

PRODUCTION GUIDELINES FOR ONIONS

1. ECOLOGICAL CONSIDERATIONS

a. Temperature

- Performs best in warm and hot areas (15 degrees to 30 degrees Celsius).

b. Rainfall

- Onions demand high moisture until plants start maturing.
- Dry period necessary when bulb ripening in progress.
- Either well distributed rains of 500 mm to 700 mm followed by a dry period. Irrigation will also suffice.

c. Altitude

- Production can be at sea level or up to 1,900 meters above sea level.

2. SITE SELECTION

a. Soil type and analysis.

- Well drained.
- pH from level from 6 to 7.
- Fertile soils are recommended.
- Sandy and silty loams are excellent.

b. Water proximity.

- Proximity to water source would be excellent, particularly in timing market.

c. Topography.

- As with most crops, relatively level land is preferred in the cultivation of onions.

3. CROP PLANNING

a. Farm layout

- Necessary so as to enable planning of crop rotation and layout of irrigation and accessibility.

b. Crop rotation.

- Necessary so as to maintain soil fertility and reduce pest and disease pressure.
- Select crops that are in different families and have different feeding patterns.

c. Record keeping

- Crucial in analyzing profitability of an enterprise.

d. Marketing

- Is a very important stage. When planning, bear in mind where the product will be sold, the possible price and possible quantity.

4. NURSERY OPERATIONS

a. Area selection

- Site should be near a water source.
- Should be on a flat area.
- If possible, site should be where crops have not been grown before.
- Should be free from wildlife and human interference.

b. Preparation

- If possible, solarize the area for at least one month using an airtight, clear plastic cover.
- Thoroughly plough the site 15 centimeters deep or more.
- Remove all debris if possible.
- Remove all volunteer growth.
- Prepare a fine tilth mixture of well-cured manure and soil.
- Can use the conventional 1 meter by 3 to 4 meter raised beds or the improved seed trays.

c. Sowing

- Before sowing, the media should be thoroughly watered.
- Depth of sowing should be proportional to seed size. Onion seed should be sown on top without drilling holes and then covered with a thin layer of media. This should be followed with a light shower.

d. Management

- Nursery should be covered with either a dry mulch or a Hessian cloth.
- Should be checked at least twice a day for moisture content and water should be added as needed. This can be done through misting, or watering with a rose sieve.
- Avoid over watering.
- Monitor germination. Once seedlings start germinating, remove mulch and create shade of at least 50 percent.
- Maintain shade in nursery until the last week of germination. (Begin decreasing shade cover as necessary). Once shade is completely removed, continue monitoring moisture twice a day.

- An hour before transplanting, water seedlings thoroughly.
- During the last week in the nursery, reduce frequency of watering (hardening).

5. MAIN SITE PREPARATION

a. Ploughing

- Plough the area to a depth of at least 15 centimeters. Plough 2 to 3 weeks in advance using jembes, animal-drawn ploughs, or tractor-drawn ploughs.

b. Harrowing

- Harrow the area 2 to 3 weeks after ploughing. If possible, use a tractor. If not, use jembes.

c. Planting beds

- Planting beds are a good planting area for the crop.
- Beds should be at least 8 inches high and should be one meter wide.

d. Spacing

- Spacing should vary from 15 cm-25 cm by 3 cm-7.5cm, with less spacing for mechanized farming.

e. Starter solutions

- At planting, it is good to use starter solutions available (e.g. kickstart from hygrotech).

6. TRANSPLANTING

a. Timing

- Seedlings should be transplanted at right stage (when pencil thickness is reached).
- Should be transplanted early in the morning or preferably late in the afternoon.

b. Depth

- Should be planted at the same depth as originally in the nursery.

7. CROP MANAGEMENT

a. Feeding/Fertilization.

- At planting, a phosphorus-based fertilizer should be added (TSP/DAP). Amount depends on soil fertility.
- Top with nitrogen-based fertilizer after 3 to 4 weeks to enhance vegetative growth.

- Subsequent top dressing will depend on crop condition.

b. Manuring

- Necessary to improve soil structure and provide the extra nutrients that are gradually needed.
- Done at planting time and incorporated into soil.
- As much as 10 tonnes of manure per hectare.

c. Weeding

- Should be done regularly and as necessary to avoid competition and curb pests and disease.

d. Pests and Disease

- Scouting is important to establish types of pests and diseases on crop.
- Major pest problems with onions include thrips. Control with proper type and application of pesticide.
- Diseases on onions include: Downy mildew, purple blotch (*Alternaria porri*). Control through crop rotation, debris clearance and proper use and selection of products.

e. Mulching

- Recommended to reduce moisture stress and weed pressure as well as increasing and maintaining soil fertility.

8. HARVESTING

a. Stage

- Bulb onions reach maturity four months after transplanting to the field and are ready to harvest after 5 to 6 months.
- During bulb ripening, watering should not take place.
- Bend bulb at the shoulder to enhance curing process before lifting from field.
- Only lift bulbs with dry leaves, which should be well-cured.
- Yields of up to 30 tonnes per hectare are possible.

b. Specifications

- Bulbs will vary in size and depending on the market can be graded accordingly.
- Bulb sizes range from small, medium and large.

c. Postharvest handling

- After harvesting, the curing process is important.
- Cut the leaf from the bulb, leaving less than half a centimeter of the neck.
- Dry the bulb in the sun as often as possible to ensure the neck heals completely.

9. GROSS MARGIN ANALYSIS

a. Capital costs

- Note all capital costs like irrigation equipment (e.g. pumps)

b. Yield

- Record yield from crop and in particular, the final dry onion.

c. Cost of production

- Record all direct costs of the production process from seed purchase to the disposal of produce.

d. Profits and losses

- Conduct a profit and loss account after the sales. Multiply yield by sale price and subtract total cost of production for entire crop.