

## PRODUCE VEGETABLE CROPS IN PROTECTED ENVIRONMENT

**ISCED UNIT CODE:** 0812 251 10A

**TVETCDACC UNIT CODE:** HO/OS/HP/CR/02/3/MA

### UNIT DESCRIPTION

This unit specifies the competencies required to produce vegetable crops in protected environment. It involves setting up protected environment, growing vegetable crop in protected environment, harvesting vegetable crop, undertaking post-harvest activities, undertaking value addition processes and undertaking marketing activities.

### ELEMENTS AND PERFORMANCE CRITERIA

<b>ELEMENT</b> These describe the <b>key outcomes</b> which make up <b>workplace function</b> .	<b>PERFORMANCE CRITERIA</b> These are <b>assessable</b> 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. Set up Protected Environment	<ul style="list-style-type: none"><li>1.1 Market survey is undertaken as per vegetable crop type demand.</li><li>1.2 <i><b>High value Vegetable crops</b></i> seeds are selected for propagation as per market demand.</li><li>1.3 Work safety measures are observed as per the work requirements.</li><li>1.4 Tools and equipment are assembled as per work requirements.</li><li>1.5 Suitable <i><b>production structure</b></i> is prepared as per work instructions.</li><li>1.6 Soil and water are conserved as per agronomic requirements.</li><li>1.7 Water for irrigation is applied as per water analysis report.</li><li>1.8 Crop nursery is established as per vegetable crop type.</li><li>1.9 Propagation media is prepared based on the crop requirement and work instructions.</li></ul>

	<p>1.10 Nursery trays are selected and treated as per safety requirements.</p> <p>1.11 Crop nursery management practices are carried out as per vegetable crop type</p> <p>1.12 Tools and equipment are maintained as per type</p> <p>1.13 Farm activities costs is documented as per task requirements</p> <p>1.14 Waste is disposed in accordance with EMCA 2015 requirements</p> <p>1.15 Food safety measures are implemented as per conformity assessment standards</p>
2. Grow Vegetable Crop in protected environment	<p>2.1 Work safety measures are observed as per the work requirements</p> <p>2.2 Tools, equipment and materials are assembled as per work requirements</p> <p>2.3 Mapal troughs are watered as per crop water requirements</p> <p>2.4 Seedbed is prepared as per vegetable crop manual.</p> <p>2.5 Vegetable crop is established as per crop requirement.</p> <p>2.6 Mulching of the vegetable crops is carried out as per agronomic requirements.</p> <p>2.7 Vegetable crops are watered as per crop requirement.</p> <p>2.8 Vegetable crops are gaped and thinned based as per crop requirement.</p> <p>2.9 Vegetable crops are trained, trellised and pruned as per crop requirement.</p> <p>2.10 Pests and diseases are identified as per crop type</p> <p>2.11 Crop protection measures are applied as per pests and diseases.</p> <p>2.12 Crop nutrition measures are implemented as per crop requirement.</p> <p>2.13 Food safety measures are implemented as per conformity assessment standards</p> <p>2.14 Tools and equipment are maintained as per manufactures manual</p>

	<p>2.15 Farm activities costs is documented as per task requirements and workplace policy.</p> <p>2.16 Waste is disposed in accordance with EMCA 2015 requirements</p>
3. Harvest Vegetable Crop	<p>8.1 Work safety measures are observed as per the work requirements</p> <p>8.2 Tools, equipment and materials are assembled as per work requirements</p> <p>8.3 <b>Maturity indices</b> are observed as per vegetable crop type.</p> <p>8.4 <b>Picking</b> of the crop is carried out as per the vegetable type</p> <p>8.5 Produce is transported to the pack house as per the Vegetable type requirements.</p> <p>8.6 Tools and equipment are maintained as manufactures manual.</p> <p>8.7 Farm activities costs is documented as per task requirement and workplace policy.</p> <p>8.8 Waste is disposed in accordance with EMCA 2015 requirements</p> <p>8.9 Emerging trends are applied in harvesting vegetable crop as per current technological development.</p>
4. Undertake Post Harvest Activities	<p>7.1 Work safety measures are observed as per the workplace policy.</p> <p>7.2 Tools, equipment and materials are assembled as per work requirements.</p> <p>7.3 Harvested vegetables are received at the packhouse as per workplace policy.</p> <p>7.4 Vegetables are sorted as per vegetable type and workplace policy.</p> <p>7.5 Produce is cleaned as per the vegetable crop requirements and workplace policy.</p> <p>7.6 Vegetables are graded as per market requirements.</p> <p>7.7 Vegetables are packaged as per market requirements.</p> <p>7.8 Produce is Stored as per vegetable crop type</p>

	<p>7.9 Tools and equipment are maintained as per manufactures manual.</p> <p>7.10 Farm activities costs is documented as per task requirements</p> <p>7.11 Waste is disposed in accordance with EMCA 2015 requirements</p> <p>7.12 Emerging trends are applied in undertaking post-harvest activities as per current technological development</p>
5. Undertake Value Addition Processes	<p>8.1 Work safety measures are observed as per the workplace policy.</p> <p>8.2 Tools, equipment and materials are assembled as per work requirements.</p> <p>8.3 vegetable crops are sorted and graded as per market product type.</p> <p>8.4 Vegetable produce is cleaned as per crop type</p> <p>8.5 Basic processing is undertaken as per market product type.</p> <p>8.6 Tools and equipment are maintained as per manufactures' manual</p> <p>8.7 Farm activities costs is documented as per task requirements and workplace policy.</p> <p>8.8 Waste is disposed in accordance with EMCA 2015 requirements</p> <p>8.9 Emerging trends in value addition as per current technological development</p>
6. Undertake Marketing Activities	<p>9.1 Crop price is compared based on different markets.</p> <p>9.2 Produce price range and market is decided based on the market demand.</p> <p>9.3 Basic value addition is undertaken as per the market demand and vegetable requirement.</p> <p>9.4 Farm activities costs is documented as per task requirements</p> <p>9.5 Waste is disposed in accordance with EMCA 2015 requirements</p> <p>9.6 Emerging trends are applied in undertaking Marketing activities as per current technological development</p>

## RANGE

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

Variable	Range
1. Vegetable crop include but not limited to:	<ul style="list-style-type: none"><li>• Leafy vegetables<ul style="list-style-type: none"><li>• Lettuce</li><li>• Spinach</li></ul></li><li>• Fruit vegetables<ul style="list-style-type: none"><li>• Tomatoes</li><li>• Capsicum</li><li>• Cucumber</li></ul></li><li>• Root and Tuber<ul style="list-style-type: none"><li>• Onions</li><li>• Carrots</li><li>• Garlic</li></ul></li></ul>
2. Production structure include but not limited to:	<ul style="list-style-type: none"><li>• Greenhouse</li><li>• Shade nets</li></ul>
3. Maturity indices include but not limited to:	<ul style="list-style-type: none"><li>• Horticultural maturity</li><li>• Market maturity</li><li>• Physiological maturity</li></ul>
4. Picking include but not limited to:	<ul style="list-style-type: none"><li>• Cutting</li><li>• Uprooting</li><li>• Digging</li><li>• Pinching</li></ul>
5. Basic value additions include but not limited to:	<ul style="list-style-type: none"><li>• Waxing</li><li>• Packaging</li><li>• Product processing</li></ul>
6. Plant physiology process include but not limited to:	<ul style="list-style-type: none"><li>• Photosynthesis</li><li>• Transpiration</li><li>• Respiration</li><li>• Osmosis</li><li>• Diffusion</li></ul>

7. Emerging trends include but not limited to:	<ul style="list-style-type: none"> <li>• New technologies for pests and diseases control</li> <li>• Food system transformations</li> <li>• Automated agriculture systems</li> <li>• Climate smart agriculture</li> <li>• Digital Agriculture</li> </ul>
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## REQUIRED SKILLS AND KNOWLEDGE

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

### Required Skills

- Agronomic practices skills
- Measuring skills
- Spraying skills
- Observation skills
- Record keeping skills
- Marketing skills
- Analytical skills

### Required Knowledge

The individual needs to demonstrate knowledge of:

- Types of soilless media
- Plant anatomy and physiology
- Crop husbandry practices
- Waste management practices
- Soil and water conservation measures
- Safety measures
- Weather patterns
- Pests and disease control measures
- Types of weeds and their control
- Ecological zones
- Irrigation methods
- Food safety measures
- Basic financial literacy
- Greenhouse structures

- Crop nutrition measures

## EVIDENCE GUIDE

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

<b>1. Critical aspects of competency</b>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> <li>1.1 Selected vegetable crop seeds for propagation as per ecological requirements</li> <li>1.2 Carried out vegetable crop nursery management practices as per vegetable crop type</li> <li>1.3 Watered vegetable crops as per crop requirement</li> <li>1.4 Identified the vegetable crop pests and diseases as per crop type</li> <li>1.5 Applied Crop protection measures as per pests and diseases</li> <li>1.6 Undertook crop nutrition measures as per crop requirement.</li> <li>1.7 Observed maturity indices as per vegetable crop type.</li> <li>1.8 Carried out picking of the crop as per maturity indices</li> <li>1.9 Stored produce as per vegetable crop type</li> <li>1.10 Applied vegetable food safety measures based on confirmation assessment standards</li> </ul>
<b>2. Resource implications</b>	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> <li>2.1 Appropriately simulated environment where assessment can take place.</li> <li>2.2 Access to relevant work environments.</li> <li>2.3 Resources relevant to the proposed activities or task.</li> </ul>
<b>3. Methods of assessment</b>	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> <li>3.1 Observation</li> <li>3.2 Oral questioning</li> <li>3.3 Written tests</li> <li>3.4 Practical's</li> <li>3.5 Projects</li> </ul>

<b>4. Context of Assessment</b>	Competency may be assessed: 4.1 On-the-job 4.2 Simulated workplace environment
<b>5. Guidance information for assessment</b>	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.