



NQF Level: 4

US No: 116311

# Facilitator Guide

## Primary Agriculture

### Soil fertility and plant nutrition practices



Facilitator: .....

Company: .....

Commodity: ..... Date: .....

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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:

<b>Title:</b> Implement Soil Fertility and Plant Nutrition Practices
<b>US No:</b> 116311 <b>NQF Level:</b> 4 <b>Credits:</b> 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"> <li>• Organic production,</li> <li>• Hydroponic production,</li> <li>• Perma-culture production,</li> <li>• Agronomy,</li> <li>• Horticulture,</li> <li>• Natural resources harvesting.</li> </ul>	<ul style="list-style-type: none"> <li>• Small stock production,</li> <li>• Large stock production,</li> <li>• Dairy production,</li> <li>• Pig production,</li> <li>• Poultry production,</li> <li>• Game,</li> <li>• Aqua / mari culture,</li> <li>• Commercial insects</li> <li>• Animal fibres harvesting,</li> <li>• Bee keeping,</li> </ul>	<ul style="list-style-type: none"> <li>• Natural resources harvesting,</li> <li>• Organic production,</li> <li>• Perma-culture production,</li> <li>• Eco/Agri Tourism,</li> <li>• Agro Chemicals,</li> <li>• Horse Breeding,</li> <li>• Etc.</li> </ul>

# 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?

<b>The Learning Experience .....</b>	<b>6</b>
<b>Learning Program Time Frames .....</b>	<b>8</b>
<b>Tips for the facilitator .....</b>	<b>9</b>
<b>Tips for level of learning .....</b>	<b>9</b>
<b>Facilitator’s Checklist &amp; Training Aids .....</b>	<b>10</b>
<b>Contextualisation of Content! .....</b>	<b>11</b>
<b>Session 1:           Set up a nutritional program.....</b>	<b>12</b>
Learner Guide page 8	
<b>Session 2:           Soil utilization plan.....</b>	<b>13</b>
Learner Guide page 25	
<b>Session 3:           Symptoms of nutritional deficiencies .....</b>	<b>14</b>
Learner Guide page 30	
<b>Session 4:           Soil improvement .....</b>	<b>15</b>
Learner Guide page 44	
<b>                          What will I do differently next time? .....</b>	<b>16</b>

## The Learning Experience...

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

- ◆ Set up and supervise the implementation of soil preparation and maintain and conserve soil in a safe, effective and responsible manner with consideration to the environment.
- ◆ Gain specific knowledge and skills in soil and plant nutrition and will be able to operate in a plant production environment implementing sustainable and economically viable production principles.

### Learners will specifically be able to:

- ◆ Interpret recommendations and set up a nutritional programme based on recommendations.
- ◆ Implement soil utilization plan for specified crops.
- ◆ Identify and interpret symptoms of nutritional deficiencies, and make full recommendations.
- ◆ Manage soil improvement according to soil properties.

### Learners will also gain basic knowledge of:

- ◆ . Sampling procedures.
- ◆ Chemical, properties of soil - pH, nutrient status and degradation.
- ◆ Physical properties of soil - Texture, structure, soil profiles, crust formation, erosion types, compaction, and degradation.
- ◆ Biological properties of soil and processes.
- ◆ Soil ecology e.g. soil organisms, food webs, role of water and oxygen in soil.
- ◆ Soil health and conservation.
- ◆ Role of living organisms.
- ◆ Conservation practices - Runoff control, contours.
- ◆ Tillage operations - mechanical, non-mechanical, organic, minimum and zero Tillage and application of nutrients (liquid and solid) Primary and secondary soil preparation methods.
- ◆ Soil preparation and fertiliser/ compost application equipment.
- ◆ Nutrients - mixtures, limes, calcite and dolomite lime, single nutrients and compost, liquids, etc.
- ◆ Calibration of equipment.
- ◆ Chemical, physical and biological properties, degradation and rehabilitation.
- ◆ Characteristics of the nutrients.
- ◆ Role of nutrients in the plant.
- ◆ Rules and regulations for storage and handling of agro-chemicals transport.
- ◆ Crop requirements.

- ◆ Soil water relationships.
- ◆ Mulching and ploughing in of mulch layer.
- ◆ Pollution prevention.
- ◆ Biological processes.
- ◆ Mineral cycles e.g. Nitrogen.

**Learning Assumed to be in Place:**

It is assumed that the learner has successfully completed the unit standards listed below:

- ◆ NQF3; Literacy and Numeracy
- ◆ *Level*3; 116267; Manage soil fertility and plant nutrition
- ◆ *Level*4; 116312; Implement a data collection plan
- ◆ *Level*4; 116288; Execute sustainable resource use and quality control
- ◆ *Level*4; 116320; Plan and maintain environmentally sound agricultural processes



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

**My Notes ...**

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# Learning Program Time Frames

	Total time allocated (hours)	Theoretical learning time allocated (hours)	Practical learning time allocated (hours)	Activities to be completed
<b>Complete Program (including summative assessment)</b>	30 hours	11 hours	19 hours	7
<b>Learner Orientation and "Ice Breaker"</b>	1 hour	30 minutes	30 minutes	-
<b>Purpose, Introduction and Learner Directions</b>	1 hour	30 minutes	30 minutes	-
<b>Session 1</b>	6 hours	2 hours	4 hours	1.1 1.2
<b>Session 2</b>	6 hours	2 hours	4 hours	2
<b>Session 3</b>	6 hours	2 hours	4 hours	3.1 3.2
<b>Session 4</b>	6 hours	2 hours	4 hours	4.1 4.2
<b>Preparation for Assessment &amp; revision</b>	4 hours	2 hours	2 hours	-

## My Notes ...

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## Tips for the facilitator



- The learning material provides generic information of fertiliser deficits and fertilisation programmes and how these are to be developed and applied. These may differ between crops and even crop types. The material provided some examples on Citrus crops as tree crops and tomatoes as an example of vegetables. It is essential that the learning experience include site specific details on crops that may be grown where the material is being presented. To this end the facilitator must be aware of such crop specifics. It is also essential that crop and site specific guidelines and procedure be incorporated into the learning experience. Ensure that these site and crop specific documents are dealt with during the roll-out of the material. Learners should also be evaluated against such crop specific procedures and guidelines where it is required. Where relevant it may be necessary to modify activities and questions so as to suite the specifics of a site or specific crop type.

## 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.

# Facilitator's Checklist & Training Aids

## Learner support strategies:

Learners are supplied with all resources and aids as required by the programme – including:

- 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
<b>Qualification Knowledge</b> – I have familiarised myself with the content of the applicable qualification		
<b>Unit Standard Knowledge</b> – I have familiarised myself with the content of all aspects of the applicable unit standard		
<b>Content Knowledge</b> – I have sufficient knowledge of the content to enable me to facilitate with ease		
<b>Application knowledge</b> – I understand the programme matrix & have prepared for programme delivery accordingly		
<b>Contextualisation</b> – I have included information which is specific to the commodity and practices related to the commodity		
<b>Ability to respond to learners background &amp; experience</b> – I have studied the learner demographics, age group, experience & circumstances & prepared for programme delivery accordingly		
<b>Enthusiasm &amp; Commitment</b> – I am passionate about my subject & have prepared my programme delivery to create a motivating environment with real commitment to success		
<b>Enterprise knowledge</b> – I know & understand the values, ethics, vision & mission of the workplace & have prepared my programme delivery, reporting & administrative tasks accordingly.		
<b>Equipment check:</b>		
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		
<b>Documentation checklist:</b>		
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"> <li>Commodity specific?</li> </ul>	
<ul style="list-style-type: none"> <li>Operating procedures of the farm?</li> </ul>	
<ul style="list-style-type: none"> <li>Agricultural practices?</li> </ul>	
<ul style="list-style-type: none"> <li>Agricultural markets?</li> </ul>	

Session

# 1 Set up a nutritional program

**Learner Guide:**  
**Page 7**

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

**SO 1: Interpret recommendations and set up a nutritional program based on recommendations.**

Concept (SO 1)	Time frame	Activities related to the concept
A soil nutrition program is developed based on a recommendation.	6 hours	Activities 1.1 – 1.2
Stock levels are maintained and orders are placed timeously.		



**Please allow learners to complete Activity 1.1 & 1.2 in their Learner Guides**

Type of activity	Resources
<b>1.1</b> Brainstorming.	Learner guide, Stationary, Calculator
<b>Instructions to give to the learners</b>	
As per instructions in the learner guide.	
Type of activity	Resources
<b>1.2</b> Brainstorming.	Learner guide, Stationary, Calculator
<b>Instructions to give to the learners</b>	
As per instructions in the learner guide.	

# 2 Soil utilization plan

Session

**Learner  
Guide:  
Page 25**

*After completing this session, the learner should be able to:*  
**SO 2: Implement soil utilization plan for specified crops.**

Concept (SO 2)	Time frame	Activities related to the concept
The ability to select the appropriate soil for various crops is demonstrated.	6 hours	Activity 2
The influence of soil characteristics or crop growth is explained.		



**Please allow learners to complete Activity 2 in their Learner Guides**

Type of activity	Resources
2. Individual Brainstorming.	Learner guide, Stationary
Instructions to give to the learners	
As per instructions in Learner guide.	

**My Notes ...**

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Session

# 3 Symptoms of nutritional deficiencies

**Learner  
Guide:  
Page 30**

*After completing this session, the learner should be able to:*  
**SO 3: Identify and interpret symptoms of nutritional deficiencies, and make full recommendations.**

Concept (SO 3)	Time frame	Activities related to the concept
Colour changes on plants are interpreted and related to specific nutrient deficiencies.	6 hours	Activity 3.1 – 3.2
Full recommendations for both macro- and micronutrients are proposed and presented.		
Soil and leaf samples for are taken for laboratory analysis.		



**Please allow learners to complete Activity 3.1 & 3.2 in their Learner Guides**

Type of activity	Resources
<b>3.1</b> Answer the questions.	Learner guide, Stationary.
<b>Instructions to give to the learners</b>	
As per instructions in the Learner guides.	
Type of activity	Resources
<b>3.2</b> Practical exercise.	Learner guide, Stationary; Crop examples with characteristic deficiency symptoms – preferably a whole plant, Colour plates or detailed descriptions for identifying deficiencies in that specific crop.
<b>Instructions to give to the learners</b>	
As per instructions in the Learner guides.	

# 4 Soil Improvement

Session

**Learner  
Guide:  
Page 44**

*After completing this session, the learner should be able to:*  
**SO 4: Manage soil improvement according to soil properties.**

Concept (SO 4)	Time frame	Activities related to the concept
The appropriate soil preparation method is selected.	6 hours	Activities 4.1 – 4.2
Records are maintained over time and changes in soil properties are analysed and used in management programmes.		



**Please allow learners to complete Activity 4.1 & 4.2 in their Learner Guides**

Type of activity	Resources
<b>4.1</b> Brainstorming with partner or group.	Learner guide, Stationary
<b>Instructions to give to the learners</b>	
As per instruction in Learner guides.	
Type of activity	Resources
<b>4.2</b> Visit a farmer in the community.	Learner guide, Stationary, Organize a visit to a prominent farmer in the community and explain what the students will need from him/her.
<b>Instructions to give to the learners</b>	
As per instruction in Learner guides.	

## What will I do differently next time?

Take some time to **reflect** on your own activities as facilitator of this Unit Standard 116311. 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 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.	