice seems to be analogous to the use of FarmBis in some States to conduct skill audits.

Viticulturists expressed concern with apparently casual and inconsistent assessment procedures. While workplace assessment was favoured, cotton growers held that skilled external assessors trained to a nationally consistent standard should undertake this task, rather than other (on-farm) assessors who may have undertaken a short course in workplace assessment.

Echoing the issues raised with ANTA, farmers expressed concern with the variable training regulations across States and also with inconsistent training incentives. While FarmBis operates under a broad national framework with a common set of outcomes, specific strategies, priorities and funding mechanisms differ between the States, recognising the differing circumstances between States.

National wine and grape associations criticised the variability of 'user choice' funding and services across States. Viticulturists believed that Department of Education, Training and Youth Affairs (DETYA) employer incentives should be available for New Apprentices with qualifications not relevant to the industry at AQF level III or higher wanting to retrain for a career in viticulture.

VET-in-Schools

Industry has embraced the VET-in-Schools program as a new and valuable way to encourage young people into rural industry careers. However, progress is being impeded in some cases by a poor image of the industry, poor industry–school linkages, inadequate health and safety or indemnity arrangements, lack of qualified teachers, and inconsistent assessment procedures.

In some rural towns, courses relevant to the local rural industry are not offered but hospitality and other courses are offered that do not match to realistic local labour market opportunities. Pathways through school and into work were not visible to young people wishing to remain in a rural community. In addition, access to VET courses and to training through registered training providers was limited.

School-based training was favoured in the cotton industry, but a promising pilot (cotton ginning in Years 8–10 in regional Queensland) is no longer being funded. The success of the VET-in-Schools program for cotton growing was highly dependent on community and industry support, and prudent cover of health and safety and indemnity issues. In New South Wales, a successful VET-in-Schools program was observed for Aboriginal New Apprentices in cotton growing, part of its success being related to mentoring which directly took account of cultural differences.

Viticulture representatives were complimentary of the VET-in-Schools program, finding that the programs could lead on to TAFE courses with the same employer, and ultimately university courses. They expressed concern if VET-in-Schools was heavily school-based and not underpinned by qualified staff and strong industry links.

Beginning in 1999, the Australian Student Traineeship Foundation (ASTF), now the Enterprise and Career Education Foundation, and National Farmers' Federation (NFF) have worked together on six model VET-in-Schools projects across Australia. This ASTF–NFF initiative is an indicator of the special work required in preparing schools, employers, students, communities and projects, if the VET-in-Schools program is to make the right contribution to getting local young people into worthwhile rural careers. The initiative also shows the value of organised work placements for students as an alternative to formal school-based New Apprenticeship arrangements.

Better marketing of careers and career paths will also be necessary if young people are to pursue and maintain careers in the rural industry. Innovative initiatives and provider-industry partnerships should be explored, such as that funded by the University of Tasmania. This statewide program offers a number of promising senior secondary students from schools and colleges to spend two weeks working in agricultural industries. The aim is to give students a better knowledge of careers available within primary industry in Tasmania. Respondents to the questionnaire distributed by the Working Group also suggested that greater access to, and funding for part-time training in conjunction with part-time employment, would also help to bring young people into the industry.

Skilling and reskilling issues

Distinct problems of skill gaps, skill shortages, and labour difficulties and shortages, emerge from the research and industry consultations. All are barriers to a more effective skill mix in the rural industry.

Skill gaps

The research identified large productivity and profit gaps between best and worst farm performers, particularly in wool growing, where there are sharply declining or negative cash surpluses at farm level. This correlates with substantial skill gaps in technique, management and business planning.

The industry identified the need for existing farmers and wool classers to undertake training in new technological (for example, laser fleece measurement, mechanical and robotic shearing) skills. Wool classing and management training to upgrade the skills of shearers and provide a career path was also suggested.

There is a need for reskilling and upskilling among existing farmers to bridge skill gaps if all the skill needs are to be satisfied.

Certain skill shortages

Industry consultations confirmed particular skill shortages across the sectors of study—shearing and shed hands, skilled stock and farm hands, plant operators (wool), orchard, plantation and packing skills (horticulture), middle-level management skills in viticulture, and agronomists for the cotton industry.

Young people are not entering shearing and shed hand occupations. It appears that New Apprenticeship programs in wool growing are not sufficiently broad-based and rewarding for New Apprentices.

In horticulture, there are shortages of local skills in tree physiology, orchard management, and high-density orchard development. In viticulture, industry representatives believe the middle-management shortages are 'chronic' and many middle-level vineyard personnel are not fully competent, or are promoted beyond their ability.

As noted above, the industry perceives a gap in terms of a suitable Certificate II for mainstream entrants to cotton growing, the Certificate III being too technical for the purpose.

Seasonal labour shortages

Seasonal labour shortages are occurring in the rural industry across Australia. Labour-hire companies are helping to fill the gaps, but in viticulture and horticulture the day-labour arrangements can be disruptive with little continuity of workers.

Migrant and 'backpacker' labour is useful and in some cases is the favoured solution, but there are gaps in introductory training and infrastructure (transport, housing). For safety reasons, language and literacy training is essential for new migrant workforces found in viticulture and horticulture.

Horticulturists have commented that the backpacker labour force could be expanded if age restrictions and tax regulations associated with their working visas could be relaxed. This is a complex issue beyond an education and training portfolio, however, it should be noted that the migrant and backpacker community is an important and valued supply of seasonal labour in the rural industry.

Solutions to labour shortages in the industry cannot be separated from initiatives to improve career and occupational pathways. Vineyard and horticulture farm owners highlighted the difficulties they were having locating skilled and seasonal labour for harvesting tasks. Since they cannot employ labour continuously throughout the year, they are unable to train effectively. On the other hand, staff provided by labour-hire companies and other sources have not been adequately trained. Similar findings arose from the Harvest Trail report.

Key message

While the industry embraces the available opportunities within the vocational education and training system, they are currently not being utilised effectively to meet the needs of rural industry.

Training delivery is not appropriate to farm employment where short-term, casual employment is the norm. Difficulties with competencies and assessment are experienced across the industry.

While Group Training Companies are operating in larger regional centres they are not reaching all rural communities because of large distances and thin markets. This problem is compounded by poor communication of training options to farmers, with confusion between a proliferation of recognised and unrecognised training courses. Industry is seeking to expand the New Apprenticeship and VET-in-Schools programs and has identified a number of enhancements which would improve their effectiveness.

There are a number of skill gaps and skill shortages in skilled occupations and in higher-level technical skills in all the sectors of study. Better marketing of careers and career paths in both rural and urban areas are necessary to encourage young people to pursue careers in the rural industry.

Initiatives and recommendations

The fourth term of reference requested that the Working Group recommend solutions against the key issues identified during the research.

The Working Group acknowledges that it would be difficult to develop initiatives and recommendations that address the full range of issues contained in this report. The recommendations suggested, therefore, are those identified and considered by the Working Group as having the highest priority.

Marketing and promotion

Until recently, there has been little direct Australian evidence to confirm the productivity and profit benefits of investment in training, a situation which is changing. As confirmed by the Working Group's questionnaire, Australian farmers do now understand the benefits of training and the majority believe that training provides an investment return to the business.

There is a strong case for further promotion of the benefits of training, provided that the message is tailored to the audience. However, marketing and promotion of the benefits alone will not be effective unless action is taken to improve communication with farmers about training products, and to improve the products themselves and their delivery so that they conform with the VET system and with the practical realities of farm employment.

An effective and co-ordinated VET communication strategy with farmers is needed, perhaps one which builds on the rural New Apprenticeships marketing campaign and utilises an online training information service, noting the need for technology infrastructures to be improved in rural communities.

Farm enterprises will be much more prepared to grasp the training opportunities if they can see that the training products are shifting from the supply-side to a demand-side emphasis that caters for their distinctive problems of distance and seasonal employment.

In addition, value will be gained from informal farm business and training programs such as FarmBis if they are promoted and applied so that they complement the VET system and skills development leading to a qualification. Programs such as these also play a significant role in the provision of skill audits for RPL–RCC processes.

1 Recommendations

1.1 That a co-ordinated communication and marketing strategy promoting best practice in rural industry vocational education and training and careers is developed and implemented, specifically targetting rural and urban school students, parents and the community.

1.2 That an audit of rural skills training and training providers be undertaken which would lead to a comprehensive directory of rural skills (competencies), training opportunities, training providers and career pathways being made available.

1.3 That ANTA and Commonwealth and State/Territory Government agencies in the rural industry work with State VET agencies and industry to link informal, unrecognised training programs and activities (including FarmBis) to recognised VET qualifications.

1.4 That measures to boost rural industry-related post-secondary study and qualifications, and specific measures to promote farm careers to students on the verge of completing relevant VET and university qualifications, be developed and implemented.

1.5 That industry and farmer organisations take proactive measures to promote the research findings on the returns from investment in training.

Attuning the VET system to the training needs of industry

The current VET system is based on a nationally consistent Australian Recognition Framework. The elements, including Training Packages (containing qualifications, competencies and assessment procedures), registered training organisations, training agreements and New Apprenticeships, provide a solid foundation for effectively meeting industry training needs.

However, a significant amount of work remains to be done to build a fully integrated national VET system, particularly one that can serve the non-standard employment and training needs of industries such as agriculture and horticulture.

State VET plans are an important expression of training priorities for the agricultural and horticultural sectors. The Working Group believes that these plans can do more to address strategic skills needs in industry sectors under pressure as well as in sectors which are continuing to grow. Industry, the Rural Training Council of Australia (RTCA) and State-Territory industry training boards should all strive to improve strategic inputs into State VET plans to ensure that they maintain appropriate industry-related VET funding levels and that they address strategic skill needs for the industry. In addition, statistics and data based on broad ASCO classifications do not accurately reflect the nature and extent of the rural industry labour force. This has implications for future funding and accurate monitoring of industry training needs and priorities.

Measures should also be developed to increase the rates of agriculture and horticulture-related VET study, and particularly the take-up of training and Training Package qualifications related to the four sectors of study. However, it is equally valid to examine the relatively low throughput into farming occupations from those who are completing relevant VET and university qualifications.

Non-New Apprenticeship pathways to skills and qualifications have a place in the rural industries and, critically, there is a need to encourage cross-sectoral skill pathways that can turn the seasonal nature of the work into a training advantage rather than disadvantage.

More use should also be made of flexible course timing, flexible release patterns, on-farm delivery, distance learning, RPL–RCC and on-farm assessment. These modes of delivery and assessment are established elements of the current training system, but their implementation needs to be accelerated to meet the particular training needs of the rural industry.

There needs to be an emphasis on the realignment and coordination of formal and non-formal training programs.

2 Recommendations

2.1 That further action be taken to develop and implement a coordinated strategy for enhancing the co-operative relationship between ANTA, Commonwealth and State/Territory agriculture agencies or private sector firms and the formal VET sector.

2.2 That registered training organisations take measures to provide and promote appropriate training products so that more farm enterprises and workers can take

advantage of available training opportunities, including increased utilisation of internet technologies.

2.3 That industry, the Rural Training Council of Australia and training providers identify cross-sectoral, cross-industry and multi-skilling training programs that assist with transforming seasonal jobs into year-round career jobs. These programs should make full use of modules from the appropriate Training Packages.

2.4 That workable forms of skill passports (across training modules, industries, employers, and States) be developed for VET students and New Apprentices in rural and related fields, to ensure multi-skilling training programs and subsequent employment can be effectively tracked and checked by employers.

2.5 That industry, farmer organisations and training providers adopt more proactive measures to mainstream and promote the use of recognition (RPL–RCC) procedures for reskilling and upskilling.

2.6 That FarmBis funding be made available in all States and Territories for skills audits for farmers wishing to access recognition of prior learning-recognition of current competencies.

2.7 That VET planning processes make allowance for the under-counting of the rural industry labour force in their industry training funding allocations.

2.8 That the Training Packages covering the viticulture industry (Agriculture, Horticulture, Food Processing) are streamlined to meet the needs of specialist viticulturists.

Making New Apprenticeships work for the industry

The New Apprenticeship system has been reformed with provisions for a more flexible and responsive approach to meet employer needs.

However, the research estimates that relevant New Apprenticeships still only represent about one per cent of the agriculture workforce, which is below the workforce as a whole (two per cent) and well below traditional New Apprenticeship industries such as manufacturing (ten per cent).

The Working Group's research clearly establishes that, if New Apprenticeships are to grow in the rural industry, the ability of the training programs to meet industry needs and their brokerage must be improved.

Currently, all New Apprenticeships must be of a permanent nature for the period of training, difficult in many instances in rural industries where continuous full-time employment is not an option for many employers. To ensure that employees in common forms of rural industry employment are not routinely excluded from necessary training, alternative approaches to New Apprenticeships are urgently required.

Alternative approaches should be based on cross-sectoral employment and training wherever possible, because in many regions this appears to be one of the best ways to build casual or part-time rural industry jobs into careers. Another approach could include a cross-industry New Apprenticeship which would be full-time for the trainee, but may only involve agriculture or horticulture for part of the overall training program with components from another industry sector making up the full extent of the program. An alternative may be for a group training company to deliver multiple host placements for a trainee to ensure a continuous full-time work and training program. This could be across a number of rural industry employers or across various industries.

While Group Training Companies are operating in larger regional centres, they typically are not an effective presence in rural and farming regions. In addition, registered training

authorities are not streamlining training sufficiently for rural industry. Administration processes associated with New Apprenticeships, inconsistent interpretation of employer incentives and the specific training and employment needs of the agriculture and horticulture industries require review and improvement.

The rural New Apprenticeships marketing campaign should be extended and strengthened to increase awareness of the system within rural industries.

3 Recommendations

3.1 That a major shift to part-time and cross-industry New Apprenticeships for the rural industry is implemented and promoted.

3.2 That the Commonwealth work with industry to investigate and develop provisions and incentives that will strengthen the role and responsibilities of Group Training Companies in the ongoing implementation of New Apprenticeships in the rural industry.

3.3 That industry-identified cross-sectoral and cross-industry training programs are promoted to the key rural industry labour-hire companies.

3.4 That modifications to the administration of New Apprenticeships, and steps to make the processes work with greater ease for rural industry participation, are made.

3.5 That access to employer incentives for New Apprentices holding an Australian Qualifications Framework certificate level III or higher be reviewed.

3.6 That a review of the rural/regional incentive schemes offered by the Commonwealth government be undertaken to ensure their effectiveness for rural industries.

3.7 That the rural New Apprenticeships marketing campaign is continued and strengthened to increase the awareness and uptake of New Apprentices within rural industries.

Developing young people for careers in the industry

VET-in-Schools programs have grown quickly through the 1990s to become an influential new pathway towards VET skills and qualifications.

A recent pilot program conducted by the National Farmers' Federation with the Australian Student Traineeship Foundation (now the Enterprise and Career Education Foundation), the major national broker of VET-in-Schools program opportunities, has provided fresh insights into the prospects and some of the implementation issues associated with VET-in-Schools for the rural industry.

Improving VET-in-Schools is an important avenue for introducing young people to worthwhile careers in the industry. If suitable mentoring programs are included, VET-in-Schools programs can also lead indigenous students to successful career opportunities.

The Working Group consistently raised concern over inadequate or misleading information about careers, or negative attitudes on the part of those dispensing information. While it may be true that, on average, farming occupations are less well paid than many others, there are many opportunities and areas of growth available. The marketing of these opportunities should not be restricted solely to young people in rural areas.

4 Recommendations

4.1 That national consistency issues and difference between State education policies associated with VET-in-Schools programs are reviewed and addressed to ensure the continued implementation and expansion of the program within the rural industry.

4.2 That industry organisations take action to promote authoritative and balanced information to both urban and rural young people about careers and occupational prospects in agriculture and horticulture.

4.3 That career counsellors (including career teachers and advisors) are provided with ongoing professional development specific to career opportunities available within rural industries.

Addressing skill gaps and shortages

The Working Group began with limited knowledge of where specific skill gaps and shortages existed within the industry. During the course of its research, evidence of action for addressing skill needs was found within State VET plans, often designed to address certain skill needs (for example, quality assurance) or in sectors of growth (for example, horticulture and viticulture).

With the aid of the industry consultations, a more detailed picture of skill shortages and gaps emerged across the four sectors of study. RTCA, State VET agencies and the recognised training brokers are important players in resolving these shortages. In some cases, as with the upgrading of middle-level management training for viticulturists, skill solutions will also call into play the VET–university linkages.

The Working Group noted the evidence of growth and diversification in horticulture, viticulture and cotton growing. However, the situation for wool growing was starkly different, with declining or negative earnings and large gaps between best and worst performers. There is an awareness of where these gaps are, and some of this was amplified by industry consultation findings. Action on these fronts is one of the most important, but most difficult, tasks confronting the Working Group.

The Working Group found that substantial amounts of training in areas such as quality assurance, business planning, and computing may appear in the rural industry section of State VET plans or are being delivered through joint Commonwealth/State initiatives (FarmBis). While there is a need for these programs it is important they are targetted more effectively (perhaps to redress critical skill gaps) and mainstreamed so that participants are directed towards recognised training that meets national qualifications available under the Agriculture and Horticulture Training Packages. The concept of using FarmBis programs for quality assurance and skill audits may prove useful here.

Industry strongly endorses moves to develop cross-sectoral training programs based on multi-skilling and the use of seasonal training calendars. However, these measures must be fully researched and co-ordinated on regional bases. The Working Group also calls for training and other measures to improve the usefulness of migrant and backpacker workforces for peak harvest workloads.

The gender, age and skill profiles of the rural industry indicate an ongoing need for replacement and improvement of the skill base. This would include succession planning and literacy and numeracy training.

5 Recommendations

5.1 That targetted and mainstream training programs addressing skill gaps in quality assurance, business planning, succession planning and computing are required for experienced farmers.

5.2 That training programs and strategies to upgrade existing rural industry skills to best practice and innovative management are developed and implemented.

5.3 That training programs and strategies are developed to address skill shortages and gaps identified in the sectors of study:

- shearers/shed hands
- skilled stock and farm hands
- on-farm delivery of new technologies in wool growing such as laser scanning
- flexible training for woolclassers and management training for experienced shearers
- orchard, plantation and packing skills in horticulture
- middle-level skills (vineyard supervisors and managers) in viticulture
- appropriate competencies at Certificate II level and agronomists in cotton growing

5.4 That language, literacy and numeracy training programs, particularly targetting the casual workforce, are widely available.

5.5 That innovative enterprise skill models are developed to meet current and emerging skill needs.

5.6 That industry and relevant industry organisations identify and promote links between the rural industry, VET providers and centres of excellence (including universities) to ensure the delivery of increased upskilling opportunities and career pathways to industry, in particular, the provision of opportunities for certificate level viticulturists to upgrade to diploma and degree levels.

5.7 That training infrastructures, and deregulatory measures to extend the usefulness of the migrant and backpacker labour forces as a means of solving seasonal (harvest) labour shortages, are developed and promoted.

Recommended strategies for action

* The following are suggested implementation time frames for action to be completed against the recommended strategies:

S	short	within 6 months
SM	short-medium	within 12 months
M	medium	within 1 – 2 years
L	long	within 2 – 5 years

Target Area	Recommended Strategy	Priority *	Responsibility	Proposed outcomes
1. Marketing and promotion	1.1 A coordinated communication and marketing strategy promoting best practice in rural industry vocational education and training and careers is developed and implemented.	SM	Industry State/Territory VET and rural industry agencies RTCA State/Territory rural ITABs Rural Skills Australia Schools ANTA DETYA	Enhanced awareness amongst rural and metropolitan school students, parents and the community of career and training opportunities in the rural industry.
	1.2 An audit of rural skills training and training providers is undertaken which would lead to a comprehensive directory of rural skills (competencies), training opportunities, training providers and career pathways.	M and ongoing	Industry RTCA State/Territory rural ITABs Registered training organisations	Relevant information is readily available from a reliable source.
	1.3 Informal, unrecognised training programs and activities (including FarmBis) are linked to recognised VET qualifications.	S	DETYA AFFA RTCA ANTA State/Territory rural agencies	The gaps between unrecognised and recognised training are bridged.

Target Area	Recommended Strategy	Priority *	Responsibility	Proposed outcomes
	1.4 Rural industry-related post-secondary study and qualifications, and specific measures to promote farm careers to students on the verge of completing relevant VET and university qualifications, be developed and implemented.	L and ongoing	Industry DETYA Registered training organisations	Increased uptake of employees entering or returning to rural industry employment following training.
	1.5 The research findings on the returns from investment in training are promoted to industry.	SM	Industry Farmer organisations	Increased awareness and acceptance by industry that training is an investment yielding a return rather than a cost.
2. Attuning the VET system to the training needs of rural industry	2.1 Strategies are developed which ensure funding for FarmBis and other private sector training initiatives are used to encourage effective links with the formal VET sector.	S	DETYA AFFA RTCA	Cooperative relationships between sectors are strengthened and promoted to industry.
	2.2 Appropriate and more flexible training products are provided and promoted.	SM	Registered training organisations	More farm enterprises and workers can take advantage of available training opportunities, including increased utilisation of internet technologies.
	2.3 Cross-industry, cross-sectoral and multi-skilling training programs are identified making full use of appropriate Training Packages.	S	Industry RTCA Registered training organisations	Seasonal jobs are transformed into year-round career jobs.
	2.4 Workable forms of skill passports (across training modules, industries, employers, and States) are developed for VET students and New Apprentices in rural and related fields.	M	Industry Registered training organisations	Multi-skilling training programs and subsequent employment can be effectively tracked and confirmed by employers.
	2.5 Proactive measures to mainstream and promote the use of recognition (RPL–RCC) procedures for reskilling and upskilling.	S	Industry Registered training organisations	Industry is more aware of, and participates fully in, reskilling and upskilling opportunities.
	2.6 FarmBis funding is made available in all States and Territories for skills audits for farmers wishing to access RPL-RCC	S	AFFA State/Territory rural agencies	Effective use of FarmBis funding to increase access to recognition of skills and qualifications by farmers.

Target Area	Recommended Strategy	Priority *	Responsibility	Proposed outcomes
	2.7 VET planning processes make allowance for the under-counting of the rural industry labour force in their industry training funding allocations.	M	RTCA State/Territory rural ITABs Industry State/Territory Training Authorities ANTA	Realistic and effective planning processes and funding targetted to meet rural industry training needs.
	2.8 Training Packages covering the viticulture industry are streamlined to meet the needs of specialist viticulturists.	M	RTCA WINETAC ANTA	Training Packages reviewed to effectively meet the diverse needs of the viticulture industry, particularly to minimise existing confusion.
3. Making New Apprenticeships work for the industry	3.1 Part-time and cross-industry New Apprenticeships for the rural industry are enhanced and widely promoted.	SM	New Apprenticeship Centres Group Training Companies Registered training organisations DETYA	Rural industry is made aware of and more fully able to participate in New Apprenticeship opportunities.
	3.2 Provisions and incentives are developed that will strengthen the role and responsibilities of Group Training Companies in the ongoing implementation of New Apprenticeships in the rural industry.	S	DETYA Industry Group Training Companies State/Territory Training Authorities	Group Training Companies are more willing and able to operate successfully in rural and remote regions.
	3.3 Industry-identified cross-industry and cross-sectoral training programs are promoted to Group Training Companies and key rural industry labour-hire companies.	SM	DETYA Industry New Apprenticeship Centres Group Training Companies	Problems of hiring skilled seasonal labour overcome through the development and implementation of appropriate Certificate level training opportunities.
	3.4 Modifications to the administration of New Apprenticeships, and steps to make the processes work with greater ease for rural industry participation, are made.	S	DETYA State/Territory Training Authorities	Increased uptake of rural industry employers participating in New Apprenticeships.

Target Area	Recommended Strategy	Priority *	Responsibility	Proposed outcomes
	3.5 Access to Commonwealth and State/Territory employer incentives for New Apprentices holding an AQF III or higher are reviewed.	SM	DETYA State/Territory Training Authorities	Employer incentives will be available to qualified New Apprentices who hold a qualification, at AQF III or higher, in an unrelated field of study who are retraining for a rural industry occupation.
	3.6 Rural and regional incentive schemes currently available are reviewed.	SM	DETYA State/Territory Training Authorities	Commonwealth funded rural and regional incentive schemes are effective in rural and remote regions.
	3.7 Rural New Apprenticeships marketing campaign is continued and strengthened.	M	DETYA	Awareness and knowledge regarding New Apprenticeships is increased.
4. Developing young people for careers in the industry	4.1 VET-in-Schools programs are reviewed to ensure the programs continued implementation and expansion within the rural industry.	SM	Enterprise and Career Education Foundation (formerly ASTF) State/Territory VET agencies DETYA	Increased industry-school linkages that support more effective pathways to skills through work placements and training contracts, modified indemnity and insurance arrangements, appropriate teaching skills, consistent assessment procedures, increased mentoring programs (particularly for indigenous students).
	4.2 Authoritative and balanced information to both urban and rural young people about careers and occupational prospects in agriculture and horticulture is widely promoted.	M and ongoing	Industry Schools Community Enterprise and Career Education Foundation (formerly ASTF) DETYA	Increased awareness of career opportunities in the rural industry amongst young people.
	4.3 Career counsellors (including teachers and advisors) are provided with ongoing professional development specific to career opportunities available within rural industries.	M and ongoing	DETYA Enterprise and Career Education Foundation (formerly ASTF)	Expert advice and information is provided to students and parents.

Target Area	Recommended Strategy	Priority *	Responsibility	Proposed outcomes
5. Addressing skill gaps and shortages	5.1 Mainstream training programs addressing skill gaps in quality assurance, business planning, succession planning and computing are available for experienced farmers.	SM	ANTA Industry State/Territory VET agencies Registered training organisations	Training Packages are modified to incorporate identified skill needs.
	5.2 Training programs and strategies to upgrade existing rural industry skills to best practice and innovative management are developed and implemented.	M	Industry RTCA State/Territory VET agencies Registered training organisations ANTA DETYA	Skills of existing rural industry employers and employees are upgraded and recognised against national qualifications.
	5.3 Training programs and strategies are developed to address skill needs and gaps identified in the sectors of study.	SM	Industry RTCA State/Territory VET agencies Registered training organisations DETYA	Skills shortages and gaps are overcome for: shearers/shed hands skilled stock and farm hands new technologies in wool growing woolclassers management training for experience shearers orchard, plantation and packing skills in horticulture middle-level skills (vineyard supervisors and managers) in viticulture appropriate competencies at Certificate II level and agronomists in cotton growing
	5.4 Language, literacy and numeracy training programs are expanded and widely available.	M and ongoing	DETYA State/Territory Training Authorities	Access to language, literacy and numeracy programs is broadened and strengthened to meet the needs of rural industries.
	5.5 Innovative enterprise skill models are developed.	M and ongoing	RTCA Industry	Improved career models and skill pathways will assist with the longer term solution to redressing skill shortages and gaps in the rural industries.

Target Area	Recommended Strategy	Priority *	Responsibility	Proposed outcomes
	5.6 Links between the rural industry, VET providers and centres of excellence (including universities) are established.	M	Industry Registered training organisations Universities DETYA	The delivery of increased upskilling opportunities and career pathways to industry, in particular, the provision of opportunities for certificate level viticulturists to upgrade to diploma/degree levels.
	5.7 Training infrastructures, and deregulatory measures to extend the usefulness of the migrant and backpacker labour forces, are established.	L	Industry DETYA State/Territory governments State/Territory VET agencies DEWRSB DIMA	Seasonal (harvest) labour shortages will be reduced.

Appendix A

Industry output and employment analysis

Industry output trends

The Australian economy grew by around four per cent over the five-year period to 1998–99 and in 1998–99. Average annual gross value-added growth rates by ANZSIC industry sector are shown in table A1. Of all industry divisions, agriculture, forestry and fishing recorded the highest annual gross value-added growth rate over the five-year period to 1998–99, with an average annual growth rate of over nine per cent. Part of this growth can be attributed to recovery from the drought up to the mid-1990s.

Increased diversity in agricultural production, and an increase in the proportion of agricultural produce exported, have improved the value of agricultural produce in recent years (ABARE 2000b, p.41). In the late 1990s, 65–70 per cent of agricultural production was exported, a significant increase compared with the 1980s.

The influence of world demand has changed the nature of agricultural commodities produced. Oilseeds, cotton, wine, horticulture, sugar, dairying, lamb and live cattle have experienced significant export growth over the last decade. Red meat, cereals and wool comprised only 50 per cent of Australian agricultural export income in 1998–99 compared to 70 per cent in the mid-1980s.

Table A1: Average annual gross value added (a) growth rates by industry division, for 1994–99 period and 1998–99

	Average annual rate of growth (per cent)	
	Five year period 1994–95 to 1998–99	One year period 1997–98 to 1998–99
Agriculture, forestry & fishing	9.5	8.6
Mining	3.7	-2.9
Manufacturing	1.5	2.5
Electricity, gas & water supply	0.3	1.6
Construction	5.7	6.0
Wholesale trade	5.3	7.6
Retail trade	3.9	2.9
Accommodation, cafes & restaurants	3.3	7.7
Transport & storage	3.6	3.2
Communication services	8.8	9.5
Finance & insurance	6.1	5.0
Property & business services	6.0	9.0
Government administration & defence	0.6	-2.2
Education	1.0	2.3
Health & community services	2.7	1.6
Cultural & recreational services	2.1	3.5
Personal & other services	2.9	1.8
All industries	3.7	4.0

Source: Australian Bureau of Statistics catalogue number 1350.0.
(a) By industry average 1997–98 prices (per cent).

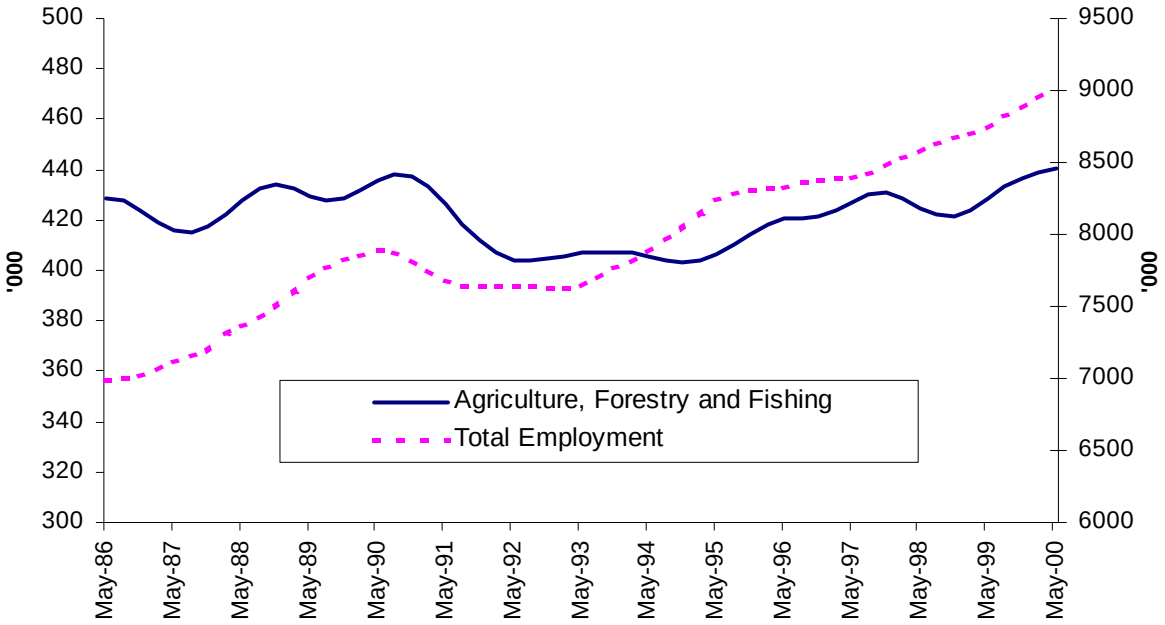
Employment-by-industry trends

At May 2000, the agriculture, forestry and fishing industry division (the division) employed about 440 000 persons, or 4.9 per cent of the total Australian workforce. About 385 000 of these were employed in the agriculture subdivision, with much smaller numbers in services to agriculture (31 000), commercial fishing (16 000) and forestry and logging (8000).

The number of people employed in the division has increased by seven per cent over the last five years, at an average annual growth rate of 1.4 per cent. Over the same period there was a 9.5 per cent increase in total employment in Australia or an average annual growth rate of 1.8 per cent. However, there was a marginal decline in the number of people employed in agriculture (- 0.5 per cent) over the ten years to May 2000.

The difference in 1986–2000 trend growth in employment in the division compared to overall Australian employment is illustrated in figure A1. Whereas overall employment has a fairly steady upward trend, the division fluctuates in the 400 000–440 000 band for most of the period.

Figure A1: Employment trends for the agriculture, forestry and fishing industries and total employment, May 1986–May 2000



Source: ABS Labour Force Survey; DEWRSB trending of LFS industry data.

There were different trends in sectors of agriculture over 1996–2000. Employment in poultry farming (-13 per cent) and other livestock farming (-33 per cent) fell. The major increases were in horticulture and fruit growing (including our study sectors of production horticulture and viticulture) with an increase of 20 per cent or 16 900 people; grain, sheep and beef cattle with an increase of 6 per cent or 12 600 people; and services to agriculture with an increase of 67 per cent or 12 100 people. Details are at table A2.

Table A2: Employment change for the agriculture, forestry and fishing industries division and selected subdivisions and groups, 10, 5 and 2 years to May 2000

Industry	Numbers Employed May 2000	10 yrs to May 2000			5 yrs to May 2000			2 yrs to May 2000		
	'000	'000	%	% pa	000	%	% pa	000	%	% pa
AGRICULTURE	385.7	-1.9	-0.5	0.0	25.7	7.1	1.4	15.3	4.1	2.0
Horticulture and fruit growing *	101.1	10.4	11.4	1.1	16.9	20.1	3.7	7.2	7.7	3.8
Grain, sheep and beef cattle farming **	210.5	-17.8	-7.8	-0.8	12.6	6.3	1.2	14.8	7.6	3.7
Dairy cattle farming	34.4	10.7	45.0	3.8	2.2	6.8	1.3	-0.8	-2.4	-1.2
Poultry farming	9.8	0.7	7.2	0.7	-1.5	-12.9	-2.7	0.8	8.3	4.1
Other livestock farming	11.6	-11.3	-49.4	-6.6	-5.6	-32.7	-7.6	-4.1	-26.1	-14.1
Other crop growing***	18.4	5.6	44.2	3.7	1.0	5.7	1.1	-2.3	-11.1	-5.7
SERVICES TO AGRICULTURE****	30.2	7.8	34.7	3.0	12.1	66.8	10.8	4.5	17.7	8.5
AGRICULTURE, FORESTRY AND FISHING	**440.7**	**5.2**	**1.2**	**0.1**	**34.1**	**8.4**	**1.6**	**15.9**	**3.7**	**1.9**
Total employment (total all industries)	**9015.4**	**1125.3**	**14.3**	**1.3**	**781.0**	**9.5**	**1.8**	**439.6**	**5.1**	**2.5**

Sources: For industries, figures are DEWRSB trending of ABS Labour Force Survey data.
For total employment, figures are ABS, *The Labour Force, Preliminary* (trend data).

Notes: * Includes production horticulture and viticulture, ** Includes sheep farming (wool growing),
*** Includes cotton growing, **** Includes shearing and cotton ginning.

Changes in industry class (for example, sheep farming) employment levels are only available for census years. At that level, the largest proportional 1991–96 change was in grape growing, with an increase in employment of about 70 per cent, albeit from a small base. Declines in employment in cotton ginning (25 per cent), sheep farming (33 per cent), poultry farming (21 per cent in meat and 6.5 per cent in eggs), pig farming (10 per cent) and shearing services (36 per cent) were recorded between the 1991 and 1996 census years. Details are in table A3.

Table A3: Change in employment in selected Agriculture industry classes, 1991 to 1996 census

ANZSIC Code*	Title	Change in employment %
0114	Grape growing	68.9
0124	Sheep farming	-32.6
0125	Beef cattle farming	9.6
0130	Dairy cattle farming	12.4
0140	Poultry farming—undef	10.6
0141	Poultry farming—meat	-21.1
0142	Poultry farming—eggs	-6.5
0151	Pig farming	-9.9
0161	Sugar cane growing	3.5
0162	Cotton growing	0.9
0211**	Cotton ginning	-25.1
0212	Shearing services	-36.0
0213	Aerial agricultural services	3.2
0220	Hunting and trapping	55.6
0300–0302	Forestry and logging	10.5
0400–0420	Fishing	10.9

* The 1991 Census was coded in accordance with the Australian Standard Industrial Classification (ASIC), while the 1996 Census was coded in accordance with the Australian and New Zealand Standard Industrial Classification (ANZIC). The ASIC and ANZIC codes shown above may not be fully comparable. In the 1991 Census the percentage of employed people whose industry of employment could not be determined was over twice that in the 1996 Census (6.7 per cent cf 3.1 per cent).

** Cotton Ginning was included in the Manufacturing industry in the 1991 Census (ASIC Code).

The differential growth in employment across agricultural industry sectors does not impact uniformly because of the uneven distribution of agricultural employment across States and Territories. A 1999 estimate of this distribution is shown in table A4. Grain, sheep and beef cattle (including wool growing) takes up 48 per cent of agriculture, forestry, and fishing employment overall, spread in fairly even proportions across States. Horticulture and fruit growing picks up 22 per cent, with stronger proportional representation in Queensland (37 per cent of total) and South Australia (17 per cent of total). Other crop growing (including cotton) is five per cent, very strongly represented in Queensland and also more visible in New South Wales.

Table A4: Distribution of agriculture, forestry and fishing division of employment, by industry subdivision and group, by State and Territory, August 1999

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia	Australia (number, %)
Agriculture, forestry & fishing	28.1	19.0	27.4	10.6	9.5	4.0	1.3	0.2	100.0	435 657(100%)
Agriculture	28.2	19.7	27.8	10.6	8.7	3.3	1.4	0.2	100.0	383 553 (88%)
Horticulture and fruit growing	17.0	19.6	36.8	17.1	5.0	3.4	0.9	0.2	100.0	94 371 (22%)
Grain, sheep and beef cattle	37.8	17.0	20.5	9.7	10.4	2.3	2.1	0.1	100.0	210 059 (48%)
Dairy cattle farming	9.0	41.5	21.8	5.9	12.8	8.9	0.0	0.0	100.0	35 234 (8%)
Poultry farming	40.9	35.9	6.8	6.8	7.4	2.2	0.0	0.0	100.0	7 697 (2%)
Other livestock farming	23.5	21.0	30.6	11.3	8.4	2.5	0.6	2.2	100.0	13 771 (3%)
Other crop growing	14.8	4.1	74.5	0.0	2.4	4.2	0.0	0.0	100.0	22 422 (5%)

Source: ABS Labour Force Survey, August 1999.

Agricultural employment is growing faster in near-metropolitan and coastal areas than in other non-metropolitan areas. This trend represents part of the long-term pattern of structural change in the Australian economy and also increased productivity in agriculture through scientific inputs or increased mechanisation. This change in agricultural industry employment across Australia between the census years 1991 and 1996 is illustrated at map 47 in *Country matters: Social atlas of rural and regional Australia,* www.brs.gov.au/social_sciences/atlas.html.

The unemployment rate for people who worked full time in their last job is relatively high for the agriculture division. This industry has the second highest unemployment rate for people who were last employed full time. The highest rate is five per cent for people last employed full-time in accommodation, cafes and restaurants. The all-industries rate is three per cent. Details are in table A5.

Table A5: **Unemployment rates for industry division of last full-time job, May 2000**

Industry	Unemployment rate (%)
Agriculture, forestry and fishing	4.9
Mining	2.9
Manufacturing	4.4
Electricity, gas and water	2.9
Construction	4.0
Wholesale trade	3.4
Retail trade	3.1
Accommodation, cafes and restaurants	5.0
Transport and storage	2.6
Communication services	2.9
Finance and insurance	1.4
Property and business services	2.4
Government administration and defence	2.9
Education	1.1
Health and community services	1.4
Culture and recreational services	2.5
Personal and other services	2.5
Total - all industries (those who had worked for 2 weeks or more in the last 2 years)	3.0

Source: ABS Labour Force Survey.

Employment-by-occupation trends

Census figures usually describe 75 per cent of agriculture division workers as 'farmers' or 'farm hands'. Employment changes for rural occupations to May 2000 are in table A6. These changes should be read in the general context (figure A1) of agriculture growing more slowly than overall employment.

The largest rural occupations at May 2000 were livestock farmers, mixed crop and livestock farmers, and crop farmers (239 000 in total), farm hands (101 000) and nursery and garden labourers (46 000).

Over the past ten, five and two years, the livestock farming group (including sheep farmers) has gained some employment, while crop and mixed farming have gone into reverse. The gain in livestock farming is not attributable to woolgrowers. The farm hand group shows only minor variations. Off a small base, shearing shows some gain over the past five years.

Rural occupation unemployment rates, for the occupation of last full-time work, are shown in table A7. Notably, the unemployment rate for farm hands (near 11 per cent) is particularly high compared to the rate for skilled agricultural occupations and the Australian unemployment rate for people who last worked full time. The unemployment rates for shearers and wool hide and skin classers were near five per cent. The high unemployment rate among unskilled workers in agriculture suggests that there are no labour shortages *per se*. However, the existence of labour shortages should not be discounted, for it has been argued that 'frictional' unemployment is much higher in rural than metro Australia. The low 'unemployment rate' recorded among skilled workers does not reflect the substantial evidence (below) of low or negative incomes in some sectors.

Occupational choices of potential employees who have not as yet entered the labour market are another indicator of perceived labour market opportunities. A UK study on skill shortages (Haskel & Holt 1999) reports that a one per cent increase in the wage of an occupational group generates a large(r) increase in the proportion of young people choosing that occupation. Studies looking at the benefits of staying on at school report that staying depends on the returns of doing so or the occupational opportunities available.

The proportion of 16-year-olds attending school in 1996 in relation to the non-metropolitan average is shown in map 69 of *Country matters: Social atlas of rural and regional Australia,* www.brs.gov.au/social_sciences/atlas.html. This shows considerable variation in school attendance by 16-year-olds across rural Australia, with below average school attendance in inland regions. This suggests that the returns to education in rural Australia are considerably less inland compared to coastal regions.

Productivity trends in the industry

The gross value of Australian agriculture is steady at around $28 billion (ABARE 2000a) for 1997–98. Broadacre farming, especially the grain, sheep and beef cattle industry group, accounts for the bulk of farm gate output.

In general, strong productivity growth in agriculture is associated with increased profitability as farms increase production with fewer workers. Recent technological developments mean that Australian enterprises can operate with less capital than before. These developments have led to marked reductions in delivery lead times.

Lower inflation has meant that relative price movements are more clearly distinguished from movements in the general level of prices. This has meant that enterprises focus more on reducing costs than raising prices. These benefits have been reinforced by reduced trade barriers, greater flexibility in the labour market and industry deregulation (ABARE 2000b).

Table A6: Employment change for selected rural and farming occupations (ASCO unit groups), 10, 5 and 2 years to May 2000

Occupation	Numbers Employed May 2000	10 yrs to May 2000			5 yrs to May 2000			2 yrs to May 2000		
	'000	'000	%	% pa	'000	%	% pa	'000	%	% pa
Mixed crop and livestock farmers	89.4	-12.0	-11.9	-1.3	-2.6	-2.8	-0.6	-6.3	-6.6	-3.4
Livestock farmers	93.8	11.2	13.6	1.3	19.2	25.7	4.7	13.0	16.1	7.7
Crop farmers	55.3	-10.3	-15.7	-1.7	-4.9	-8.1	-1.7	-7.2	-11.5	-5.9
Aquaculture farmers	2.8	0.4	14.6	1.4	0.5	22.3	4.1	1.7	155.1	59.7
Environmental and agricultural science professionals	18.8	8.5	82.3	6.2	6.1	47.7	8.1	-0.4	-2.1	-1.0
Farm overseers	1.5	-1.4	-48.6	-6.4	-1.4	-47.9	-12.2	0.8	106.2	43.6
Shearers	8.5	-1.4	-14.4	-1.5	2.6	44.0	7.6	1.4	19.1	9.1
Wool, hide and skin classers	1.4	1.1	348.7	16.2	1.4	1,382.9	71.5	-0.3	-17.7	-9.3
Other mobile plant operators	17.3	5.9	51.3	4.2	6.9	66.0	10.7	3.7	27.5	12.9
Farm hands	101.3	-4.2	-4.0	-0.4	1.8	1.8	0.4	5.8	6.1	3.0
Nursery and garden labourers	46.3	15.2	49.0	4.1	7.3	18.7	3.5	4.3	10.1	4.9
Other agricultural and horticultural labourers	2.3	-1.1	-32.1	-3.8	-1.4	-37.6	-9.0	-0.4	-15.2	-7.9
Total Employment (all occupations)	**9015.4**	**1125.3**	**14.3**	**1.3**	**781.0**	**9.5**	**1.8**	**439.6**	**5.1**	**2.5**

Sources: For occupations, DEWRSB trending of ABS Labour Force Survey data. For total employment, ABS, *The Labour Force, Preliminary* (trend data).

World demand has been the impetus for changes in the range of agricultural products produced. The terms of trade have continued to decline in the late 1990s, but in general at a slower rate than the long-term trend. Productivity increases in the agricultural sector have been greater than the decline in the terms of trade.

Differences in productivity growth across enterprises and geographical locations have been the major determinants of differing patterns of change in farm performance during the 1990s. Productivity gains have been unequal—grazing industries have not performed as well as other industries (ABARE 2000b). Wool has achieved poor financial performance and productivity growth over the last decade.

Top-performing farms that exhibit relatively high levels of financial performance continue to do so over the medium term. The potential surely exists to improve the financial performance of other farms. Training (and overcoming the barriers to training) can be part of such improvement. ABARE (ABARE 2000b, p.55) reports that top-performing farms in the 1990s were defined by: larger enterprise size, diversification, younger farmers, higher prices for products, lower unit costs, and higher levels of involvement in farm planning. Property management planning and quality assurance programs also featured.

Agricultural production tends to be concentrated among large farms. In broadacre farming, for example (RIRDC 1998), the largest 30 per cent of farms in terms of cash receipts account for nearly 70 per cent of the value of production and the next 35 per cent of farms nearly all of the rest. These larger farms tend to make most of the productivity gains in agriculture.

Table A7: Unemployment rates for selected rural and farming occupations of last work, annual average to May 2000

Occupation	Unemployment rate (%)
Mixed crop and livestock farmers	0.1
Livestock farmers	0.3
Crop farmers	0.4
Aquaculture farmers (a)	0.0
Environmental and agricultural science professionals	1.1
Farm overseers (a)	0.0
Shearers	4.9
Wool hide and skin classers (a)	4.9
Other mobile plant operators	5.3
Farm hands	10.7
Nursery and garden labourers	5.0
Other agricultural and horticultural labourers (a)	13.5
Total—all occupations (who had worked for 2 weeks or more in the last 2 years)	3.0

Source: Annual average data derived by DEWRSB from ABS Labour Force Survey data.

(a) Each of these has much less than 5000 aggregate employment (see table A6) and the 'unemployment rate' should be interpreted with some caution.

ABARE reports that the gap in performance between the top-performing farms and others grew during the 1990s as unit values for outputs increased for top-performing farms relative to others. This indicates that top-performing farms target products with higher prices. Differences in productivity growth are likely to have been a major contributor to the increasing gaps between farms, particularly in the wheat-sheep zone. Daniels and Woods

(1997) observe that less innovative farmers tend to assume that good management is an 'innate' skill related to physical (farm) improvements rather than business improvements.

To overcome some of the problems associated with small farm size, some farmers are leasing land, sharefarming and farming in groups in order to reduce unit costs of production. Farmers leasing, sharefarming and routinely agisting obtained higher rates of return on capital owned (ABARE 2000b, p.55).

There has been growth in off-farm income for families on smaller farms (ABARE 2000b, p.55), although this does not necessarily imply growth in on-farm productivity. There are marked differences (see table A8) between States and Territories and industry sectors in the proportion of people employed in agricultural industries who work full-time in agriculture. This may reflect differential needs opportunities for off-farm income.

Table A8: Proportion of full-time employment, by agriculture industry group by State, August 1999

	NSW	Vic	Qld	SA	WA	Tas	NT	ACT	Australia
Agriculture, forestry and fishing	78.5	74.0	80.1	68.7	71.5	77.2	92.8	46.1	76.5
Agriculture	76.3	73.6	79.1	69.3	70.2	75.8	92.3	51.3	75.5
Horticulture and fruit growing	71.1	69.8	76.8	68.9	75.3	81.8	73.5	50.0	73.1
Grain, sheep and beef cattle	78.1	74.7	83.1	71.5	69.7	73.6	97.8	33.8	77.3
Dairy cattle farming	89.9	75.4	78.2	80.8	74.8	76.0	-	-	77.6
Poultry farming	77.8	60.1	54.4	34.0	31.9	100.0	-	-	64.0
Other livestock farming	42.6	80.2	71.3	40.9	62.3	49.9	-	67.4	61.2
Other crop growing	78.1	100.0	76.8	-	66.7	71.4	-	-	77.5

Source: ABS Labour Force Survey, August 1999.

Appendix B

Output and employment trends by sector

This appendix gives output and employment indicators for the four sectors of study.

Used throughout are NCVER estimates of current employment by occupation in industry classes relevant to the sectors of study. These estimates were made by apportioning May 2000 labour force survey figures to the industry detail observed in the 1996 census.

At table B1 are the resulting estimates of employment and occupational composition for industry classes in horticulture and fruit growing; grain, sheep and beef cattle; other crop growing; and services to agriculture. About two-thirds of people employed in sheep farming are 'farmers', but less than half of those employed in horticulture and fruit growing and only 30 per cent of those employed in cotton growing are farmers. Supposed differences in 'skill' may partly be due to differences in enterprise size and labour intensiveness, but they are also indicative of a range of training needs across the four sectors.

The sectors present quite different output and employment pictures. In the past five years, wool growing has suffered continued output and employment losses, although there is subdued optimism in current ABARE forecasts. Horticulture has shown encouraging export diversification and strong employment growth. Allowing for annual fluctuations, viticulture exhibits strong growth in production and particularly in employment. Cotton growing shows some improvement in production, almost entirely due to increased area under harvest. Total employment in the sectors is estimated around 125 000 or more, about 30 per cent of the total agriculture division, mainly in wool growing and production horticulture.

Wool growing

The wool industry has undergone major structural change over the 1990s and the industry will continue to adjust to lower world demand for wool for some time into the future.

The industry has suffered performance and productivity reverses over the past ten years. The sheep rate of return adjusted to full equity was –1.1 per cent in 1997–98; –1.5 per cent in 1998–99 and -1.3 per cent in 1999–2000. The rate of return adjusted to full equity is defined as profit at full equity, excluding capital appreciation, as a percentage of total opening capital.

Farm business profit for sheep enterprises averaged -$26,872 in 1997–98; -$32,230 in 1998–99 and -$28,800 in 1999–2000 (ABARE 2000b, p.43). Farm business profit is defined as farm cash income, plus build-up in trading stocks, less depreciation and the imputed value of operator, partner and family labour.

Australian wool production declined by 23 per cent between 1992–93 and 1998–99 (see table B2). At average auction prices, the figures in table B2 represent values over $3 billion at a high (1994–95), or over $2 billion at a low (1998–99).

Table B1: Estimated (a) agriculture division employment, by industry classes and key occupations in skill order (b), May 2000

Industry	Farmers	Environ and ag sc profs	Farm overseers	Shearers	Nursery persons	Other mobile plant ops	Forestry and logging workers	Hand packers	Farm hands	Nursery and garden labourers	Other ag and horticultural labourers	Other	Grand total (c)
Horticulture and fruit growing													
0110 Horticulture and fruit growing undef	10174	55	42	0	226	242	32	569	5359	223	40	4272	21234
0111 Plant nurseries	1993	34	25	0	5176	91	61	51	824	5890	27	7114	21286
0112 Cut flower and flower seed growing	3543	6	38	0	419	46	0	74	1401	1007	6	1325	7863
0113 Vegetable growing	7972	29	40	6	48	331	10	674	2858	219	21	2457	14663
0114 Grape growing	6082	27	74	0	13	228	6	17	5789	44	17	1726	14024
0115 Apple and pear growing	915	0	17	0	6	51	0	225	736	6	0	367	2324
0116 Stone fruit growing	601	6	17	0	0	21	6	10	249	6	0	72	988
0117 Kiwi fruit growing	49	0	0	0	0	0	0	0	40	0	0	11	101
0119 Fruit growing nec (d)	7742	21	120	0	36	415	6	1435	6162	67	38	2577	18618
Grain, sheep and beef cattle													
0120 Grain sheep bf cattle farm undef	19499	20	116	477	0	184	7	0	2927	0	213	7668	31111
0121 Grain growing	11806	36	50	20	0	384	0	7	983	0	45	2791	16122
0122 Grain-sheep grain-bf cattle Farm	42184	30	166	397	0	513	0	7	4117	0	177	6626	54216
0123 Sheep-beef cattle farming	20820	18	293	182	7	170	0	0	3113	14	307	2457	27381
0124 Sheep farming	20450	30	184	2536	0	150	20	43	3406	7	204	4142	31173
0125 Beef cattle farming	34059	36	259	14	0	248	7	34	6998	43	643	8157	50497
Other crop growing													
0160 Other crop growing undef	539	7	0	3	3	28	0	15	200	0	0	206	1001
0161 Sugar cane growing	6645	13	18	0	0	817	15	38	1066	0	8	1773	10392
0162 Cotton growing	665	30	63	0	0	331	0	0	397	0	4	684	2175
0169 Crop and plant growing nec	1752	12	54	3	10	86	10	118	1736	34	10	1006	4832
Services to agriculture													
0210 Services to agriculture undef	20	107	0	0	0	32	0	5	41	5	0	581	792
0211 Cotton ginning	5	10	7	0	0	17	0	5	19	0	0	637	700
0212 Shearing services	87	0	0	4423	0	5	5	0	1585	0	5	1193	7302
0213 Aerial agricultural services	5	5	0	0	0	37	0	0	20	5	0	1079	1152
0219 Services to agriculture nec	1403	617	44	76	53	1534	61	267	2326	100	116	13657	20254

(a) ABS, Labour Force Survey (May 2000), weighted according to 1996 census.
(b) According to ASCO. With the limitations of the weighting technique, the small numbers in some occupational cells may not be realistic.
(c) May not add due to rounding.
(d) It is not possible to separate data for the banana gowing industry within 0119, however, accurate estimates provided by Qld Department of Primary Industries and NSW Agriculture (2000) are as follows:

Banana growing NSW	1090	6	7	0	6	6	0	340	223	0	0	364	2042
Banana growing Sth East Qld	200	2	4	0	0	0	0	20	55	0	0	0	281
Banana growing North Qld	500	18	80	0	10	100	0	450	3200	0	0	9000	13358

nec = not elsewhere classified

'In summary, the conclusion is stark, no matter if the enterprise is large or small, unless the costs of production are near or below the best 20 per cent of woolgrowers, maintaining viability into the future will be extremely difficult.' (Wool Taskforce 1999, p.24). The taskforce identified factors influencing successful adjustment. In most seasons a focus on the efficiency of the land, labour and overhead resources achieved far more in terms of performance than a focus on gross margin. Land, labour and overheads explained well over half the difference in profits between the top 20 per cent of woolgrowers and the industry average. Highly profitable woolgrowers were associated with:

- optimising the balance between cropping and livestock
- high conversion of rainfall to pasture
- high conversion of pasture to wool
- high labour productivity and overhead efficiencies
- development of a whole farm plan
- a continuing commitment to training

About 75 per cent of production (Martin 1998) comes from the 37 per cent of growers who produce more than 63 bales. Over 30 per cent of the total 46 000 wool growing enterprises run less than 1000 sheep and these (mixed) enterprises produce less than five per cent of the clip.

Productivity improvement has been slow for woolgrowers compared to other rural enterprises. Especially in the average enterprises, wool growing is more labour-intensive than the other sectors of study. The taskforce blames low productivity on low profitability, low education and increasing age, poor or misleading market signals, poor adoption of technology, genetic (breeding) myths and risk averse attitudes.

Table B2: Australian sheep disposal, wool production and price, 1992–93 to 1998–99

	Sheep shorn (million)	Cut per head (kg)	Wool production (kt)	Av auction price (c/kg)
1992–93	178.9	4.55	815.1	313.53
1993–94	172.8	4.49	775.8	330.08
1994–95	156.3	4.37	682.5	504.43
1995–96	146.7	4.46	654.9	386.73
1996–97	156.9	4.35	682.0	403.01
1997–98	155.5	4.21	655.1	444.30
1998–99	145.7	4.32	629.2	356.41

Source: Australian Commodity Statistics, 1999, tables 228–9.

Martin estimates about 46 000 (principal) woolgrowers at 1996–97, including about one specialist enterprise for every three mixed enterprises, and numbers are declining. He also estimates about two full-time equivalent labour units per wool growing farm, over 90 000 units in total. Allowing that three-quarters of these labour units are in mixed enterprises, perhaps a generous estimate of 'core' employment (principals and employees solely or mainly in wool growing) in the sector of study would be well over 50 000 in full-time equivalents.

Production horticulture

ABARE (2000a) estimates that the gross value of horticulture has more than doubled in ten years to reach $5.1 billion for 1997–98, or 18 per cent of the total agriculture gross value. This includes grapes (20 per cent or $1 billion), nursery and flowers (14 per cent), potatoes (seven per cent) and citrus (seven per cent). The value of exports has increased over 100 per cent in the ten years to 1998–99 to $1.2 billion.

The main products and regions are at table B3, including an estimate of the production trend as increasing, unchanged or declining. This is based on the change in production over 1995–99, or other factors described in *Australian horticulture in the global environment* (ABARE 2000a).

Table B3: A–Z of major horticulture products, by States and regions of production, by production trend, 2000

Product	States and regions	Production trend (a)
Almonds	Almost 85% from SA (Riverland) and NSW–Vic (Sunraysia)	+57%
Apples	All States, mainly Tasmania & WA (Donnybrook-Manjimup)	0
Avocados	5 States, 60% from QLD (Atherton Tablelands to NSW border)	+51%
Canning Fruit	Vic (Goulburn Valley), SA (Riverland) and NSW (MIA)	0
Cherries	5 States, 50% from NSW (Young)	+35%
Chestnuts	NE Victoria (over 80%) and also NSW, WA, SA	+ (new planting)
Citrus (fresh and juice)	70% mandarins from QLD and WA, Tas (smaller areas)	0 to -
Custard fruit	NSW (North Coast) to Qld (Atherton Tablelands)	0
Cut flowers	All States	0
Macadamias	90% in NSW (NE) and Qld (SE)	++
Mangos	Over 75% in Qld, rest in NSW, WA and NT	-
Melons	About 65% in Qld, also NSW, VIC, WA, SA and NT	0
Pears	Over 90% from Vic (Goulburn Valley)	0
Pineapples	Qld	0
Potatoes	All States except NT, especially Tas (N), Vic and SA (SE)	0
Stonefruit	Vic, NSW, SA, WA (SW) and Qld (granite belt)	++ (plant'g up 84%)
Strawberries	All States, over 80% in Qld, Vic and WA	0
Tomatoes	75% of fresh production in Qld	+11%

Source: ABARE 2000a.
(a) + = increasing, 0 = unchanged, less than 10% either way, - = declining.

Queensland and South Australia dominate the product list, although Victoria (a major producer), New South Wales and Western Australia are important. Most products show

little change, those that have a strong positive projection are usually coming off a small base. Information is limited on the volume and value of a number of horticulture products.

Potatoes (1372 kt in 1997–98), vegetables (1317 kt in 1996–97, excluding potatoes and tomatoes) and citrus (579 kt in 1998–99) are the largest crops of horticulture production. Citrus production is detailed in table B4. Although the value of navel orange production increased substantially over the 1990s, production declined by 8 per cent between 1990–91 and 1998–99. Valencia orange production declined by 14 per cent, lemons and limes by 11 per cent and grapefruit by 43 per cent. In contrast, mandarin production expanded over 100 per cent during the 1990s.

Table B4: Citrus production by type, weight and value, 1990–91 to 1998–99

	Navel oranges		Valencia oranges		Mandarins		Lemons & limes		Grapefruit	
	Kt	$'000s	Kt	$'000s	Kt	$'000s	Kt	$'000s	Kt	$'000s
1990–91										
1991–92	153	5249	326	1811	45	5968	35	1645	28	257
1992–93	189	27307	433	29019	55	5540	36	1571	25	314
1993–94	-									
1994–95	203	47739	448	29860	70	12323	36	4947	24	307
1995–96	136	46119	303	32997	70	17284	32	7236	17	244
1996–97	183	70030	360	36457	79	19462	38	4119	17	167
1997–98	201	76991	356	30659	81	20948	26	5727	16	221
1998–99	141	74136	281	45594	95	22312	31	5554	16	296

Source: Australian Commodity Statistics, 1999, table 149.

Horticulture and fruit growing is one major sector of agriculture that is growing. Its total employment is put (table A2 in appendix A) at about 100 000, up about 20 per cent on 1995, and over half in Queensland and South Australia (table A4 in appendix A). ABARE (2000a) suggests quarantine and tariff constraints as major issues in further export market access and growth.

The 'production horticulture' employment levels within horticulture and fruit growing can be estimated by considering table B1. This yields an estimate of perhaps 60 000 or more, mainly in the groups cut flowers, vegetable growing, apple and pear growing, stone fruit growing, and fruit growing (not elsewhere counted or undefined); and also in services to agriculture. This does not include the groups plant nurseries (excluded) or grape growing (considered separately).

Dividing our 60 000 (employees) by about $4 billion (horticulture value excluding grapes), an average of roughly 15 persons per $1 million is implied for 'production horticulture' as defined here. This is close to the Ferguson and Simpson (1995, using 1991 figures) of 20 persons per $1 million in vegetable growing, although the same authors find a much higher figure in fruit growing (including grapes).

Viticulture

The sector under study here is viticulture, although it is recognised that some enterprises or establishments may integrate grape growing and winemaking activities. ABARE (2000a) puts about $1 billion gross value on grape growing (table or wine) for 1997–98. Whereas table grape growing has stagnated, wine grape production increased 25 per cent over 1995–99 (see table B5). The area of wine grape production increased by 37 per cent over this period.

Wine grape production accounted for only 57 per cent of total grape production in 1990–91 but 80 per cent by 1998–99.

Table B5: Grape production, by table or wine making purposes, by area under production, 1990–91 to 1998–99

	Grape production Kt	Drying and table Kt	Wine making Kt	% Wine grape production	Area Wine grape Production '000 ha
1990–91	940	401	539	57.3	-
1991–92	1111.5	476.3	635.2	57.1	-
1992–93	909.5	283.3	626.2	68.9	-
1993–94	1080.8	303.4	777.4	71.9	61
1994–95	939.7	309.8	629.8	67.0	62
1995–96	1095.4	212	883.3	80.6	63
1996–97	1161	363	798	68.7	64
1997–98	1192.3	241.5	950.8	79.7	79
1998–-99p	1378.8	269.4	1109.4	80.5	86

Source: Australian Commodity Statistics, 1999, tables 143 and 146.

The major production regions for specialist wine grapes are at table B6. South Australia accounts for over half of Australia's specialist wine grape production and is expected to hold its position. ABARE projects that production will continue to expand significantly from 1998–99 to 2001–02.

Table B6: Specialist wine grape intake 1998–99, projected production 2001–02, change 1999–2000 to 2001–02, by State and region

State and region	Estimated intake 1998–99 kt	Projected production 2001–02 kt	Change 1999–2000 to 2001–02 %
South Australia			
Barossa	64	80	10
Central	73	102	22
Northern	20	33	33
South-East	80	110	15
North Murray	96	149	18
South Murray	48	63	12
Waikerie-Lower Murray	78	103	12
Total	460	640	16
New South Wales			
Hunter	36	39	6
Murrumbidgee Irrigation Area	126	156	8
Sunraysia	25	46	28
Rest of New South Wales	40	60	25
Total	227	300	13
Victoria			
Kerang-Swan Hill	23	32	3
Sunraysia	97	138	1
Rest of Victoria	51	66	2
Total	170	235	1
Western Australia	27	39	4
Total	884	1215	15

*Tas, Qld, NT and ACT combined account for less than 1% of total production

Source: Shepherd 1999, table 3.

An estimate for 'viticulture' employment within horticulture and fruit growing can be derived from the grape growing entry at table B1. This yields an employment estimate near 14 500, about 15 persons per $1 million value. Even if the employment figure is slightly overstated, there appears to be significant growth from the 1996 and 1991 census employment figures (cited by DEWRSB) of about 7500 and 4500 respectively for grape growing.

Cotton growing

Selected indicators on the performance of the cotton industry over the 1990s are presented in table B7. Significantly, the growth in value ($980 million in 1990–91 up to $1.32 billion in 1998–99) can be attributed almost entirely to an expansion in the area of cotton harvested. The harvest increased nearly 100 per cent over 1990–99, with an increase over 125 per cent in Queensland and nearly 90 per cent in New South Wales.

During the 1990s, there was a decline in the average lint yield from 1.55 t/ha in 1990–91 to 1.3 t/ha in 1998–99. The highest average lint yield of 1.61 t/ha was achieved in 1991–92 and the lowest of 1.1 t/ha in 1993–94. The average gross unit value of cotton has dropped since 1994–95 when it reached 272 Ac/kg (or 92USc/lb). The average gross unit value of cotton was 189Ac/kg or 60USc/lb in 1989–99.

Table B7: Australian cotton, area harvested and yield, gross value, and value by area harvested and by weight, 1990–91 to 1998–99

Year	Area harvested '000 ha			Lint yield t/ha			Gross value of production $m	$m/ha Cotlook 'A' index	(USc/lb)	Average gross unit value Ac/kg
	NSW	Qld	Aust	NSW	Qld	Australia				
1990–91	202	77	279	1.678	1.403	1.552	981	3.5	84	227
1991–92	225	87	312	1.812	1.688	1.609	972	3.1	64	194
1992–93	204	82	286	1.478	1.314	1.304	770	2.7	58	206
1993–94	210	84	294	1.301	1.123	1.12	739	2.5	69	225
1994–95	157	89	246	1.594	1.402	1.362	910	3.7	92	272
1995–96	201	120	321	1.458	1.269	1.337	1112	3.5	86	259
1996–97	277	119.1	396.1	1.599	1.403	1.535	1219	3.1	78	200
1997–98	299.3	138.8	438.2	1.588	1.371	1.519	1294	3.0	73	194
1998–99	378.9	173.8	552.7	1.23	1.345	1.266	1326	2.4	60	189

Source: Australian Commodity Statistics, 1999, Tables 59, 61 and 63.

A current employment estimate for the cotton growing sector of study can be derived by merging the cotton growing and cotton ginning figures at table B1. This yields a total near to 3000. Allowing for the estimation uncertainties, employment seems to be fairly steady compared to the 1996 and 1991 census employment figures (cited by DEWRSB) of about 2500.

Per $1 million of production value, cotton growing is rather less labour intensive than production horticulture and viticulture. Putting this another way, cotton needs larger-scale inputs of land and other resources for growth and economies of scale.

Appendix C

Education and training analysis

This appendix considers trends in rural education and training (particularly for young people and including the tertiary education sector), vocational education and training (VET) planning protocols and their impact on the sectors under study, and statistical trends (enrolments and New Apprenticeships) in VET for the rural industry.

Rural education and training background

DETYA (DETYA 2000), the Rural and Industries Research Development Corporation (RIRDC 1998) and NCVER (NCVER 1998, 1999a) summarise recent trends in schooling, post-secondary education and VET for rural and remote Australia. In these papers, 'metropolitan' or 'urban' refers approximately to the eight capitals and other large centres over 100 000, 'rural' to population centres under 100 000 and over 5000, and 'remote' to other sparsely populated areas meeting defined criteria of low population and high remoteness.

In 1998, DETYA finds that young people from rural (63 per cent) and remote (54 per cent) areas are somewhat less likely to finish Year 12 than those in capital cities (67 per cent). These gaps shrink in the case of females. There is also (map 69 of the *Social atlas*, cited in appendix B) evidence of better educational continuation in coastal compared to inland areas.

Only 42 per cent of rural and remote young people completing Year 12 in 1994 went on to university compared to 59 per cent of urban. However, the 1994 percentages of teenagers participating in VET and apprenticeships were higher in rural Australia than in urban Australia.

Rural and remote students have slightly lower rates of achievement and completion in their school and post school studies, with the exception of the trades. Rural Year 12s and rural apprentices go for the more traditional subject choices. Young rural students (and their homes) are less likely to take up information technology.

On 1996 figures, about seven per cent of the rural workforce have degrees, compared to 15 per cent of the urban workforce. However, about 25 per cent of both groups have diplomas or trades qualifications. Rural Indigenous Australians rate well below urban Australians on Year 12 completions, but once again the gap closes in the case of trade completions.

When we move from the *rural* workforce to the *agricultural* workforce, the qualifications profile dips. Although agriculture has a level of trade-technical qualification comparable to that of the overall workforce, RIRDC (1998) points to the marked difference in the proportions holding associate diploma or higher qualifications (12 per cent versus 26 per cent on 1995 figures). The lower overall participation rates of rural people in tertiary (post-secondary) education, RIRDC contends, are a consistent trend that is not likely to disappear quickly.

On 1997 ABS figures, the industry monograph (NCVER 1998) for agriculture estimates that about six per cent of the agriculture division of employment has a degree qualification, seven per cent diploma and seven per cent skilled vocational qualification (total 20 per cent). The equivalent all-industry percentages are 17 per cent, 9 per cent and 13 per cent, totalling 38 per cent.

The RIRDC report draws unfavourable comparisons between the qualifications profile of Australian agriculture and that of European or USA agriculture. It notes that about half of

the Australian universities offer agriculture and related education, adding up to about 12 000 agriculture and animal husbandry students in Australian universities at 1996. This is two per cent of the total, rather lower than the equivalent percentage in the VET sector (see below), and lower than the agriculture workforce as a percentage of the total workforce. The *Good universities guide* (Ashenden & Milligan 2000) counts 18 universities in agriculture education but only about 9000 students on 1999 figures.

The report, *Australian VET in 1997: Rural and remote students* (NCVER 1999a), estimates 415 000 rural (28 per cent out of a total of 1.46 million) students and 48 000 remote (three per cent of total) students in VET as at 1997. NCVER finds these percentages have increased slightly to 30 per cent and four per cent respectively by 1999. Relative to their metropolitan counterparts, the rural and remote students are slightly more likely to be male, older, and studying part time.

Just as smaller proportions of rural and remote school students complete Year 12, NCVER also finds that smaller proportions of the 1997 rural (34 per cent of total) and remote (34 per cent) VET students have Year 12 compared to metro VET students (52 per cent). Updating with 1999 figures, the respective percentages are fairly similar at 35 per cent, 32 per cent and 50 per cent.

The employment and field-of-study profiles of the rural and remote students are fairly similar to those of the metro students. As would be expected, the main difference is that rural and remote students are more likely to be studying in the field of land and marine resources and animal husbandry. When studying at trades and skilled levels, the rural and remote students are about as likely to complete VET 'modules' (units of training) as their metro counterparts.

Over 76 per cent of metro VET students live within 20 km of their VET provider, versus 47 per cent and 32 per cent respectively for rural and remote students. The percentage of students doing some or all of their courses by correspondence is 6–7 per cent in metro Australia, just seven per cent in rural Australian and 11 per cent in remote Australia. However, correspondence becomes the dominant form of provision once rural and remote students live more than 100km from their providers.

The above review of the aggregate figures for school and post school educational participation tends to suggest a strong rural disadvantage. The same review shows that this is less so in the VET sector, where rural and remote students have comparatively good rates of participation and outcome compared to their urban counterparts.

'People from rural and remote areas,' notes the *Annual national report 1998* (ANTA 1999a), 'participate in VET at higher levels than their population proportion'. A similar point arises from NCVER estimates prepared for the Ministerial Review of Post Compulsory Education and Training in Victoria. Comparing ABS and NCVER data, the capital cities absorb more than their fair share of *all* post secondary enrolments (about 69 per cent) compared to their share of national population (56 per cent). Once again, this difference evaporates in the *VET* sector of post-secondary education, where the capitals' share of enrolments (58 per cent) is very close to their share of national population (56 per cent).

Planning issues in vocational education and training for the rural industry

The national and State VET and industry planning protocols have a significant impact on the adequacy of VET provision for the rural industry.

Each year, ANTA sets the broad directions for public VET funding and reports on the performance of the VET system against key performance measures. *Directions and resource*

allocations for 2000 (ANTA 1999b) plans for just under 260 million hours of public VET nationally in 2000, up two per cent on revised 1999 figures. ANTA awards the largest increases in training provision to industries seen to be the 'most rapidly growing' in employment over 1997–2006, namely cultural and recreational services, education, retail trade, business services, and health and community services.

Agriculture is assessed to have a small negative annual rate of employment growth over 1997–2006. However, the equivalent ANTA category (primary industry), still receives a fairly reasonable 4.6 per cent increase in provision, up from 12.4 million hours in 1999 to an estimated 13 million hours in 2000. This represents about five per cent of the total allocation, very close to the 4.7 per cent allocation of 1996 (NCVER 1998). In comparison, the Agriculture division represents about 4.9 per cent (at May 2000) of total Australian employment, and a fairly similar proportion of gross product in the economy.

On these figures, agriculture could be said to have a reasonable share of available public VET funding, although its share of VET funding per employed person is actually slightly below the industry average. An important point here is the flattening rate of growth in public VET funding since 1998. Further increases in the VET dollars, or share of dollars, available for agriculture-related training cannot be assumed.

The national planning scenario is played out in State-level VET plans, and in their application to the study sectors. As ANTA notes, Queensland is the only State to include primary industry in its areas of highest growth in training provision for 2000. The successive Queensland VET plans for 1999 and 2000 (DETIR 1999a, 1999c) suggest up to 15 per cent increase for primary industry. The New South Wales (NSW BVET 2000) and Victorian 2000 VET plans (OTFE 1999a) more or less 'maintain effort' in primary industry. Other State VET plans tend to suggest smallish 1–4 per cent increases.

In effect, these broad allocations for primary industry set the scene for the observed intensity of VET activity in primary industry-related courses, be they New Apprenticeships or non-apprenticeship, award courses or other non-award and short courses. Within their VET plans, all States maintain some form of regional or industry priority plans that give further direction for resource allocations.

These sub-plans identify certain training (both award courses and short courses) priorities relating to the Working Group's sectors of study. This is noticeable in the South Australian, West Australian and Queensland VET plans.

The 1998 SA Plan and 1999 update (DETE 1998, 1999) identify viticulture or horticulture as priority industries for training in 8–9 of 15 regions. The 1999–2001 WA Plan (WADT 1999) puts a system priority on viticulture (technical) training and this is replicated in four of the nine regional plans. Comparing priorities to production levels, South Australia carries (table B6) a much higher share of Australian viticulture than Western Australia. The 2000 Queensland plan (DETIR 1999b), with a special section on Queensland's four rural training colleges, signals resource priorities to lift horticulture training for increased demand.

On the other hand, the 2000 Tasmanian Plan (Department of Education 1999) urges quality assurance training for (3300) farmers and the training of (50) shearers and shed hands to replace wastage.

On the face of it, and unsurprisingly, the State VET plans engage with the growing horticulture and viticulture sectors rather more readily than the strategic difficulties of wool growing in decline.

A recent NCVER review (Kilpatrick & Bell 1998) of the rural training literature recommends further study of rural and local involvement in VET planning, meaning regional rather than

top-down planning and perhaps the use of local brokers who would sit in between training providers and local communities. The RIRDC report (RIRDC 1998), having the total spectrum of post-secondary education in mind, supports an 'integrated local community' approach to farm education and training, comprehending case studies (of best practice), and the investigation of advisory mechanisms and farm leaders' attitudes to training.

The Kilpatrick review points to issues such as accommodating 'thin' rural VET markets, dealing with higher rural costs of training, making use of flexible delivery, overcoming the limited rural tradition of formal VET, and improving the quality of rural trainers and assessors. NCVER's industry training monograph (NCVER 1998) points to training issues generated by the ageing workforce, distance learning needs and the dispersion of technology.

In addressing these needs, the Working Group has also considered the extent to which industry and training providers are solving skill needs by mobilising the new Training Packages and the pathways that they enable.

The national VET system, particularly the Australian Recognition Framework and Australian Qualifications Framework of 1998, establishes Training Packages as the main vehicle for competency-based training in industry. Industry training advisory bodies, such as RTCA, develop packages of qualifications, competencies and assessment guidelines for industries and occupations to be endorsed by ANTA. As the average farm enterprise is very small, training intermediaries—State rural ITABs, Group Training Companies and New Apprenticeship Centres—have important roles to play in helping training providers to operationalise the Training Packages for agriculture and horticulture.

The rural industries VET plan (RTCA 1999a) for 1999–2000 is a useful guide to progress and problems in implementing the new system. This focusses on skills development, skills supply and marketing. Its key objectives and initiatives relate to improving the industry's image and careers, raising industry awareness of Training Package options, encouraging training for productivity gains, marketing to industry, enterprises and providers, and tackling training impediments (inappropriate awards, inflexible New Apprenticeships, and assessment difficulties).

There are two endorsed Training Packages for the agricultural sector, agriculture (including wool and cotton) and horticulture (including viticulture). Together they contain 22 broad categories of qualification (RTCA 1999b, 1999c). The categories that align with the sectors under study are production horticulture, sheep and wool, wool harvesting, and cotton.

The initial RTCA (Rumsey 2000a, 2000b) reviews of the packages commend their portability and flexibility, workplace and career focus, and simplicity. However, Rumsey calls for improvements in user friendliness, qualifications and units, management and higher technical aspects, and assessment and learning guides. The reviews call for more development of higher level AQF 5–6 qualifications, above diploma level.

The initial review (ANTA 2000b) of the Food Processing Package (Wine) is also relevant, although it applies more to the winemaking stream than wine grape growing (viticulture). It is also complimentary, although calling for improved qualifications, better professional development of workplace trainers and assessors, and VET funding based on skill outcomes rather than class inputs.

VET and other providers for the rural industry

The RIRDC report (RIRDC 1998) lists post-secondary providers of public sector farm education and training as universities, TAFE and agricultural colleges (both come under VET here), State departments of agriculture, plus a variety of other public and private industry

organisations and farm groups. Private VET providers (registered training organisations) need to be added to this list.

There are (Ashenden & Milligan 2000) 18 universities (and 37 campuses) involved in rural industry education, teaching about 9000 students in 1999. The biggest providers (over 1000 undergraduate enrolments in 1999) are Charles Sturt University, University of Melbourne, University of Queensland and Sydney University.

The synergies, especially at regional and campus level, between the higher education and VET sectors are relevant to the Working Group's investigations and solutions of skill gaps. A number of the universities contain specialised institutes, colleges, campuses or research centres for rural education and training. Some universities, such as the University of Ballarat, contain integral TAFE divisions that provide rural industry training.

Other centres of excellence are relevant, particularly Victoria's International Fibre Centre which opened in 1999. Although the fibre centre goes beyond the wool and cotton farm gates, the point of interest is that it is market and product-driven rather than supply-driven, and links industry, training and research. Glover (1998) describes the 'flexible access and (technical) staffing arrangements which allow for plant and equipment to operate on demand' for textile firms and education and training providers.

Enrolment trends related to the rural industry

Australian VET statistics (NCVER 2000b) counts 85 TAFE and other government VET institutes at 1999, spread over 1132 locations. The 85 institutes are in New South Wales (14), Victoria (20), Queensland (21), Western Australia (15), South Australia (8), Tasmania (1), Northern Territory (5) and Australian Capital Territory (1).

Seven (NSW 1, Victoria 1, Queensland 4 and NT 1) of the 10 distinct agricultural colleges identified in the RIRDC (1998) report are also identifiable in the NCVER report. While the agricultural colleges have an especially important role, a large number of the 85 institutes are involved in training for the industry.

Table C1, based on unpublished NCVER statistics assigning VET course enrolments to the seven ASCO farming and farm hand groups is a broad indication of the main TAFE and government VET providers in 1999 for the sectors of study. TAFE and government providers capture over 80 per cent of enrolments (NCVER 2000a) generally in publicly funded VET and the same is true for enrolments related to agriculture.

Over 60 of the 85 TAFE and government institutions can be seen to have some involvement in rural industry-related VET. About 30 public institutions and perhaps 100 of their campuses have a more substantial involvement.

As noted at the foot of table C1, a number of private providers also provide rural industry-related VET, and they account for 15 per cent of the agriculture-related VET enrolments. At face value, there appears to be a broad regional spread of providers and training for the number of enrolments. However, a recent (NCVER 1999a) assessment is that only a small percentage of (all) rural and remote VET students receive some or all of their training by correspondence.

Another recent ANTA report (ANTA, 2000a) on new pathways to trade and related qualifications includes case studies of innovative (non-apprenticeship) pathways to Certificate II and III qualifications under the Horticulture Package. More TAFE and private providers are taking the training delivery and assessment to the farm gate where they can.

It is necessary to look at the VET enrolment statistics in several different ways to build up a picture of the overall training effort related to the rural industry. The statistics can be dissected by provider (as above), by occupation, by level of qualification, by type of training, by use of Training Package, and so on.

NCVER (NCVER 2000b) estimates 1.99 million publicly funded VET course enrolments in 1999. About 103 000 (5 per cent of total) of these enrolments are in land and marine resources and animal husbandry, a first approximation to the VET supply side for the farming occupations. Table C2 displays the land-animal husbandry enrolments by sex and by qualification level.

The figures suggest a broad spread of needs and preferences for longer and shorter courses. About one-third of the 103 000 enrolments (32 per cent) fall into the category 'Certificate III and above', one-third (33 per cent) 'Certificate I–II' and one-third (35 per cent) 'other', including statements of attainment and non-award courses. Male course enrolments outnumber female by 3:1.

Tables 6 and 18 of the *Student outcomes survey* (NCVER 1999b) are a broad guide to relevant course and module completions in 1998. The total number of land-marine-animal husbandry graduates, at Certificate III and equivalent level or above, was over 5000 (four per cent of total) in 1998, and the equivalent total of 'module' completions was over 13 000 (five per cent of total). Up against 33 000 enrolments for Certificate III and above in 1999, as per table C2, the 5000 figure is only moderate.

Unpublished NCVER data can be used to assign about 45 000 (two per cent of total) of the 1999 VET course enrolments to the seven major ASCO farming and farm hand groups identified as relevant by the Working Group. The ASCO assignment is variable in quality and should be interpreted with caution at the detailed State and qualification levels.

However, the 45 000 (a little over 40 per cent of *all* land-animal husbandry enrolments) are a useful first approximation of the VET demand side in agriculture. Analogously, in the *Student outcomes survey* (NCVER 1999b), the number of graduates employed in agriculture also appears to be about 40 per cent in relation to *all* land-animal husbandry graduates. The equivalent percentage for 'module completers' is higher at about 70 per cent.

Tables C3 and C4 display the agriculture-related enrolment trends by State and Territory and by qualification level.

Table C1: Major TAFE and government institutions recording VET course enrolments for agriculture-related occupations (a), ranked (b) by State and Territory by number of students, 1999

State and institution	No of locations (c)	No major campuses(c)
New South Wales (11)		
NSW Agriculture	3	3
North Coast	18	16
Riverina	16	14
Western	20	20
Hunter	16	16
New England	12	11
(plus five others)		
Victoria (12)		
Land & Food Resources	7	7
Goulburn Ovens	12	5
Sunraysia	11	4
Northern Melbourne	9	6
Bendigo	10	6
Uni of Ballarat (TAFE)	11	4
East Gippsland	17	2
(plus five others)		
Queensland (16)		
Rural Training Colleges (4)	8	5
Southern Queensland	24	11
Barrier Reef	41	10
Central Queensland	19	10
(plus nine others)		
Western Australia (10)		
CY O'Connor	11	10
South Metro	15	4
Great Southern	21	3
Central West	21	1
Midland	8	1
South West	15	5
(Plus four others)		
South Australia (8)		
Spencer	18	15
Murray	8	7
South East	11	3
Onkaparinga	7	5
Torrens Valley	6	4
(plus three others)		
Tasmania and Territories (5)		
Tasmanian TAFE	47	10
NT Rural College	3	2
Centralian	37	4
Canberra	7	6
NT University	41	3
Total agriculture-related institutions (62) Total all TAFE and Government VET Institutions (85) Total TAFE-government enrolments represented here for agriculture-related occupations (About 39 000 or 85%) Total private provider enrolments, not represented here, for same agriculture-related occupations(About 6000, 15&)		

Source: NCVER, unpublished 1999 statistics.

(a) Within the land-animal husbandry field, mixed crop and livestock farmers, livestock farmers, crop farmers, farm overseers, shearers, farm hands, and other agricultural and horticultural labourers, as per ASCO unit groups. Also includes those (mostly NSW, Vic) just assigned to ASCO 13, 131 (farmers and farm managers) and not to individual unit groups.

(b) As a guide only, the institutes are ranked in descending order of the number of agriculture-related enrolments.

(c) From NCVER 2000b. Number of 'locations' is often much larger than the number of colleges or campuses. It is not to be taken that all locations have agriculture-related enrolments.

Table C2: Numbers of VET course enrolments for land-marine-animal husbandry by sex by level of qualification (a), 1999

	Dip's	AQF Cert IV & equiv	AQF CIII & equiv	AQF CII	AQF CI	Other Cert	Other Rec'g Course	Non Award	Total
Males	2800	7500	12700	21100	3900	3800	14800	8600	75200
Females	1500	3800	5100	6500	2400	1600	3600	3300	27800
Total	4300	11200	17800	27800	6300	5400	18400	11900	103300
%	4%	11%	17%	27%	6%	5%	18%	12%	100%

Source: NCVER 2000b, extract from table 14, p.12.

(a) The qualification categories refer to the new Australian Qualifications Framework of 1998. Diploma also includes higher qualifications, Certificate IV includes advanced certificates and post-trade, III includes (many) trades and II includes (many) traineeships. 'Other recognised course' relates to statements of attainment.

Table C3: Numbers and percentages of VET course enrolments for agriculture-related occupations (a) by State and Territory, 1997–99

	NSW	Vic (b)	Qld (b)	WA	SA	Tas	NT	ACT	Total
1999	18127	10124	6344	3901	4877	1140	561	126	45200 (c)
1999 (%)	40	22	14	9	11	3	1	<1	100
1998	9993	12391	7921	3584	4450	1308	459	148	40254
1997	8358	14496	8617	2061	4809	676	456	105	39578

Source: NCVER, unpublished 1997–99 statistics

(a) Within the land-animal husbandry field, mixed crop and livestock farmers, livestock farmers, crop farmers, farm overseers, shearers, farm hands, and other agricultural and horticultural labourers, as per ASCO. Also includes those (mostly NSW, Vic) just assigned to ASCO 13 and 131 (farmers and farm managers) and not to individual unit groups.

(b) 'Apparent' downward trends may partly be due to re-coding.

(c) As compared to the total for all enrolments in land-marine-animal husbandry of 103 300. Most of the difference can be assigned to occupations such as technical officers, horticultural trades and gardeners, animal attendants and pest controllers, forestry and sawmill workers, food millers, other clerical and service occupations, and those doing 'extension' courses.

The number of agriculture-related enrolments has climbed from about 40 000 in 1997 and 1998 up to 45 000 in 1999. There is a substantial jump in enrolments in New South Wales, which nearly doubles from 9000 in 1998 to 18 000 (40 per cent of the total). Both New South Wales and South Australia claim a little under 30 per cent of employment in the agriculture division. On this basis, the former State is over represented and the latter under-represented in the enrolments. Against that, Queensland appears to the only State that has planned for a substantial lift in agriculture-related VET provision in 2000.

The distribution of agriculture-related enrolments by qualification in 1999 is fairly similar to that reported (NCVER 2000a) for the whole 1.99 million VET enrolments. The trends over 1997–99 are of interest. It would appear that the enrolments for higher-level qualifications (Certificate IV and above) and non-qualification courses (statements of attainment and non-award) are growing. Certificate III (about trade level) seems to be relatively stable, although there is growth in the Certificate II level, which includes some New Apprenticeship programs.

Roughly one-third of the 1999 agriculture-related enrolments fall into each of the categories 'Certificate III and above' (14 466), 'Certificate I–II' (12 952), and 'non-qualification' (17 778). Higher-level qualifications are more common in the farming occupations and less common in

the farm hand occupations. Many of the shearing-related enrolments are for Certificates I or II.

Table C4: Numbers of VET course enrolments for agriculture-related occupations (a) by qualification level (b),1997–99

	Dip's	AQF Cert IV & equiv	AQF CIII & equiv	AQF Cert I, II	Other Cert	Other Rec'g Course	Non Award	Total
1999	2032	5545	6889	12952	-	10057	7725	45200 (c)
1998	2415	3933	6833	9695	4189	8613	4576	40254
1997	2363	2632	6962	7306	7661	8020	4634	39578

Source: NCVER, unpublished 1997–99 statistics.

(a) Within the land-animal husbandry field, mixed crop and livestock farmers, livestock farmers, crop farmers, farm overseers, shearers, farm hands, and other agricultural and horticultural labourers, as per ASCO unit groups. Also includes those (mostly NSW, Vic) just assigned to ASCO 13 and 131 (farmers and farm managers) and not to individual unit groups.

(b) The qualification categories refer to the new Australian Qualifications Framework of 1998. Diploma also includes higher qualifications, Certificate IV includes advanced certificates and post-trade, III includes (many) trades and II includes (many) traineeships. 'Other recognised course' relates to statements of attainment.

(c) As compared to the total for all enrolments in land-marine-animal husbandry of 103 300. Most of the difference is assigned to occupations such as technical officers, horticultural trades and gardeners, animal attendants and pest controllers, forestry and sawmill workers, food millers, other clerical and service occupations, and those doing 'extension' courses.

Again, the figures suggest a spread of needs and preferences for longer qualifications and also for shorter courses. While the observable variations in growth of different courses across the States may partly be explained by changing demand patterns in industry, they may also relate to the new private provider influences, and variable degrees of marketing or ease of delivery for the different courses.

At present, these issues are complicated by the relatively recent introduction of the packages and collections of data relating to them. However, over the longer term, package-related training data offers prospects for sharpening the focus on industry training.

Table C5 indicates nearly 15 000 course enrolments in 1999 under the agriculture (7000) and horticulture (nearly 8000) packages, including both contract and non-contract training, the majority of enrolments being for Certificates II–IV. Comparing to the average rate of package penetration in VET enrolments for qualifications (perhaps 15 per cent or less, see NCVER 2000a), and considering the limited history of formal training in agriculture, this represents quite a reasonable rate of package uptake in relation to the total course enrolments for land-animal husbandry.

Training Package and New Apprenticeship trends related to the sectors of study

Related to the level of training (as discussed above) is the type of training, whether under a Training Package, whether under a contract of training (New Apprenticeship) or under some other form of (institutionally based) VET pathway.

Also in table C5, the 1999 VET enrolments for sheep and wool, wool harvesting, cotton and production horticulture total 1472, or about 10 per cent of the total Training Package enrolments.

Table C5: Numbers of VET course enrolments by horticulture and agriculture (a) Training Packages (and selected package categories) and by level of qualification (b), 1999 (c)

	Dip's	AQF Cert IV	AQF CIII	AQF Cert II	AQF Cert I	Total
Agriculture Package	306	2565	740	3087	386	7084
Including:						
Sheep & wool						128
Wool harvesting						619
Cotton						6
Horticulture Package	368	775	2633	2598	1393	7767
Including:						
Production Horticulture						719
Total	674	3340	3373	5685	1779	14851

Source: NCVER, unpublished 1999 statistics.

(a) The forestry and fishing sectors of industry, which only represent about 2 per cent of agriculture division employment, have their own separate Training Packages.

(b) The qualification categories refer to the new Australian Qualifications Framework of 1998. Diploma also includes higher qualifications, Certificate IV includes advanced certificates and post-trade, III includes (many) trades and II includes (many) traineeships. 'Other recognised course' relates to statements of attainment.

(c) There are nil returns for WA, as the packages were not in operation at the time.

These are early figures and not fully representative across the States. However, it may be noted that the study sectors have a lesser share of the package enrolments than they do of agriculture employment (about 30 per cent). The number of enrolments (128) for sheep and wool qualifications, as distinct from wool harvesting (mainly shearing and classing), appears to be fairly low. Much the same could be said of cotton.

In the last few years preceding and up to 1997, the numbers in training in skilled horticultural trades was around 3000 (see NCVER 1998), and these would mostly have been amenity horticultural (not production horticulture) and gardening trades. Historically, apprenticeship has never featured strongly for those intending to take up broadacre farming occupations.

More recently, unpublished NCVER data (table C6) indicates about 10 000 contracts of training for agriculture (nearly 4000) and horticulture (over 6000) occupations at the end of 1999.

Although a majority of the horticulture contracts may still relate to 'non-production' rather than production horticulture, it is clear that New Apprenticeships have given a significant boost to structured training for agriculture and for the sectors of study in particular.

The reviews of the agriculture and horticulture Training Packages (Rumsey 2000a, 2000b) utilising State training authority data count as many as 8000 *contracts of training* under the two packages at May 2000, the majority being for Certificates II–IV. This compares to 15 000 total *enrolments* under the packages as at table C5. Although table C5 and the Rumsey data set are not strictly comparable, together they suggest that non-contract forms of training for Certificates II, III and IV have a significant market share under the packages.

Analogously, the number of agriculture-related contracts in table C6 (near 4000) is less than half of the number of agriculture-related enrolments for qualifications at or above Certificate III (over 12 000) in table C4.

Rumsey's 8000 contracts represent about two per cent of current employment in the agriculture division of employment. More realistically, the 4000 agriculture-related contracts

in table C6 represent about one per cent. The New Apprenticeship percentage for the workforce as a whole is about two per cent, well below the ten per cent found in manufacturing (Pickersgill & Walsh 1998). These types of statistics restate the proposition that the agriculture workforce is still under-qualified at trade and technical levels and above.

Finally, the VET statistics here do not give a complete picture of the study sectors' training participation and preferences. Again, Kilpatrick (1997) notes that very few farms are involved in formal training through the education system, but very many are involved in some form of non-formal training, particularly seminars and field days. Particularly important is the FarmBis program, whose annual funding is quite significant compared to the $200 million and up (5 per cent of $4 billion) implied for primary industry training through the ANTA VET pool.

Table C6: Numbers in contracts of training, for agriculture (a) and general horticulture (b) related occupations, by State and Territory, December 1999 (c)

	NSW	Vic	Qld	WA	SA	Tas	NT	ACT	Total
Agriculture related:									
Farmers & farm m'gers nec	87	700	323	5	476	82	-	-	
Mixed crop & livestock Farmers	-	-	-	-	-	-	-	-	
Livestock farmers	86	192	301	-	-	38	-	-	
Crop farmers	-	168	122	5	-	16	-	-	
Farm overseers	232	-	5	-	-	-	7	-	
Shearers	-	-	-	-	-	-	-	-	
Farm hands	280	101	271	40	87	58	66	-	
Other hort & ag labourers	-	108	4	-	74	-	5		
Subtotal	**685**	**1269**	**923**	**54**	**563**	**268**	**73**	**5**	**3840**
Horticulture-related:									
Horticulture trades nec	1353	1311	266	272	457	61	10	95	
Nurserypersons	128	277	97	55	-	25	6	9	
Gardeners	630	778	9	106	265	25	3	23	
Florists	-	-	154	-	16	-	2	-	
Subtotal	**2111**	**2520**	**372**	**449**	**722**	**113**	**19**	**127**	**6433**
Total	**2796**	**3789**	**1295**	**503**	**1285**	**381**	**92**	**132**	**10 273**

Source: NCVER, unpublished 1999 statistics

(a) Within the land-animal husbandry field, mixed crop and livestock farmers, livestock farmers, crop farmers, farm overseers, shearers, farm hands, and other agricultural and horticultural labourers, as per ASCO. Also includes those just assigned to ASCO 13 and 131 (farmers and farm managers) and not to individual unit groups.

(b) Horticultural tradespersons, nurserypersons, gardeners, florists, as per ASCO. Generally not 'production horticulture'.

(c) Based on March 2000 data.

nec=not elsewhere classified

Appendix D

Industry consultations

The following is a summary of the results and key issues arising from industry consultations for each of the four sectors.

Wool growing

The wool industry identified the following key issues:

Unskilled labour shortages

Industry representatives throughout Australia identified a shortage of shed hands for shearing, lamb marking, hay caring, fencing, general farm work and stock workers.

Skilled labour shortages

Industry representatives identified shortage in all States of shearers, shed hands, wool classers (in particular classers with skills to class elite wool), skilled stockmen, mulesing contractors, cradle crutchers, capable farm hands and middle farm management, plant operators and skilled tractor drivers.

In response to low wool prices and shrinking flocks, there has been a decline in young people training to be shearers and shed hands or remaining to work in the industry. There is a dearth of young people pursuing a career in the wool shed.

Anecdotal evidence suggests that most shearers are middle-aged and there are few young people working in the industry.

A problem identified by the Wool Council of Australia is that responsibility for shearer training has shifted from industry to government. Historically, the Australian Wool Corporation (AWC) used to levy wool farmers to provide shearer training, but with the demise of the AWC some years ago the responsibility for funding training was subsumed by State training authorities.

Training solutions

Training courses offered by Agforce (Dirranbandi and Blackall, Qld) provide training on-site at shearing sheds that is attracting young people, many of whom have obtained full-time employment.

Bendigo Regional Institute of TAFE is administering a shearing school run in Wedderburn, Victoria for young people.

A suggestion has been made that a more flexible Agriculture Training Package is required, one which recognises and rewards the existing skills of trainees more effectively and includes wool classing and management training for experienced shearers (*The Land* 7 November 2000).

New technologies

A range of new technologies are being introduced in the wool industry, including the laserscan, which measures the micron of the fleece. Industry representatives noted that there is a need for wool classers/farmers to learn how to operate new technology.

In addition, there is a need for woolgrowers to be introduced to alternative methods of shearing such as mechanised methods, robotics and chemical defleecing. The new mechanised methods are not as complex as existing shearing methods because only part of a sheep is shorn at a time as opposed to the whole animal. This is similar to an assembly line approach where the sheep is shorn by three or four people shearing a particular section of the sheep. This would reduce the reliance on traditional shearers, although it is acknowledged that both mechanised methods of shearing and robotics require large capital outlays on the part of woolgrowers.

Major impediments to satisfying skill needs

The following were identified by industry representatives as major impediments to satisfying skill needs:

- lack of continuity of casual work (skilled and unskilled)
- low unemployment numbers in area
- low wages
- itinerant nature of wool harvesting
- seasonal nature and diversity of skills
- remoteness from city and regional centres resulting in lack of education facilities
- lack of training facilities and workshops
- lack of full-time work on one farm; workers lack of skill in co-ordinating casual work
- economics of the wool industry means that a job that was previously offered as a full-time job (that is, station hand) is now a casual or part-time job. Not able to offer a career path

Suggested solutions to impediments

Industry representatives made the following suggestions as possible solutions to satisfying skill needs:

- training providers provide multi-skilling courses for casual workers
- workshops or courses run on site in alternative farming methods
- investment in regional infrastructure
- increase availability of training on-the-job, perhaps by training shearing contractors to become workplace trainers with assessment conducted by a registered training organisation
- local co-ordinator at one contact point or register of casual jobs in local regions to assist continuity of work
- improve delivery of holistic management training with exposure to HR management
- increase regularity of training courses with block release

Occupational health and safety

Concern was raised by industry representatives that prospective casual employees are not properly trained in OH&S.

Conclusions

A skill shortage exists in all States for shearers and shed hands. Young people have not been attracted to the industry, reflecting concern over the decline in the industry. This has resulted in a shortage of shearers as few people have entered the occupation to replace older shearers who have retired or moved to other occupations.

Some new courses have recently been developed in response to the shortage of shearers and shed hands.

Many wool farmers have downsized their labour force and are now employing people on a casual or part-time basis rather than a full-time basis. These changes have repercussions for training needs.

Training issues that have been raised include the need for courses for existing workers in new technologies, the lack of regional training facilities, the need for management training for farmers, multi-skilling courses for casual workers, and a need for an increase in on-the-job training.

Production horticulture

The production horticulture industry identified the following key issues:

Skilled labour shortages

Industry representatives identified that there is a need for skilled labour at harvest time to harvest fruit without damaging it. The Horticultural Research Development Corporation (HRDC) training video is a useful tool to assist in training casual staff.

There is also a need for skilled labour for packing—tend to use casual and part-time labour.

There is also a need for workers with knowledge of banana industry practices and plantation worker skills.

Industry representatives noted that employees with high level orchard management skills are required. Currently skills are bought in from overseas in tree physiology, management processes, methodology to develop high density orchards and utilisation of new root stocks in cherries.

Growers tend to have high-level skills in integrated pest management and integrated fruit production.

Farmers cannot employ people full time because of the size of farms. Comparatively few farms employ people full time.

Skill and competency levels are an issue. Lack of skills particularly in relation to pruning. Different competency levels provided by labour-hire companies when people are changed from day to day.

Suggested solution

Employees could undertake training programs in basic skills such as picking and pruning. These programs would entitle the person to receive a 'generic pass'. This system is used in the mining industry and the construction industry utilises a similar system, where all training courses that have been successfully completed are documented on a card (Adelaide Hills Regional Development Board 2000, p.29).

Seasonal labour shortages

Low levels of unemployment in some regional areas such as the MIA make it very difficult to attract casual and seasonal labour. Advertisements to attract labour no local applicants. In the MIA there has been a traditional reliance on families of immigrants coming over to assist with harvest. Immigration laws have stopped this arrangement.

The vast majority of people employed within horticulture are casual, seasonal employees (Adelaide Hills Regional Development Board 2000).

The majority of casuals are employed on a farm for more than eight months of the year while seasonal workers are employed predominantly for periods of one-to-two months and three-to-four months.

Geographic isolation is a problem with no source of labour close by.

Backpackers are encouraged as they are motivated and reliable. There is a need to increase age limits on backpacker eligibility and reduce tax rates (29 per cent currently).

One of the problems encountered by seasonal workers is the availability of short-term accommodation of suitable quality and price. This problem can be countered by providing the opportunity for sustained employment.

Labour required for banana harvesting, fruit thinning and packing shed duties.

Regional solutions to casual/seasonal labour issues

1. South-East (South Australia)

   A seasonal work calendar has been developed in the South-East to offer the opportunity of year-long continuity of employment to otherwise casual/seasonal workers. Many jobs, particularly in the viticulture, horticulture and wool growing sectors can be aggregated to provide equivalent to full, or near full-time employment. Cross-industry training of workers needs to be provided by job network and labour hire companies.

2. Northern Adelaide Plains—Virginia vegetable/flower growing region

   A list of labour requirements and associated skill sets has been developed for the different vegetable/flower growing enterprises in the Adelaide Plains area. It has been found that year-long employment can be provided by combining the seasonal labour needs of the different sectors. Labour-hire companies train previously unemployed people from the north of Adelaide and supply labour across different growers. Sometimes the skill sets are easily transferable across vegetable growing, cut flowers and viticulture. A pruner for instance could alternate between pruning roses, pruning grape vines, pruning tomatoes, cutting flowers, harvesting tomatoes and grapes.

There is a need for a more co-ordinated process for these types of solutions.

Skills required

Industry representatives noted that the following skills are required in production horticulture: tractor driving, self-motivation, self-management, and pruning training.

Multi-skilling is important although some specialisation in tractor driving or manual skills is encouraged.

Mechanisation is increasing so courses in machine harvesters would be useful.

There has been a move to specialisation and away from 'fruit salad blocks' in the MIA and the Riverland with increasing mechanisation. New technology and specialisation increases the need for skills in these areas.

Training and Training Packages

Industry commented that there are issues with finding suitable registered training organisations to work with industry at the practical level.

Traditional methods of training (that is, classroom style) is only one aspect of training delivery and the importance of field days, seminars and farmers as extension officers cannot be overlooked.

Industry representatives commented that there is a need to get Training Packages out to major growers and show them how they can be used to map skills. There are two age groups to deal with:

- owners (typically 40–50 years of age)
- young people (18–25 years of age)

VET-in-Schools

In some rural towns, courses relevant to the local horticulture industry are not offered but hospitality and other courses are offered that do not match to realistic local labour market opportunities.

Investment in training

Industry representatives commented that it is hard for individual farmers to obtain long-term returns from training employees as they generally don't remain with one farmer for long enough for a farmer to recoup the investment because of the lack of continuity in employment. However, farmers receive the return on their own training or from training a family member.

Quality assurance training

Short courses are available in quality assurance, which allow farmers to document safe food production practices.

Qualifications

Industry representatives commented that qualifications can be useful if family members are planning a career outside the family farm. Representatives considered that RPL–RCC would be useful but there was little knowledge of how to go about it in the MIA.

In the Virginia region of SA where there are over 1000 growers, FarmBis funds are being accessed to conduct skills audits of growers. Farmers subsequently apply for RCC and then enrol in a course at the appropriate qualification level at Murraylands TAFE. Farmers are more motivated and have a higher level of self-esteem after completing their qualification. Typically, they continue on to a higher level of qualification after completing their initial course. Then they can become trainers of others employed on their farms.

Language, literacy and numeracy

Industry representatives identified a need for language, literacy and numeracy courses for new migrants. Incentives are required to encourage immigrants to embrace language courses. Literacy and numeracy skills are essential to do a ChemCert course. Bilingual trainers are required to teach this course.

Industry representatives noted that a lack of literacy skills is an issue in the industry particularly in relation to Cambodian and Vietnamese labour crews. Communication problems are also an issue.

Infrastructure

Industry representatives noted that there are transport and accommodation problems in many rural areas and so it is difficult for seasonal workers to obtain short-term accommodation.

Conclusions

Many parts of the production horticulture sector are experiencing skills shortages, particularly during times of peak workloads. As most farms are unable to employ full-time staff, the skilled labour shortages are related to the training of seasonal workers.

Skill gaps of existing workers have been identified because of increased mechanisation as farms are rationalised.

The low uptake of New Apprenticeships and other forms of training is directly related to the casual/part-time nature of employment. In some regions innovative practices have been developed to counter the problems involved with the seasonal nature of employment which involve infrastructure (for example, housing) as well as training. In some areas jobs have been grouped in an attempt to transform seasonal jobs into full-time jobs.

In regions where farmers are aware of the reforms to training there is strong support for initiatives such as:

- RPL utilising skills audits provided through FarmBis
- on-the-job training
- training for existing workers
- school-based New Apprenticeships
- quality assurance training.

The general awareness of training initiatives is low and many growers are unaware of the use of Training Packages or how to access training.

Viticulture

The viticulture industry identified the following key issues:

Skilled labour shortage

Industry representatives identified that there is a chronic shortage of skilled labour at the middle-management level (throughout Australia), including overseers, supervisors, vineyard managers and trained personnel who can direct unskilled labour (at about AQF III). These personnel are critical to any operation as unskilled labour becomes very costly if they are not supervised to perform tasks correctly and the job has to be redone.

Because of the shortage of vineyard managers, many have been employed who are not fully competent. This will be a long-term problem for the industry as many people have been promoted beyond their ability.

In addition, there are variations in the skill mix required, including disease monitoring, irrigation control and new technologies that must be learnt on an ongoing basis.

Few students are undertaking tertiary qualifications in viticulture. Students predominantly enroll in oenology (winemaking) courses at tertiary level.

Training Packages

Industry representatives noted that there is confusion with two Training Packages that cover viticulture. The Agriculture and Horticulture Training Packages are for smaller owners and are designed for mixed production horticulture (olives and vines). The Wine Industry Training Package is designed for wineries with a vineyard, *not* for vineyard owners *per se.* Most vineyard owners do not have a need for cellar hand training included as part of the course.

Industry representatives commented that there is a need for multi-skilling in vineyards – mechanisation and manual tasks. The old level III program was superior to the current one, as it included mechanical harvester maintenance.

Different awards and pay structures between vineyards and wineries.

Continuity

Vineyard owners cannot employ labour continuously throughout the year. By necessity there will be breaks in employment, which means that trained labour will move on to other areas, to other vineyards and to other jobs.

The vast majority of people employed within viticulture are casual seasonal employees (Adelaide Hills Regional Development Board).

In vineyards, the highest demand for unskilled labour is at the developmental phase of a vineyard, when planting and training tasks are undertaken. Now that new plantings have plateaued it is likely that the demand for unskilled labour will decline.

The problem with using people from labour-hire companies is that they often provide different personnel on a daily basis who need to be constantly retrained. In addition, some labour-hire companies provide people on a daily rate only. This is not satisfactory for grape picking or tasks that are time-specific and may not take a full day to perform, or may carry over from the previous day for a short time. For grape picking it is more cost-effective (hire of trucks etc) to get a team of workers for a short time, but labour-hire companies may require full daily rate for each in the team.

Cross-sectoral training

Cross-sector training would help ameliorate the seasonality and continuity problem. In the South-East of South Australia people move through shearing, production horticulture and viticulture.

Occupational health and safety

Industry representatives identified OH&S training as a major issue. In some areas TAFE has developed a course that they will deliver on site. There are high costs to an enterprise in terms of repercussions from misuse of chemicals if OH&S is not taught properly.

Many companies require an AQF I level course to have been completed before a person can be employed on a vineyard.

Group Training Companies

Industry representatives commented that there are no Group Training Companies working in this industry because of the high cost of travel. Industry representatives suggested that alternative approaches to New Apprenticeships are required to overcome the problems associated with a lack of Group Training Companies operating successfully in the rural and regional areas. Currently some States have stand-down provisions so it is not possible to employ a trainee on a casual basis. Part-time New Apprenticeships are not a viable alternative given the lack of continuity in the workload of a vineyard.

VET-in-Schools

Industry representatives noted that some VET-in-Schools programs are very well-run and are providing a career pathway for young people. Young people work with vineyard contracting companies while at school, then they progress onto a TAFE course with the same employer and for a student with ability they could ultimately progress onto a university course, either through the University of Adelaide or Charles Sturt University.

Assessment

The industry does not feel confident that there is national consistency in assessment practices. Anyone can do a module in assessment and then become a workplace assessor. No set standard is applied. There is a huge variance in ability of people to assess. This is a major pitfall in the current training system.

Language, literacy and numeracy

Industry representatives identified a need for language, literacy and numeracy courses for migrants. Incentives are required to encourage immigrants to embrace language courses. Literacy and numeracy skills are essential to do a ChemCert course. Bilingual trainers are required to teach this course to the Asian workforce. Many employers prefer to employ Asian work teams on the larger sites because they tend to work more effectively as a team and stay in the job longer, however, there can be major communication problems with new immigrants. Communication at the supervisor level is critical because a team of workers can cover 100 acres in a week and it could be all wrong.

Recognition of prior learning–recognition of current competencies

This is becoming more prevalent in the industry and is working well to encourage older people to upgrade their skills and learn new techniques.

Quality assurance (QA) programs

Industry representatives commented that a 'training industry' has developed in quality assurance programs (particularly amongst private providers and FarmBis funded activities). There is a proliferation of courses, some claim to be 'nationally' accredited, others claim to be 'internationally' accredited and Woolworths have their own quality assurance accreditation. The industry needs to push for one quality standard that could be filtered down though the food safety act or could be government based.

The proliferation of QA courses leads to confusion and leads to a distrust of all training programs, including recognised training, because people have been 'caught out' by such programs.

Infrastructure

Industry representatives commented that there are problems with accommodation for workers in many areas where there are vineyard developments. For example, there is a shortage of housing in the South East/Longhorn Creek region. Getting labor to these areas is a major problem as vineyard staff must live remotely.

Draft report of CRC for viticulture wine and grape industry personnel education, training and assessment needs analysis

Some issues were discussed in the draft report which are relevant to this study:

- There is a need for a specific wine and grape industry qualification pathway from AQF III to degree level and beyond. Training at this level needs to comprise bridging skills and knowledge between the existing AQF III and degree courses. The qualification must be suited to distance education and on-the-job training.
- There is a need for training in finance and management skills for existing workforce who have graduate level qualifications
- At AQF levels I–V there is considerable variation in understanding of the range of courses, qualifications and training delivery options available.

Three commonly identified issues were (p.19 of the draft report):

The New Apprenticeship system

The number of parties involved, the lack of co-ordination, lack of information, complexity of the process, inability to train casual or contracted staff (these groups comprise a considerable proportion of industry personnel). Regulations regarding part-time employees and the regulations about the use of part-time employees vary from State to State.

Disparity in funding criteria and levels between States is a hindrance to nationally consistent training

It is difficult for national wine and grape industry organisations to plan and budget for consistent national training strategies because of differences across States in amounts paid under User Choice, the range of services paid for, and who qualifies for funding.

Shortage of qualified and experienced workplace assessors

Potential exists for the value of qualifications to be compromised because of inconsistent assessment practices and decrease in motivation because of delays in assessment processes. There is a shortage of qualified and experienced workplace assessors and lack of development opportunities for assessors wishing to upgrade their skills.

Food Processing Industry Training Package review

The following issues were identified in the draft report of the review of the Food Processing Industry Training Package relevant to this study:

- There are barriers preventing the uptake of New Apprentices by the wine industry (p.51)
  - too many players (confusion over roles and responsibilities of players)
  - too cumbersome
  - lack of co-ordination
  - lack of information on the process
  - not a one-stop shop
  - need for funding to address needs of existing workers
  - no State award provision for organisations who want to use and train casual staff
  - constant rule changes
  - no trainee award wage in South Australian award
- Employers are unable to access employer incentives for adult New Apprentices who hold a qualification at AQF level III or higher in an unrelated field. This ignores the demographics of rural areas and the needs of older people to retrain if they have been employed in a declining industry (p.51).
- There is concern about the quality of training and assessment being provided by schools participating in the VET-in-Schools program. Concern has been raised about the depth of learning being undertaken in Years 11 and 12, especially when compared with the level of competency achieved by a full-time employee on the job for a comparable length of time. Grave concerns have been raised over the programs offered in some schools where there is not sufficient qualified or trained staff or industry links.

  Work experience with a few rows of vines in the school ground is not considered adequate for the implementation of fair, reliable and valid assessment. In the majority of instances, it is questionable whether the students are being provided with the opportunity to effectively demonstrate their competence in a real work or credible 'simulated' work environment (p.50).

Conclusions

The sector is experiencing critical skill shortages nationally at the middle-management level that includes overseers, supervisors and vineyard managers.

Skill gaps have been identified in people working at supervisor level who have been promoted because of the industry development. Many of these people require upskilling.

VET-in-School programs are embraced by the industry as the program is clearly providing a career pathway for young people.

Some issues of concern relating to training were raised. Growers indicated that they would employ New Apprentices if they could employ people on a casual basis. Some problems were identified in the operation of the scheme and the inability of older workers to access the scheme if they have moved into viticulture with qualifications from a previous occupation. Industry representatives suggested that a scheme comparable to a group training scheme would overcome the problems associated with the casual/part-time nature of employment.

Industry representatives suggested that there is a need for a program to assist employees move from AQF III to AQF IV and then onto diploma and university courses.

A proliferation of courses have developed offering in QA programs that are not part of Training Packages. Industry representatives suggested that a unit of competency could be developed in the Training Package to overcome the uncertainty that exists with these courses.

Concern has been raised by the industry about assessment practices, lack of suitable language, numeracy and literacy programs.

Cotton

The cotton industry identified the following key issues:

Information about training is fragmented

Farmers grapple with the question 'what are our training needs?' They are bombarded with information about training; short courses (unrecognised) versus longer courses (recognised). In these circumstances, it is difficult for farmers to determine which course or option is best.

There are a number of salesmen 'selling' training. These salesmen are reported as 'selling' training rather than 'marketing' training, as marketing implies after-sales service which is not taking place. Indeed, industry representatives reported in some instances that no training appeared to be on offer, only the 'sign-up' process. Some farmers in Moree and Bourke had taken up the training options on offer (source unidentified). They found the courses were poorly delivered (or not delivered at all) and this experience has deterred a number of farmers from training.

In general, participants were confused by the plethora of training information and options on offer and they were not sure who was offering what.

Industry representatives feel there is a need for registered training organisations to provide clear details about how training is to be delivered, who is going to deliver the training, who is going to assess the training and how it is to be funded. TAFE tends to do this—private providers and other non-accredited providers are less likely to. There is a need for a marketing plan to be developed about training options that provides a strategy for training.

Industry representatives suggest that a list of 'preferred' providers be made available.

Recognised versus unrecognised training

There is a need to bridge the gap between recognised and unrecognised training. The bulk of training currently being delivered is not recognised.

Recognised training is largely delivered by the VET sector. Unrecognised training is delivered through the State departments of agriculture. Currently there is no relationship between the two sectors. There is a need for increased co-operation between the two sectors.

Some representatives feel that FarmBis should, and does in most instances, complement the vocational system and provide training in non-vocational skills.

Competencies

Industry reported that 'competencies' have not been publicised sufficiently to growers.

Most felt that the language and descriptors were also 'too technical'. There is a language barrier between older farmers and the training industry. The language of training providers is unfriendly to users. There is a need to turn training 'jargon' into common language usage so that farmers are not alienated by the 'jargon'.

Competencies are only a framework. Communication with growers is critical to improve delivery and assessment procedures. If training is to be endorsed by farmers they need to be actively included in the process.

Industry would like more involvement in the Training Package review process reported as underway. It was noted that the competencies provide a good, solid background to cotton farming. There is a particular need to look at the underpinning units of competency.

If, however, informal training via FarmBis funding is accessed the bulk of professional development undertaken by cotton growers may lie outside the formal VET sector and competency standards links.

Entry to the cotton industry starts at Certificate III. The bulk of training (Certificate III to diploma level) is delivered through agricultural colleges, and is not accessible to growers.

There is a need for a Certificate II course in cotton. Certificate III is too technical and aimed at too high a level of understanding as an introduction to formal education in cotton farming. There is a gap in the lower certificate levels (I and II). The need for a Certificate II course has been discussed by registered training organisations as well as by growers.

Recognition of prior learning–recognition of current competencies is important

Industry reports that RPL was an important development for most farmers. Farmers undergo a change in culture as a result of the RPL process. There is a difference in attitude associated with being a 'qualified farmer'. Once a farmer has attained a qualification there is an improvement in self-esteem and personal confidence.

Existing growers are embracing the RPL–RCC process; however, the uptake of RPL is influenced by the age of farmers. There is a need for better systems and procedures to encourage the uptake of RPL–RCC by older growers.

RPL recognises skills and subsequently new ones are learnt. Long-term employees accredited and assessed will then want to learn new skills. But red tape and technical jargon discourage farmers. There is a need for diagrams in training materials.

The speed of change in the training sector is too rapid

Industry reports that often a new process or guidelines are in place before a training course has been completed. Lots of competencies are seasonal as many farming tasks are only undertaken once a year (for example, planting and harvesting). The course may have changed before all the competencies have been completed.

Often trainers have been moved before the course has been completed, or funding is no longer available for a particular course.

Registered training organisations and New Apprenticeship Centres (NACs) are often the same organisation. There is a problem with continuity of training when the NAC loses its contract. There is a need for the establishment of continuity.

It was suggested that the training model used by the 'unrecognised' training sector is a more palatable model for farmers. Training provision needs to be flexible, accessible—when and where farmers want training.

Delivery of training on the farm is important

There are time and resource implications associated with on-farm training (Emerald agricultural college delivers traineeships on-farm).

There are a number of issues associated with the delivery of on-farm training. Growers can be trainers, but they should not be assessors. There is a critical need for a consistent assessment program to confirm that skills have been learnt properly and thoroughly. Quality information must be provided to trainer and trainee.

There is a need for assessment to be moderated (industry identifying/endorsing its own assessors). The role of trainer needs to be separated from the role of assessor.

If the on-the-job training in the New Apprenticeship system is to succeed in the cotton industry, the issue of assessment needs to be addressed

School-based training and New Apprenticeships

Industry feels that school-based training in cotton is an ideal way to introduce young people to a career in cotton farming. Emerald/Goondiwindi started a course with the cotton gin in Years 8–10 which was reported as highly successful. However, the funding was removed. This type of model has attraction but success is highly dependent on the local community and the irrigation industry. Connections with schools needs to be made by growers. Transport is also a problem for students although they can 'go out' on the school bus.

There are a number of problems with school-based training. Occupational health and safety are the main issues, as well as legislation (work cover) issues. Farmers find it hard to prove that a young under-age driver has been properly trained in the use of machinery. Legislation discourages use of inexperienced staff.

Limited uptake in cotton traineeships was reported with only 8 cotton trainees in total in Queensland. Part-time traineeships were limited in New South Wales.

Some industry representatives are concerned that 'existing workers' (not defined) are no longer eligible for New Apprenticeships and felt that this would disadvantage the sector.

It is imperative that procedures are streamlined for the signing up of New Apprentices between the State training authority, the RTO, the Commonwealth and the States.

Employment/training of young people

Industry feels that legislation discourages use of young people. As discussed above, employees should have a driver's license and a truck license for work cover.

The industry stated that one award classifies an 18-year-old as an adult so there is no advantage in taking on an inexperienced 18-year-old compared to an experienced 30-year-old. Ideally, the industry would like to employ someone who has finished Year 12 because they are more likely to be more technically and mathematically competent.

Best management process

The Best Management Process (BMP) is part of the industrial relations process. BMP involves a skills audit being conducted and training being provided as part of the employee's contract with an employer. A training plan is part of a workplace agreement and it provides the link to training.

There was a suggestion from industry that the BMP could be expanded or broadened to accreditation. There is a need for a module to link BMP to formal training.

The skills audit required by BMP will assist the uptake of RPL. The motivation factor implicit in RPL is important. BMP also needs to be embraced by labor-hire companies and contractors. Many are not providing training.

Some representatives suggest that farmers should not use contractors/labour hire companies who cannot prove that they have a BMP procedure in place. This will improve the quality of labour provided by labour-hire companies particularly at the lower-skill end (chippers). If all farmers require proof of a BMP procedure, then the quality of labour supplied to all will improve.

Aboriginal education and training

Industry suggests that local solutions worked better in terms of providing training and employment opportunities for Indigenous people. They reported that Moree had commenced a program of cotton training for Indigenous Australians. Bourke has now joined the program and the Kimberleys are looking at the model.

The Moree-Gwydir Valley Cotton program has a shop front. The program has been highly successful because it focusses on a mentoring program that principally mentors around cultural differences. Peer group support has meant that a number of people have enrolled in TAFE. Funding comes from the Department of Employment, Workplace Relations and Small Business through the job network provider. Employers access trainers and Cotton Australia backs up the system financially.

Quality of communications

Poor and non-existent internet and communication provision in remote Australia are reported to make education and training difficult in remote areas. Communication services are now a necessity of life—remote people want their email delivered on the day it is sent.

All rural competencies should be readily available along with a full overview of training available and a list of providers.

Costs involved with distance

Industry representatives feel that there is not enough recognition by policy-makers of the costs involved with distance. Often there is 400kms between trainees. Group Training Companies are not targetting the rural industries because of the distance problem and

associated costs. There is a need for incentives to be provided for rural industry trainees particularly in remote areas.

Education and training provision

Education and training provision in the industry ranges from Certificate III through to post-graduate studies in agriculture/agronomy.

Local institutional providers including TAFE colleges and university provide specific training for the cotton sector including the following:

- Post-graduate Certificate and Certificate in Rural Science (Cotton Production)—University of New England (small but growing numbers of enrolments)
- Certificate III and IV in Agriculture (Cotton Production)—TAFE including Western Institute of TAFE at Warren and Emerald Agricultural College
- Short courses such as farm chemical accreditation, farmsafe accreditation, cotton crop checking, cotton agronomy and cotton pest management—TAFE
- General short courses in agriculture such as welding and thermal cutting, front end loader/backhoe/forklift license, farm machinery servicing, hydraulics/pneumatics and first aid

Industry reports high levels of private provider activity in the area as well.

Conclusions

Overall, the sector does not appear to be experiencing critical skill shortages, but is having difficulties in matching provision to industry needs in some key areas. The exception to this may be the need for a Certificate II level qualification, specifically gin hand training.

There appears to be considerable difficulty in maintaining an appropriate supply of providers. This is compounded by a lack of clear communication about what training is available for what purpose. In some instances regulation and industrial issues appear to be barriers to employment, particularly for young people.

The general direction of training within the VET sector appears to have high levels of in principle support, particularly for such initiatives as:

- recognition of prior learning
- on-the-job training
- training for existing workers
- school-based New Apprenticeships
- competency-based training
- increased flexibility
- internet training possibilities

The difficulties are rather those of effective communication and dialogue to sufficiently engage the sector and to provide and deliver relevant training. This applies in particular to the development of suitable industry competency standards and assessment procedures, and access to communication infrastructures.

Appendix E

Cross-sector issues

A questionnaire was developed by NCVER and subsequently modified based on input from industry, particularly the National Farmers' Federation and its member bodies. The questionnaire was designed to gather information on a range of issues including skills shortages and skills gaps, careers, pathways and education and training. The questionnaire was distributed by fax principally through State organisations affiliated with the National Farmers' Federation. A total of 60 responses were received nationally across the wool, viticulture and production horticulture (banana, citrus, apple and pear) industries. A range of cross-sector issues were identified in the responses to the questionnaire.

Training was viewed as providing a return on investment. Less than 10 per cent of questionnaire respondents did not believe that investing in training provided a return on that investment to the business.

Almost 30 per cent of questionnaire respondents were not aware that you can have your skills recognised by a registered training authority through RCC or RPL. It is likely that a much higher percentage of farmers will not be aware of RPL or RCC opportunities as the questionnaire was sent out to committee members of grower organisations. Respondents are therefore more likely than other farmers to have been presented with the information about RPL and RCC at meetings of their respective organisations.

About a quarter of questionnaire respondents were not aware of New Apprenticeships.

About half of all respondents would employ someone on a New Apprenticeship (if they could employ a casual worker through the scheme).

Problems encountered with trainees include:

- training off the job held at inconvenient times
- difficult to train employees at busy times such as shearing and harvest
- quality of delivery for workplace New Apprenticeships is below industry standards. TAFE has not been able to deliver to industry requirements due to funding restrictions and availability of suitably qualified lecturers
- lack of continuous work
- course commitments often clash with seasonal work commitments such as harvest
- too much paper work
- poor resource materials and application of materials to needs in the workplace.

Suggested solutions to problems with trainees include:

- training off the job not scheduled for busy times
- live-in courses for training
- balance need for training in individual skills with skills offered in full certificate. Some individual skills may be higher-level skills which are not offered at the particular certificate level.
- better training of providers and better structured courses
- allow employers to employ trainees under the usual conditions of employment (casual/part-time)
- restructure courses so that more choice to attend subject classes in down times
- employer rotation scheme

Almost two-thirds of respondents had not been approached by a New Apprenticeship centre, training provider or training broker/extension officer about relevant skill opportunities or courses. Those that had been approached about courses had been approached at industry organisation meetings or had a child at school and so had been contacted about opportunities available in the VET-in-Schools program. Some respondents had a son who were undertaking an agricultural traineeship.

Most respondents indicated that they would find a regional training broker or equivalent helpful to discuss skills, training and career opportunities. Many respondents indicated that their farm was too small to be able to offer a full-time New Apprenticeship. Pre-work training was considered necessary. Information on funding options and courses was sought. Some respondents indicated that they would like to know about opportunities available to upgrade their own skills.

Impacts of new ways of working/new technologies on training needs include:

- need for office training
- computer skills
- chemical handling
- video-conferencing
- need to keep abreast of efficiencies to reduce costs (wool industry)

Training priorities that need to be addressed include:

- ability to access new technology and adoption of more QA-driven training systems
- just-in-time short courses
- e-commerce, machinery maintenance, mechanics, welding, practical shearing
- multi-skilling of personnel in computer skills, machine skills, agronomic skills
- leading hand training, CEM staff, forklift, baling machine
- higher level computing skills
- electronic
- basic shearing and shed hand training

Initiatives to support the development of better career pathways to encourage new entrants or retain youth in the industry include:

- management courses
- opportunities for training for part-time employees
- training in a number of skills (some may be lower-level skills) to provide continuous employment, for example, crutching, shearing, tractor driving and fencing
- integrated Training Packages and modules that allow students to continue part-time courses while working on the job
- recognise part-time employment as valuable and fund training accordingly
- recognise importance of a generic career path across the agricultural industry
- the new structured workplace learning at schools is a benefit
- target youth to careers in the rural industry through the schools
- most respondents indicated that the industry needs to be shown that there are financial rewards available to people wishing to make a career in agriculture and horticulture

The main impediments to sustaining or increasing productivity levels because of a lack of suitably qualified staff that were identified were:

- inability to offer full-time work
- lack of profitability in wool growing

- lack of infrastructure in the region
- too much management time spent trying to hire people from a small pool of people
- reduction in labour requirements because of rationalisation in farming and smarter farming practices means that many farmers no longer require full-time staff, rather they need part-time or seasonal staff
- small farms are not able to invest in becoming bigger, so labour requirements are shrinking not expanding

Infrastructure problems identified by respondents include:

- lack of housing for seasonal workers
- lack of affordable housing
- distance to be travelled by labour force
- population base declining as farmers are not encouraging their children to remain in the country

Conclusions

Overall, there was strong support for training across all sectors. There was a lack of knowledge about RPL–RCC and New Apprenticeship opportunities.

Many farmers indicated they would be interested in taking on a New Apprentice if they were not required to employ someone on a continuing basis. For those who had employed a trainee there were some problems identified with the delivery of training in terms of the timing of courses and release times.

Many farmers would be interested in upgrading their skills and learning new management and office practices associated with computing.

Appendix F

Acknowledgements

Working Group membership

Wayne Cornish	National Farmers' Federation, *Chair*
Joan Armitage	Department of Education, Training and Youth Affairs, *Deputy Chair*
Alan Bowman	National Farmers' Federation
Richard Calver	National Farmers' Federation
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Geoff Lindon	Cotton industry representative (Twynam Pastoral Company)
John Harvey	Viticulture industry representative
Belinda Wilkes	Production horticulture industry representative (MIA Council of Horticultural Associations)
Vicky Kippin O'Connor	Queensland Fruit and Vegetable Growers' Association
James Dennis	Victorian Farmers' Federation
Keryl Enright	Western Australian Farmers' Federation
Sue Walker	Pastoralists' and Graziers' Association of Western Australia
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Chris Robinson	National Centre for Vocational Education Research
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Appendix G

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