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SOUTH AFRICAN QUALIFICATIONS AUTHORITY (SAQA)

In accordance with regulation 24(c) of the National Standards Bodies Regulations of 28 March 1998, the Standards Generating Body (SGB) for

Primary Agriculture

Registered by NSB 01, Agriculture and Nature Conservation, publishes the following qualifications and unit standards for public comment.

This notice contains the titles, fields, sub-fields, NQF levels, credits, and purpose of the qualification and unit standards upon which qualifications are based. The full qualification and unit standards can be accessed via the SAQA web site at <u>www.saqa.org.za</u>. Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, Hatfield Forum, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the unit standards should reach SAQA at the address *below and no later than 13 March 2004.* All correspondence should be marked **Standards Setting – SGB for Primary Agriculture** and addressed to

> The Director: Standards Setting and Development SAQA *Attention: Mr. D Mphuthing* Postnet Suite 248 Private Bag X06 Waterkloof 0145 or faxed to 012 – 431-5144 <u>dmphuthing@saga.co.za</u>

JOE SAMUELS DIRECTOR: STANDARDS SETTING AND DEVELOPMENT



NATIONAL CERTIFICATE IN FARMING NQF LEVEL 3

FIELD: Agriculture and Nature Conservation

SUB-FIELD: Primary Agriculture

LEVEL: 3

CREDITS: 120

Qualification Rationale

The range of typical learners that will enter this qualification will vary and includes:

- Farm operators who wish to progress to the level of supervisor within farming operations;
- Learners in possession of different levels of practical experience in farming operations, which will be assessed through the RPL process;
- Possible candidates for promotion identified by the community as leaders.
- Learners may come from both genders.

The learner will engage in supervision activities relevant to farming operations within a specific context, namely horticulture, agronomy and animal husbandry. The farming activities will be determined by the agricultural commodity, which is produced.

Requests and expressions of need for this qualification, coming from the broad, but also specific farming communities forms the basis for the development of this qualification.

This qualification will form the basis for learners to extend their learning and practice into other areas of agricultural commodities within a context of either agronomy, or horticulture or animal husbandry as applicable to the agricultural commodity, or to strive towards agricultural management standards and practices at higher levels.

Competent qualifying learners in this qualification will oversee quality agricultural products whereby enhancing the overall agricultural process and gain opportunities to access local, national and international agricultural markets.

Purpose of the Qualification

A learner assessed as competent against this qualification will have the necessary competence to supervise and lead a working team performing the agricultural processes as applicable to the agricultural commodity within a context of either agronomy, horticulture or animal husbandry. Furthermore, the learner will be able to take responsible decisions based on a sound understanding of the basic principles of supervision and leadership, in meeting the set objectives and targets within the broader farm plan which includes the economical application of general resources, agricultural production and technical knowledge and skills. The learner will also be able to adhere to and implement according to the level of supervision relevant quality, safety and hygiene standards as applicable within the industry.

In addition they will be well positioned to extend their learning and practice into other areas of agricultural commodities within a context of either agronomy, or horticulture or animal husbandry

as applicable to the agricultural commodity, or to strive towards agricultural management standards and practice at higher levels.

Competent qualifying learners in this qualification will oversee the production of quality agricultural products whereby enhancing the overall agricultural process and gain opportunities to access local, national and international agricultural markets.

Access to the qualification

Open access.

Learning assumed to be in place

It is assumed that a learner entering a programme leading to this qualification has achieved numeracy, literacy and communication equivalent to NQF 2 and technical skills pertaining to agricultural activities equivalent to NQF 2.

Exit level outcomes and associated assessment criteria

On achieving this qualification the learner will be able to:

Exit level outcome

• Supervise the implementation of a sustainable agricultural system according to set standards as applicable to an aspect of a land use plan for a specific agricultural commodity, such as fertilisation, cultivation, irrigation, water ways, crop protection, veldt and pastures, housing, etc.

Associated assessment criteria:

- Procedures are followed according to set standards.
- Set standards are achieved.
- Deviations are observed and corrective actions are implemented.

Exit level outcome

• Supervise the utilisation of allocated resources to achieve set objectives in an economical viable way. (Resources include human, finance, equipment and material.)

Associated assessment criteria:

- Resources are applied in an economical manner.
- Set standards are achieved.
- Interpersonal relations are enhanced taking into account:
- Number of grievances,
- Staff turnover,
- Absenteeism,
- Health,
- Number of meetings.

Exit level outcome

• Apply and communicate basic business and financial principles to demonstrate the ability to show how personal ethics, values and norms impacts on the workplace.

Associated assessment criteria:

- Basic ethical principles, values and norms and how they influence the agricultural process, interaction with co-workers and clients, as well as work related conflict situations are explained.
- An own value system is established.
- The effect of his/her work activities on family and social life is described and appropriate steps to improve relationships are explained.
- Indicators in relation to failure and/or successes are evaluated.
- Tasks are performed in accordance to standard operating procedure.
- Basic business and financial principles are explained and applied.
- Regular and appropriate feed back to management.
- Business and financial principles are implemented according to site operating procedures.

Exit level outcome

• Identify and measure possible deviations from working procedures and policies, which might impact on objectives and act pro-actively.

Associated assessment criteria:

- Problems and deviations are identified and reported timeously.
- The team works according to standard operation procedures and policies.
- The impact of problems and deviations is explained.
- Goals are achieved within set targets and timeframes.
- Factors influencing the business farm plan are identified and explained.

Exit level outcome

 Develop, manage an integrated strategic plan and supervise farming activities to enhance quality production.

Associated assessment criteria:

- Personal involvement in community activities is enhanced.
- Demonstrate an understanding of and explain the importance of personal financial planning.
- Personal objectives are identified and captured in a personal life strategy.
- A program of maintenance is developed and implemented.
- General appearance of infrastructure and good housekeeping is enhanced where appropriate.
- Team members are supervised and activities are monitored according to set objectives.
- Accurate records are kept and interpreted according to standard operation procedures.
- Production is graded according to set quality standards.
- Allocated resources related to assets and infrastructure are supervised and maintained.

NOTE: Assessment should be specific to the area of operation (either horticulture or agronomy or animal husbandry) and the agricultural commodity(ies) of the learner's own choice.

International Comparability

In the case of the primary agricultural context it is difficult to compare the qualification and unit standards because of the vast differences in the level of mechanisation, the level of literacy of the farm operators, climate and other conditions as well as the variety in commodities.

However, New Zealand and Australian qualifications and unit standards were sourced and evaluated for applicability. Also, during two separate study visits, agricultural practices were compared in the Netherlands and France.

An example of the differences would be in animal husbandry where the cold climate (snow and ice) requires total different feeding processes and different hygiene processes.

However, there are similarities in terms of the floriculture and viticulture processes and unit standards.

Integrated Assessment

Integrated assessment at the level of the qualification provides an opportunity for learners to show that they are able to integrate concepts, ideas and actions across unit standards to achieve competence that is relevant and coherent in relation to the purpose of the qualification.

Integrated assessment must judge the quality of the observable performance, but also the quality of the thinking that lies behind it. Assessment tools must encourage learners to give an account of the thinking and decision-making that underpin their demonstrated performance. Some assessment practices will be of a more practical nature while others will be of a more theoretical nature. The ratio between action and interpretation is not fixed, but varies according to the type and level of qualification.

A broad range of task-orientated and theoretical assessment tools may be used, with the distinction between practical knowledge and disciplinary knowledge maintained so that each takes its rightful place.

Criteria for the registration of assessors

Assessors need:

- A minimum of 2 (two) years' practical experience;
- Competence in the generic assessor unit standards; and
- Technical competence at, at least at NQF level 4.

Recognition of prior learning

This qualification may be achieved in part or in whole through the recognition of prior learning. Credit will be given to learning, which has already been acquired, through the appropriate process of assessment.

For example:

Learners who have acquired skills and competencies in this qualification through for instance experience in the industry will be assessed against the unit standards the qualification comprises of prior to entering learning. Credits will be allocated to those unit standards and exit level outcomes in which the learner is found competent. The outstanding unit standards will then be sequenced according to an appropriate learning programme.

Should a new entrant into the industry wish to enter this learning programme, recognition will be given to all appropriate learning acquired through the schooling system.

In terms of fundamental unit standards, competencies could be acquired through life experience.

Any learner wishing to be directly assessed may arrange to do so, without attending further training or education. The assessor and learner will decide together on the most appropriate assessment route to take.

Articulation possibilities

A learner will be able to progress horizontally from one category to another, namely horticulture, agronomy or animal husbandry. He/she will be able to do this without re-doing the whole qualification, but by only completing the necessary elective unit standards.

This qualification builds on the Farming qualification on NQF 2 and gives access to the agricultural management qualification at NQF 5. In terms of competencies, the learner will progress from farming operation skills to basic managerial skills to managerial skills. The scope of practice will also increase.

The learner will be able to articulate with other occupations within the agricultural pharmaceutical operations such as laboratory assistant, marketing and selling of agricultural pharmaceutical products and fertilisers. The learner will also be able to move to the secondary agricultural field.

Moderation options

Anyone assessing a learner against this qualification must be registered as an assessor with the relevant ETQA.

Any institution offering learning that will enable achievement of this qualification, or assessment against this qualification must be accredited as a provider with the relevant ETQA. Moderation of assessment will be overseen by the relevant ETQA according to agreed ETQA procedures.

Therefore anyone wishing to be assessed against this qualification may apply to be assessed by any assessment agency, assessor or provider institution, which is accredited by the relevant ETQA.

National Certificate in Farming NQF Level 3 qualification matrix

FUNDAMENTAL	NLRD	LEVEL	CREDIT	CORE	NLRD	LEVEL	CREDIT	ELECTIVE	NLRD	LEVEL	CREDIT
COMMUNICATION		3	20	Demonstrate an understanding of the primary agricultural industry		3	5	Develop and manage a personal strategic life plan	Generic Managem	3	5
Accommodate audience and context needs in oral communication	8415	3	5	Create a culture of and supervise the maintenance of infrastructure and other assets		3	5	Apply basic entrepreneurial principles to an agricultural operation		3	5
Interpret and use information from texts	8969	3	5	Operate in a team	8420	2	4	Demonstrate an understanding of the production systems for farm animals		3	6
Write texts for a range of communication contexts	8970	3	5	Supervise the application of health, safety and environmental principles, practices and legislation.		3	5	Understand the basic management systems used for farm animals		3	6
Use language and communication in occupational learning programmes	8973	3	5	Demonstrate an understanding of HIV/AIDS and its implications	8494	2	4	Demonstrate an understanding of the nutrition and feeding of farm animals		3	6
MATHEMATICS		3	16	Apply and oversee good practices to ensure quality of the produce		3	7	Understand the basic principles and practice of breeding farm animals		3	8
Demonstrate understanding of the use Of different number bases and measurement units and an awareness of error in the context of relevant calculations	9010	3	2	Apply sound self-organization skills and time management.		3	6	Understand the care and veterinary aspects of farm animals		3	6
Use mathematics to investigate and monitor the financial aspects of personal and business issues	9011	3	5	Identify and the keep records that a team manager is responsible for keeping	Generic managem	3	4	Demonstrate an understanding of harvesting of farm animal products		3	8
Measure, estmate and calculate physical quantities and explore, describe and represent, interpret and justify geometrical relationships in two and three-dimensional space relevant to the life or workplace of the community	9013	3	4	Supervise the implementation of an agricultural production system relevant to a specific agricultural commodity		3	5	Monitor and supervise the implementation of a food safety, production, environmental and social practices management plan within the agricultural supply chain.		3	4
Investigate life and work related problems using data and probabilities	9012	3	5	Supervise the utilisation of allocated resources		3	8				
			36				53				54
								TOTAL			143

TITLE: Demonstrate an understanding of the principles of vegetable production system design

UNIT STANDARD LEVEL:	1
CREDIT:	4
FIELD:	Agriculture and Nature Conservation
SUBFIELD:	Primary Agriculture

PURPOSE

Learners understand the basic principles and basic design requirements of a vegetable garden.

LEARNING ASSUMED TO BE IN PLACE

No prior learning assumed to be in place.

SPECIFIC OUTCOMES

- 1. Select a site for the placement of a vegetable production system.
- 2. Distinguish between the components of a vegetable production system.
- 3. Distinguish between different vegetable production systems.
- 4. Demonstrate an understanding of the important safety and health issues involved in vegetable production systems.
- 5. Identify tools required to develop a vegetable garden and demonstrate their application.

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

- 1. Learners can select a site for the placement of a vegetable production system. Assessment criteria
 - 1.1 Factors that influence the placement of the vegetable production system are explained.
 - 1.2 Selection of production sites in relation to markets and transportation and communication systems are described and explained.
 - 1.3 Environmental requirements for vegetable production are explained.
 - 1.4 Effects of vegetable crop type on the site requirements for the vegetable production system are explained.
 - 1.5 Effects of slope and proximity of water sources on site selection for vegetable production are described and explained.
- 2. Distinguish between the components of a vegetable production system. Assessment criteria
 - 2.1 Various components of a vegetable garden are identified.
 - 2.2 Role of beds, nurseries, composting areas, seedbeds storage and processing areas in the vegetable production system are explained.
 - 2.3 Components of a vegetable production system are defined and described.

3. Distinguish between different vegetable production systems.

- 3.1 Three major vegetable production systems are distinguished and described.
- 3.2 Characteristics and advantages of vegetable gardens as production systems are defined.
- 3.3 Characteristics and advantages of open field vegetable production systems are explained.
- 3.4 Characteristics and advantages of hydroponics vegetable production systems are explained.

- 4. Demonstrate an understanding of the important safety and health issues involved in vegetable production systems Learners can identify the basic safety wear.
 - 4.1 The purpose and functioning of safety wear are elaborated.
 - 4.2 Possible health effects of fertilizers and pesticides and the precautions required for protection of the operator are explained.
 - 4.3 Impact of production under closed conditions on health and safety aspects are defined.
 - 4.4 Application and implications of the National Occupational and Health Act on workers are defined and explained.
- 5. Identify tools required to develop a vegetable garden and demonstrate their application 5.1 Tools required for vegetable production are identified.
 - 5.2 Functions of basic tools used in vegetable production are identified and described.

ACCREDITATION PROCESS

The assessment of qualifying learners against this standard should meet the requirements of established assessment principles. It will be necessary to develop assessment activities and tools, which are appropriate to the context in which qualifying learners are working. These activities and tools may include an appropriate combination of self-assessment and peer assessment, formative and summative assessment, portfolios and observations.

The assessment should ensure that all the specific outcomes, critical cross-field outcomes and essential embedded knowledge are assessed.

The specific outcomes must be assessed through observation of performance. Supporting evidence should be used to prove competency and specific outcomes only when they are not clearly seen in the actual performance.

Essential embedded knowledge must be assessed in its own right through oral and written evidence and cannot be assessed only through observation.

The specific outcomes and essential embedded knowledge must be assessed **in relation to each other**. If a qualifying learner is able to explain the essential embedded knowledge but is unable to perform the specific outcomes they should not be assessed as competent. Similarly if a qualifying learner is able to perform the specific outcomes but is unable to explain or justify their performance in terms of the essential embedded knowledge they should not be assessed as competent.

Evidence of the specified **critical cross-field outcomes** should be found both in performance and in the essential embedded knowledge.

Performance of specific outcomes must actively affirm target groups of qualifying learners and not unfairly discriminate against them. Qualifying learners should be able to justify their performance in terms of **these values**.

- 1. Assessors assessing a learner against the unit standard must be registered as an assessor with the relevant ETQA.
- 2. Institution offering learning that will enable achievement of this unit standard must be accredited as a provider with the relevant ETQA.
- 3. Moderation of assessment will be overseen by the relevant ETQA according to moderation guidelines in the relevant qualification and the agreed upon ETQA procedures.

NOTES

CRITICAL CROSS-FIELD OUTCOMES

The following cross-field outcomes are addressed:

- 1. Identifying and solving problems regarding the layout and placement of a vegetable garden and its components, such as:
 - Taking into account distances from water sources
 - Slopes of the fields
 - Environmental conditions in the site such as shade and traffic
 - Distances of the gardens field from markets
- 2. Collecting, analyzing and critically evaluating information in order that an informed decision regarding the placement and layout of a vegetable production system can be made.
- 3. Demonstrating an understanding that the selection of vegetable production systems and their placement is related to the location of markets, transportation and communication systems.

EMBEDDED KNOWLEDGE

Materials

Names of different type of vegetable production systems Names of the components of a vegetable production system Types of vegetables suited to different vegetable production systems. Effects of logistics on the placement on the production system Names and functions of the basic equipment required in the different production systems. Procedures and methods for caring of equipment

Processes

Rules for the placement of a vegetable production system Rules for the layout of vegetable production systems The relationship between production systems, markets and transportation systems The basics of the National Occupational Health and Safety Act

Range statement

The unit standard refers to an understanding of vegetable production systems and their design

Supplementary information

End

TITLE: Demonstrate an understanding of the different types of vegetable crops

UNIT STANDARD LEVEL:	1
CREDIT:	4
FIELD:	Agriculture and Nature Conservation
SUBFIELD:	Primary Agriculture

PURPOSE

Learners will be able to identify and distinguish between different types of vegetables, their significance and their suitability to different vegetable production systems.

LEARNING ASSUMED TO BE IN PLACE

No prior learning assumed to be in place.

SPECIFIC OUTCOMES

- 1. Different vegetable crop types are distinguished.
- 2. The difference between determinate growers and indeterminate growers is explained.
- 3. The significance and application of leafy and root vegetables are explained.
- 4. A vegetable crop type for a specific vegetable production system is selected.
- 5. New (traditional) vegetable crops and vegetables that can be sourced from invasive species are identified.

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

1. Identify and distinguish between different vegetable crop types and explain their role in the marketplace.

Assessment criteria

- 1.1 Major groups of vegetable crops are identified and defined.
- 1.2 The relevance and characteristics of the major vegetable crop groups are explained.
- 1.3 The effect of crop choice on production times is distinguished.
- 1.4 The importance of different vegetable crop types in the marketplace is explained.
- 2 Demonstrate an understanding of the difference between determinate growers and indeterminate growers.

Assessment criteria

- 2.1 Determinate and indeterminate growers are identified.
- 2.2 Differences between determinate and indeterminate growers are explained.
- 2.3 The influence of growth habit of fruit bearing crops on the harvest and harvesting process is explained.
- 3 Demonstrate an understanding of the significance and application of leafy and root vegetables.

Assessment criteria

- 3.1 The role of leafy and root vegetables in vegetable production is described.
- 3.2 The characteristics of root and leafy vegetable crops are explained.

4 Demonstrate an understanding of selecting a vegetable crop type for a specific vegetable production system.

Assessment criteria

4.1 A crop for a specific production system is selected.

- 4.2 Factors that influence the choice of crop to be used in specific crop systems are explained.
- 4.3 The influence of the scale of harvest required of the crops production system is selected.
- 4.4 The influence of harvest timing on the selection of crop production system is explained.
- 4.5 The influence of market forces on the selection of vegetable crop for production is.
- 4.6 The importance of crop rotation in a vegetable production system is defined.
- 5 Identify traditional vegetable crops and those, which can be sourced from invasive plant species.
 - 5.1 The potential application of new vegetable crops in the market is explained.
 - 5.2 Traditional vegetable crops with market importance are identified.
 - 5.3 Invasive species that are used as vegetable crops are identified.
 - 5.4 The role of vegetable processing in the utilization of alternative vegetable crops is explained.

ACCREDITATION PROCESS

The assessment of qualifying learners against this standard should meet the requirements of established assessment principles. It will be necessary to develop assessment activities and tools, which are appropriate to the context in which qualifying learners are working. These activities and tools may include an appropriate combination of self-assessment and peer assessment, formative and summative assessment, portfolios and observations.

The assessment should ensure that all the specific outcomes, critical cross-field outcomes and essential embedded knowledge are assessed.

The specific outcomes must be assessed through observation of performance. Supporting evidence should be used to prove competency and specific outcomes only when they are not clearly seen in the actual performance.

Essential embedded knowledge must be assessed in its own right through oral and written evidence and cannot be assessed only through observation.

The specific outcomes and essential embedded knowledge must be assessed **in relation to each other**. If a qualifying learner is able to explain the essential embedded knowledge but is unable to perform the specific outcomes they should not be assessed as competent. Similarly if a qualifying learner is able to perform the specific outcomes but is unable to explain or justify their performance in terms of the essential embedded knowledge they should not be assessed as competent.

Evidence of the specified **critical cross-field outcomes** should be found both in performance and in the essential embedded knowledge.

Performance of specific outcomes must actively affirm target groups of qualifying learners and not unfairly discriminate against them. Qualifying learners should be able to justify their performance in terms of **these values**.

- 1. Assessors assessing a learner against the unit standard must be registered as an assessor with the relevant ETQA.
- 2. Institution offering learning that will enable achievement of this unit standard must be accredited as a provider with the relevant ETQA.

3. Moderation of assessment will be overseen by the relevant ETQA according to moderation guidelines in the relevant qualification and the agreed upon ETQA procedures.

NOTES

CRITICAL CROSS-FIELD OUTCOMES

The following cross-field outcomes are addressed:

- 1. Identify vegetable types and their seasonal distribution as well as the effect of production under protection on availability.
- 2. Identify the crop characteristics, which will influence the selection of crop type for production.
- 3. Understanding the different crop requirements so that tem work can be improved during handling the crop.
- 4. Being aware that knowledge of the crop will increase productivity.
- 5. The learner can critically evaluate the efficacy of a crop within a specified production system using the knowledge acquired.
- 6. Communicate effectively when discussing crop types, their selection and the relevance of cropping systems.
- 7. Demonstrate an understanding of the relevance of the different crops in the market place.
- 8. Contributing to the personal development of each learner participating as a responsible citizen by being aware of the effect of the crop position in the marketplace and being sensitive to the cultural diversity within a team.

EMBEDDED KNOWLEDGE

Materials

Names of different types of vegetable and names of examples of each group. Basic plant anatomy and plant structure. Types of vegetables suited to different production systems Uses of each vegetable crop type

Processes

Rules for selecting and producing vegetable crops Characteristics of different vegetable crops The relationship between market forces and product quality The potential effect of vegetable processing on marketing of the harvest **lity**

Quality

The requirements for the quality of different vegetable types

Range statement

The unit standard refers to an understanding of vegetable crop types and their application

Supplementary information

TITLE: Demonstrate an understanding of growth manipulation in indeterminate vegetable crops

UNIT STANDARD LEVEL:	1
CREDIT:	6
FIELD:	Agriculture and Nature Conservation
SUBFIELD:	Primary Agriculture

PURPOSE

Learners understand the basic principles of, and reasons for growth manipulation of especially indeterminate vegetable crops with special reference to hydroponics production.

LEARNING ASSUMED TO BE IN PLACE

No prior learning assumed to be in place.

SPECIFIC OUTCOMES

- 1. Demonstrate an understanding of why the growth of indeterminate vegetable crops should be manipulated.
- 2. Demonstrate and understanding of different trellising systems when growing indeterminate vegetable crops
- 3. Remove suckers, old leaves and diseased tissue from vegetable crops.
- 4. Thin fruit during the growing season.
- 5. Pollinate vegetables manually.

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

1. Demonstrate an understanding of why the growth of indeterminate vegetable crops should be manipulated.

Assessment criteria

- 1.1 Growth habit associated with indeterminate growers is explained.
- 1.2 Major forms of growth manipulation in indeterminate vegetable crops are identified.
- 2. Demonstrate an understanding of different trellising systems when growing indeterminate vegetable crops. Assessment criteria
 - 2.1 Purpose of trellising is explained.
 - 2.2 A trellising system is erected.
 - 2.3 Different types of trellising systems used in growing indeterminate vegetables are explained
 - 2.4 Primary runners are identified and attached to a suitable trellising system.
- 3. Remove suckers, old leaves and diseased tissue from vegetable crops. Assessment criteria
 - 3.1Circumstances under which plant parts are removed are explained.
 - 3.2 Indeterminate growers are selected.
 - 3.3 Old leaves from the plant are identified and removed.
 - 3.4 Decontaminate and diseased tissues from indeterminate growers are selected and removed.

4. Thin fruit during the growing season. Assessment criteria

4.1 The need for fruit thinning in indeterminate vegetable crops is explained.

4.2 A fruit that need to be thinned on the vine of indeterminate vegetable is identified.

4.3 Fruit from indeterminate vegetable crops are identified and thinned.

5 Pollinate vegetables manually.

Assessment criteria

- 5.1 The need for pollination in vegetable cropping systems is explained.
- 5.2 The different pollination methods employed in vegetable production are distinguished
- 5.3 Vegetable crops in enclosed production systems are pollinated.

ACCREDITATION PROCESS

The assessment of qualifying learners against this standard should meet the requirements of established assessment principles. It will be necessary to develop assessment activities and tools, which are appropriate to the context in which qualifying learners are working. These activities and tools may include an appropriate combination of self-assessment and peer assessment, formative and summative assessment, portfolios and observations.

The assessment should ensure that all the specific outcomes, critical cross-field outcomes and essential embedded knowledge are assessed.

The specific outcomes must be assessed through observation of performance. Supporting evidence should be used to prove competency and specific outcomes only when they are not clearly seen in the actual performance.

Essential embedded knowledge must be assessed in its own right through oral and written evidence and cannot be assessed only through observation.

The specific outcomes and essential embedded knowledge must be assessed **in relation to each other**. If a qualifying learner is able to explain the essential embedded knowledge but is unable to perform the specific outcomes they should not be assessed as competent. Similarly if a qualifying learner is able to perform the specific outcomes but is unable to explain or justify their performance in terms of the essential embedded knowledge they should not be assessed as competent.

Evidence of the specified **critical cross-field outcomes** should be found both in performance and in the essential embedded knowledge.

Performance of specific outcomes must actively affirm target groups of qualifying learners and not unfairly discriminate against them. Qualifying learners should be able to justify their performance in terms of **these values**.

- 1. Assessors assessing a learner against the unit standard must be registered as an assessor with the relevant ETQA
- 2. Institution offering learning that will enable achievement of this unit standard must be accredited as a provider with the relevant ETQA.
- 3. Moderation of assessment will be overseen by the relevant ETQA according to moderation guidelines in the relevant qualification and the agreed upon ETQA procedures.

NOTES

CRITICAL CROSS-FIELD OUTCOMES

The following cross-field outcomes are addressed:

- 1. Identifying and solving problems in which responses display critical and creative thinking during the manipulation of growth of vegetables such as:
 - The learner identifies the tools required
 - The equipment is functional and in good working order
 - Being observant and responsive to the repair of equipment
 - Being observant in the identification of plant parts that need removal
 - Being observant and responsive regarding the intermediate storage and disposal of removed plant parts
- 2. Working effectively as a team member responsible for manipulation of growth of vegetable crops through.
 - Preventing and resolving conflict
 - Understanding the relationship between productivity and team work
 - Understanding the logistics of growth manipulation
- 3. Collecting, analyzing and organizing through observing;
 - When and what plant part to manipulate and what technique to apply
- 4. Communicate effectively by using visual and/or language communication skills while:
 - Reporting damage observed or repaired
 - Removing unwanted plant parts
 - Trellising vegetable crops
- 5. Demonstrate an understanding that the process is a set of related systems by:
 - Explaining how the manipulation of indeterminate vegetable relates to other systems such as:
 - a. Produce quality
 - b. Productivity
 - c. Market requirements
 - d. Job security
- 6. Contributing to the personal development of each learner participating as a responsible citizen by:
 - Being aware of the effect of the lack of hygiene
 - Being sensitive to the cultural diversity within a team

EMBEDDED KNOWLEDGE

Materials

Names and functions of all equipment and trellising systems relevant to growth manipulation.

Procedures and methods for caring and storing of equipment.

Processes

Rules during the manipulation of growth of indeterminate. Critical events during the growth manipulation process.

Range statement

The unit standard refers to an understanding of the manipulation if indeterminate vegetable crops with special reference to hydroponics production.

Supplementary information

End

TITLE: Demonstrate an understanding of propagating vegetables

UNIT STANDARD LEVEL:	1
CREDIT:	3
FIELD:	Agriculture and Nature Conservation
SUBFIELD:	Primary Agriculture

PURPOSE

Learners understand the basic principles of propagating vegetable crops using different propagating materials.

LEARNING ASSUMED TO BE IN PLACE

No prior learning assumed to be in place.

SPECIFIC OUTCOMES

- 1. Demonstrate an understanding of the production of vegetables from seed.
- 2. Demonstrate an understanding of the seedling production.
- 3. Demonstrate an understanding of seedling production systems.
- 4. Demonstrate an understanding of vegetable production from seedlings.

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

- 1. Demonstrate and understanding of the production of vegetables from seed. Assessment criteria
 - 1.1 Sowing process is described and applied.
 - 1.2 Fields for sowing are prepared.
 - 1.3 Seeds of varying sizes are sown.
- 2. Demonstrate an understanding of seedling production. *Assessment criteria*
 - 2.1 Vegetable seedlings from seed are identified and described.
 - 2.2 Water and fertiliser requirements of seedlings are explained.
 - 2.3 Different seedling media is distinguished.
 - 2.4 The principles of media and container sterilisation in seedling production are explained.

3. Demonstrate an understanding of seedling production systems.

Assessment criteria

- 3.1 Different seedling production systems are identified.
- 3.2 Seedlings in seedbeds are produced.
- 3.3 Thin seedling in seedbeds and containers are selected described and.

4. Demonstrate an understanding of vegetable production from seedlings. *Assessment criteria*

4.1 Learners can explain in informal language the planting of seedlings into the prepared beds 4.2 Major seedling disorders that occur in the field are identified.

ACCREDITATION PROCESS

The assessment of qualifying learners against this standard should meet the requirements of established assessment principles. It will be necessary to develop assessment activities and tools, which are appropriate to the context in which qualifying learners are working. These activities and tools may include an appropriate combination of self-assessment and peer assessment, formative and summative assessment, portfolios and observations.

The assessment should ensure that all the specific outcomes, critical cross-field outcomes and essential embedded knowledge are assessed.

The specific outcomes must be assessed through observation of performance. Supporting evidence should be used to prove competency and specific outcomes only when they are not clearly seen in the actual performance.

Essential embedded knowledge must be assessed in its own right through oral and written evidence and cannot be assessed only through observation.

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Evidence of the specified **critical cross-field outcomes** should be found both in performance and in the essential embedded knowledge.

Performance of specific outcomes must actively affirm target groups of qualifying learners and not unfairly discriminate against them. Qualifying learners should be able to justify their performance in terms of **these values**.

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NOTES

CRITICAL CROSS-FIELD OUTCOMES

The following cross-field outcomes are addressed:

- 1. Identify the major propagation methods for vegetable production and the production requirement for each.
- Being observant and responsible for the constant care of seedlings during production in nursery.
- 3. Being observant and responsible for the constant care of seedlings and sown crops in the field.
- 4. Ensure principals of hygiene are kept up in the nursery.
- 5. Ensure timely and constant supply of vegetable seedlings for production.
- 6. Understand the relationship between effective teamwork and increased production.

- 7. Preventing and not creating conflict.
- 8. Understanding the impact of the failure of seedling production on the failure of vegetable production.
- 9. Identifying disorders and knowing how to respond to these.
- 10. Communicating effectively with superiors on the condition of seedlings and vegetables crops under production and with workers on the tasks that need to be carried out.
- 11. Demonstrate an understanding that the process is a set of related systems by explaining the importance of well manger seedling production and disorder management on productivity and thus job security.
- 12. Contributing to the personal development of each learner participating as a responsible citizen by being aware of the effect of the importance of hygiene and being sensitive to the cultural diversity within a team

EMBEDDED KNOWLEDGE

Materials

Names of different type of vegetable propagation methods

Application of each propagation method and crops to which they are relevant

Names of equipment, chemicals and materials required in propagating vegetable crops Requirement for caring for equipment used in vegetable propagation

Processes

Methods of sowing and planting vegetable seed

Methods for producing seedlings

Methods for planting out and caring for seedlings in the production system

Quality

Requirement for hygiene requirement in the nursery Requirements if seeds and seedlings once planted Characteristics of good quality propagation material Requirements for storage of seed and keeping seedlings

Range statement

The unit standard refers to an understanding of the methods of propagating vegetable crops for production

Supplementary information

End

TITLE: Demonstrate an understanding of vegetable crop harvesting

UNIT STANDARD LEVEL:	1
CREDIT:	4
FIELD:	Agriculture and Nature Conservation
SUBFIELD:	Primary Agriculture

PURPOSE

Learners understand the basic principles of harvesting vegetable crops and the effects of crop type of harvesting process.

LEARNING ASSUMED TO BE IN PLACE

No prior learning assumed to be in place.

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

- 1. Demonstrate an understanding of harvesting intervals as required by different crop types and under different production systems.
- 1.1 Demonstrate an understanding, explain in informal language the relevance of different harvest schedules for determinate and indeterminate fruit bearing vegetable crops.
- 1.2 Demonstrate an understanding of the effects of environmental conditions on harvesting times.
- 1.3 Demonstrate an understanding of the influence of harvesting interval of leafy parts on the development of root harvest.

2. Harvest fruit bearing vegetables crops. Assessment Criteria

- 2.1 The harvestable stages fruit bearing vegetable crops are identified and harvested.
- 2.2 The effects of fruit ripeness on its storability are explained.
- 2.3 Post harvest ripening process is defined.
- 2.4 The effects of fruit ripeness on the storage requirements are explained.
- 2.5 Fruit bearing vegetable crops are cleaned and packed.

3. Harvesting leafy vegetables.

Assessment Criteria

- 3.1 The process of cutting leafy vegetables is defined.
- 3.2 Measures to prevent spread of post harvests diseases are applied.
- 3.3 The difference between continuous and once off harvest programme is defined.
- 3.4 Cleaning and sorting procedure for leafy vegetable crops is applied.

4. Harvesting root vegetables.

Assessment Criteria

- 4.1 The harvestable stage of the crop is identified.
- 4.2 Cleaning procedures common in root crop production is applied.
- 4.3 The process of post harvest treatments, storage and post harvest disease prevention is applied
- 4.4 Cleaning and sorting procedure for root crops is applied.

- 5. Harvesting dual purpose crops (those that render both leafy and root harvests) and juvenile vegetables (baby vegetables) for niche markets. *Assessment Criteria*
 - 5.1 Leaves on crops that render root harvest are identified and harvested.
 - 5.2 Optimal numbers of leaves that can be harvested without influencing the root harvest are selected.
 - 5.3 The effect of harvest timing on optimising harvests is explained.

ACCREDITATION PROCESS

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The assessment should ensure that all the specific outcomes, critical cross-field outcomes and essential embedded knowledge are assessed.

The specific outcomes must be assessed through observation of performance. Supporting evidence should be used to prove competency and specific outcomes only when they are not clearly seen in the actual performance.

Essential embedded knowledge must be assessed in its own right through oral and written evidence and cannot be assessed only through observation.

The specific outcomes and essential embedded knowledge must be assessed **in relation to each other**. If a qualifying learner is able to explain the essential embedded knowledge but is unable to perform the specific outcomes they should not be assessed as competent. Similarly if a qualifying learner is able to perform the specific outcomes but is unable to explain or justify their performance in terms of the essential embedded knowledge they should not be assessed as competent.

Evidence of the specified **critical cross-field outcomes** should be found both in performance and in the essential embedded knowledge.

Performance of specific outcomes must actively affirm target groups of qualifying learners and not unfairly discriminate against them. Qualifying learners should be able to justify their performance in terms of **these values**.

- 4. Assessors assessing a learner against the unit standard must be registered as an assessor with the relevant ETQA
- 5. Institution offering learning that will enable achievement of this unit standard must be accredited as a provider with the relevant ETQA.
- 6. Moderation of assessment will be overseen by the relevant ETQA according to moderation guidelines in the relevant qualification and the agreed upon ETQA procedures.

NOTES

CRITICAL CROSS-FIELD OUTCOMES

The following cross-field outcomes are addressed:

- 1. Identifying and solving problems regarding the layout and placement of a vegetable garden and its components, such as Identifying, caring maintenance and storage of equipment
- 2. Working effectively with other team members of a team responsibly for harvesting and growth manipulation by:
 - Preventing, not creating and resolving conflict
 - Understanding the relationship between effective team work and productivity
 - Understanding the effect of the negligent actions of one influences the team effort, morale and productivity
- 3. The importance of punctuality and productivity on profitability
- 4. Communication effectively using visual or language communication skills while harvesting vegetables and observing and communicating damage
- Demonstrate an understanding that the process is a set of related systems by explaining the importance of well manger seedling production and disorder management on productivity and thus job security
- 6. Contributing to the personal development of each learner participating as a responsible citizen by being aware of the effect of the importance of hygiene and being sensitive to the cultural diversity within a team

EMBEDDED KNOWLEDGE

Materials

Names of different type of vegetable production systems.

Names and characteristics of different vegetable crops types and their harvestable parts Procedures and methods of sorting, cleaning and handling vegetable produce after harvest Procedures and methods for caring of equipment

Processes

Procedures and rules for harvesting different crop types Produce care during harvest and post harvest handling Critical steps in the harvest procedure

Quality

Principals of quality and its relation to market prices Personal hygiene and the potential effects of marketability of the harvest

Range statement

The unit standard refers to an understanding of the methods of harvesting different groups of vegetable crops and their post harvest handling

Supplementary information

End

TITLE:	CONTROL P	ESTS AND DISEASES IN CROPS
UNIT STANDARD LEVEL:		1
CREDIT:		5
FIELD:		Agriculture and Nature Conservation
SUBFIELD:		Primary Agriculture: Farming

PURPOSE

Learners who have obtained this unit standard will be able to:

- control pests and diseases commonly found in a specific commodity.
- explain the effect pests and diseases have on yields
- explain how pests and diseases are transmitted and
- explain how to contain the spreading of pests and diseases

LEARNING ASSUMED TO BE IN PLACE

No prior learning is assumed to be in place

SPECIFIC OUTCOMES

- 1. Identify the evidence of pests in crops
- 2. Explain how to control pests
- 3. Use of chemicals to control pests
- 4. Identify diseased plants
- 5. Explain how diseases can be transmitted
- 6. Outline principles of disease control

SPECIFIC OUTCOMES AND ASSESSMENT CRITERIA

1. Identify evidence of pests in crops Assessment criteria

Evidence of pest infestations is identified Range: Pests included but not limited to:

- Leaf eaters e.g. locusts, army worm
- Leaf suckers e.g. green leave sucker.
- Leaf hopper, aphid, maize bug stem borers
- Soil pests e.g. white grubs, termites.

2. Explain how to control pests

Assessment criteria

Learner to explain what methods can be used to control pests **Range:** Examples:

- Ecological control i.e. make the "situation" less suitable for the pest e.g. use pest resistant seed, farm hygienically e.g. burning the old crop, do not bring in plant material from infected areas, plant at a time that pests are less active.
- **Biological control** involves naturally occurring and introduced living enemies of the pests **Chemical control** involves using insecticides
- **Integrated control** involves the most advantageous combination methods above.

3. Use chemicals to control pests Assessment criteria

Problems that can be encountered if chemicals are used **Range**: Example: Chemicals are costly, could be dangerous to the people applying it and to consumers, could damage through wind drift adjacent crops.

4. Identify diseased plants Assessment criteria

Diseased plants identified

Range: Retarded growth in plant, discolouring of leaves and stem of plants, mottling of leaves, leaves whither and curl, rotting of stem,

5. Explain how diseases can be transmitted Assessment criteria

Learner to explain how diseases can be transmitted **Range:** Examples: Planting effected plants, using contaminated equipment (e.g. planters, hoes), diseased volunteers, wind blown spores, contaminated soil, insects and rain

6. Outline principles of disease control

Assessment criteria

- 3.1 Knowledge of limiting spreading of diseases is demonstrated **Range**: Example: Selecting varieties that are disease resistant Selecting disease free seed Field to be planted to be free from volunteers at an early stage Stress free plants are disease resistant
- 3.2. Previous crop material removed from field
- 3.3. Diseased plants to be removed from the field and destroyed
- 3.4. Use of fungicides demonstrated

ACCREDITATION PROCESS

The assessment of qualifying learners against this standard should meet the requirements of established assessment principles.

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The **specific outcomes** must be assessed through observation of performance Supporting evidence should be used to prove competence of specific outcomes only when they are not clearly seen in the actual performance.

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Evidence of the specified **critical cross-field outcomes** should be found both in performance and in the essential embedded knowledge.

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RANGE STATEMENT

Crops are include but are not limited to sorghum, maize, groundnuts, sunflower, beans, soya beans, sugarcane, wheat, rye, barley, cotton and potatoes

NOTES

CRITICAL CROSS-FIELD OUTCOMES

The following critical cross-field outcomes are addressed:

- 1. The learner will be able to identify and solve problems that has to do with pests and diseases in crops
- 2. The learner will work effectively with others as a member of a team.
- 3. The learner will be able to organise and manage himself and his activities responsibly and effectively
- 4. The learner will be able to collect, analyse and critically evaluate information
- 5. The learner will communicate effectively when reporting on work matters
- 6. The learner will use science and technology effectively and critically (showing responsibility towards the environment and health of others)
- 7. The learner will demonstrate an understanding of the world as a set of related systems.

ESSENTIAL EMBEDDED KNOWLEDGE

- 1. Effect pests and diseases have on yields
- 2. Hygiene measures necessary to limit the spreading of pests and diseases
- 3. Importance of early identification of presence of pests and diseases in crops.
- 4. Use of chemicals to control pests and diseases to be last resort.
- 5. Benefits of alternate cropping
- 6. Meaning of: "the farm fence do not keep out pests or diseases"
- 7. Importance of obtaining seed/plants from a reliable source.

SUPPLEMENTARY INFORMATION

Terminology

Pests and diseases may be known by different names in different localities. Field is used as synonymous of land

Notes

It is important that the learner be made aware of the fact that everyone on the farm must be on the "look-out" for pests and diseases present in crops.

TITLE:	CONTROL P	ESTS AND DISEASES IN CROPS
UNIT STANDARD LEVEL:		1
CREDIT:		5
FIELD:		Agriculture and Nature Conservation
SUBFIELD:		Primary Agriculture: Farming

PURPOSE

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LEARNING ASSUMED TO BE IN PLACE

No prior learning is assumed to be in place

SPECIFIC OUTCOMES

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- 2. Explain how to control pests
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