



ROHINI COLLEGE OF ENGINEERING AND TECHNOLOGY
AUTONOMOUS INSTITUTION

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**24AG201 - CROP PRODUCTION
TECHNOLOGY**

UNIT 4

PRODUCTION PRACTICES

OF AGRICULTURAL

CROPS

Gap fill on the 15th day of sowing and simultaneously thinning may be done leaving one healthy plant.

9. Weed management

10. Apply pre emergence herbicide Pendimethalin @3lit/ha or Fluchloralin @2 lit/ha on 3DAS followed by hand weeding twice on 20th & 40th DAS.

11. Intercropping

Raise one row of castor for every six rows of groundnut. In the case of late receipt of monsoon blackgram + castor at 6:1 ratio is recommended.



12. Harvesting the crop

Observe the crop considering the average duration of the variety.

- One or more capsules show sign of drying.
- Cut the matured racemes without damaging the secondaries.
- Dry the capsule in the sun without heaping it in the shade.
- Use castor sheller to separate the seeds or beat the dried capsule with wooden planks, winnow and collect the seeds.

Sugar crops

1. SUGARCANE –

Saccharum officinarum



Seasons

- There are four main seasons in TN
 - Early–Dec-Jan
 - Mid-season–Feb-Mar
 - Late–Apr– may
 - Special season–June-July

Soils

- Cultivated in wide range of soils
- The soil must be of good depth and drainage
- No salt and compaction

Seed bed

- **Preparation of good seed bed is essential**
- o Since the same field is retained for 2-3 years
- o Deep ploughing/sub-soiling is needed
- **Field Layout**
 - In India-by adopting two systems viz.,
 - Ridge and furrows system
 - Flat system.

Planting materials

- **Vegetative propagation**
 - Known as seed pieces or setts
 - Buds on sugarcane germinate and give plants

Preparation of setts

- Use of sharp knife to cut setts
- Treat the setts immediately with fungicide solution
- Machine cutting and mechanical planting is also followed in developed countries

Seed rates & spacing

- Depends upon the spacing
- In TN

- 50,000 three budded setts
- 75,000 two budded setts
- 187,500 single budded setts

Method of planting Flat

Planting

- In this method, shallow (8-10 cm deep) furrows are opened with a local plough or cultivator at a distance of 75 to 90 cm
- The setts are planted in them end to end
- Furrows are covered with 5-7 cm soil

Furrow Planting

- In this method furrows are made with a sugarcane ridger about 10-15 cm deep in northern India and about 20 cm in south India
- Setts are planted end to end

Manures for Sugarcane

- Apply FYM/ Compost during field preparation
- In organic fertilizers:
 - For Coastal and flow irrigated areas
 - 270:112.5:60N:P2O5:K2O kg/ha
 - For Lift irrigated areas
 - 225:112.5:60N:P2O5:K2O kg/ha
 - For Jaggery producing areas
 - 175:112.5:60N:P2O5:K2O kg/ha

Irrigation

- To support and sustain a vigorous nursery crop, irrigating at optimum levels is important
- Any shortage in the irrigation would lead to reduced sett yield
- Moisture stress would pre-dispose the crop to the attack of some pests and diseases

Weed control

- Pre-emergence application of
 - Atrazine 1.75kg or Oxyfluorfen 0.75 lit/ha on 3-4 days of planting using knapsack sprayer
- Post-emergence application of
 - Gramaxone 2.5 lit + 2-4,D Sodium salt 2.5 lit/ha as directed spray on 21 DAP
- Hand weeding before each manuring

Cultural operations

Important cultural operations in sugarcane in addition to weeding, manuring and irrigation are

- Earthing up
- De trashing
- Propping and

- Flowering control

Earthing-Up

- This practice is followed where furrows are practiced
- Earthing up are 2-3 times during crop period.

Detrashing

- On an average a stalk may produce 30-35 leaves
- All are not useful for effective photosynthesis
 - Only the top 8-10 leaves are sufficient
- Therefore it is important to remove the dry and lower leaves
- This operation is known as detrashing
- Detrashing helps in clean cultivation

Propping

- Tying the canes by using the lower bottom leaves to check lodging of cane
- Propping can be either done for each row or two rows can be brought together and tied

Ratoon Management

- The crop raised from planting cane sett is called plant crop
- After the harvest of plant crop stubble sprouts and gives rise to succeeding crop called as ratoon crop
- The practice of taking up ratoon crop is called 'ratooning'

Maturity and harvest

- Ripening of sugarcane refers to rapid synthesis and storage of sucrose in the stalk

Assessing maturity

- Use of hand refractometer-Brix reading
- Assess the maturity by HR meter survey—18-25% indicates optimum maturity
- When the reading between top and bottom is 1:1—is right time to harvest
 - If delayed
 - Sucrose content decreases
 - Non-sugars increases
 - Fibre content increases

2. TROPICAL SUGARBEET

Betavulgaris spp. *Vulgaris var altissima* Doll

Climate and season

- Tropical sugar beet require good sunshine during its growth period.
- The crop does not prefer high rainfall as high soil moisture or continuous heavy rain may affect development of tuber and sugar synthesis.

- The optimum temperature for germination is 20–25°C,
- For growth and development 30–35°C and
- For sugar accumulation in 25– 35°C.

Season

- September to November and harvested during March and May.

Field preparation

- Well drained sandy loam and clayey loam soils having medium depth (45” cm) with fairly good organic status are suitable.
- Ridges and furrows are formed at 50 cm apart.

Manures and Fertilizers

Manures and Fertilizers

Basal Application

12.5tonnes /ha

Seeds and sowing

- Optimum population is 1,00,000-1,20,000/ha.
- The recommended spacing is 50 x 20 cm.

Weeding and Earthing up

- The crops should be maintained weed free situation upto 75 days.
- Pretilachlor 50 EC @ 0.5 kg /ha or Pendimethalin @3.75lit /ha can be dissolved in 300 litres of water and sprayed with hand operated sprayer on 0-2day after sowing,
- Followedbyhandweedingon25thdayand50thdayaftersowing.

Irrigation**Tropical sugarbeet is very sensitive to water stagnation in soil at all stages of crop growth**

- Irrigation should be based on soil type and climatic condition.
- Pre-sowing irrigation is essential since at the time of sowing, sufficient soil moisture is must for proper irrigation.
- First irrigation is crucial for the early establishment of the crop.
- For loose textured sandy loam soil irrigation once in 5 to 7 days and for heavy textured clay loam soil once in 8 – 10 days is recommended.
- Theirrigationhastobestoppedatleast2to3weeksbeforeharvest.
- At the time of harvest if the soil is too dry and hard it is necessary to give pre harvest irrigation for easy harvest.

Harvest and yield

- The Tropical sugarbeet crop matured in about 5 to 6 months.
- The average root yield of tropical sugar beet is 80–100 tonnes/ha.
- Harvesting should be timed so as the roots reach the factory within 48 hours for processing.

FIBRE**1. COTTON***Gossipium sp***Climate**

- A mean average temp of <15° C for crop growth
- Optimum temp for vegetative growth is 21°C
- For fruiting a day temp of 27-30° C with large diurnal variation
- Well distributed seasonal rainfall
- Open sunny weather

Soils

- A soil to a depth of not less than 60cm
- Sandy, sandy loam, black soils

Season

- Southern zone
 - June in Karnataka
 - Jun/ July in red soil of AP
 - August in TN

Field preparation

- Fine tilth is not a pre-requisite
- Application of FYM/compost
- Chiseling may be to break hard pan
- Forming ridges and furrows is ideal

Spacing and seed rate

Variety / Hybrid	Spacing	Seed Fuzz	- Seed-Delinted	Seed Naked
MCU5, 9, 11, SVPR 2, LRA 5166	75x 30	15	7.5	-
KC 2	45x 15	20	15	-
SUVIN	90x 45	-	-	6
Jayalakshmi, HB224,TCHB 213	120x60	3.75	2.5	-
MUC7,SVPR1,ADT1	60x 30	15	7.5	-

Sowing

- Dibbletheseedsat3cmdepth
- Noofseeds
 - Fuzzy seeds
 - Hybrids-2
 - Varieties-3
 - Delinted seeds
 - Hybrids-1
 - Varieties-2

Inorganic fertilizer–kg/ha

Variety/Hybrid	N	P2O5	K2O
MCU5,9,11,SVPR2,LRA5166	80	40	40
MUC7,SVPR1,ADT1	60	30	30
SUVIN,Jayalakshmi,HB224,TCHB 213	120	60	60

Weed management

- Herbicide application
 - Pre-emergence application of
 - Fluchloralin1.0 kg
 - Pendimethalin1.0kg

- Handweeding at 30-45 DAS

Irrigation

- Cotton can be irrigated at
 - 75% depletion available soil moisture in clay
 - 50% ASM at sandy loam soils
- Early irrigation is important to have proper plant growth
- Methods of irrigation
 - Flooding through furrows
 - Surge may be followed
 - Drip fertigation is also possible

After cultivation Thinning and gap filling

- Gap filling on 10th day
- Seedlings raised from poly ethylene bag may be useful
- Thin the seedlings to single plant on 15th day

Earthing up

- Digging and earthing up is essential for soil aeration



Harvesting

- Hand picking is usual practice
- Strippers—spindle or brush type is used in developed countries
- May be machinery
 - Method of sowing needs change
 - One time harvest
- Seed cotton should be collected from fully opened bolls
- After harvesting should be dried in clean threshing floor

GREEN MANURES

Green manuring & Green leaf manuring

- Green manuring
 - Growing of crop purposely and incorporating it in the soil for manuring
- Green leaf manuring
 - Collecting green leaves from all available sources and using for manuring