

MANAGE HYDROPONIC FARM

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UNIT DESCRIPTION

This unit specifies the competencies required to setup and run a hydroponic farm. It involves installing hydroponic system, preparing hydroponic plant media, establishing hydroponic plants, managing hydroponic plants and performing hydroponic crops post-harvest practices.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace functions	These are assessable statements which specify the required level of performance for each of the elements <i>(Bold and italicized terms are elaborated in the range)</i>
1. Install hydroponic system	1.1 Personal protective equipment's are worn as per work requirement 1.2 Tools, equipment and materials are assembled as per work requirement 1.3 Hydroponic systems are designed as per type of hydroponic system 1.4 A work schedule for installation of hydroponic system is prepared as per type of hydroponic system 1.5 Hydroponic system is setup as per work procedure
2. Prepare hydroponic plant media	2.1 Personal protective equipment's are worn as per work requirement 2.2 Tools, equipment and materials are assembled as per work requirement 2.3 Hydroponic planting media are prepared as per work requirement

	2.4 Nutrient solutions to use at different growth stages are determined
3. Establish hydroponic plants	<p>3.1 Personal protective equipment's are worn as per work requirement</p> <p>3.2 Tools, equipment and materials are assembled as per work requirement</p> <p>3.3 <i>Hydroponic planting materials</i> are prepared as per <i>agronomic requirement</i></p> <p>3.4 Hydroponic plants are transplanted as per agronomic requirement</p>
4. Manage hydroponic plants	<p>4.1 Personal protective equipment's are worn as per work requirement</p> <p>4.2 Tools, equipment and materials are assembled as per work requirement</p> <p>4.3 <i>Cultural practices</i> are carried out as per agronomic requirements</p> <p>4.4 <i>Nutrient solutions</i> are prepared and fed to hydroponic plants as per crop requirement</p> <p>4.5 <i>Chemical analysis of planting media</i> is carried out as per work procedure</p> <p>4.6 Pest and diseases are scouted and controlled as per agronomic requirement</p> <p>4.7 Hydroponic plants are harvested as per crop maturity indices</p>
5. Perform hydroponic plants post-harvest practices	<p>5.1 Tools and equipment for carrying out post-harvest practices are assembled as per work requirement</p> <p>5.2 Quality and quantity of cut flowers is assessed as per work procedures</p> <p>5.3 <i>Post-harvest practices</i> are carried out in accordance to agronomic requirement</p> <p>5.4 Hydroponics plants <i>marketing techniques</i> are applied as per organizational policy</p> <p>5.5 Waste management is undertaken in accordance to work requirement</p>

RANGE

This section provides work environment 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">• Gloves• Safety goggles• Safety boots• Overalls• Dust coat• Ear muffs• Face masks
2. Tools, equipment and materials may include but are not limited to:	<ul style="list-style-type: none">• Hoes• Machetes• Secateurs• Shovels• Soil auger• Panga• Pegs• Hammer• Saw• Bucket• Secateurs• Shears• Dibbler• Pegs• Spray pumps• Watering cans• Hose pipes• Plough

- Harrows
- Ridges
- Boom sprayer
- Pruning saw
- Wire strainer
- Traps
- Pipe sprinklers
- Scouting flags
- Storage tanks
- Tractors
- Grading shed
- Bud count square
- Meteorological equipment
- Pesticides
- Fertilizers
- Stationery
- Manures
- Seedlings /planting materials
- Khaki paper bags size 3
- Rope
- Nets
- Translucent papers
- Papers
- Fencing wire
- Staking sticks
- Nails
- Herbicides
- Pesticides
- Pheromones
- Seeds
- Seedlings
- Splits

	<ul style="list-style-type: none"> • Crowns • Slips • Cuttings • Suckers • Plantlets
3. Hydroponic systems	<ul style="list-style-type: none"> • Deep water float system • Nutrient film technique (NFT) • Drip • Wick • Aeroponics • Ebb and Flow
4. Hydroponic planting media may include but are not limited to	<ul style="list-style-type: none"> • Pumice • Vermiculite • Perlite • Cocoa peat • Peat moss • Rock wool
5. Hydroponic planting materials may include but are not limited to:	<ul style="list-style-type: none"> • Seeds • Splits • Suckers • Buds • Bulbils • Cuttings • Corms • Tissue culture • Seedlings
6. Agronomic requirements may include but are not limited to	<ul style="list-style-type: none"> • Gapping • Thinning • Pruning • Training • De- suckering • Watering

	<ul style="list-style-type: none"> • Nutrient application
7. Crop protection practices may include but are not limited to:	<ul style="list-style-type: none"> • Pest control • Disease control • Weed control
8. Cultural practices may include but are not limited to:	<ul style="list-style-type: none"> • Gapping • Thinning • Training • Weeding • Pruning
9. Nutrient solution may include but are not limited to:	<ul style="list-style-type: none"> • Solution A (Calcium nitrate, iron) • Solution B (magnesium sulphate, potassium nitrate, mono potassium phosphate, manganese sulphate, zinc sulphate, copper sulphate and Borax 11%)
10. Chemical analysis of planting media may include but are not limited to:	<ul style="list-style-type: none"> • pH • Electrical conductivity • Nutrient concentration
11. Post-harvest practices may include but are not limited to:	<ul style="list-style-type: none"> • Transportation • Cleaning • Sorting • Grading • Drying • Processing • Packaging • Branding • Storage
12. Marketing techniques may include but are not limited to:	<ul style="list-style-type: none"> • Online marketing • Influencer marketing • Referrals

	<ul style="list-style-type: none"> • Advertisement • Auctioneering • Public relation • Cold calling • Content marketing • Invoicing • Loyalty programs
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REQUIRED KNOWLEDGE AND SKILLS

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

Required knowledge

The individual needs to demonstrate knowledge of:

- Components of hydroponic system
- Sources of quality water
- Hydroponic farming tools and equipment
- Physiology of hydroponic plants
- Phyto-sanitary requirements
- Sources of quality planting materials
- Husbandry practices in hydroponic farming
- Procedures for calibration of equipment
- Harvesting and Post Harvesting Handling of hydroponic plants
- Record keeping and accounting
- Waste Management practices
- Occupational Safety and Health Procedures

Required skills

The individual needs to demonstrate the following skills:

- Measuring
- Levelling
- Gapping

- Pruning
- Spraying
- Pests, diseases and nutrients deficiency scouting
- Equipment calibration
- Technical Report writing
- Observation
- Negotiation
- Digital literacy
- Networking

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills 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 Designed and setup hydroponic system as per hydroponic system requirements</p> <p>1.3 Treated planting materials based on agronomic requirements.</p> <p>1.4 Prepared propagation media in accordance to agronomic requirements.</p> <p>1.5 Raised hydroponic plants as per agronomic requirements.</p> <p>1.6 Carried out crop protection practices on hydroponic plants as per work procedure</p> <p>1.7 Carried out fertigation in accordance to crop nutrient requirement</p> <p>1.8 Carried out pruning, training and de-suckering based on crop requirement</p> <p>1.9 Harvested hydroponics plants as per maturity indices</p> <p>1.10 Carried out post-harvest handling of hydroponic plants in accordance to work requirement</p> <p>1.11 Managed wastes generated in production process in accordance to work requirement</p>
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2. Resource implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> 2.1 Appropriately simulated environment where assessment can take place 2.2 Access to relevant work environment 2.3 Resources relevant to the proper activities or tasks
3. Methods of assessment	<p>Competency in this unit may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Observation 3.2 Oral questioning 3.3 Portfolio of evidence 3.4 Interviews 3.5 Third party report 3.6 Written tests
4. Context of assessment	<p>Competency may be assessed:</p> <ul style="list-style-type: none"> 4.1 Workplace or simulated workplace
5. Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.</p>