



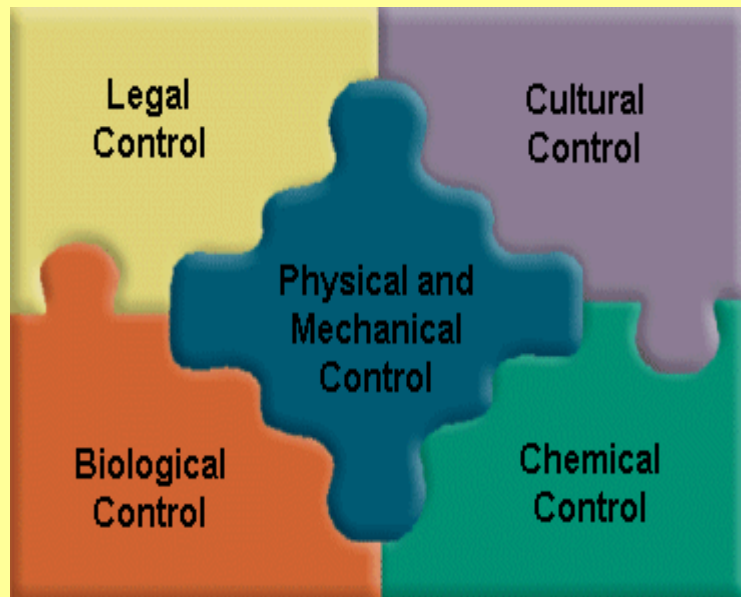
NQF Level: 4

US No: 116301

Facilitator Guide

Primary Agriculture

Integrated pest management



Facilitator:

Company:

Commodity: Date:

The availability of this product is due to the financial support of the National Department of Agriculture and the AgriSETA. Terms and conditions apply.



agriculture

Department:
Agriculture
REPUBLIC OF SOUTH AFRICA



Before you get started...

Dear Facilitator,

This Facilitator Guide (together with the relevant Learner Guide) is aimed at facilitators who will be assisting learners wishing to complete the following unit standard:

Title: Apply effective and responsible integrated pest, disease and weed control
US No: 116301 NQF Level: 4 Credits: 3

This guide contains all necessary facilitation instructions to ensure that learners will attain the expected competencies required by the above-mentioned unit standard. This guide is designed to be used during the presentation of a learning session based on this unit standard. The full unit standard is attached at the end of the relevant Learner Guide. Learners are advised to read the unit standard at their time. Please discuss the unit standard with the learners to ensure that they understand what is expected from them to achieve the outcomes of the unit standard.

This unit standard is one of the building blocks in the qualifications listed below. Please mark the qualification you are currently facilitating, because that will be determined by the context of application:

Title	ID Number	NQF Level	Credits	Mark
National Certificate in Animal Production	48979	4	120	<input type="checkbox"/>
National Certificate in Plant Production	49009	4	120	<input type="checkbox"/>

Please mark the learning program the learners are enrolled in:

Are you enrolled in a:	Y	N
Learnership?	<input type="checkbox"/>	<input type="checkbox"/>
Skills Program?	<input type="checkbox"/>	<input type="checkbox"/>
Short Course?	<input type="checkbox"/>	<input type="checkbox"/>

Note to Facilitator:

If you are presenting this module as part of a full qualification or learnership, please ensure that you have familiarised yourself with the content of the qualification.

Please explain the above concepts to the learner.

There are three guides, namely the Learner Guide (with activities), Assessor Guide and the Facilitator Guide.

These guides have been developed to address specific aspects of the learning experience. You therefore need to use these guides complementally to one another.

Make this an enjoyable learning experience!

Context of Application ...

Primary Agriculture is a diverse sector and a wide range of commodities is being produced for both national and international market. Each commodity has its own production requirements and practices. You will be facilitating the learning process within a specific context where a specific agricultural commodity is being produced. The learning material has been written in a **generic** manner, as it is aimed to be available on national level and should be relevant to be applied within a variety of commodities. It is therefore inclusive of all agricultural commodities and crop in this field. Therefore, the examples that are being used in the materials may not always be applicable to your specific community, commodity, environment or region.

This presents you, the facilitator, with the challenge to **contextualise** the learning material. It is imperative that you, the Facilitator and Assessor interpret and present activities, case studies and projects related to the material in such a way that learners can easily identify and apply their knowledge within their own context. This will require from you to add examples of crop, which are applicable to the community or farm. Learners must be guided with examples from their own communities, commodities, environment or regions. This should be done by complementing the learning material with:

- Examples relevant to the commodity,
- Including commodity specific requirements,
- Including operating procedures of the farm,
- Including agricultural practice specific requirements,
- Agricultural markets,
- Guiding learners to write these specifics down in the learning guide, etc.

The contextualisation of the learning material is a very important step in preparing for and facilitating the learning experience and enough time and effort should be put into this exercise.

According to the qualifications mentioned on page 2, this module could be contextualised to fit the following groups of commodities:

Plant Production	Animal Production	
<ul style="list-style-type: none"> • Organic production, • Hydroponic production, • Perma-culture production, • Agronomy, • Horticulture, • Natural resources harvesting. 	<ul style="list-style-type: none"> • Small stock production, • Large stock production, • Dairy production, • Pig production, • Poultry production, • Game, • Aqua / mari culture, • Commercial insects • Animal fibres harvesting, • Bee keeping, 	<ul style="list-style-type: none"> • Natural resources harvesting, • Organic production, • Perma-culture production, • Eco/Agri Tourism, • Agro Chemicals, • Horse Breeding, • Etc.

How to use this guide ...

Throughout the guide information is given specifically aimed at you, the facilitator, to **assist** in the actual presentation of the learning material and/or facilitation of the learning process. Although this guide contains all the information required for attaining competency in this unit standard, references to additional resources, both printed and electronic, are provided for additional reference by the facilitator and further study by the learner.

Please note that the purpose of this information is merely to **guide** you, the facilitator, and is provided as a suggestion of possibilities. It remains the responsibility of every facilitator to re-assess the learner/s in each learning situation throughout the learning process in order to stay in touch with their specific learning needs. This should be the determining factor in the choice of the learning approach to follow.

Use the different boxes listed below for identification purposes:



Instructions regarding **activities**, whether group or individual activities will be described in this box.



Facilitators' Tip ...

My Notes ...

You can use this box for your own notes/comments.

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What & How will you be Facilitating?

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The Learning Experience...

On completion of this module, the learners will be able to:

- ◆ A learner achieving this unit standard will understand the basic principles of an integrated pest management system with basic control measures as per agricultural enterprise. Furthermore, the learner will be able to recognise and differentiate between economical damageable pests and diseases and make use and interpret sources for application or product management.
- ◆ Learners will gain an understanding of sustainable agricultural practices as applied in the animal-, plant and mixed farming sub fields. This unit standard focuses on the application of pest identification in primary agriculture.
- ◆ They will be able to participate in, undertake and plan farming practices with knowledge of their environment. This unit standard will instill a culture of maintenance and care for both the environment as well as towards farming infrastructure and operations.

Learners will specifically be able to:

- ◆ Demonstrate a basic understanding of the principles of integrated pest management.
- ◆ Identify and differentiate between economically damageable pests, sporadic pests, diseases and symptoms using guides or resource material.
- ◆ Understand the different types of control measures that can be applied in integrated pest management programme for pests, diseases and weeds.
- ◆ Assist in developing a plan to assist the decision making process on the type of control to apply.
- ◆ Execute post-application monitoring
- ◆ Apply environmental and community considerations.
- ◆ Oversee the management of an agrochemical storage facility effectively and responsibly.

Learners will also gain basic knowledge of:

- ◆ The fact that integrated pest management is the integration of a number of different methods of pest control is explained.
- ◆ The importance of monitoring at regular intervals is discussed.
- ◆ The influence of the ratios between pests and predators on the decision on which control method to use is described.
- ◆ The importance of replacing the pheromones, clearing the traps regularly and the collecting and assessing of information is explained.
- ◆ The importance of recording the data correctly is explained.
- ◆ Data is recorded by applying the basic principles.
- ◆ Pests and beneficial insects on specific crops (all crops) are recognised, identified, counted and recorded and the impact or findings is assessed.
- ◆ The damage and the cause of the damage is observed, categorically explained and identified.

- ◆ Access to guides/publications and other resources and the use thereof are demonstrated.
- ◆ Selection of method of identification is motivated.
- ◆ Method of identification includes but is not limited to macroscopic and microscopic, and chemical.
- ◆ Symptoms are observed and identified.
- ◆ Scouting activities are performed regularly and thoroughly.
- ◆ Weather patterns are observed and the effect thereof interpreted.
- ◆ The different control measures that can be applied within an integrated management are explained.
- ◆ The concept of biological control is explained.
- ◆ The concept of cultural control is explained.
- ◆ The concept of mating disruption its use is described.
- ◆ The sterile insect technique its application is explained.
- ◆ Other methods that can be integrated into the control management programme are explained.
- ◆ The application of some of these concepts in disease and weed control is explained.
- ◆ The most appropriate control measures, taking onto consideration integrated pest management and the environmental impact is selected.
- ◆ Access to guides/publications and the use thereof are demonstrated.
- ◆ Environmental considerations that should be considered are explained.
- ◆ Resistance and mode of action re rotation is determined.
- ◆ Institutes to contact for advice are identified.
- ◆ Legal and market requirements are adhered to.

Learning Assumed to be in Place:

- ◆ It is assumed that a learner attempting this unit standard will show competence against the following unit standards or equivalent:
- ◆ NQF 3: Monitor pests, diseases and weeds on crops.
- ◆ NQF 2: Apply crop protection and animal health products effectively and responsibly.



Remember to do a diagnostic assessment of the learner's prior learning and ensure that they are starting at the correct level.

Learning Program Time Frames

	Total time allocated (hours)	Theoretical learning time allocated (hours)	Practical learning time allocated (hours)	Activities to be completed
Complete Program (including summative assessment)	30 hours	6.5 hours	23.5 hours	7
Learner Orientation and "Ice Breaker"	0.5 hour	0.5 hour		NA
Purpose, Introduction and Learner Directions	0.5 hour	0.5 hour		NA
Session 1	4 hours	2 hours	2 hours	1
Session 2	4 hours	1 hours	3 hours	1
Session 3	4 hours	1 hours	3 hours	1
Session 4	4 hours	-	4 hours	1
Session 5	4 hours	-	4 hours	1
Session 6	4 hours	-	4 hours	1
Session 7	4 hours	1 hours	3 hours	1
Preparation for Assessment & revision	1 hour	0.5 hour	0.5 hour	NA

My Notes ...

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Tips for level of learning



Remember the following before you get started:

Typically, a learning programme leading to the award of a qualification or unit standards at level 4 should develop learners who demonstrate an ability to:-

- Take responsibility for their own learning within a supervised environment.
- Take decisions about and responsibility for actions.
- Evaluate their own performance against given criteria.
- Take the initiative to address any shortcomings they find.
- Communicate and present information reliably and accurately in writing and verbally.
- Gather relevant information, analysis and evaluation skills.
- Use their knowledge to solve common problems within a familiar context; adjust an application of a common solution within relevant parameters to meet the needs of small changes in the problem or operating context; motivate the change using relevant evidence.
- Apply essential methods, procedures and techniques of the field or discipline; apply and carry out actions by interpreting information from text and operational symbols or representations.
- Understand the organisation or operating environment as a system within a wider context.
- Demonstrate a fundamental knowledge base of the most important areas of one or more fields or disciplines, in addition to the fundamental areas of study an informed understanding of the key terms, rules, concepts, established principles and theories in one or more fields or disciplines.

My Notes ...

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Facilitator's Checklist & Training Aids

Learner support strategies:
<p>Learners are supplied with all resources and aids as required by the programme – including:</p> <ul style="list-style-type: none"> ▪ Objects & devices such as equipment, protective clothing, safety gear, etc. ▪ Learner Guides and Learner Workbook ▪ Visual aids, etc.

Use this checklist below during your preparation to ensure that you have all the equipment, documents and training aids for a successful session.

Preparation:	Yes	No
Qualification Knowledge – I have familiarised myself with the content of the applicable qualification		
Unit Standard Knowledge – I have familiarised myself with the content of all aspects of the applicable unit standard		
Content Knowledge – I have sufficient knowledge of the content to enable me to facilitate with ease		
Application knowledge – I understand the programme matrix & have prepared for programme delivery accordingly		
Contextualisation – I have included information which is specific to the commodity and practices related to the commodity		
Ability to respond to learners background & experience – I have studied the learner demographics, age group, experience & circumstances & prepared for programme delivery accordingly		
Enthusiasm & Commitment – I am passionate about my subject & have prepared my programme delivery to create a motivating environment with real commitment to success		
Enterprise knowledge – I know & understand the values, ethics, vision & mission of the workplace & have prepared my programme delivery, reporting & administrative tasks accordingly.		
Equipment check:		
Learner guides x 1 per learner		
Assessment guides x 1 per learner		
Writing materials & stationary (facilitator & learner)		
White board & pens		
Flip chart paper		
Proxima projector & screen		
Laptop & programme disk		
Sample Hand-outs and examples of laws and other relevant		

documents		
Safety gear as prescribed by unit standard and applicable legislation		
Documentation checklist:		
Attendance Register		
Course Evaluation		
Learner Course Evaluation		
Portfolios of evidence		

Contextualisation of Content!

Go through this module and indicate what specific **information** / **activities** / **examples** should be included in this module?

Contextualisation	
<ul style="list-style-type: none"> Commodity specific? 	
<ul style="list-style-type: none"> Operating procedures of the farm? 	
<ul style="list-style-type: none"> Agricultural practices? 	
<ul style="list-style-type: none"> Agricultural markets? 	

Session

1 The principals of integrated pest management

Learner Guide:
Page 8

After completing this session, the learner should be able to:
SO 1: Demonstrate a basic understanding of the principles of integrated pest management.

Concept (SO 1)	Time frame	Activities related to the concept
The fact that integrated pest management is the integration of a number of different methods of pest control is explained.	4 Hours	Activity 1
The importance of monitoring at regular intervals is discussed.		
The influence of the ratios between pests and predators on the decision on which control method to use is described.		
The importance of replacing the pheromones, clearing the traps regularly and the collecting and assessing of information is explained.		
The importance of recording the data correctly is explained.		
Data is recorded by applying the basic principles.		



Please allow learners to complete Activity 1 in their Learner Guides

Type of activity	Resources
Individual work; Theory	Learner Guide, stationary, relevant on-farm procedures
Instructions to give to the learners	
As per Learner Guide. Allow the learners to complete the questions once the theory of IPM has been discussed. Allow the learners to make use of relevant resources for information. Learners may have to consult documentation similar or equivalent to the documents required for the Learning Assumed to be in Place.	

2 Pest status

Session

**Learner
Guide:
Page 17**

After completing this session, the learner should be able to:
SO 2: Identify and differentiate between economically damageable pests, sporadic pests, diseases and symptoms using guides or resource material.

Concept (SO 2)	Time frame	Activities related to the concept
Pests and beneficial insects on specific crops (all crops) are recognised, identified, counted and recorded and the impact or findings is assessed.	4 Hours	Activity 2
The damage and the cause of the damage is observed, categorically explained and identified.		
Access to guides/publications and other resources and the use thereof are demonstrated.		
Selection of method of identification is motivated.		
Symptoms are observed and identified.		
Scouting activities are performed regularly and thoroughly.		
Weather patterns are observed and the effect thereof interpreted.		

My Notes ...

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Session

3 Pest management tools

Learner Guide:
Page 31

After completing this session, the learner should be able to:

SO 3: Understand the different types of control measures that can be applied in integrated pest management programme for pests, diseases and weeds.

Concept (SO 3)	Time frame	Activities related to the concept
The different control measures that can be applied within an integrated management are explained.	4 Hours	Activity 3
The concept of biological control is explained.		
The concept of cultural control is explained.		
The concept of mating disruption and its use is described.		
The sterile insect technique and its application are explained.		
Other methods that can be integrated into the control management programme are explained.		
The application of some of these concepts in disease and weed control is explained.		
The most appropriate control measures, taking into consideration integrated pest management and the environmental impact is selected.		
Access to guides/publications and the use thereof are demonstrated.		

Environmental considerations that should be considered are explained.		
Resistance and mode of action regarding rotation is determined.		
Institutes to contact for advice are identified.		
Legal and market requirements are adhered to.		



Please allow learners to complete Activity 3 in their Learner Guides

Type of activity	Resources
Group Work - Practical	Learner guide, Stationery, relevant on farm procedures.
Instructions to give to the learners	
As per Learner Guide. Allow the learners to conduct the practical activity one they have revised the theory in a class setting. Learners may have to source information from farm managers and other employees and also the facilitator. Learners may have to consult documentation similar or equivalent to the documents required for the Learning Assumed to be in Place.	

My Notes ...

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4 Developing pest management processes

Session

Learner Guide:
Page 59

After completing this session, the learner should be able to:

SO 4: Assist in developing a plan to assist the decision making process on the type of control to apply.

Concept (SO 4)	Time frame	Activities related to the concept
Monitoring data is collected and used.	4 Hours	Activity 4
Data is incorporated into a management plan.		
The process followed to assist in the decision making process is described.		
The type of control is decided on, selected and implemented.		
Application instruction per etiquette is followed.		
Weather, growth stage and type of product are considered.		
Type of production system is considered.		
Appropriate application method is decided on.		
Safety measures are selected and managed.		
Calibration and mechanical integrity of the equipment is determined.		
Quality and availability of water is according to requirements.		

Session

5 Post control monitoring

Learner Guide:
Page 61

After completing this session, the learner should be able to:
SO 5: Execute post-application monitoring.

Concept (SO 5)	Time frame	Activities related to the concept
Effectiveness of a product is determined.	4 Hours	Activity 5
Follow-up generation is identified.		
Side effects and/or damage are determined.		
Equipment is cleaned and serviced.		



Please allow learners to complete Activity 5 in their Learner Guides

Type of activity	Resources
Group Work - Practical	Learner guide, Stationery, relevant on farm procedures.
Instructions to give to the learners	
As per Learner Guide. Allow the learners to conduct the practical activity. Learners may have to source information from farm managers and other employees and also the facilitator. Learners may have to consult documentation similar or equivalent to the documents required for the Learning Assumed to be in Place.	

My Notes ...

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Session

6 Environmental and community considerations in pest management

Learner Guide:
Page 62

After completing this session, the learner should be able to:
SO 6: Apply environmental and community considerations.

Concept (SO 6)	Time frame	Activities related to the concept
Poisoning of wildlife and beneficial insects is avoided.	4 Hours	Activity 6
Soil and water contamination is avoided.		
Drift onto non-targeted area is avoided.		
Empty containers are appropriately disposed of.		
Rinse water is properly managed.		
Aerial application warnings are performed.		



Please allow learners to complete Activity 6 in their Learner Guides

Type of activity	Resources
Group Work - Practical	Learner guide, Stationery, relevant on farm procedures.
Instructions to give to the learners	
As per Learner Guide. Allow the learners to conduct the practical activity. Learners may have to source information from farm managers and other employees and also the facilitator. Learners may have to consult documentation similar or equivalent to the documents required for the Learning Assumed to be in Place.	

7 Storage of agrochemicals

Session

Learner Guide:
Page 63

After completing this session, the learner should be able to:
SO 7: Oversee the management of an agrochemical storage facility effectively and responsibly.

Concept (SO 7)	Time frame	Activities related to the concept
The storage facility adheres to minimum requirements.	4 Hours	Activity 7
Products are categorised and separated.		
Record of incoming and outgoing products is in place and complete.		
Proper stacking methods are applied.		
Emergency and safety plan is in place.		
Access control and security is according to requirements.		



Please allow learners to complete Activity 7 in their Learner Guides

Type of activity	Resources
Group Work - Practical	Learner guide, Stationery, relevant on farm procedures.
Instructions to give to the learners	
As per Learner Guide. Allow the learners to conduct the practical activity. Learners may have to source information from farm managers and other employees and also the facilitator. Learners may have to consult documentation similar or equivalent to the documents required for the Learning Assumed to be in Place.	

What will I do differently next time?

Take some time to **reflect** on your own activities as facilitator of this Unit Standard. Then write down five of the most important lessons you have learnt and include a motivation:

What will I do differently next time?	Motivate how or why (Give examples, reasons, etc.)
1.	
2.	
3.	
4.	
5.	

As facilitator, you have hands on experience in the application of the unit standard. And you might experience difficulties with the unit standard that the developers did not anticipate. Also, the unit standard will be revised at the end of the registration period. Your comments below can be an important contribution in the revision process and should be brought to the attention of either the AgriSETA ETQA manager or the SGB chairperson.

Please take some time to reflect on your experience and list a few of the difficulties you had to address.

Difficulties I had with the Unit Standard	Recommended Changes to Address the Difficulty
6.	
7.	
8.	
9.	
10.	