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# GOVERNMENT NOTICES

## SOUTH AFRICAN QUALIFICATIONS AUTHORITY

**No. 838** **16 July 2004**

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*Established in terms of Act 58 of 1995*

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

**Secondary 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. The qualification and unit standards can be accessed via the SAQA web-site at **www.saqa.org.za** . Copies may also be obtained from the Directorate of Standards Setting and Development at the SAQA offices, Hatfield Forum West, 1067 Arcadia Street, Hatfield, Pretoria.

Comment on the qualification and unit standards should reach SAQA at the **address below and no later than 16 August 2004.** All correspondence should be marked **Standards Setting – SGB Secondary Agriculture** and addressed to

The Director: Standards Setting and Development
SAQA
Attention: M.D. Mphuthing
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**JOE SAMUELS**
**DIRECTOR: STANDARDS SETTING AND DEVELOPMENT**

## Further Education and Training Certificate: Seed Research and Development at NQF Level 4

**Field:** Agriculture and Nature Conservation

**Sub-field:** Secondary Agriculture

**NQF Level:** 4

**Credits:** 135

### Rationale for the Qualification

This Qualification is aimed at people who are working in the seed industry and who would like to pursue a career in the seed industry. It is aimed at formalising the skills required in seed research and development to facilitate career-pathing and to provide access to new entrants. The qualification provides learners with access to advanced learning in specialised areas within the seed industry. It also provides learners with the necessary background knowledge and skills to enhance the NQF's principle of portability within other agricultural industries.

Through the above, the Qualification will address one of the key priorities of the Department of Labour in the reduction of unemployment and under employment. It will assist in creating job opportunities.

### Purpose of the Qualification

This Qualification is registered at level 4 on the National Qualification Framework. It provides learners with the opportunity to obtain competence in seed research and development, including aspects such as the execution of seed trials, receipt and distribution of parent seed, contract of seed growers; conducting controlled pollination; sampling a seed lot; preparing germplasm for planting to ensure the quliaty of seed yield meets expectations. The qualification will provide learners with the technical competence to perform to industry standards.

This Qualification is an entry-level qualification into seed research and development, enabling learners to progress in other fields of learning in the agricultural industry and providing articulation to higher education and learning.

The Qualification focuses on the skills, knowledge, and values to ensure competence at this level of learning. The intention is to enhance the potential of people, in order for them to grow and develop. This qualification will furthermore add value to the individuals, their workplace and the economy as a whole.

### Rules of combination

To obtain this Qualification, the learner must complete 74 fundamental, 61 core Unit Standards to total 135 credits.

### Access to the qualification

The only restriction to access this Qualification is outlined in the learning assumptions listed below. There are no restrictions placed on learners, which may prevent them from gaining access to this Qualification.

**Learning assumed to be in place**

Learners will have:

- attained competency in mathematics, literacy and communication skills at NQF 3 or equivalent, except the second language that is on NQF level 2 or
- demonstrated competence at that level through recognition of prior learning

**Exit level Specific Outcomes and associated assessment criteria**

**1. Exit Level Outcome**
Demonstrate a general knowledge of the seed industry

**Associated Assessment Criteria**

- Consequences of not understanding seed as a living organism are explained.
- The importance of correctly applying relevant seed rules and regulations are explained.
- Reasons for using the correct processing equipment in the workplace are explained.
- The impact of various processes on the physiology and quality of seed are explained.

**2. Exit Level Outcome**
Receive distribute parent seed and execute seed trials

**Associated Assessment Criteria**

- Consequences of not adhering to plant husbandry procedures according to work site procedures are explained.
- Implications of not identifying and informing relevant parties of deviations according to work site procedures are explained.
- Consequences of not adhering to planting instructions according to work site procedures are explained.
- Consequences of not labelling the material correctly according to work site procedures are explained.
- Reasons for correct disposal of material are understood and explained.
- Consequences of not obtaining correct parent seed according to work site procedures are explained.
- Implications of not identifying and informing relevant parties of variations according to work site procedures are explained.
- Consequences of not completing documentation according to work site procedures and statutory requirements are explained.

**3. Exit Level Outcomes**
Contract seed growers and conduct controlled pollination.

**Associated Assessment Criteria**

- Consequences of not obtaining accurate production information according to work site procedures are explained.
- Consequences of not adhering to legal requirements when completing the contract are explained.
- Implications of not identifying and informing relevant parties of variations according to work site procedures are explained.
- Consequences of not selecting appropriate production fields and hectares are explained.
- Consequences of not selecting suitable growers are explained.
- Consequences of not completing documentation according to work site procedures and legal requirements are explained.
- Consequences of not obtaining or adhering to the pollination plan and instructions according to work site procedures are explained.

- Implications of not identifying and informing relevant parties of deviations from the pollination plan according to work site procedures are explained.
- Consequences of not marking and labelling the pollinated plants correctly according to work site procedures are explained.

**4. Exit Level Outcome**
Sample, certify seed lot and inspect seed unit

**Associated Assessment Criteria**

- Importance of drawing a representative sample is explained.
- Implications of not identifying deviations on seed are explained.
- Importance of adhering to health and safety regulations when drawing a sample is explained.
- Importance of advising accurately on corrective action to be taken according to work site procedures is explained.
- Importance of advising accurately on the use of appropriate equipment according to work site procedures is explained.
- Implications of not identifying and reporting on deviations and informing relevant parties according to work site procedures are explained.
- Variations in the seed unit are identified and handled according to work site procedures.
- Advice on correctly selecting and using equipment is provided in accordance with standard operating procedures and statutory requirements.

**International comparability**

A thorough search was done to find international qualifications and unit standards in seed processing countries specific to seed research and development, but no formal unit standards and qualifications could be found.

However, areas such as seed production and technology were compared to State Universities. These were:

- PLS 556 Seed Production and Technology Course

(Prof TeKroney – University of Kentucky)

- HCS 694 Seed Production course

(Ohio State University)

- AGN 4223/6223 Seed Production Course

(Mississippi State University)

A comparison of the above Qualifications was undertaken and various literary sources consulted before incorporating the best practice points in the generation of this Qualification's Unit Standards.

**Integrated Assessment Criteria**

Unit Standards associated with this Qualification must be used to assess specific and critical cross-field Specific Outcomes. Assessment should focus in an integrated way on determining the competence of the learner in terms of the overall purpose and title of this Qualification.

The term integrated assessment also implies that the theoretical and practical components should be assessed together and assess combinations of practical, applied, foundational and reflective competencies.

Assessment activities should be done in real workplace situations and where simulations or role-plays are used, there should be supporting evidence to show that the learner is able to display the competencies to the real work situation.

All assessments should be conducted in line with the following documented principles of assessment: appropriateness, fairness, manageability, integration into work of learning, validity, direct, authentic, sufficient, systematic, open and consistent.

Learners wishing to be assessed will need to provide evidence of the following:

- Verbal and written explanations of reasons for adhering to operational and work site procedures as well as statutory requirements, adhering to specific sequence of operations, identifying deviations, taking corrective actions and recording relevant data, and reporting deviations outside the jobholder's responsibility.
- Demonstrations of a range of operational actions relating to applying quality control in receipt and distribution of parent seed, execution of trials, conducting controlled pollination, sampling of seed lots, determining stock levels and applying general safety in the work place. Learners will also demonstrate an understanding of the Seed Industry and the relevant workplace.
- Oral or written questioning regarding the reflective competencies within the qualification:

If the identifying and solving of problems, team work, organising one-self, the using of applied science, the implication of actions and reactions in the world as a set of related systems are not clear from the observation a method of oral questioning or a cases study should be applied to determine the whole person development and integration of applied knowledge and skills.

- A portfolio of evidence is required to prove the practical, applied and foundational competencies of the learner that may include trial plans, trial results and pollination programmes.
- Assessors and moderators should develop and conduct their own integrated assessment by making use of a range of formative and summative assessment methods. Assessors should assess and give credit for the evidence of learning that has already been acquired through formal, informal and non-formal learning and work experience.
- Unit standards in the qualification must be used to assess specific and critical cross-field Specific Outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflective competencies.

**Recognition of prior learning (RPL)**

This Qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience. Where RPL is required the learner will need to prove competence in that specific area in order to obtain recognition of that skill and knowledge.

Evidence can be presented in a variety of forms, including international or previous local qualifications, reports, testimonials mentioning functions performed, work records, portfolios, videos of practise and performance records. The assessment methods and tools to be used to assess Prior Learning shall be decided upon jointly by the assessor and the learner.

**Articulation possibilities**

This Qualification lends itself to both vertical and horizontal articulation possibilities. These possibilities ensure both mobility and progression for the learner in other fields of learning such as seed production and seed processing and packaging control.

An example of vertical articulation possibilities:
National Diploma in Farm Management at NQF 5 (ID 20291)

An example of horizontal articulation possibilities:
National Certificate in Seed Production at NQF 4

**Moderation Options**

Anyone assessing a learner against these unit standards must be registered as an assessor with the relevant ETQA.

Any institution offering learning that will enable achievement of these unit standards or will assess these unit standards must be accredited as a provider with the relevant ETQA. Moderation of assessment will be overseen by the relevant ETQA according to the moderation guidelines in the relevant qualification and the agreed ETQA procedures.

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

## TITLES OF UNIT STANDARDS AT NQF LEVEL 3

1. Acquire a general knowledge of the seed industry
2. Receive and distribute parent seed

## TITLES OF UNIT STANDARDS AT NQF LEVEL 4

1. Contract seed growers
2. Certify a seed unit
3. Prepare a germplasm for planting
4. Sample a seed lot
5. Determine seed stock levels
6. Conduct controlled pollination
7. Conduct a field inspection of a seed unit

## UNIT STANDARDS' TITLES AND SPECIFIC OUTCOMES AT NQF LEVEL 3

### 1. TITLE: Acquire a general knowledge of the seed industry

Specific Outcome 1.1: Demonstrate knowledge of the complexities of living seed.
Specific Outcome 1.2: Demonstrate knowledge of the operations of the seed industry.
Specific Outcome 1.3: Demonstrate knowledge of seed legislation.
Specific Outcome 1.4: Demonstrate knowledge of seed technology and physiology.

### 2. TITLE: Receive and distribute parent seed

Specific Outcome 2.1: Plan for seed receipt
Specific Outcome 2.2: Distribute the parent seed
Specific Outcome 2.3: Complete receipt and distribution of parent seed

## UNIT STANDARDS' TITLES AND SPECIFIC OUTCOMES AT NQF LEVEL 4

### 1. TITLE: Contract seed growers

Specific Outcome 1.1: Plan for seed production
Specific Outcome 1.2: Contract growers
Specific Outcome 1.3: Complete preparation for seed production

### 2. TITLE: Conduct controlled pollination

Specific Outcome 2.1: Prepare for pollination of trials
Specific Outcome 2.2: Execute pollination of trials
Specific Outcome 2.3: Complete pollination process

### 3. TITLE: Sample a seed lot

Specific Outcome 3.1: Prepare for drawing a seed sample
Specific Outcome 3.2: Draw a seed sample
Specific Outcome 3.3: Divide the seed sample
Specific Outcome 3.4: Complete the seed sampling process

### 4. TITLE: Determine seed stock levels

Specific Outcome 4.1: Prepare for determining stock levels
Specific Outcome 4.2: Determine stock levels
Specific Outcome 4.3: Complete process of determining stock levels
Specific Outcome 4.4: Restore work area

**5. TITLE: Prepare germplasm for planting**

Specific Outcome 5.1: Prepare germplasm for planting
Specific Outcome 5.2: Packaging of germplasm
Specific Outcome 5.3: Complete preparation of germplasm

**6. TITLE: Certify a seed unit**

Specific Outcome 6.1: Prepare for certification inspection
Specific Outcome 6.2: Inspect the seed unit
Specific Outcome 6.3: Conclude inspection process
Specific Outcome 6.4: Complete unit certification

**7. TITLE: Conduct a field inspection of a seed unit**

Specific Outcome 7.1: Prepare for inspection
Specific Outcome 7.2: Inspect seed unit
Specific Outcome 7.3: Implement corrective action
Specific Outcome 7.4: Complete inspection process

| National Certificate: Seed Research and Development at NQF level 4 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | NQF Level 3 | ID No | Credits | NQF Level 4 | ID No | Credits | Total |
| Fundamental | Accommodate audience and context needs in oral communication | 8968 | 5 | Engage in sustained oral communication and evaluate spoken texts | 8974 | 5 | |
| | Interpret and use information from texts | 8969 | 5 | Read, analyse and respond to a variety of texts | 8975 | 5 | |
| | Write texts for a range of communicative contexts | 8970 | 5 | Write for a wide range of contexts | 8976 | 5 | |
| | Use language and communication in occupational learning programmes | 8973 | 5 | Use language and communication in occupational learning programmes | 8979 | 5 | |
| TOTAL | **Language/Communication** | | **20** | **Language/Communication** | | **20** | 40 |
| Fundamental | Operate a computer | 7786 | 8 | Use mathematics to investigate and monitor the financial aspects of personal, business and national issues | 9014 | 6 | |
| | Produce and use spreadsheets for business | 7567 | 5 | Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life-related problems | 9015 | 6 | |
| | Produce word processing documents for business | 7570 | 5 | Measure, estimate and calculate physical quantities and explore, critique and prove geometrical relationships in two and three dimensional space in the life and workplace of the adult with increasing responsibility | 9016 | 4 | |
| TOTAL | | | **18** | **Mathematics/Numeracy** | | **16** | 34 |
| Core | Acquire a general knowledge of the seed industry | | 11 | Contract seed growers | | 6 | |
| | Receive and distribute parent seed | | 5 | Certify a seed unit | | 5 | |
| | | | | Prepare germplasm for planting | | 7 | |
| | | | | Sample a seed lot | | 8 | |
| | | | | Determine seed stock levels | | 4 | |
| | | | | Conduct controlled pollination | | 6 | |
| | | | | Conduct a field inspection of a seed unit | | 9 | |
| TOTAL | | | **16** | | | **45** | 61 |
| **Total Credits for Qualification - 135** | | | | | | | |

## National Certificate in Seed Analysis at NQF Level 3

**Field:** Agriculture and Nature Conservation

**Sub-field:** Secondary Agriculture

**NQF Level:** 4

**Credits:** 122

### Rationale for the Qualification

This Qualification is aimed at people who are working in the seed industry or who would like to pursue a career in the seed industry. It is aimed at formalising the skills required in seed analysis to facilitate career-pathing and to provide access for new entrants. The Qualification provides learners with access to advanced learning in specialised areas within the seed industry. It also provides learners with the necessary background knowledge, skills and attitudes to achieve the NQF principle of portability within other sub-sectors of the agricultural industries.

Through the above, the Qualification will address one of the key National priorities in the reduction of unemployment and under employment. It will assist in creating job opportunities.

### Purpose of the Qualification

This Qualification is registered at level 3 on the National Qualification Framework. It provides learners with the opportunity to obtain competence in seed analysis, including the receipt and storage of seed samples as well as the performance of various tests to determine the quality of seed. The Qualification will provide learners with the technical competence to perform to local and international industry standards.

This Qualification is an entry-level Qualification into seed analysis enabling learners to progress into Laboratory and Seed Quality Management and other fields of learning in this sub-sector of the agricultural industry, providing articulation to higher education and learning.

The Qualification focuses on the skills, knowledge, and values to ensure competence at this level of learning. The intention is to enhance the potential of people, in order for them to grow and develop. This Qualification will furthermore add value to the individuals, their workplace and the economy as a whole.

### Rules of combination

To obtain this Qualification, the learner must complete 36 fundamental, 71 core and select 15 elective Unit Standards to total 122 credits.

### Access to the Qualification

There are no restrictions placed on learners, which may prevent them from gaining access to this Qualification. Only the learning assumptions outlined below determine the requirements for access to this Qualification.

**Learning assumed to be in place**

It is assumed that learners wishing to enter a programme leading to this qualification have demonstrated competence in mathematics, languages and communication at NQF 2.

**Exit level outcomes and associated assessment criteria**

**1. Exit Level Outcome**

Demonstrate understanding of the introduction to the workplace within the seed industry.

**Associated Assessment Criteria**

- Consequences of not identifying and reporting unsafe working practices and potentially dangerous situations in the work are explained.
- Purposes of maintaining sound customer relations and service excellence are recalled and explained.
- Reasons for identifying and handling hazardous substances in the work place are explained.
- Consequences of not adhering to company norms, values and ethics are explained.

**2. Exit Level Outcome**

Receive seed samples and analyse the physical purity, germination and viability of seed

**Associated Assessment Criteria**

- Importance of verifying delivery documentation and labelling is explained.
- Consequences of not acquiring a representative sample are explained.
- Implications of not identifying deviations on seed are explained.
- Consequences of not evaluating seed according to work site procedures are explained.
- Consequences of not labelling the consignment correctly according to work site procedures and statutory requirements are explained.
- Consequences of incorrect transfer according to work site procedures are explained.
- Consequences of not completing documentation according to work site procedures and statutory requirements are explained.

**3. Exit Level Outcome**

Determine the moisture level of seed and store seed samples

**Associate Assessment Criteria**

- Consequences of not sub-sampling accurately according to the operational procedures are explained.
- Consequences of not using clean and dry equipment are explained.
- Consequences of not identifying and reporting findings accurately according to the operational procedures and work site procedures are explained.
- Consequences of not reporting deviations are explained.
- The importance of using the correct equipment and methods for determining moisture content according to work site procedures are explained
- The importance of keeping records according to the operational procedures, work site procedures and statutory requirements are explained.

**4. Exit Level Outcome**

Sample a seed lot, test the vigour of seed and conduct maintenance of seed testing equipment.

**Associated Assessment Criteria**

- Consequences of not sub-sampling accurately according to the operational procedures are explained.
- Consequences of not using correct sanitary procedures according to work site procedures are explained.
- The importance of using the correct equipment, sub-strata and methods for planting and evaluating according to work site procedures are explained
- The importance of recording the different fractions according to the operational procedures and work site procedures are explained.
- The importance of retaining the sample and prescribed records according operational procedures, work site procedures and statutory requirements are explained.
- The reasons for regular inspection and maintenance of seed testing equipment, are explained.
- Consequences of not informing appropriate maintenance personnel to perform repairs, are explained.
- Consequences of inaccurate calibration of equipment are explained.
- Implications of not maintaining accurate maintenance records are understood.
- Reasons for adhering to health and safety requirements are understood.

**International comparability**

Comparisons were done against qualifications in the United States. These were:

- PLS 556 Seed Production and Technology Course

(Prof TeKroney – University of Kentucky)

- HCS 694 Seed Production course

(Ohio State University)

- AGN 4223/6223 Seed Production Course

(Mississippi State University)

- HCS 420 Seed Science

(Ohio State University)

- HCS 694 Seed Physiology

(Ohio State University)

- AGN 4243/6243 Seed Technology

(Mississippi State University)

- AGN 8203 Seed Physiology

(Mississippi State University)

A comparison of the above Qualifications was undertaken, considering the regulations for seed testing set by the International Seed Testing Association (ISTA). The best practice points were incorporated and used in the generation of this qualification's unit standards.

The South African Qualification is focused more on the basic analysis of seed and does not include the in-depth knowledge of plant pathology, which can be gained at a local tertiary institution at a higher level

of learning. This basic and practical level of learning provides an ideal opportunity for a person to start a career in seed analysis.

**Integrated Assessment Criteria**

Unit standards associated with this qualification must be used to assess specific and critical cross-field outcomes. Assessment should focus in an integrated way on determining the competence of the learner in terms of the overall purpose and title of this qualification.

The term integrated assessment also implies that the theoretical and practical components should be assessed together and assess combinations of practical, applied, foundational and reflexive competencies.

Assessment activities should be done in real workplace situations and where simulations or role-plays are used, there should be supporting evidence to show that the learner is able to display the competencies to the real work situation.

All assessments should be conducted in line with the following documented principles of assessment: appropriateness, fairness, manageability, integration into work of learning, validity, direct, authentic, sufficient, systematic, open and consistent.

Learners wishing to be assessed will need to provide evidence of the following:

- Verbal and written explanations of reasons for adhering to operational and work site procedures as well as statutory requirements, adhering to specific sequence of operations, identifying deviations, taking corrective actions and recording relevant data, and reporting deviations outside the jobholder's responsibility.

- Demonstrations of a range of operational actions relating to applying quality control in all aspects of seed analysis in the work place. Learners will also demonstrate an understanding of the Seed Industry and the relevant workplace.

- Oral or written questioning regarding the reflective competencies within the Qualification:
  If the identifying and solving of problems, team work, organising one-self, the using of applied science, the implication of actions and reactions in the world as a set of related systems are not clear from the observation, a method of oral questioning or a case study should be applied to determine the whole person development and integration of applied knowledge and skills.

- A portfolio of evidence is required to prove the practical, applied and foundational competencies of the learner that may include seed analysis worksheet/s.

- Assessors and moderators should develop and conduct their own integrated assessment by making use of a range of formative and summative assessment methods. Assessors should assess and give credit for the evidence of learning that has already been acquired through formal, informal and non-formal learning and work experience.

- Unit standards in the qualification must be used to assess specific and critical cross-field outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflective competencies.

**Recognition of prior learning (RPL)**

This qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience. Where RPL is required the learner will need to prove competence in that specific area in order to obtain recognition of that skill and knowledge.

Evidence can be presented in a variety of forms, including international or previous local Qualifications, reports, testimonials mentioning functions performed, work records, portfolios, videos of practise and performance records. The assessment methods and tools to be used to assess Prior Learning shall be decided upon jointly by the assessor and the learner.

**Articulation possibilities**

This Qualification lends itself to vertical articulation possibilities. These possibilities ensure both mobility and progression for the learner in other fields of learning within the agricultural industry and will provide the learner with an opportunity to progress at a higher level of learning.

This Qualification articulates with the following Qualifications:

Further Education and Training Certificate: Seed Research and Development: Level 4

Further Education and Training Certificate: Seed Marketing: Level 4

**Moderation Options**

Anyone assessing a learner against this Qualification and the associated Unit Standards must be registered as an assessor with the relevant ETQA.

Any institution offering learning that will enable achievement of this Qualification and the Unit Standards or will assess the same must be accredited as a provider with the relevant ETQA. Moderation of assessment will be overseen by the relevant ETQA according to the moderation guidelines in this Qualification and the agreed upon ETQA procedures.

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

## NEW UNIT STANDARD TITLES AT NQF LEVEL 2

1. Title: Acquire an introductory knowledge of the seed industry
2. Title: Demonstrate an understanding of the introduction to the workplace within the seed industry

## NEW UNIT STANDARD TITLES AT NQF LEVEL 3

1. Title: Receive a seed sample
2. Title: Analyse the physical purity of seed
3. Title: Determine the moisture level of seed
4. Title: Receive seed
5. Title: Store seed samples
6. Title: Conduct maintenance of seed testing equipment

## NEW UNIT STANDARDS TITLES AT NQF LEVEL 4

1. Title: Analyse the germination of seed
2. Title: Analyse the quality of seed
3. Title: Test the vigour of seed
4. Title: Sample a seed lot

## UNIT STANDARDS TITLES AND SPECIFIC OUTCOMES AT NQF LEVEL 2

### 1. TITLE: Acquire an introductory knowledge of the seed industry

Specific Outcome 1.1: Demonstrate an understanding of the role and importance of seed
Specific Outcome 1.2: Demonstrate an understanding of the complexities of living seed
Specific Outcome 1.3: Demonstrate an understanding of the quality components of seed
Specific Outcome 1.4: Demonstrate an understanding of the principles applied to seed storage
Specific Outcome 1.5: Demonstrate a basic awareness of legislation applicable to the seed industry

### 2. TITLE: Demonstrate an understanding of the introduction to the workplace within the seed industry

Specific Outcome 2.1: Prepare for introduction to seed industry
Specific Outcome 2.2: Understand the nature of the seed industry
Specific Outcome 2.3: Identify and recall basic principles of safety in the workplace
Specific Outcome 2.4: Identify and recall basic principles of work ethics
Specific Outcome 2.5: Complete introduction to seed industry

## UNIT STANDARDS TITLES AND SPECIFIC OUTCOMES AT NQF LEVEL 3

### 1. TITLE: Receive a seed sample

Specific Outcome 1.1: Prepare for receipt of samples
Specific Outcome 1.2: Register a seed sample
Specific Outcome 1.3: Complete the receiving process

**2. TITLE: Analyse the physical purity of seed**

Specific Outcome 2.1: Prepare the work for analysis
Specific Outcome 2.2: Prepare working sample and relevant documentation
Specific Outcome 2.3: Analyse and retain components of working sample
Specific Outcome 2.4: Retention of submitted sample
Specific Outcome2.5: Complete physical seed-purity analysis process

**3. TITLE: Determine the moisture level of seed**

Specific Outcome 3.1: Prepare the work are for analysis
Specific Outcome 3.2: Prepare moisture sample and relevant documentation
Specific Outcome 3.3: Drying the working sample
Specific Outcome 3.4: Determine moisture content of sample
Specific Outcome 3.5: Complete the moisture determination test

4. TITLE: Receive seed

Specific Outcome 5.1: Prepare for receipt of seed
Specific Outcome 5.2: Verify legitimacy and mass/quantity of consignment
Specific Outcome 5.3: Obtain a representative seed sample
Specific Outcome 5.4: Transfer of seed
Specific Outcome 5.5: Complete seed receiving process

**5. TITLE: Store seed samples**

Specific Outcome 6.1: Prepare for storage of seed samples
Specific Outcome 6.2: Store seed samples
Specific Outcome 6.3: Withdrawal of sub samples
Specific Outcome 6.4: Disposal of seed samples
Specific Outcome 6.5: Complete storage process

**6. TITLE: Conduct maintenance of seed testing equipment**

Specific Outcome 7.1: Establish maintenance conditions
Specific Outcome 7.2: Test and calibrate seed testing equipment
Specific Outcome 7.3: Perform maintenance on seed testing equipment
Specific Outcome 7.4: Complete the maintenance on seed testing equipment

## UNIT STANDARDS TITLES AND SPECIFIC OUTCOMES AT NQF LEVEL 4

**1. TITLE: Analyse the viability of seed**

Specific Outcome 1.1: Prepare the work area for viability testing
Specific Outcome 1.2: Prepare working sample for imbibition
Specific Outcome 1.3: Prepare the seed for staining
Specific Outcome 1.4: Evaluate the viability of the seed sample
Specific Outcome 1.5: Complete the viability test process

**2. TITLE: Analyse the germination of seed**

Specific Outcome 2.1: Prepare the work for analysis
Specific Outcome 2.2: Prepare planting sample and relevant documentation
Specific Outcome 2.3: Plant sample for germination
Specific Outcome 2.4: Evaluate the germination sample
Specific Outcome 2.5: Complete the process

**3. TITLE: Sample a seed lot**

Specific Outcome 3.1: Prepare for drawing of a seed sample
Specific Outcome 3.2: Draw a seed sample
Specific Outcome 3.3: Divide the seed sample
Specific Outcome 3.4: Complete the seed sampling process

**4. TITLE: Test the vigour of seed**

Specific Outcome 4.1: Prepare the work area for conducting a vigour test
Specific Outcome 4.2: Prepare sample and relevant documentation
Specific Outcome 4.3: Conduct the vigour test
Specific Outcome 4.4: Evaluate the vigour test
Specific Outcome 4.5: Complete the process

## National Certificate: Seed Analysis at NQF level 3

| | NQF Level 2 | ID No | Credits | NQF Level 3 | ID No | Credits | NQF Level 4 | ID No | Credits | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Fundamental | | | | Accommodate audience and context needs in oral communication | 8968 | 5 | | | | |
| | | | | Interpret and use information from texts | 8969 | 5 | | | | |
| | | | | Write texts for a range of communicative contexts | 8970 | 5 | | | | |
| | | | | Use language and communication in occupational learning programmes | 8973 | 5 | | | | |
| | | | | **Language/Communication** | | **20** | | | | **20** |
| | | | | *Demonstrate understanding of the use of different number bases and measurement units and an awareness of error in the context of relevant calculations* | 9010 | 2 | | | | |
| | | | | Use mathematics to investigate and monitor the financial aspects of personal and business issues | 9011 | 5 | | | | |
| | | | | *Investigate life and work related problems using data and probabilities* | 9012 | 5 | | | | |
| | | | | Measure, estimate and calculate physical quantities and explore, describe and represent, interpret and justify geometrical relationships in two and three dimentional space relevant to the life or workplace of the community | 9013 | 4 | | | | |
| | | | | **Mathematics/Numeracy** | | **16** | | | | **16** |
| Core | Acquire an introductory knowledge of the seed industry | | 4 | Receive a seed sample | | 7 | Analyse the germination of seed | | 14 | |
| | Demonstrate an understanding of the introduction to the workplace within the *seed industry* | | 2 | Analyse the physical purity of seed | | 11 | Analyse the viability of seed | | 6 | |
| | | | | Determine the moisture level of seed | | 4 | Sample a seed lot | | 8 | |
| | | | | Receive seed | | 13 | | | | |
| | | | | Store seed samples | | 2 | | | | |
| | | | 6 | | | **37** | | | **28** | **71** |
| Electives | | | | Establish normal conditions in the laboratory | | 4 | Test the vigour of seed | | 15 | |
| | | | | Conduct maintenance of seed testing equipment | | 3 | Sample a seed lot | | 8 | |
| | | | | | | 7 | | | **23** | **15** |

**Choice of 15 Credits from the Elective are of learning**

**Total Credits for Qualification - 122**

## Further Education and Training Certificate: Seed Processing and Packaging Control at NQF Level 4

**Field:** Agriculture and Nature Conservation

**Sub-field:** Secondary Agriculture

**NQF Level:** 4

**Credits:** 148

### Rationale for the Qualification

This Qualification is aimed at people who are working in the seed industry and who would like to further their career in the seed industry. It is aimed at formalising the skills required in the control of seed processing and packaging to facilitate career-pathing and to provide access to new entrants. The Qualification provides learners with access to advanced learning in specialised areas within the seed industry. It also provides learners with the necessary background knowledge and skills to enhance the NQF principles of portability within other agricultural industries.

Through the above, the Qualification will address one of the key priorities of the Department of Labour in the reduction of unemployment and under employment. It will assist in creating job opportunities.

### Purpose of the Qualification

This Qualification will provide learners with the opportunity to obtain competence in the control of seed packaging and processing, including the sampling of a seed lot; analysing the physical purity of seed; storing of seed; determining seed stock levels; disease and pest control of store seed and the dispatch of stock to maintain seed quality. The Qualification will provide learners with the technical competence to perform to industry standards.

This Qualification will enable learners to progress in other fields of learning in the agricultural industry and providing articulation to higher education and learning.

The Qualification focuses on the skills, knowledge, and values to ensure competence at this level of learning. The intention is to enhance the potential of people, in order for them to grow and develop. This Qualification will furthermore add value to the individuals, their workplace and the economy as a whole.

### Rules of combination

To obtain this qualification the learner must complete 54 fundamental 74 core and 10 elective unit standards to total 148 credits.

### Access to the qualification

There are no further restrictions placed on learners, which may prevent them from gaining access to this Qualification.

**Learning assumed to be in place**

It is assumed that learners wishing to enter a programme leading to this qualification have demonstrated competence in mathematics, languages and communication at NQF 3.

**Exit level Specific Outcomes and Associated Assessment Criteria**

**Exit level outcome 1**

Determine seed stock levels and analyse physical purity of seed.

**Associate Assessment Criteria**

- The purpose of determining a sequence of operation is explained.
- Reasons for identifying, selecting and using appropriate equipment are explained.
- Consequences of not comparing actual stock levels with recorded levels according to operational procedures are explained.
- Reasons for identifying and reporting deviations to stock according to statutory requirements are explained.
- Affected parties are informed of deviations and corrective actions are taken.
- Consequences of not sub-sampling accurately according to the operational procedures are explained.
- Consequences of not using correct sanitary practices according to work site procedures are explained.
- The possible effects of hazardous seed treatment material on the learner are explained.
- The importance of using the correct equipment during analysis according to work site procedures is explained.
- The importance of keeping the different components according to the operational procedures and work site procedures is explained.
- The importance of retaining the sample and prescribed records according to the operational procedures, work site procedures and statutory requirements is explained.

**Exit level outcome 2**

Conduct disease and pest control in stored seed and dispatch seed.

**Associated Assessment Criteria**

- Job instructions, oral or written, are accurately followed and adhered to.
- All affected parties are informed of results, deviations and corrective actions taken.
- Purpose of selecting and verifying the correct seed lots are explained
- Purpose of selecting and using appropriate equipment is explained.
- Purpose of preparing the work area is explained.
- Consequences of not following loading instructions are explained.
- Reasons for adhering to safety and quality procedures.
- Job instructions, oral or written, are accurately followed and adhered to.
- Appropriate tools and equipment are identified and selected according to work site procedures.
- Purpose of determining a sequence of operation is explained.
- Consequences of not completing documentation and informing affected parties according to safety procedures and statutory requirements are explained.
- Reasons for performing follow-up inspections are explained
- Purpose of preparing the work area is explained.
- Reasons for storing tools and equipment according to work site and safety procedures as well as statutory requirements are explained.
- Reasons for adhering to safety and quality procedures.

**Exit Level Outcome 3**
Communicate in a variety of ways

Assessment criteria

- Oral communication is maintained and adapted as required to promote effective interaction in a work context.
- Information is accessed from standing instructions, visual information and a range of other workplace texts and responses where required are appropriate to the context.
- Written communication is clear and unambiguous and at an appropriate level for designated target audiences.

**Exit level Outcome 4**
Use mathematics in real life and education, training and development situations.

Assessment criteria

- Mathematical functions are used correctly to solve routine workplace problems and tasks.

**International comparability**

A thorough search was done to find international qualifications and unit standards in seed processing countries specific to the seed processing and packaging control, but no formal unit standards and qualifications could be found.

However, areas such as seed and grain conditioning were compared to State University. These were:

- AGN 4253/6253 Seed and Grain Conditioning and Storage

  (Mississippi State University)

Comparison of the above Qualifications was undertaken and various literary sources consulted. The best practice points were incorporated and used in the generation of this Qualification's Unit Standards.

Because of the difference in levels across the different countries, difficulty was found in making actual direct comparisons, level to level. It was found that the South African Qualifications appear to be specific to the needs of the local industry and are therefore slightly more complex in their presentation and execution.

**Integrated Assessment Criteria**

Unit Standards associated with this Qualification must be used to assess specific and critical cross-field Specific Outcomes. Assessment should focus in an integrated way on determining the competence of the learner in terms of the overall purpose and title of this Qualification.

The term integrated assessment also implies that the theoretical and practical components should be assessed together and assess combinations of practical, applied, foundational and reflective competencies.

Assessment activities should be done in real workplace situations and where simulations or role-plays are used, there should be supporting evidence to show that the learner is able to display the competencies to the real work situation.

All assessments should be conducted in line with the following documented principles of assessment: appropriateness, fairness, manageability, integration into work of learning, validity, direct, authentic, sufficient, systematic, open and consistent.

Learners wishing to be assessed will need to provide evidence of the following:

- Verbal and written explanations of reasons for adhering to operational and work site procedures as well as statutory requirements, adhering to specific sequence of operations, identifying deviations, taking corrective actions and recording relevant data, and reporting deviations outside the jobholder's responsibility.
- Demonstrations of a range of operational actions relating to applying quality control in storing seed, analysing physical purity of seed, sampling of seed lots, dispatch of seed and applying general safety in the work place. Learners will also demonstrate an understanding of the Seed Industry and the relevant workplace.
- Oral or written questioning regarding the reflective competencies within the qualification:

If the identifying and solving of problems, team work, organising one-self, the using of applied science, the implication of actions and reactions in the world as a set of related systems are not clear from the observation, a method of oral questioning or a case study should be applied to determine the whole person development and integration of applied knowledge and skills.

- A portfolio of evidence is required to prove the practical, applied and foundational competencies of the learner that may include production and quality statistics.
- Assessors and moderators should develop and conduct their own integrated assessment by making use of a range of formative and summative assessment methods. Assessors should assess and give credit for the evidence of learning that has already been acquired through formal, informal and non-formal learning and work experience.
- Unit standards in the qualification must be used to assess specific and critical cross-field Specific Outcomes. During integrated assessments the assessor should make use of formative and summative assessment methods and should assess combinations of practical, applied, foundational and reflective competencies.

**Recognition of prior learning (RPL)**

This Qualification may be achieved in part or completely through the recognition of prior learning, which includes formal, informal and non-formal learning and work experience. Where RPL is required the learner will need to prove competence in that specific area in order to obtain recognition of that skill and knowledge.

Evidence can be presented in a variety of forms, including international or previous local qualifications, reports, testimonials mentioning functions performed, work records, portfolios, videos of practise and performance records. The assessment methods and tools to be used to assess Prior Learning shall be decided upon jointly by the assessor and the learner.

**Articulation possibilities**

This Qualification lends itself to both vertical and horizontal articulation possibilities. These possibilities ensure both mobility and progression for the learner in other fields of learning such as Seed Production.

An example of vertical articulation possibilities:
National Certificate in Agricultural Sales and Services NQF 4 (14854)

An example of horizontal articulation possibilities:
National Certificate in Seed Production at NQF 4

**Moderation Operations**

Anyone assessing a learner against these unit standards must be registered as an assessor with the relevant ETQA.

Any institution offering learning that will enable achievement of these unit standards or will assess these unit standards must be accredited as a provider with the relevant ETQA. Moderation of assessment will be overseen by the relevant ETQA according to the moderation guidelines in the relevant qualification and the agreed ETQA procedures.

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

## TITLES OF UNIT STANDARDS AT NQF LEVEL 3

1. Acquire a general knowledge of the seed industry
2. Analyse the physical purity of seed
3. Sample a seed lot

## TITLES OF UNIT STANDARD AT NQF LEVEL 4

1. Control the seed processing operation
2. Determine the seed stock levels
3. Store seed
4. Dispatch seed
5. Conduct disease and pest control in stored seed

## UNIT STANDARDS' TITLES AND SPECIFIC OUTCOMES AT NQF LEVEL 3

### 1. TITLE: Acquire a general knowledge of the seed industry

Specific Outcome 1.1: Demonstrate a knowledge of the complexities of living seed.
Specific Outcome 1.2: Demonstrate a knowledge of the operations of the seed industry.
Specific Outcome 1.3: Demonstrate a knowledge of seed legislation.
Specific Outcome 1.4: Demonstrate a knowledge of seed technology and physiology

### 2. TITLE: Analyse the physical purity of seed

Specific Outcome 2.1: Prepare work area for analysis
Specific Outcome 2.2: Prepare working sample and relevant documentation
Specific Outcome 2.3: Analyse and retain components of working sample
Specific Outcome 2.4: Complete physical seed purity analysis process

### 3. TITLE: Sample a seed lot

Specific Outcome 3.1: Prepare for drawing a seed sample
Specific Outcome 3.2: Draw a seed sample
Specific Outcome 3.3: Divide the seed sample
Specific Outcome 3.4: Complete the seed sampling process

## UNIT STANDARDS' TITLES AND SPECIFIC OUTCOMES AT NQF LEVEL 4

### 1. TITLE: Control of seed processing operation

Specific Outcome 1.1: Coordinate the processing operation/s
Specific Outcome 1.2: Monitoring the processing operation/s
Specific Outcome 1.3: Complete the processing operation/s

### 2. TITLE: Determine seed stock levels

Specific Outcome 2.1: Prepare for determining seed stock levels
Specific Outcome 2.2: Determine seed stock levels
Specific Outcome 2.3: Complete process of determining seed stock levels
Specific Outcome 2.4: Restore work area

### 3. TITLE: Store seed

Specific Outcome 3.1: Prepare for storage
Specific Outcome 3.2: Store seeds
Specific Outcome 3.3: Monitor storage of seed
Specific Outcome 3.4: Complete storage process

**4. TITLE: Dispatch seed**

Specific Outcome 4.1: Prepare for dispatch
Specific Outcome 4.2: Dispatch seed consignments
Specific Outcome 4.3: Complete dispatch process
Specific Outcome 4.4: Restore work area

**6. TITLE: Conduct disease and pest control in stored seed**

Specific Outcome 6.1: Prepare for combating contamination
Specific Outcome 6.2: Assess the nature of contamination
Specific Outcome 6.3: Combat contamination
Specific Outcome 6.4 Complete combating procedures

| Further Education and Training Certificate: Seed Processing and Packaging Control at NQF level 4 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | NQF Level 3 | ID No | Credits | NQF Level 4 | ID No | Credits | Total |
| Fundamental | Accommodate audience and context needs in oral communication | 8968 | 5 | Engage in sustained oral communication and evaluate spoken texts | 8974 | 5 | |
| | Interpret and use information from texts | 8969 | 5 | Read, analyse and respond to a variety of texts | 8975 | 5 | |
| | Write texts for a range of communicative contexts | 8970 | 5 | Write for a wide range of contexts | 8976 | 5 | |
| | Use language and communication in occupational learning programmes | 8973 | 5 | Use language and communication in occupational learning programmes | 8979 | 5 | |
| TOTAL | **Language/Communication** | | **20** | **Language/Communication** | | **20** | **40** |
| Fundamental | Operate a computer | 7786 | 8 | Use mathematics to investigate and monitor the financial aspects of personal, business and national issues | 9014 | 6 | |
| | Produce and use spreadsheets for business | 7567 | 5 | Apply knowledge of statistics and probability to critically interrogate and effectively communicate findings on life-related problems | 9015 | 6 | |
| | Produce word processing documents for business | 7570 | 5 | Measure, estimate and calculate physical quantities and explore, critique and prove geometrical relationships in two and three dimensional space in the life and workplace of the adult with increasing responsibility | 9016 | 4 | |
| TOTAL | | | **18** | **Mathematics/Numeracy** | | **16** | **34** |
| Core | Acquire a general knowledge of the seed industry | | 11 | Control the seed processing operation | | 13 | |
| | Analyse the physical purity of seed | | 11 | Determine the seed stock levels | | 4 | |
| | Sample a seed lot | | 8 | Store seed | | 12 | |
| | | | | Dispatch seed | | 8 | |
| | | | | Conduct disease and pest control in stored seed | | 7 | |
| TOTAL | | | **30** | | | **44** | **74** |
| **Total Credits for Qualification - 148** | | | | | | | |