

## CARRY OUT PLANT BREEDING

**ISCED UNIT CODE:** 0811 551 23A

**TVETCDACC UNIT CODE:** HO/OS/HP/CR/03/6/MA

### UNIT DESCRIPTION

This unit specifies the competencies required to carry out plant breeding to produce clean and quality planting materials. It involves performing asexual and sexual plant breeding and maintaining improved cultivars.

### ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes, which make up workplace function.	These are assessable statements, which specify the required level of performance for each of the elements. <i><b>Bold and italicized terms are elaborated in the range.</b></i>
1. Perform asexual plant breeding	1.1 <i><b>Personal protective equipment</b></i> are worn as per work requirement 1.2 <i><b>Tools, equipment</b></i> and <i><b>materials</b></i> are assembled as per work requirement 1.3 <i><b>Germplasm</b></i> of asexually propagated crops are collected as per work requirement 1.4 Germplasm of asexual propagated crops are selected and evaluated as per work requirement 1.5 Asexually propagated crops are bred as per work procedure 1.6 <i><b>Progeny desired characteristics</b></i> are tested as per work requirement 1.7 Waste management is undertaken in accordance to work requirement
2. Perform sexual plant breeding	2.1 Personal protective equipment are worn as per work requirement 2.2 Tools, equipment and materials are assembled as per work requirement 2.3 Germplasm of sexually propagated crops are collected as per work requirement

	<p>2.4 Germplasm of sexual propagated crops are selected and evaluated as per work requirement</p> <p>2.5 Sexually propagated crops are bred as per work procedure</p> <p>2.6 Progeny desired characteristics are tested as per work requirement</p> <p>2.7 Waste management is undertaken in accordance to work requirement</p>
3. Maintain improved cultivars	<p>3.1 Personal protective equipment are worn as per work requirement</p> <p>3.2 Tools, equipment and materials are assembled as per work requirement</p> <p>3.3 Improved cultivars are multiplied as per work requirement</p> <p>3.4 Improved cultivars <i>marketing techniques</i> are applied as per agro-ecological requirements</p>

## RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

Variable	Range
1. Personal protective equipment may include but are not limited to:	<ul style="list-style-type: none"> <li>• Gloves</li> <li>• Safety goggles</li> <li>• Safety boots</li> <li>• Overalls</li> <li>• Dust coat</li> <li>• Ear muffs</li> <li>• Face masks</li> </ul>
2. Tools, equipment and materials may include but are not limited to:	<ul style="list-style-type: none"> <li>• Magnifying lens</li> <li>• Forceps</li> <li>• Scissors</li> <li>• Needles</li> <li>• Brushes</li> <li>• Bags</li> <li>• Ethyl alcohol</li> </ul>

	<ul style="list-style-type: none"> <li>• Markers, pencil, eraser.</li> <li>• Meter scale and measuring tag</li> <li>• Weighing balance</li> <li>• Field book</li> <li>• Microscope</li> </ul>
3. Germ plasm may include but are not limited to:	<ul style="list-style-type: none"> <li>• Seeds</li> <li>• Cuttings</li> <li>• Cultures</li> <li>• Tissues</li> </ul>
4. Progeny desired characteristics may include but are not limited to:	<ul style="list-style-type: none"> <li>• High yielding</li> <li>• Resistance to pest and diseases</li> <li>• Non- shattering</li> <li>• Improved quality</li> <li>• Change in maturation duration/ earliness</li> <li>• Desirable agronomic characteristics</li> <li>• Elimination of toxic substance</li> <li>• Wider adaptability</li> <li>• Varieties for new seasons</li> </ul>

## REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

### Required skills

The individual needs to demonstrate the following skills:

- Measuring
- Pruning
- Spraying
- Pests, diseases and nutrients deficiency scouting
- Equipment calibration
- Technical Report writing
- Soil sampling
- Observation
- Digital literacy

- Planning skills
- Networking skills

### Required knowledge

The individual needs to demonstrate knowledge of:

- Sources of quality water
- Agro Ecological Zonation
- Breeding tools and equipment
- Establishment and management of bred crops
- Soil and water conservation measures
- Phyto-sanitary requirements
- Soilless growing media
- Record keeping and accounting
- Waste Management practices
- Occupational Safety and Health Procedures

### EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range.

1. Critical aspects of competency	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Used personal protective equipment as per work requirement</p> <p>1.2 Assembled tools, equipment and materials as per work requirement</p> <p>1.3 Collected germplasm of crops as per work requirement</p> <p>1.4 Selected and evaluated the germplasm as per work requirement.</p> <p>1.5 Bred crops as per work procedure.</p> <p>1.6 Tested Progeny desired characteristics as per work procedure.</p> <p>1.7 Managed waste generated in accordance to work requirement</p> <p>1.8 Multiplied improved cultivars as per work requirement</p> <p>1.9 Marketed improved cultivars as per agro-ecological requirements</p>
2. Resource Implications for	The following resources must be provided:

competence certification	<p>2.1 Appropriately simulated environment where assessment can take place</p> <p>2.2 Access to relevant work environment</p> <p>2.3 Resources relevant to the proper activities or tasks</p>
3. Methods of assessment	<p>Competency may be assessed through:</p> <p>3.1 Practical test</p> <p>3.2 Project</p> <p>3.3 Portfolio of evidence</p> <p>3.4 Written test</p> <p>3.5 Oral questions</p> <p>3.6 Third party report</p>
4. Context of assessment	<p>This competency may be assessed</p> <p>4.1 Workplace or in a simulated workplace.</p>
5. Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended.</p>