22296VIC
Course in Farm Business Risk Management

Accredited for the period: 1 July 2015 to 30 June 2020 under Parts 4.4 and 4.6 of the *Education and Training Reform Act 2006.*

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Table of Contents

Section A: Copyright and course classification information

1.	Copyright owner of the course	Department of Education and Training
2.	Address	Department of Education and Training Higher Education and Skills Group Executive Director, Training Participation and Facilitation Division GPO Box 4367 Melbourne Victoria 3001 **Organisational Contact:** Manager Training Products Higher Education and Skills Group Telephone: (03) 9637 3688 **Day to day contact:** Primary Industries Curriculum Maintenance Manager Email: kateb-rd@melbournepolytechnic.edu.au Telephone: (03) 9269 1391
3.	Type of submission	Accreditation
4.	Copyright acknowledgement	Copyright of the following units of competency from nationally endorsed training packages is administered by the Commonwealth of Australia. © Commonwealth of Australia **AHC10 Agriculture/Horticulture/Conservation and Land Management Training Package** AHCBUS403A Support and review business structures and relationships AHCBUS506A Develop and review a business plan AHCBUS507A Monitor and review business performance AHCAGB504A Plan production for the whole land/farm based business AHCAGB501A Develop climate risk management strategies **BSB Business Services Training Package** BSBRSK501 Manage risk BSBMGT608 Manage innovation and continuous improvement Copyright of the following units of competency from accredited curriculum is held by the Department of Education and Training, Victoria © State of Victoria. The following curricula can be downloaded free of charge from the Victorian Department of Education and Training website at: http://www.education.vic.gov.au/training/providers/rto/Pages/courses.aspx **22273VIC Diploma of Agronomy** VU21628 Manage application technology VU21629 Select and use agricultural technology
5.	Licensing and franchise	Copyright of this material is reserved to the Crown in the right of the State of Victoria. © State of Victoria (Department of Education and Training) 2015. This work is licensed under a Creative Commons Attribution-NoDerivs 3.0

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6.	Course accrediting body	Victorian Registration and Qualifications Authority (VRQA) Website : http://www.vrqa.vic.gov.au/	
7.	AVETMISS information	**ANZSCO** [Australian and New Zealand Standard Classification of Occupations]	121411 Mixed crop and livestock farmers
		ASCED Code – 4 digit (Field of Education)	0501 Agriculture
		National course code	22296VIC
8.	Period of accreditation	1 July 2015 to 30 June 2020	

Section B: Course information

1.	Nomenclature	Standard 1 AQTF Standards for Accredited Courses
	1.1. Name of the qualification	22296VIC Course in Farm Business Risk Management
	1.2. Nominal duration of the course	**510-630** hours

2.	Vocational or educational outcomes	Standard 1 AQTF Standards for Accredited Courses
	2.1. Purpose of the course	This course is designed to provide farmers with the skills and knowledge to develop risk management strategies for farm business planning, climate risk management, the selection and use of appropriate agricultural technology to support the implementation of risk management strategies.
		It aims to support farmers and farm managers to build on their self-reliance and preparedness to manage business risks.
		Farmers will develop capability to: • identify and manage business risk • adapt and prepare for the impacts of increased climate variability • improve business productivity and performance • use agricultural technology to manage risk

3.	Development of the course	Standards 1 and 2 AQTF Standards for Accredited Courses
	3.1. Industry / enterprise/ community needs	This course has been established in response to recommendations to to establish and promote farm business management training.
		A 2009 Productivity Commission report recommended that significant public funding be directed to a continuous learning program for farmers that encompasses advice and training in managing climate variability and improving farm business management.
		The 2011 Keogh review of the pilot of drought reform measures in Western Australia also recommended that governments should support strategic farm business planning as a means of improving resilience and adaptability in the farm sector. The Australian Government relased a White Paper in October 2012 entitled *Australia in the Asian Century*, which reported that the substantial opportunities for Australia's agriculture sector in Asia require strategic business management.
		Developing these opportunities could have a positive impact on Australia's economic and social prosperity, particularly in supporting jobs in rural and regional communities.
		Victoria's agriculture sector is well-placed to build on its strengths:

	proximity to markets in Asia, complementarity in production systems, a robust biosecurity system, a record of innovation and a reputation for producing high-quality and safe food products.
	The Agrifood Industry Skills Council's (AISC) 2013 Environmental Scan cites that the new Asian urban middle class represents the greatest single factor shaping the future of Australian agriculture. AISC identified the following major challenges and trends for industry: - evolving job roles which require higher, often technology orientated skills - building adaptive capacity of enterprises underpinned by new technologies and world class research and development - building environmentally sustainable production systems capable of delivering strong economic returns - developing risk management skills. The proposed course does not duplicate any accredited courses or qualifications within existing Training Packages. Although there is a Farm Business Management Skill Set(FBMSS) in the AHC10 Agriculture, Horticulture and Conservation and Land Management Training Package, it does not contain competencies which cover the selection and use of agricultural technology in identifying and managing risk. This is a significant gap in the context of drought program reform as the information that farmers and farm managers must engage with in order to plan business diversification and risk management strategies is increasingly technical and complex. The Course in Farm Business Risk Management was developed on behalf of the Department of Economic Development, Jobs, Transport and Resources and the Department of Education and Training. A steering committee was established to advise on the development of this course:
	Julie Simmons Department of Economic Development, Jobs, Transport and Resources - Chair Charlie Beckley Department of Economic Development, Jobs, Transport and Resources Tracey Butcher Department of Economic Development, Jobs, Transport and Resources Chris Souness Birchip Cropping Group Inc Nickie Berrisford Grain Industry Training Network Susan Finger Victorian Farmers Federation Tony Seymour National Centre for Dairy Education Cameron Smith Farmanco Pty Ltd Ann Wiltshire Melbourne Polytechnic Barry Ray State Agriculture Teacher Network; Longernong College A Skills and Knowledge Survey was developed following face to face and electronic consultation with the steering committee. The steering committee advised on and validated the survey, which was used to guide the selection of the units of competency for the course.
3.2. Review for re-accreditation	Not applicable.

4. Course outcomes	Standards 1, 2, 3 and 4 AQTF Standards for Accredited Courses	
4.1. Qualification level	*Standards 1, 2 and 3 AQTF Standards for Accredited Courses* This course does not align with any specific Australian Qualification Framework (AQF) level but is consistent with the definition of a short course in that it is a program of learning that comprises units of competency and has been accredited by an accrediting authority.	
4.2. Employability skills	*Standard 4 AQTF Standards for Accredited Courses* Not applicable	
4.3. Recognition given to the course	*Standard 5 AQTF Standards for Accredited Courses* Not applicable	
4.4. Licensing/ regulatory requirements	*Standard 5 AQTF Standards for Accredited Courses* At the time of accreditation no licensing or regulatory requirements apply.	

5. Course rules	Standards 2, 6,7 and 9 AQTF Standards for Accredited Courses

5.1. Course structure

To be eligible for the 22296VIC Course in Farm Business Risk Management, particpants must successfully complete all 4 core units and 1 elective. Learners who do not successfully complete all required units will be issued with a Statement of Attainment for any completed units.

Elective units may be selected from the list below or from units first packaged at an AQF level 4, 5 or 6 from an accredited course or endorsed training package qualification. Electives may only be imported if they are consistent with the outcomes of this course and do not duplicate the outcomes of the core units.

Unit of competency/ module code	Field of Education code (six-digit)	Unit of competency	Pre-requisite	Nominal hours
Core Units				
AHCBUS403A		Support and review business structure and relationships	nil	120
AHCBUS506A		Develop and review a business plan	nil	150
AHCBUS507A		Monitor and review business performance	nil	120
BSBRSK501		Manage risk	nil	60

Sub-total				450
Elective units - Select 1 unit				
BSBMGT608		Manage innovation and continuous improvement	nil	70
AHCAGB504A		Plan production for the whole land/farm based business	nil	180
AHCAGB501A		Develop climate risk management strategies	nil	120
VU21628	059901	Manage application technology	nil	100
VU21629	050101	Select and use agricultural technology	nil	60
Total nominal hours				**510-630**

5.2. Entry requirements	*Standard 9 AQTF Standards for Accredited Courses* The following is a general guide to entry in relation to the language, literacy and numeracy skills of learners aligned to the Australian Core Skills Framework (ACSF), details of which can be accessed from – http://education.gov.au/australian-core-skills-framework Learners are best equipped to achieve the course outcomes in the Course in Farm Business Risk Management if they have minimum language, literacy and numeracy skill that are equivalent to Level 4 of the Australian Core Skills Framework (ACSF). Indicators of ACSF Level 4 could include: Extracting key information from documents such as sales figures, expenditure, attributable costs and borrowing costs, developing an action plan for implementing risk treatments, reviewing and monitoring a business plan and identifying areas for improvement Learners with language, literacy and numeracy skills at lower levels than those suggested will require additional support to successfully undertake the course.
6. **Assessment**	**Standards 10 and 12 AQTF Standards for Accredited Courses**
6.1. Assessment strategy	*Standard 10 AQTF Standards for Accredited Courses* All assessment will be consistent with the AQTF Essential Conditions and Standards for Initial/Continuing Registration Standards 1.2/1.5. Or Standard 1: Clauses 1.1 and 1.8 of the Standards for Registered Training Organisations (SRTOs) 2015

	See http://www.nssc.natese.gov.au/vet_standards/standards_for_rtos
	The following principles are a guide to assessment:
	• assessment tasks/activities should be grounded in a relevant context and not be culturally biased
	• students should be assessed across a wide range of tasks integrated into practice, in order to increase reliability and validity of assessment. One-off assessment tasks do not provide a reliable and valid measure of competence
	• instructions for assessment tasks should be clear, explicit and ordered
	• students must know what is expected and the criteria by which they will be judged
	• time allowed to complete a task should be reasonable and specified, and should allow for preparation and re-drafting as appropriate to the task
	• assessment should be validated
	• appropriate reference materials should be available to students during assessment, e.g. personal word lists, dictionaries, thesaurus, calculators.
6.2. Assessor competencies	*Standard 12 AQTF Standards for Accredited Courses*
	Assessor competencies for this course are consistent with the requirements of the AQTF Standards for Registration Standard 1.4 that require trainers and assessors to:
	• have the training and assessment competencies determined by the National Skills Standards Council (NSSC) or its successors,
	• have the relevant vocational competencies at least to the level being delivered or assessed, and;
	• continue to develop their vocational and training and assessment competencies to support continuous improvements in the delivery of RTO services.
	See AQTF User guides to the Essential Conditions and Standards for Initial/Continuing Registration. or Standard 1: Clauses 1.13, 1.14, 1.15, 1.16 and 1.17 of the Standards for Registered Training Organisations (SRTOs) 2015
7. Delivery	**Standards 11 and 12 AQTF Standards for Accredited Courses**
7.1. Delivery modes	*Standard 11 AQTF Standards for Accredited Courses*
	This course may be delivered in a variety of modes: classroom delivery, face-to-face, on-line.
	Delivery options, including grouping of learners and learning activities, should recognise the varying learning needs, educational backgrounds, preferred learning styles and constraints of the individual learner and the specific requirements

	of the unit. Delivery strategies should actively involve the learner and learning should be experiential, relevant and age appropriate. This course is available for full or part-time study. Providers should be flexible in the way the training is delivered to ensure that they meet the needs of the client group.
7.2. Resources	*Standard 12 AQTF Standards for Accredited Courses* Resources include teachers/trainers who meet the Australian Quality Training Framework Essential Conditions and Standards for Initial / Continuing Registration Standard 1.4. or Standard 1: Clauses 1.13.1.14,1.15,1.16 and 1.17 of the Standards for Registered Training Organisations (SRTOs) 2015 Participants must have access to: - relevant legislative and statutory requirements - documentation normally used in the workplace - digital technology to access information related to farm business management
8. Pathways and articulation	*Standard 8 AQTF Standards for Accredited Courses* Individuals will receive credit for any units completed as part of this course if they enrol in further training where the units are part of the qualification. Individuals will receive credit for units in qualifications where relevant within the following Training Packages: - AHC10 Agriculture, Horticulture, Conservation and Land Management - BSB Business Services The following units provide credit into the AHC50110 Diploma of Agricutlure and AHC51410 Diploma of Agribusiness Management - AHCBUS403A Support and review business structures and relationships - AHCBUS506A Develop and review a business plan - AHCBUS507A Monitor and review business performance - AHCAGB504A Plan production for the whole land/farm based - business - AHCAGB501A Develop climate risk management strategies The following units provide credit into the 22273VIC Diploma of Agronomy - VU21628 Manage application technology - VU21629 Select and use agricultural technology
9. Ongoing monitoring and evaluation	*Standard 13 AQTF Standards for Accredited Courses* Ongoing monitoring and evaluation of the course is the responsibility of the Primary Industries Curriculum Maintenance

	Manager throughout the period of accreditation.
	A formal review will take place once during the period of accreditation and will be informed by feedback from users of the curriculum and will consider at a minimum:
	• any changes to meet emerging or developing needs of the agriculture industry
	• changes in legislation and regulations
	• development of any relevant national competency standards or accredited curricula
	Any significant changes to the course resulting from course monitoring and evaluation procedures will be notified to the VRQA. Course maintenance and review procedures may also indicate that the course in total should be expired if a suitable qualification becomes available through the development, review or continuous improvement process of a Training Package.

Part C: Units of Competency

Core units

AHCBUS403A Support and review business structures and relationships
AHCBUS506A Develop and review a business plan
AHCBUS507A Monitor and review business performance
BSBRSK501 Manage Risk

Elective units

BSBMGT608 Manage innovation and continuous improvement
AHCAGB504A Plan production for the whole land/farm based business
AHCAGB501A Develop climate risk management strategies
VU21628 Manage application technology
VU21629 Select and use agricultural technology

VU21628	Manage application technology

Unit Descriptor	This unit of competency specifies the outcomes required to provide information or manage application technology in crops or pastures. The technology applies to the application of chemicals such as herbicides, fungicides, insecticide and fertilisers as well as biological and organic agents.
	The unit involves the application of a broad knowledge base to identify and apply solutions to a range of problems. This includes plant morphology and physiology, plant protection and nutrition requirements, environmental impacts, occupational health and safety hazards and the use of information technology.
	No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication.
Employability Skills	The required outcomes described in this unit of competency contain applicable facets of employability skills. The qualification's Employability Skills Summary in which this unit is included will assist in identifying employability skill requirements.(Refer to 22273VIC Diploma of Agronomy)
Application of the Unit	This unit of competency applies to work in a range of agricultural or support enterprises, such as agronomists and rural merchants. Work will be undertaken without supervision. Responsibility for and organisation of the work of others involved in the program may be required.

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes of a unit of competency. Elements describe actions or outcomes that are demonstrable and assessable.	*Performance criteria describe the required performance needed to demonstrate achievement of the element. Terms requiring explanation or further definition should be bolded and italicised and detail provided in the range statement. Assessment of performance is to be consistent with the evidence guide.*
1. Analyse application requirements	1.1 Goals for application of ***agents*** are determined following a review of enterprise production plans and in consultation with land manager
	1.2 Records of previous nutrition, pest, weed and disease management including the application of any agents are accessed and reviewed
	1.3 Relevant ***climate, environmental and geographic data*** from available information systems and sources is accessed and reviewed
	1.4 Yield monitoring data including yield variability is accessed and reviewed
	1.5 Relevant ***soil, plant and water*** information from tests and/or records is accessed and reviewed

2.	**Develop an application plan**	2.1	Performance targets and indicators are identified in the plan

2. **Develop an application plan**

2.1 Performance targets and indicators are identified in the plan

2.2 Appropriate agent/s, including adjuvants, *method of application* and *equipment* are selected based on site analysis, recommendations, production requirements, environmental conditions and *manufacturer's specifications*

2.3 Spray nozzles are selected to achieve the optimum droplet size with minimal variation and deliver the appropriate liquid flow rate for the selected agent in the desired spray distribution pattern

2.4 Measures to control factors influencing the level of spray *drift* are specified and monitored

2.5 Procedures are specified to ensure compliance with the range of appropriate federal, state and local government legislation and/or regulations

2.6 *OHS/WHS hazards* are identified and appropriate *controls* are Implemented

2.7 *Environmental impact* of application is specified and clean up strategies are appropriate to the area

2.8 *Scheduling* for applications is determined taking the range of seasonal, geographic and resourcing factors into consideration

2.9 The type, format, frequency and detail of *record keeping* required by legislation and undertaken by manager(s) and operators are specified

3. **Monitor and evaluate the effectiveness of the application plan**

3.1 The effectiveness of the application is evaluated at key points and adjustments made as necessary

3.2 Environmental impacts and OHS/WHS hazards relating to application strategies are monitored and assessed throughout the implementation process

3.3 Modifications are made to the plan as and when necessary for environmental, OHS/WHS, resourcing or effectiveness reasons

3.4 Data, observations and documentation from the implementation of the application plan are analysed against the plan according to enterprise guidelines

3.5 Recommendations for future strategies are prepared based on the analysis of the data

3.6 Documentation of the implementation includes information on any difficulties or issues faced, technical details, environmental and OHS/WHS impacts; recommendation for future action, results, costs and any available data analysis

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.

Knowledge and skills listed here must be assessed in the unit.

Required skills

- interpret, analyse and extract information from a range of sources
- establish processes, strategies, procedures and controls for the application of chemical and biological agents
- prepare written plans and procedures for implementation by others
- explain and deliver instructions about the plans and scheduling of operations
- identify and react appropriately to environmental implications and OHS/WHS hazards
- identify and assess weeds, pests, diseases and nutritional and other deficiencies
- formulate efficient, cost effective control programs
- read and interpret manufacturer's instructions and agent labels
- record recommendations and applications

Required knowledge

- characteristics of pest, weed and disease species including their life cycles and reproduction capability
- principles of integrated pest and weed management
- range and classes of fertilisers, herbicides, insecticides and fungicides available and their basic chemistry
- growth stages of weeds and plant morphology
- the effects on crops of weeds, pests, diseases and/or lack of soil fertility
- mode of action of chemical or biological control agents and long term effects of these agents with respect to plant back periods and resistance
- range and effect of different nozzles, pressures, spray patterns, droplet sizes and basic physics of droplets and fluids
- OHS/WHS hazards and controls and environmental impacts
- best management practices and processes to minimise the impact of agents
- federal, state and local government legislation and/or regulations

RANGE STATEMENT

The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. **Bold italicised** *wording in the performance criteria is detailed below.*

Agents may include the following and may vary in formulation:	- fertiliser - insecticide - herbicide - fungicide - organic agents - adjuvants

Climate, environmental and geographic data may include:	- inversions and thermal activity - wind direction and wind speed - temperature range - frost - Delta T - local topographic features - property boundaries - waterways and water holding areas - location of non-target crops - human and animal habitation
Soil, plant and water information may include*:*	Soil - pH - salinity - nutrient and carbonate content - nutrient availability - structure - depth - colour - texture - compaction - depth of watertable - depth of root zone - organic matter - plant available water Plant - type of crop - stage of growth - nutrient - condition of plant Water - salinity - pH - chemical content - turbidity - biological activity
Methods of application may include*:*	- spray - injection - wick wiping - mist - fertigation - fixed or variable rate application
Equipment may include*:*	- boom spray - injector - mister

Course in Farm Business Risk Management, Version 1

	• nozzles
	• wick wiper
	• monitors
	• GPS

Manufacturer's specifications *may include:*	• timing • rates • placement • legal uses • drift control additives • surfactants and other enhancing adjuvants • hazards • protective equipment requirements • mixing instructions • wind speed and temperature limitations • first aid procedures • compatibility
Factors that influence the level of drift *may include:*	• droplet size • wind speed • humidity • formulation • height of emission • size of area treated • temperature inversion
OHS/WHS hazards *may include:*	• air-wind speed/temperature • chemicals and hazardous substances • dust • incorrect manual handling • machinery and machinery parts • moving vehicles • noise • solar radiation
Controls *may include:*	• assessing and reporting risks • basic first aid available on site • cleaning, maintaining and storing tools, equipment and machinery • correct manual handling • identifying hazards • maintaining personal hygiene • reporting problems to land manager • safe handling, use and storage of chemicals and hazardous substances • safe disposal of containers and waste chemical • safe operation of tools, equipment and machinery • access to current material safety data sheets (MSDS) • appropriate use of personal protective equipment, including sun protection

Environmental impact may include:	- minimisation of run-off and toxic side effects in soil and surrounding environment achieved by: - improved application techniques and rates - improved assessment and targeting - reduction of toxic side effects of applied nutrients in crop plants - negative impact of over-spraying or run-off into external environment - effect on non-target species - resistance in target species - excess noise - excess dust - incorrect use and disposal of debris, containers, chemicals or hazardous substances that could contaminate soil or water, produce odours or attract pests - use of non-renewable energy - greenhouse gas emissions
Scheduling may include*:*	- timing of applications to suit seasonal influences, weather and weather forecasts - production stages and resource availability
Record keeping may include*:*	- operator and evidence of training - land owner - location of application areas - dates and times of application - product detail - target crop - application equipment - amount of product used - weather conditions - notification of neighbours

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment section in Section B of the accreditation submission.

Critical aspects for assessment and evidence required to demonstrate competency in this unit	The participant must be able to: - identify, locate and assess appropriate information sources and then apply them - determine the appropriate equipment, method of application and chemical or agent for the target species - take account of the local conditions to ensure efficacy of application and minimise the effect on non-target species and resistance - ensure the appropriate rates are used taking into account issues such as water quality, target species and crop stage of growth - ensure appropriate OHS/WHS practices are followed - ensure appropriate records are kept

	• comply with applicable legislation/regulations
Context of and specific resources for assessment	Assessment for this unit of competency is to be largely practical in nature and will most appropriately be assessed in the workplace or simulated normal work conditions. The candidate must also have access to the following resources: • relevant information sources, which may be industry personnel, appropriate internet sites, equipment and chemical company information and industry and/or research publications • spray equipment and manuals • relevant weather information • site and operational information • chemical and other product specifications and performance data • material safety data sheets (MSDS) • regulations pertaining to the chemicals and mode of application • GPS
Method of assessment	For valid and reliable assessment of this unit, evidence should be gathered through a range of methods to indicate consistent performance. Evidence should be gathered as part of the learning process, where appropriate. For valid assessment, learners must have opportunities to participate in a range of exercises and other real and simulated practical and knowledge assessments that demonstrate the skills and knowledge to manage application technology. Assessment should be appropriate to the elements being assessed and could include: • demonstration • oral explanations and tests • written test • development of plans and case studies.
Guidance information for assessment	To ensure consistency in learners performance, competency should be demonstrated on more than one occasion over a period of time in order to cover a variety of circumstances, cases and responsibilities, and where possible, over a number of assessment activities. The skills and knowledge required to develop an application technology program must be transferable to a range of work environments and contexts, including the ability to deal with unplanned events. For example, this could include work with new chemicals, agents or mixes not usually used in the local area, new or experimental application methods and changes in regulations.

VU21629	Select and use agricultural technology

| Unit Descriptor | This unit of competency covers the selection and application of modern agricultural technology in production systems. Applications include the recording and reporting of farm activities, mapping, farm and production planning, data collection and analysis and variable rate technology. This unit assists land managers to make informed decisions specific to production systems and applications.

Applications in agricultural science range from spatial information tools to the precision application of production inputs and growth models for the improvement of production.

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of publication. |
|---------|---|
| Employability Skills | The required outcomes described in this unit of competency contain applicable facets of employability skills. The qualification's Employability Skills Summary in which this unit is included will assist in identifying employability skill requirements.(Refer to 22273VIC Diploma of Agronomy) |
| Application of the Unit | This unit is applicable to persons who have a role in managing or operating a land based production business or provide expert advice such as consultants, industry specialists and extension officers. |

| ELEMENT
Elements describe the essential outcomes of a unit of competency. Elements describe actions or outcomes that are demonstrable and assessable. | PERFORMANCE CRITERIA
Performance criteria describe the required performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge and/or the range statement. Assessment of performance is to be consistent with the evidence guide. |
|---|---|
| **1. Evaluate the need for agricultural technology** | 1.1   Organisational tasks and processes that could be supported by ***technology applications*** are identified and ***evaluated*** |
| | 1.2   Opportunities and limitations for operational improvements that may result from adopting specific technology applications are assessed |
| | 1.3   ***Equipment, tool and resource*** requirements and options are evaluated |
| | 1.4   The cost-benefit of using technology is evaluated |

	1.5	Independent technical advice and sources of information are sought as required
	1.6	A plan to incorporate the use of technology to *improve operational* efficiency, productivity and sustainability is developed
2. Implement technology to manage production	2.1	Technology is used to record, analyse and manage production data
	2.2	Technology is used to develop treatment strategies or input requirements
	2.3	Technology is used to collect, store and analyse data across the *land based business*
	2.4	Technology is used both as an information resource and for reporting and communication purposes
	2.5	Technology use is integrated to improve operational efficiency, production, profitability and sustainability
3. Evaluate the use of technology	3.1	Strategies are developed and reviewed to ensure the use of technology is cost effective and consistent with operational goals
	3.2	The need for additional training and/or support is assessed
	3.3	Strategies are developed to address *barriers* to the effective use of technology when necessary
	3.4	The impact of technology use on production levels, input costs and the cash flow budget is evaluated
	3.5	Strategies for monitoring, evaluating and incorporating future developments in technology are considered

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level, required for this unit.
Required Skills

- identify a range of technologies and how to apply them in an agricultural system
- obtain and process data and information using technology
- assess and review production information for application into farm management
- identify appropriate training and support for staff
- identify and manage issues that may arise in the use of the technology
- complete a cost and benefits analysis
- analytical skills to evaluate opportunities

Required Knowledge

- basic principles of technology used for agricultural applications
- basic principles of cost-benefit analysis
- equipment, tool and resource requirements
- context in which particular organisations operate and how this may impact on the selection and use of technology
- potential barriers to learning, and strategies to address these
- range of technology options available to support organisational activities
- strategies that can be used to evaluate technology use
- training and technical support options available to the organisation to develop skills in the use of technology
- sources of information related to agricultural technology
- trends and developments in technology relevant to agriculture

RANGE STATEMENT

*The Range Statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. **Bold italicised** wording in the performance criteria is detailed below.*

Technology applications may include:	• spatial information mapping • data management and processing • production management • environmental management • social networking • variable rate application inputs • more timely or efficient management • source information •
Evaluation may include:	• relevance to user • cost effectiveness • operational impacts • human impacts • environmental impacts • training requirements • reliability •
Equipment, tools and resources may include:	• computer (e.g. desktop or mobile device) • operator free machinery • specialist software for managing and processing data • geo-referenced data (e.g. farm, yield and soil maps; satellite or aerial imagery • real time sensors (e.g. multispectral cameras, soil moisture probes, weather stations, milk monitors) • proximal or remotely sensed data collection tools • precision and/or variable rate applicators or feeds • livestock identification systems • auto steer • rate controllers •

Operational improvements may include:	• optimised crop/pasture inputs • accuracy of seed and nutrient levels and placement to increase productivity and reduce wastage • time and labour savings • reduction in yield variations • crop or production system integration • data storage and analysis • improved pest, weed and disease control • increased efficiency, sustainability and profitability
Land based businesses may include:	• broad acre cropping • animal production including intensive grazing systems • production horticulture • consultancy
Barriers may include:	• overall cost • justification of costs • staff skills and attitudes • internet access • data allowance • device capability and reliability • access to training • access to support services • incompatible system components or data formats • access to data and accurate GPS signals • perceived versus the real need to incorporate technology applications (technology addiction)

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the Performance Criteria, Required Skills and Knowledge, the Range Statement and the Assessment section in Section B of the accreditation submission.

Critical aspects for assessment and evidence required to assess competency in this unit	The learner must be able to: • choose appropriate technology to support a production system • implement technology applications to support decision making • develop strategies to ensure technology is used effectively • use production data to plan for and improve productivity, sustainability and profitability.
Context of and specific resources for assessment	This unit can be assessed as a stand-alone unit of competency, integrated assessment tasks with another unit of competency or through a combination of both. Evidence should be gathered as part of the learning process where appropriate. Specific resources required include: • access to a land based business or case study • land based business historical production data and financial analysis. • pasture and/or cropping production programs • appropriate equipment, tools and resources

Method of assessment	Evidence should be gained through a range of methods to ensure valid and reliable assessment and consistence in performance.

Evidence should be gathered as part of the learning process where appropriate and could be from assessment of the unit of competency alone, through an integrated assessment activity or through a combination of both.

Assessment methods could include:

- practical exercises, for example assessing the current production practices and budgets, use of the technology and conducting a review of improvement gains through the use of current technology

- written and/or oral questioning to assess knowledge and understanding of incorporating technology to improve efficiency, profitability and sustainability

- completion of learning materials, including analysis of learners own properties and circumstances or case studies and management plans

- project to plan the incorporation of technology into the land based business

- written and/or oral questioning to assess learners ability to transfer skills and knowledge and problem solving abilities based on case studies from different geographical areas and rainfall zones.