

Competency Standards

for

Citrus Production (NVQF Level 1)

National Vocational & Technical Training Commission

March 2014



Implemented by **giz** Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH



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Competency Standard for Citrus Production

Module 1: Citrus Orchard Management:

Overview: These competency standards will ensure that the trainee will be able to perform citrus orchard management in local working conditions for field workers.

Competency Unit	Performance Criteria	Knowledge & Understanding
A1. Prepare the Land	<p>P1. Conduct soil sampling to identify characteristics of suitable soil as per industry requirements.</p> <p>P2. Select suitable land as per recommendations.</p> <p>P3. Design irrigation layout to meet soil needs</p> <p>P4. Demonstrate the use of land preparation tools</p> <p>P5. Demonstrate the various steps for land preparation including ploughing, leveling and dressing</p> <p>P6. Dig pits for planting citrus plants</p> <p>P7. Prepare compost and fill it in the pits</p>	<p>K1. Explain the importance of land preparation and layouts according to industry standard</p> <p>K2. Describe the ideal soil characteristics for citrus farming</p> <p>K3. Explain the merits and demerits of common irrigation systems</p> <p>K4. Describe industry standards for planting processes.</p> <p>K5. Explain composting processes</p>
A2. Manage Orchard Plantation	<p>P1. Identify and select different latest citrus varieties recommended for citrus orchards.</p> <p>P2. Determine and assess pre plantation conditions (temperature, soil moisture conditions)</p> <p>P3. Observe the plantation timings</p>	<p>K1. Describe the value and importance of right time and right variety keeping in view the established standards.</p> <p>K2. Explain the ideal planting season.</p> <p>K3: Describe the post planting operational cycle</p>

	<p>P4. Transplant plants</p> <p>P5. Carryout post plantation operations including irrigation, staking and making plant basin, hoeing etc.</p>	
A3. Fertilizer Applications	<p>P1. Compare fertilizers types on the basis of brands, chemical composition and formulation</p> <p>P2. Demonstrate different methods of fertilizer application as per industry recommendations.</p> <p>P3. Determine time and dosage of fertilizer application keeping in view the industry standards and manufacturers specifications.</p> <p>P4. Prepare and apply the farm yard and green manure</p>	<p>K1. Explain value of chemical fertilizer and green manure applications.</p> <p>K2. Describe different methods of fertilizer application</p> <p>K3. Explain the processes of manure preparation</p>
A4. Operate tools & equipments	<p>P1. Identify and use different operational tools for various identified tasks</p> <p>P2. Develop operational and maintenance schedule to ensure availability and workability of required tools</p> <p>P3. Identify and ensure tools safety measures</p>	<p>K1. Explain the importance of operational guidelines and checklist of tools.</p> <p>K2. Explain the importance of maintenance schedules to the operations of the orchard</p>
A5. Irrigation	<p>P1. Select the best means of available water for irrigation</p> <p>P2. Schedule the suitable time of irrigation as per industry standards</p> <p>P3. Assess the effective method for irrigation in accordance with recommendations for better</p>	<p>K1. Demonstrate the best method of irrigation</p> <p>K2: Explain the annual and periodic schedules of irrigation</p>

	<p>results</p> <p>P4. Calculate the water requirements stage wise.</p> <p>P5. Identify specific tools of irrigation as per industry standard.</p>	
A6. Pruning/ training and trimming	<p>P1. Demonstrate the pruning methods as recommended by industry.</p> <p>P2. Demonstrate tools of pruning, training and trimming</p> <p>P3. Identify the branches to be pruned for balance canopy</p> <p>P4. Schedule post operation treatment</p>	<p>K1. Describe the ways and benefits of pruning practices</p> <p>K2. Follow the guidelines and check list of each tool used</p>
A7. Apply Pesticides, weedicides, herbicides, fungicides	<p>P1. Identify the symptoms of all disease/ pests of citrus</p> <p>P2. Identify different weeds and their control as per industry recommendations.</p> <p>P3. Manage the rearing of beneficiary predators for efficient biological control.</p> <p>P4. Demonstrate first aid and preventive measures dealing with any incident</p> <p>P5. Maintain the record of all chemicals used</p> <p>P6. Demonstrate safe use of spray kit and spray tools and machines</p>	<p>K1. Appraise the citrus diseases and pest infestation at economic threshold and economic injury level.</p> <p>K2. Evaluate the best control with suitable and recommended herbicides and pesticides.</p> <p>K3: Explain safe storage of pesticides etc</p> <p>K4: Explain the record keeping procedures for handling chemical sprays</p>

Module 2: Citrus Harvesting:

Overview: These competency standards will ensure that the trainee is able to perform citrus harvesting as a field worker in local working conditions on citrus farm.

Competency Unit	Performance Criteria	Knowledge & Understanding
B1. Citrus Picking / Harvesting	<p>P1. Assess the best stage of fruit maturity for harvesting</p> <p>P2. Establish fine rind colour development and harvesting charts</p> <p>P3. Determine the ideal time of harvesting and marketing for maintenance of quality as per requirements of the industry</p> <p>P4. Identify the harvesting tools and effective use of picking kit</p> <p>P5. Follow the personal safety and hygiene procedures as per recommendations.</p> <p>P6. Maintain weighing methodology and standards</p> <p>P7. Calibrate the weighing machine</p>	<p>K1. Explain the importance and value of picking and harvesting at the best time.</p> <p>K2. Appraise the fruit quality with timely picking.</p>
B2. Perform Citrus Sorting	<p>P1. Demonstrate different practices at post harvest level as per industry recommendations.</p> <p>P2. Sort the citrus fruit on quality and size basis.</p> <p>P3. Check the biological infestation on fruit.</p>	<p>K1. Establish the value of fruit quality on color, size and cosmetic look.</p> <p>K2. Demonstrate the importance of maintaining fruit quality at farm.</p>

	<p>P4. Assess various injuries on harvested fruit.</p> <p>P5. Perform filling and temporary storage of citrus at farm according to industry standard procedures</p> <p>P6. Advise shading and covering of citrus at farm level</p> <p>P7. Maintain the standard data sheets of fruit</p>	
B3. Managing Waste	<p>P1. Monitor the different quality characteristics of fruit to maintain fruit grade for marketing</p> <p>P2. Demonstrate the methods of deteriorated fruit burying as per industry standards.</p> <p>P3. Maintain chart of each grade.</p>	<p>K1: Describe the characteristics of different low grade (C and D) citrus fruit as per industry standards</p> <p>K2: Describe the possible causes of fruit deterioration</p>

Module 3: Citrus Handling on the Farm.

Overview: These competency standards will ensure that the trainee will be able to perform citrus handling after harvesting at farm level for a farm worker

Competency Unit	Performance Criteria	Knowledge & Understanding
<p>C1. Perform Packing and filling</p>	<p>P1. Describe the types and use of farm packing materials</p> <p>P2. Determine the capacity of packaging material</p> <p>P3. Demonstrate the industry standard citrus packing methods and processes</p> <p>P4. Perform staking of packed baskets as crates as per recommendations.</p> <p>P5. Maintain personal hygiene and food safety in accordance with industry guidelines</p>	<p>K1. Explain the importance of packaging material and its impact on fruit quality.</p> <p>K2. Describe careful measures during packing.</p>
<p>C2. Manage Transportation</p>	<p>P1. Assess the best transportation facility with respect to market.</p> <p>P2. Perform the loading and stacking of crates in the transport as per industry standards.</p> <p>P3. Assess the loading capacity of transport vehicle in accordance with standards.</p> <p>P4. Select the best route for transportation</p> <p>P5. Maintain record of the transported vs farm fruit</p>	<p>K1. Describe the importance of transport for safe carriage up to market.</p>

Tools and Equipments

1. Farm Machinery

a. Tractor 1

Preferable 385 Ferguson especially designed for citrus orchards on rent on demand basis)

b. Rotavetor 1

Double attachment systems, standards model especially designed for citrus orchards on rent on demand basis

c. Cultivator 1

Double line of maximum rang on rent locally available

d. Boom Sprayer 1

500 liter capacity hydraulic system with auto filling and discharging systems

e. Hand spray machine 1 (12liters) made of Indonesia 1

f. Water tank of 400 liter capacity 1

Especially designed for drop systems application of pesticides during flood irrigation

2. Pruning Scissors 5

3. Pruning Saw 5

4. ladder/stand 5

5. Spade 5

6. Rope 100 meter 5

7. Pole / peg 20

8. Hoeing tools 5

9. Pheromone traps 8
10. Tension meter 5
11. Thermometer 5
12. Moisture Meter 5
13. Picking knife (Light weight) 25
14. Picking fruit bags 25
15. Fruit baskets 25
16. Weight scale 1
17. Refractometer 5
18. Fruit/pulp temperature meter 5
19. Magnifying Glass 5
20. Loading equipment 5
21. Fruit harvesting uniform 25
22. Field operation kit 25
23. First aid kit 1
24. White board with stand 1

List of Consumable Items

1. Fertilizers
 - a. NPK 7 Bags for one acre demonstration block
 - b. CAN (Calcium Ammonium Nitrate) 5 for demonstration block
Fertilizer can be selected by the expert considering the soil pH and other age, time, irrigation method and type of citrus variety
 - c. Farm Yard Manure (FYM) well rotten 50-60 kg per plant or chicken mature 20-25 kg per mature plant
2. Green Manuring
 - a. Janter seed (10-12 kg/ acer) or Goara (5-6 kg/ acer)
3. Pesticides, pesticides, fungicides and herbicides recommended by the expert considering infestation and orchard need at different critical point
4. Micronutrient and hormones recommended by the expert on demand basis for good management of orchard
5. Bordo past (1:2:12) for past application on stem and wounded parts
6. Bordo mixture (1:1:100) as recommended by the expert
7. Stock register 1
8. Note pad 25
9. Pencils 25
10. Marker three different colors 3
11. Flip Chart Book 5