



# PulseAfrika

**SAQA ID**

48975

**DURATION**

12 Months

**CREDITS**

120

**SETA**

AGRI

**NATIONAL CERTIFICATE:**

# **PLANT PRODUCTION**

NQF Level 2



## PURPOSE AND RATIONALE OF THE QUALIFICATION

The purpose of this qualification is to allow Junior Personnel and elected candidates to progress towards a position of farm labourer (operator) with specific reference to Plant Production. The contextualised purpose and usage of the qualification is as follows:

- A learner assessed against this qualification will have the necessary competence to participate as part of a working team, performing the agricultural processes as applicable to Plant production in an established and familiar context under general supervision.
- The Learner will be able to perform directed activities and take responsibility for the guiding others at lower level within a Plant Production context.
- Competency will be gained in any of the specialized sub-fields of Plant Production as specified under Areas Of Specialization (i.e. Vegetables, Fruit Production, Hydroponics, etc.)
- The learner will be able to take responsible decisions within a familiar range based on a sound understanding of the basic principles of agri-business and good agricultural practices, 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, all in an Plant Production context.
- The Learner will be able to carry out familiar procedures in a limited environment and will be able to adhere to the relevant safety, quality, hygiene and technical standards as applicable within the industry.
- In addition to the above, the learner will be well positioned to extend learning and practice into other sub-fields such as Plant Production and Mixed Farming, since such efforts will only require additional learning within the elective scope of other qualifications at this level.
- The learner will be well positioned to progress towards higher levels of Management and Technical production practices as defined by qualifications at the next level.
- Learners will be enabled to actively participate in the Primary Agricultural Sector through the production of quality agricultural products, enhancing the overall agricultural process and gain opportunities to access local, national and international agricultural markets.
- This qualification will allow qualifying learners to become economically active in farming practices that will have a direct impact on Local Economic Development through the production of food, the improvement of household food security and access to mainstream agriculture.
- Finally, Learners will be able to guide and direct others in terms of the implementation of smaller development projects within a Plant Production context.

## Rationale

This qualification provides learners the opportunity to gain a qualification in Plant Production. The range of typical learners that will enter this qualification will vary and includes:

- Junior farm labourers who wish to progress to the level of Labourer within farming operations in Plant Production;
- Farm owners, in possession of an equivalent qualification at NQF 1;
- Learners in possession of different levels of practical experience in farming operations,

which will be assessed and RPL'ed;

- Possible candidates for promotion identified by the community as leaders.
- Learners may come from both genders

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

This qualification will form the basis for learners to extend their learning into more specialised areas of plant production and provides the basis of the establishment of sustainable farming operations through the inclusion of a wide spectrum of competencies required by farmers in South Africa. Whilst technical production orientated competencies are ensured, other aspects such as agri-business and good agricultural practices are included in the range of competencies required by farmers in order to enable them to strive towards agricultural management standards and practices at higher levels.

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

## EXIT LEVEL OUTCOMES

Exit Level Outcomes are divided into five categories of competencies, namely:

- Fundamental Competencies
- Agri-business
- Good Agricultural Practices
- Plant Production; and
- Animal Production (This component has been included to ensure that Learners at this level is exposed

to a small component of animal production)

### Fundamental Competencies:

1. Apply various communication skills within the agricultural environment.
2. Apply mathematical calculations within the agricultural environment.
3. Collect and collate agricultural data and recognize and report on deviations.
4. Explain basic functions of the environment by recognising patterns and processes, knowing local resources and basic sustainable agricultural processes using environmental indicators

### Agri-business:

5. Apply basic skills in record keeping, storage, contaminant management and associated legislation when controlling input and stock.
6. Set goals and objectives related to production / conversion systems within an agricultural business.
7. Apply knowledge of the marketing principles within agriculture for a specific product or service.
8. Define and illustrate the gross margin statement, income statement, balance sheet and cash flow budget as well as the different cost aspects that one can find in a business.
9. Describe and understand the principles of Human Resources Management as applied
10. Explain the principles and factors influencing agricultural enterprise selection and production.

### Agricultural Practices:

11. Monitor and support the implementation of food safety and quality, production, environmental and social practices and awareness within the agricultural supply chain.
12. Demonstrate an understanding of the importance of water quality to agriculture and to monitor and maintain water quality using established procedures.
13. Apply basic practices to conserve the environment,

including natural resources.

14. Select basic equipment and implements that are appropriate to a combination of activities within a single agricultural process.
15. Carry out basic physical farm layout tasks including construction of rainwater harvesting and soil conservation structures in a small farm or garden environment.

### **Plant Production:**

16. Identify the basic structures and functions of a plant.
17. Soil is prepared according to the requirements of the crop.
18. Propagate plants.
19. Recognize common insects, disease symptoms and weeds and apply basic control measures
20. Apply agrochemical products in a safe, effective and responsible manner with consideration to the environment.
21. Plant a range of crops and monitor the correct establish of crops as well as ensuring that planting is placed and spaced as required.
22. Manipulate plants by applying a narrow range of techniques
23. Harvest crops.

### **Animal Production:**

24. Produce livestock whilst demonstrating an understanding of the environment and its relationship to sustainable livestock production.

## **ASSOCIATED ASSESSMENT CRITERIA**

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### **Fundamental Competencies:**

#### **1.**

- Oral reports are made or data is entered on pre-printed forms or screens.
- Instructions (including challenging, inappropriate or incorrect instructions) are received, evaluated, clarified and acted on.

- Workplace language, e.g. special purpose gestures and terminology to describe conditions, events, problems and actions is used.
- Meetings (describe conditions, state own opinions) are participated in.
- Information is collected from a variety of sources by recognising / reading / and/or using sensory cues.
- Information (collected from instruments, gauges, outputs, incidents, operations) is organised, summarised and responded to.
- Conditions or states are determined by measuring (i.e. temperature, size, mass, colour).

#### **2.**

- Numbers are used to count and measure.
- A calculator is used to add, subtract, divide or multiply.
- Simple fractions and decimals are read and written.
- Simple ratios / percentages are applied as part of an instruction.
- Proper use is made of number sequence, i.e. batch numbers.
- Shapes are recognised.
- Money is calculated in Rands and cents (related to pay, deductions, price, etc.)
- Business related application are applied.
- Underpinning natural science principles are applied.

#### **3.**

- Collected agricultural data is collated and recorded correctly and accurately.
- Data is current and available when needed.
- Methods of collating data are explained.
- Health and safety measures are adhered to.

#### **4.**

- Basic environmental patterns and processes are related to sustainable use of agricultural land.
- Limitations of natural resources within the agricultural environment are recognized.

- Principles of sustainable agriculture are applied.
- Measures to prevent environmental degradation indicators are implemented.

### **Agri-business:**

#### **5.**

- Storage space is prepared to receive stock through cleaning and disinfecting, identification of appropriate space for storage and prevention of contamination (direct and cross contamination).
- Accurate records are kept by applying basic inventory taking, issuing and receiving of stock, identification of re-order level, reporting on stock levels and re-order prompting skills.
- Legal issues regarding contracts, penalties and obligations as pertaining to input supply is explained.
- Safety regulations are applied.

#### **6.**

- The concept of optimal usage of resources and optimisation of outputs are explained.
- Tasks are appropriately scheduled.
- Human resources in terms of skills required, number of labourers required to execute tasks are identified.
- Goals and objectives related to systems within an agricultural business are set.

#### **7.**

- The value of marketing research is explained.
- The marketing mix (product, promotion, place, price and people) to a selected enterprise is applied.
- Limited and shared responsibility for the marketing budget is taken.
- The importance of effective distribution channels is explained.

#### **8.**

- Direct and indirect costs, as well as fixed and variable costs are explained.
- An income statement, the balance sheet and a cash-

flow budget and statement are explained.

- Complete a template, showing and calculating the above financial calculations.

#### **9.**

- Human resources philosophy, policies, rules, procedures and disciplinary environment applicable at farm level are explained.
- Employment rights and responsibilities are explained.
- Contracts and agreements are explained and interpreted.

#### **10.**

- Natural resources, infrastructural requirements and stock for the selection of a sustainable enterprise are recognized and described.
- Production cycles are recognised and described.
- Harvesting and post-harvesting practices are described.

### **Agricultural Practices:**

#### **11.**

- Non-conformances and deviations on food safety, quality and the environment practices are distinguish and reported on.
- Risk factors in food safety and quality are identified and explained.
- The importance of a systematic filing system for records in accordance with GAP (good agricultural practices) and GMP (good manufacturing practices) principles are explained.

#### **12.**

- Basic water quality tests and analyses are performed and monitored.
- Maintenance tasks on certain operational technical systems related to water quality are performed.
- The importance of water quality to agriculture is explained.

### 13.

- The principles of natural resource management are explained.
- Invasive alien plant species and noxious weeds are eradicated.
- On farm fire breaks and/or fire guards are established.
- Eroded areas and potential soil erosion are identified and control measures are suggested.
- The impact of the local climate and micro-climate is explained.
- Harmful and useful fauna and flora and their purpose and/or effect on the farm is explained.

### 14.

- Appropriate tools, implements and/or equipment, to use in a specified combination of activities within a single agricultural process are selected from a limited range.
- Malfunctioning tools and equipment are identified and minor repairs are performed.
- Safety measures in the use of agricultural equipment and implements are explained and adhered to.

### 15.

- Veld, planted pasture and arable land are recognized.
- Soil physical characteristics are related to land capability.
- A swale (level contour bund), using a simple water level is constructed.
- Swales and soil erosion prevention structures are maintained.

## Plant Production:

### 16.

- The basic parts which make up a seed, different root systems, different types of leaves, the flower as well as different stem types and its basic function are identified and described.
- The different types and parts of a fruit are identified

and described.

### 17.

- Appropriate quantity and quality of required soil nutrient applications are measured and prepared.
- The soil is prepared according to the requirements of the agricultural crop.
- Basic symptoms of nutritional deficiencies are identified and explained.
- The properties of soil are explained.

### 18.

- Environmental requirements for propagation in a specific agricultural production context are described
- Appropriate propagation methods are selected and applied safely.
- Successful and unsuccessful propagation are distinguished and rectified.
- Health and safety precautions are adhered to.

### 19.

- Common insects and types of weeds associated with the specific agricultural enterprise are identified and described.
- Common symptoms of diseases are identified.
- Old and new damage are distinguished and reported.
- Monitoring of pests (scouting) and decrease/increase in pest levels after spraying or other control measures were applied, are explained.

### 20.

- A pre-application plan is implemented.
- Pest control products are mixed at the correct dose rate.
- Pest control product is applied to produce/crop or farm animals.
- Necessary safety and health precautions whilst applying pest control products are applied and

emergencies are dealt with.

- Post-application procedures are applied.
- The process, problems and unusual occurrences are monitored and reported.

### 21.

- Appropriate tools and equipment used in the planting of a specific crop are selected, used and cared for.
- Handling of planting material is monitored for successful establishment according to required procedures for a specific crop.
- The impact of environmental conditions on the successful establishment of crops is explained.
- The planting of plant material at correct spacing between rows, and individual plants, and at the correct depth for specific plant species are monitored.

### 22.

- Various manipulation techniques are explained.
- Framework development principles as part of plant manipulation methods are applied.
- A range of flower and fruit manipulation methods are applied.
- Pruning techniques as a vegetative plant manipulation method are applied.
- Safety and hygiene measures are applied.

### 23.

- Sampling for maturity indexing according to established and familiar procedures are done.
- Health, hygiene and safety measures are applied during the harvesting procedure.
- Requirements disposal of waste are adhered to.

## Animal Production:

### 24.

- Environmental factors influencing the veld are identified and described.

- Environmental factors that influence livestock selection are analysed and described.
- Supplementary feeding options for livestock production are identified and described.
- Beneficial and harmful organisms that influence livestock production are identified and described. [Range: emphasis on locally important parasites and diseases]
- The effects of agricultural management practices on the sustainability of the environment identified and assessed.

## 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.

Generic nature of the unit standards and the context of assessment:

Because of the diverse nature of the primary agricultural sector, a generic approach to developing

the unit standards has been adopted. This resulted in generic unit standards which should be contextualised within a specific area of operation, a specific agricultural commodity or specific agricultural system. Assessment, therefore, should not be divorced from the context of application. All assessment tools, such as guides as well as the interpretation of unit standards and specifically range statements, should be contextualised within

a specific agricultural commodity and/or system.

### INTEGRATED ASSESSMENT:

It is assumed that a learner entering a programme leading to this qualification has achieved numeracy, literacy and communication equivalent to NQF 1 and technical skills pertaining to agricultural activities equivalent to NQF 1.

| CORE MODULES                                     | Unit Standard   | NQF | credits |
|--|---|-----|---------|
|  | Assess the influence of the environment on sustainable livestock production   | 1   | 4       |
|  | Apply crop protection and animal health products effectively and responsibly  | 2   | 4       |
|  | Apply layout principles for conservation and infrastructure                   | 2   | 5       |
|  | Apply marketing principles in agriculture                                     | 2   | 2       |
|  | Apply plant manipulation methods  | 2   | 4       |
|  | Apply sustainable farming practices to conserve the ecological environment    | 2   | 5       |
|  | Control inputs and stock in agribusiness                                      | 2   | 2       |
|  | Control pests, diseases and weeds on all crops effectively and responsibly    | 2   | 2       |
|  | Define and understand production systems and production management            | 2   | 2       |
|  | Demonstrate an understanding of plant propagation                             | 2   | 3       |
|  | Explain principles of human resources management and practices in agriculture | 2   | 2       |
|  | Harvest agricultural crops: Procedures  | 2   | 4       |
|  | Identify and recognise factors influencing agricultural enterprise selection  | 2   | 2       |
|  | Illustrate and understand the basic layout of financial statements            | 2   | 2       |
|  | Monitor the establishment of a crop   | 2   | 4       |
|  | Monitor water quality   | 2   | 3       |
| Operate and maintain specific irrigation systems | 2   | 3   |         |



|                            |   |            |                |
|----------------------------|---|------------|----------------|
| <b>CORE</b>                | Operate and support a food safety and quality management system in the agricultural supply chain  | 2          | 2              |
|                            | Understand basic soil fertility and plant nutrition   | 2          | 5              |
|                            | Understand the structure and functions of a plant   | 2          | 5              |
|                            | Utilise and perform minor repair and maintenance tasks on implements, equipment and infrastructure  | 2          | 5              |
|                            |   |            | <b>70</b>      |
| <b>Unit Standard</b>       |   | <b>NQF</b> | <b>credits</b> |
| <b>FUNDAMENTAL MODULES</b> | Access and use information from texts   | 2          | 5              |
|                            | Apply basic knowledge of statistics and probability to influence the use of data and procedures in order to investigate life related problems                             | 2          | 3              |
|                            | Demonstrate understanding of rational and irrational numbers and number systems   | 2          | 3              |
|                            | Maintain and adapt oral communication   | 2          | 5              |
|                            | Measure, estimate and calculate physical quantities and explore, describe and represent geometrical relationships in 2-dimensions in different life or workplace contexts | 2          | 3              |
|                            | Monitor, collect and collate agricultural data  | 2          | 2              |
|                            | Recognise and identify the basic functions of the ecological environment  | 2          | 4              |
|                            | Use language and communication in occupational learning programmes  | 2          | 5              |
|                            | Use mathematics to investigate and monitor the financial aspects of personal and community life   | 2          | 2              |
|                            | Work with a range of patterns and functions and solve problems  | 2          | 5              |
|                            | Write for a defined context   | 2          | 5              |
|                            |   |            | <b>37</b>      |

## CONTACT US

**T:** 011 568 6629

**E:** info@apexu.co.za

**A:** 100 West Street, Block C. Wierda Valley, Sandton.

**apexu.co.za**