

ASSESSMENT GUIDE FOR LEARNERS & LEARNER WORKBOOK

Water Quality

Level 2

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Title:		Monitor Water Quality					
Applied Title:		Monitor Water Quality in Citrus Production					
Field:		Agriculture and Nature Conservation					
Sub-Field:		Primary Agriculture					
SETA (SGB):		AgriSETA					
Skills Area:		Water Quality					
Context:		Citrus Production					
US No:	116077	Level:	2	Credits:	3	Notional Hours:	30
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Unit standard alignment and assessment tool development:

Cabeton Training and Development

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Directions

This material is aimed at learners wishing to complete this unit standard. The guide contains all necessary activities and instructions that will enable the assessor and learner to gather evidence of the learner's competence as required by the unit standard.

This guide is designed to be used by the learner with guidance from a facilitator and a trained assessor to develop competence in all knowledge, skills and attitudes required by this unit standard.

This guide contains step-by-step instructions for the assessment process. These steps are as follows:

Step	Description	Timeframe
1	Learner Assessment Contract	Before delivery of program
2	Learner Declaration of Authenticity	Before delivery of program
3	Learning Assumed to Be in Place	Before delivery of program
4	Learner Assessment Plan for Gathering of Evidence	Before delivery of program
5	Assessment Activity Workbook	During delivery of program, assessment after delivery of program
6	Poster Presentation	After delivery of program
7	Attitudes and Attributes Assessment	After delivery of program
8	Re-assessment Procedures	After completion of assessment
9	Documentation	After completion of assessment
10	Administration and Completion of Portfolio of Evidence	After completion of assessment

Step 1

Learner Assessment Contract

The assessor and / or the facilitator holds a pre-assessment briefing with you before the learning program starts in order to guide you and assist you to make sure that you understand exactly what is expected from you in order to become competent in this learning module.

As part of the pre-assessment briefing, the learner assessment contract must be signed. The assessor will assist you and explain the agreement to you in detail.

Learner Assessment Contract	
Learner's Name:	
Assessor's Name:	
Unit Standard:	116077
Your rights as a learner are: 1. You have a right to appeal against any judgment given as a result of any assessment. You must have valid reasons for doing this. 2. You have the right to an interpreter if you need one. However, if one of the learning assumptions for the unit standard is that you are competent within the language of assessment, you may not have an interpreter. 3. You can ask that an impartial observer attend any assessment. This observer may not take any part in the assessment. 4. If you do not agree with the assessment, you have the right to have your assessment internally moderated. If you still do not agree with the result of the assessment you can ask that the ETQA to perform an external moderation on the assessment. If any verification upholds the assessment findings, you will be held liable for all the costs of the verification. If any verification rules that you have been aggrieved as a result of the assessment, your assessor will be held liable for all cost of verification. 5. If during the assessment you are found not yet competent, your assessor will encourage you to master the areas where you have not reached competency. This will be recorded on a development plan. You are required to arrange with the assessor for a new assessment schedule. The assessor can only permit three such re-assessments. If a learner has not reached mastery after three additional attempts, the assessor reserves the right to remove you from the program.	
<u>Qualification</u> This standard leads to the award of credits for unit standard 116077. Once the assessment is complete application will be made to register and certify you for that standard with the AgriSETA. You may contact the assessor or facilitator at any time for information to assist you with further studies.	
<u>Confidentiality</u> Each assessment application, the outcomes, results and reviews will be treated as a confidential matter by you, the learner, the facilitator(s), assessor(s), and moderator(s). No references will be made to anyone or any organisation outside the SETA about the status of an application during the assessment process.	

Consent

I, the learner, hereby state that I have read the above and understood the contents thereof. I was given the opportunity to clarify any issues relating to the assessment process and my assessment plan. I have requested this assessment of my own free will and without duress.

Learner's Signature		Date:	
Assessor's Signature		Date:	



Step 2

Learner Declaration of Authenticity

It is important that we make sure that each learner supplies original evidence completed by himself / herself and according to the level of knowledge and skill that he / she has acquired from the learning process.

Please sign the following declaration:

I hereby declare that the following documentary evidence is my own. I certify that the process followed was ethical and did not infringe on the copyright of any individual or organisation.			
Learner's Signature		Date:	
Assessor's Signature		Date:	



Step 3

Learning Assumed to Be in Place

Do you have all the knowledge and skills necessary to begin this learning process?

This is a level 2 module of learning, and we have to make sure that you have already learnt all the skills, knowledge and attitudes that you will need to use in this module. It will help you to understand and learn more easily in this module, and it is important that we know whether you are ready to move on.

Please look at the list of unit standards below of modules that you should have completed before undertaking this one. Tell us whether you have completed each of the unit standards or modules, and if you did, tell us when you learnt this.

If you need help in understanding this list, please ask the facilitator or assessor.

<i>NQF Level</i>	<i>Unit Standard Number</i>	<i>Learning Module Name</i>	<i>No, I Have Not Completed It</i>	<i>Yes, I Have Completed It</i>	<i>If Yes, When Did You Complete It?</i>
1 (ABET 4)		Literacy and Numeracy			
1	116168	Maintain basic water quality			
Learner's Signature		Date:			
Assessor's Signature		Date:			

Step 4

Learner Assessment Plan for Gathering of Evidence

As the assessor has explained to you, the aim of an assessment is not to catch you out, but rather to help you develop all the skills, knowledge and attitudes that you need to move forward. It is important that you know what is expected from you and that you play an active role every step of the way.

Let us plan for the assessment together. Below are the steps that you have to work through in order to show that you are competent in this module. Check them carefully and discuss each step with the assessor. Agree with the assessor on the dates on which each step has to be completed or documents handed in. Write the dates in the right-hand column as a reminder.

Learner Assessment Plan		
Module / Unit Standard Name:		Monitor Water Quality
Module / Unit Standard Registration Number:		116077
<i>Step Number</i>	<i>Step Description and Learner's Tasks</i>	<i>Completion / Submission Date</i>
5	Assessment Activity Workbook - In this step, you complete certain tasks in class or as homework. - It is important that you complete every task and understand why it is necessary, because it will help you to gain the knowledge, skills and attitudes that you need to be found competent in this learning module. - If there are things that you are unsure about, please ask the facilitator or the assessor to explain it to you again. - You hand in the completed workbook to the facilitator or assessor who will help you to check your progress. - The assessor or facilitator mark it and discuss areas that need more work with you.	
6	Poster Presentation - There are many important things that you need to remember about water quality in order to be found competent in this learning module, and so that you can do your job well and move on to level three. - You have to do a poster presentation to check if you have gained all this knowledge. - There is a detailed list of things that you need to know in this guide and examples of the types of questions that you could be asked. - Please prepare yourself well and remember to ask the facilitator or assessor to explain anything that you don't understand.	

7	Attitudes and Attributes Assessment - You have to develop very specific character traits and attitudes and have to be able to do very specific tasks to be competent in this learning module, be good in this job, and to be able to move on to level three. - Going out into the field, and showing and explaining certain skills and attitudes, is the most appropriate way for you to show that you are competent in the skills and attitudes that are needed. - You will have an opportunity to practice these tasks and develop these attitudes during your practical learning module. - There is a list of all the things that you would have to be able to show and explain in this guide. - Please prepare yourself well and remember to ask the facilitator or assessor to explain anything that you don't understand.		
8	Re-Assessment Procedure - What if the assessor tells you that you have not met the right standard or that you still need more evidence to prove your competence? - The assessor explains to you exactly what you need to do or learn to become competent. - You and the assessor and / or facilitator, develop an action plan together, and you may be granted a second or even a third opportunity to prove your competence. - Remember you have the right to appeal against the assessor's decision, if you feel it is unfair. There is a copy of the form in the back of this guide if you need it.		
9	Paperwork - If you have met the standard that is explained for each step of the process you will be found competent in this unit standard. - The assessor will discuss everything with you in detail and will ask you to fill in and sign forms throughout the process. - You will also be given an opportunity to write down any comments you might have on the assessment process. - Once the assessor has given you the final declaration of competence, you will be asked to give some feedback in order to help everyone to improve the learning and assessment process. - Please think carefully. It might really help other learners in the future.		
10	Administration and Completion of Portfolio of Evidence All the documents, or copies of them, must be kept on file as part of your portfolio of evidence.		
Into the Future - The assessor will discuss what happens next and when you will get a certificate of competence. - It is also important to remember that you learnt this module for a specific reason. Discuss with the assessor, facilitator, mentor, and / or coach how you can move forward in your career with this level of competence. - Also remember that the learning process never stops. Plan together with the assessor, facilitator, coach, and / or mentor what you need to learn next.			
Learner's Signature		Date:	
Assessor's Signature		Date:	

Step 5

Assessment Activity Workbook

- The activities that follow are designed to help you gain the skills, knowledge and attitudes that you need in order to become competent in this learning module.
- It is important that you complete all the activities and worksheets, as directed in the learner guide and at the time indicated by the facilitator.
- It is important that you ask questions and participate as much as possible in order to play an active role in reaching competence.
- When you have completed all the activities and worksheets, hand this workbook in to the assessor who will mark it and guide you in areas where additional learning might be required.
- You should not move on to the next step in the assessment process until this step is completed, marked, and you have received feedback from the assessor.

Activity 1 – Class Discussion and Brainstorming
Complete the worksheet below.
What does water quality mean to you?
Why is water quality important?
What do you think are the major methods to maintain water quality?
How can contribute on a daily basis to maintaining water quality on your farm and in your area?

Activity 2 – Worksheet

Complete the worksheet below.

List the six critical water quality control points of water quality management.

1.

2.

3.

4.

5.

6.

List the materials that play a role in physical water quality factors and indicate which can be controlled with proper measures.

<i>PWQF</i>	<i>Control</i>

List the chemical water quality factors and indicate which aspect (the plant, irrigation system or the soil) of citrus production might be influenced.

<i>CWQF</i>	<i>Factor Affected</i>

Activity 3 – Experiment: Using a Pilot Plant

Follow the instructions below and complete the questions that follow.

1. Fill a 20-litre drum with the water to be used for pest control sprays.
2. Measure the pH of the water with a pH meter or pH paper strips. If the pH is higher than the optimal pH for the pesticide, continue with step 3. Otherwise no acidification is required.
3. Add acid in small volumes of 1ml at a time.
4. Stir the water with a paddle in a vertical motion – not a horizontal motion – which will mix the water, and acid in an up-down movement. Do this after every addition of acid.
5. Measure the pH again with a pH meter or pH paper strips.
6. Repeat the addition of acids and mixing until the pH reaches the desired level.
7. Record the volume of acid used to reach the desired pH.
8. Calculate the volume of acid required to bring the pH of the desired volume of water down to the required level.

List the equipment that you used to perform the experiment.
List the steps that you followed to prepare for and conduct the experiment.
What important things did you have to remember to protect your health and safety?
How did you ensure that your results were accurate, and how did you record them?

Activity 4 – Worksheet
Complete the worksheet below.
List four direct and four indirect effects of water quality on citrus production.
Direct Effects
1.
2.
3.
4.

Indirect Effects
1.
2.
3.
4.
How can PWQF be improved?
How can CWQF be improved?
How can the quality of water leaving the farm be improved?

Activity 5 – Demonstration

Take turns to demonstrate the preparation for and taking of water samples. Let the assessor or facilitator sign that you can demonstrate the correct techniques.

Key Notes:			
Learner's Signature		Date:	
Assessor's Signature		Date:	

Activity 6 – Job Description

Write a job card for someone to perform basic water quality tests on a water sample. Instruct the person to perform the following tests:

- pH Testing
- Electrical Conductivity

Job Description – pH Testing:

Job Description – Electrical Conductivity:

Activity 7 – Experiment: Water Tests

Follow the instructions below and complete the experiment.

Working in groups or as individuals, locate at least three different water sources close by and take samples in the prescribed manner. At the same time, assess the physical quality factors of the water sources. Under the supervision of the facilitator, perform pH and EC tests on the water according to the procedures described above.

Record the procedures followed in taking the water samples and performing the tests described above.

Based on the results of the pH tests performed in the practical, discuss methods that can be used to improve the pH of the water.
Based on observations made at the water sources when samples were taken, discuss means by which the physical quality factors of the water can be improved.

Activity 8 – Class Discussion

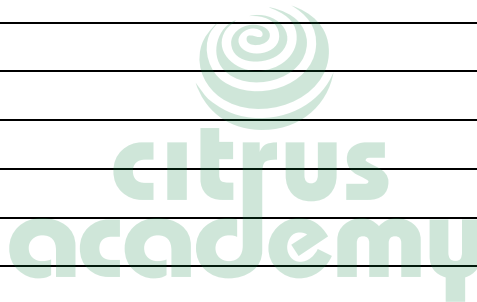
Have a class discussion and write notes for yourself.

Suggest methods to manage the physical conditions of water to maintain water quality.

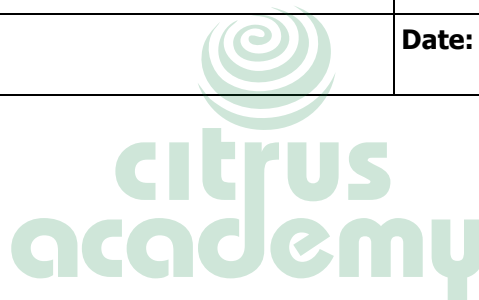
Suggest methods to manage the chemical conditions of water to maintain water quality.

Activity 9 – Write a Report

Write a report about the reporting system related to water quality management and maintenance on your farm. Include what has to be reported, when it has to be reported, who has to report what and to whom it has to be reported.



Assessment Feedback Form – Activity Workbook			
		Comments / Remarks	
Feedback to learner on assessment			
Feedback from learner to assessor			
Learner's Signature		Date:	
Assessor's Signature		Date:	



Step 6

Poster Presentation

You are now ready for step six of the assessment process. In this step you will be expected to make a poster and present it to the rest of the class.

The poster presentation should include all the aspects of water quality that you have learnt in this learning program. The topics that will be covered are listed below to help you in the planning and layout of your poster and presentation.

You have to score an overall mark of at least 85% in this task in order to be found competent.

Inform the assessor if you have any special needs or requirements **before** the agreed date for the hand in of the assessment task. You might, for example, require an interpreter to translate the questions to your mother tongue, or you might need to take this test orally. Please write your request down in your activity workbook on the front page and explain why you have made this request. Ask the assessor to sign next to your request to prove that they are aware of your special request.

Use this checklist to help you plan and prepare for the writing of the job description. These are examples of possible questions that will help you to organise and plan your task. All the information you need was taught in the classroom and can be found in the learner guide that you received.

Example Questions	<i>I Have Revised This and Understand It Well</i>	<i>I Am Unsure of This and Need to Ask the Facilitator or Assessor to Explain It Again</i>
What is water quality?		
Why is water quality important for citrus production?		
How is water quality managed and maintained on your farm?		
What affects water quality chemically?		
How should these chemical factors be controlled to assist in optimum water quality?		
What affects water quality physically?		
How should these physical factors be controlled to assist in optimum water quality?		
What does water sampling have to do with water quality?		
How should water sampling be done?		
What happens to the water samples?		
What are simple tests that you can perform on water samples?		
What information is obtained from the tests performed on the water samples?		
Describe how the water quality system on your farm works.		
Explain the basic maintenance to this water quality system or things that affect this system.		

The assessor or facilitator has explained this step to me and I have revised these questions.			
Learner's Signature		Date:	
Assessor's Signature		Date:	

The assessor will give you feedback on the test and guide you if there are areas in which you still need further development.



Step 7

Attitudes and Attributes Assessment

You are now ready for step seven of the assessment process, the Attitude and Attribute assessment. Check your plan carefully to make sure that you prepare in good time.

Inform the assessor if you have any special needs or requirements before the agreed date for the assessment test. You might, for example, require an interpreter to translate the questions to your mother tongue, or you might need to take this test orally. Please write your request down in your activity workbook on the front page and explain why you have made this request. Ask the assessor to sign next to your request to prove that they are aware of your special request.

Use the checklist below to help you prepare for the part of the practical assessment when you are observed on the attitudes and attributes that you need to have to be found competent for this learning module.

<i>Observations</i>	<i>I Am Sure of This and Understand It Well</i>	<i>I Am Unsure of This and Need to Ask the Facilitator or Assessor to Explain What It Means</i>
Can you identify problems and deficiencies correctly?		
Are you able to work well in a team?		
Do you work in an organised and systematic way while performing all tasks and tests?		
Are you able to collect the correct and appropriate information and / or samples as per the instructions and procedures that you were taught?		
Are you able to communicate your knowledge orally and in writing, in such a way that you show what knowledge you have gained?		
Can you base your tasks and answers on scientific knowledge that you have learnt?		
Are you able to show and perform the tasks required correctly?		
Are you able to link the knowledge, skills and attitudes that you have learnt in this module of learning to specific duties in your job or in the community where you live?		

- The assessor will complete a checklist that gives details of the points that are checked and assessed by the assessor.
- The assessor will write commentary and feedback on that checklist. They will discuss all commentary and feedback with you.
- You will be asked to give your own feedback and to sign this document.
- It will be placed together with this completed guide in a file as part of your portfolio of evidence.

Step 8

Re-Assessment Procedure

The assessor will discuss in detail with you what to do in case you require a re-assessment, and when the re-assessment will take place.



Step 9

Paperwork

Please assist the assessor by filling in these forms and signing then as instructed.

Learner Information Form			
Unit Standard	116077		
Program Date(s)			
Assessment Date(s)			
Surname			
First Name			
Learner ID / SETA Registration Number			
Job / Role Title			
Home Language			
Gender	Male	Female	
Race	African	Coloured	Indian/Asian White
Employment	Permanent	Non-permanent	
Disabled	Yes	No	
Date of Birth			
ID Number			
Contact Telephone Numbers			
Email Address			
Postal Address			

Assessor Report and Formative and Summative Evidence Collection Summary for Unit Standard 116077 – Level 2					
Description	Evidence Gathered		Benchmark	Competent / Not yet Competent	Feedback and Comments
	Foundational and Embedded Knowledge	Practical Skills, Underpinning Knowledge and Reflexive Competence			
Specific Outcome 1: Demonstrate an understanding of water quality management <i>Range:</i> Quality factors for water include but are not limited to temperature, dissolved gasses such as oxygen and carbon dioxide, COD, water insoluble solids and dissolved minerals and organic load	Summative Poster	CCFO Rating Scale	85% competence in all areas		
Specific Outcome 2: Demonstrate an understanding of the importance of water to agriculture	Summative Poster	CCFO Rating Scale	85% competence in all areas		
Specific Outcome 3: Demonstrate an ability to monitor and perform basic water quality tests and analyses <i>Range:</i> Quality maintenance tasks including water aeration, inlet and outlet screening, inlet and outlet level and flow control, degassing and filtration	Summative Poster	CCFO Rating Scale	85% competence in all areas		
Specific Outcome 4: Demonstrate an ability to perform and understand maintenance tasks on certain operational technical systems related to water quality	Summative Poster	CCFO Rating Scale	85% competence in all areas		

Assessor Report and Formative and Summative Evidence Collection Summary for Unit Standard 116077 – Level 2					
Description	Evidence Gathered		Benchmark	Competent / Not yet Competent	Feedback and Comments
	Foundational and Embedded Knowledge	Practical Skills, Underpinning Knowledge and Reflexive Competence			
Embedded Knowledge: The learner is able to demonstrate a basic knowledge of: 1. The names and functions of water quality maintenance systems and components 2. The names and attributes of water quality factors 3. Sensory cues related to water quality 4. The purpose of understanding the need for water quality knowledge 5. Procedures related to the maintenance and testing of water quality 6. Rules and regulations related to water 7. Basic report writing skills	Attend all lectures Complete workbook as per instruction	N/a	Overall minimum test score of 85%		

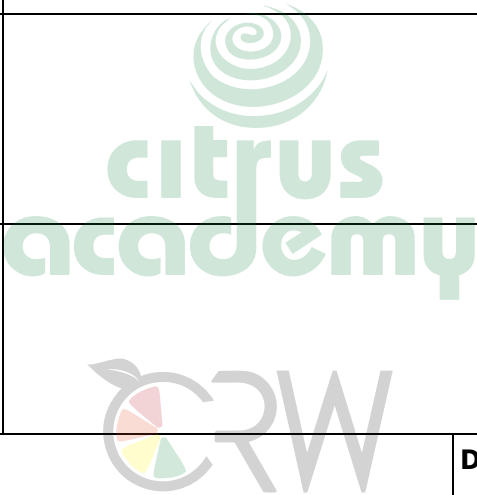
Assessor Report and Formative and Summative Evidence Collection Summary for Unit Standard 116077 – Level 2					
Description	Evidence Gathered		Benchmark	Competent / Not yet Competent	Feedback and Comments
	Foundational and Embedded Knowledge	Practical Skills, Underpinning Knowledge and Reflexive Competence			
Unit Standard CCFOs: 1. Team work relates to specific outcomes 2, 3 and 4 2. Self-management relates to all specific outcomes 3. Communication relates to all specific outcomes 4. Problem solving relates to specific outcomes 3 and 4 5. Interpreting information relates to specific outcomes 3 and 4 6. Science and technology relates to all specific outcomes 7. Related systems relates to all specific outcomes 8. Self development relates to all specific outcomes	N/a	Rating Scale	Minimum rating of 3:5 in each criteria or overall average of 3:5		

Learner Assessment Re-Actionnaire			
Questions		Response	
How did the assessor encourage you to be involved in the assessment process?			
Did the assessor take your special needs into account? If so, how?			
Did the assessor agree on the assessment procedures with you?			
Was feedback relevant to your needs?			
Were you always aware of the outcome of the assessment?			
Did the assessor help you to explore ways of becoming competent whenever you were judged NYC?			
Did the assessor allow you to ask questions?			
Did you always agree with assessment decisions?			
Was all appropriate documentation completed and signed and did you receive copies?			
Did the assessor assist or prevent you in any way when gathering evidence so as to obscure its authenticity?			
All the evidence submitted in my name is my authentic work, which was not acquired by any unethical means.			
Learner's Signature		Date:	
Assessor's Signature		Date:	
Moderator's Signature		Date:	

Assessor's Assessment Review and Improvement Document	
Issues	Comments
Did the assessment go according to plan?	
Did anything unexpected happen?	
Were you pleased with the assessment decision; i.e. was it what you expected?	
How could the process have been carried out more efficiently?	
How could the process of assessing the knowledge be improved?	
How could the Performance Observation checklist be improved?	
Was the evidence you gathered sufficient to make a judgment of competence?	
Was the way you obtained feedback from the learner effective?	
Were you pleased with the way you communicated your decision to the learner? If not, how could this have been improved?	
How would you improve the assessment process?	

Assessment Appeal Form

Any candidate has the right of appeal against any not-yet-competent decision by the assessor. If you wish to appeal, please complete the form below.

Appeal Form			
I hereby appeal against the outcome of my assessment.			
Date:			
Learner's Name:			
Assessors Name:			
Organisation:			
Assessment Details: Criteria, role, standards Used, etc.			
Issue to be Reviewed:			
Learner's Signature		Date:	
Assessor's Signature		Date:	

Step 10

Administration and Completion of Portfolio of Evidence

All the documents or copies thereof, as prescribed previously, must be kept on file as part of the learner portfolio of evidence.

