

SUGARCANE (*Saccharum officinarum*)

Sugarcane grows best in the tropical regions, receiving a rainfall of 750-1200 mm. Sugarcane grows well on medium heavy soils, but can also be raised on lighter soils and heavy clays, provided there is adequate irrigation. The soils should be well drained.

Season

The normal planting season is October-December. Delay in planting reduces cane yield. The planting season for semi-arid tract is from October-December and in deltaic areas the ideal time is the first fortnight of January. Planting should not be delayed beyond February in the plains. In hilly tracts where sugarcane is cultivated under rainfed conditions, planting should be done after abatement of heavy rains.

Varieties

CoTI 1358 (Abhay): Tolerant to water logging

CoTI 1153 (Aromal): Suitable for flood prone situations and have high sugar content suitable for jaggery production

Co TI 88322 (Madhuri): Resistant to red rot disease

Co 92175: Suitable for drought prone situation

Co 740: For ratooning

Co 6907, Co 7405 and Cul 57/84 (Thirumadhuram): Red rot resistant, high sugar content

Cul 527/85 (Madhurima): Resistant to red rot, tolerant to drought and waterlogging

Co 88017 (Madhumathi): Resistant to red rot, tolerant to drought and waterlogging

Preparation of land

Plough the land thrice length-wise and breadth-wise and level properly. Prepare furrows 25 cm deep and 75 cm apart for short

duration and 90 cm apart for medium duration varieties. In hilly tracts, prepare pits in rows along the contour at spacing of 30 cm in the row and 75 cm between the rows. For mid-late varieties, an inter-row spacing of 75 cm is recommended.

Selection of setts

Select top ends of mature, healthy disease free canes up to 1/3 of total length and cut into setts of three eye buds. The seed rate is 40000-45000 setts per hectare.

Seed treatment

For control of fungus disease like red rot, dip cut ends of setts in 0.25 per cent solution of copper based fungicide.

Planting

Plant setts end to end in the furrow, with the eye buds facing sideways and cover with soil. In the pit system, plant 2-3 setts in each pit.

Manuring

Apply compost or cattle manure, 10 t ha⁻¹ or pressmud 5 t ha⁻¹ or dolomite 500 kg ha⁻¹ or calcium carbonate 750 kg ha⁻¹. In addition, the following fertilizers as N:P₂O₅:K₂O kg ha⁻¹ are also recommended.

Pandalam and Thiruvalla areas: 165: 82.5: 82.5 (Madhuri, Thirumadhuram, Madhurima and Madhumathi)

Chittoor area : 225:75:75

Newly cleared forest areas: 115:75:90

Apply organic manures such as compost/cattle manure/pressmud as basal dose preferably in furrows and mix well with soil before planting.

In sugarcane tracts of Palakkad where sett treatment with *Azospirillum* @ 500g ha⁻¹

together with soil application 5 kg ha⁻¹ is done, sugarcane need be given only 175kg ha⁻¹ N.

When Azospirillum and Phosphobacteria at 5 kg each per ha is integrated with FYM 10t ha⁻¹, sugarcane need be given only 75 per cent of the recommended dose of N, P₂O₅ and K₂O (165:82.5:82.5) for deltaic areas.

Apply lime or dolomite or calcium carbonate in the field before final preparation of the land.

Apply N and K₂O in two split doses, the first 45 days after planting and the second 90 days after planting along with earthing up. Do not apply N beyond 100 days after planting.

Apply entire dose of phosphorus as basal dressing. When pressmud at 10t ha⁻¹ is applied sugarcane grown in Palakkad need be given only 50 per cent of the recommended dose of P as rock phosphate.

In the black soil of Palakkad apply S at 60 kg ha⁻¹ in the form of gypsum as a soil ameliorant before the final land preparation.

Among the sources of sulphur, gypsum is found to be beneficial in sugarcane.

After cultivation

When ratoon crop of sugarcane is trash mulched @ 4t ha⁻¹ the crop must be given only 100 per cent of the recommended dose of NPK 225:75:75 against the existing recommendation of 125 per cent.

The crop should be weeded twice on 45 and 90 days after planting before application of fertilizers. First weeding is done by digging on the ridges and by hand in the furrows. Care should be taken to see that the furrows are not filled up while digging so that tillering is not affected. At the time of second digging, the crop is partially earthed upto arrest formation of late shoots. With the

commencement of the south west monsoon, final earthing up should be done to prevent lodging. At this time, de-trashing is to be done to prevent the possible germination of axillary buds and to reduce pest infestation. Prevent lodging either by twisting of trash or by propping.

Weed control using herbicides

Apply oxyflurofen at 0.61 kg ai ha⁻¹ as pre emergent and at 60 DAP as post-emergent application.

Apply metribuzen 1 kg ai ha⁻¹ as pre-emergent application followed by one hoeing at 60 DAP while integrated weed management is undertaken.

Intercropping

Under irrigated conditions, intercropping with short duration pulse crop is recommended. In such cases, sow the pulse crop on the ridges one month in advance, so that the first inter-cultivation is not hindered. As a green manure, sun hemp can also be raised on the ridges.

Irrigation

Irrigate the crop 8-10 times depending upon the availability of rains. In Chittoor area, more number of irrigations will be necessary. In early growth periods, irrigate the crop at more frequent intervals. However, avoid too much moisture and water stagnation especially during germination and early growth phases.

Alternate furrow with trash mulching could economise the use of irrigation water to the tune of 41 per cent during the formative phase of spring planted sugarcane as compared to all furrow irrigation with trash mulching.

Plant protection

Pests

The important pests of sugarcane found in the state are early shoot borers, top shoot

borers, mealy bugs, white grubs, termites and rats.

Management

Use pest free setts for planting.

Adhere to clean cultivation.

Use traps or poison baiting for controlling rats.

Diseases

Red rot

The most characteristic symptom of the disease is the drying up of the canes, which when split open will show characteristic red colouration of the internal tissues with horizontal white patches and the typical foul smell. The disease is mainly transmitted through infected setts and flowing water and can be checked only by prophylactic means which are given below:

1. Affected crop should be harvested as early as possible to prevent loss in yield and deterioration in quality and also to arrest further spread of the disease. The crop residues should be completely burnt after harvesting.
2. When infection is noticed in the field, the affected clumps should be uprooted and burnt promptly.
3. Infected crop should never be ratooned.
4. Water should not be let into a healthy crop from diseased areas and as far as possible, the field may be kept free of standing water by providing drainage channels.
5. In severely affected areas sugarcane should not be cultivated at least for one season during which paddy and tapioca can be cultivated.
6. Seed setts should not be collected from diseased crops and from diseased areas.
7. Movement of seed materials from diseased to healthy areas should be strictly quarantined.

8. Cultivate red rot resistant varieties.

9. To control the fungal diseases, in general, dip the cut ends of setts in copper oxychloride 2 g l⁻¹ solution before planting.

Other transmissible diseases like grassy shoot, ratoon stunting etc. can be controlled by heat treatment and by implementing three tier seed programme.

Harvesting

Harvest the crop when it is fully mature. Delayed harvesting will reduce yield and recovery percentage.

Ratoon management

Normally not more than two ratoon crops are recommended. Stubble shaving should be done with a sharp spade wherever the canes are not cut close to the ground.

Spread the trash uniformly in sugarcane field after stubble shaving and dismantling the ridges.

Gap filling

Fill the gaps at the rate of one - three budded sett for every 50 cm gap or with poly bag settlings for every 50cm gap. Polybag settlings are produced by planting single budded setts in polythene covers containing potting mixture and transplanted at 45-60 DAP.

Manuring of ratoon crop

Ratoon crop requires a higher dose of nitrogen than the plant crop. An extra dose of 25 per cent nitrogen is recommended.

Manure the crop by 25th and 75th days after harvest of the previous crop. Entire quantity of phosphorus, half of nitrogen and potash are applied as the first dose and the remaining as the second dose. The first dose is incorporated into the soil by digging and the second dose is applied around the clump and earthing up is done. Weeding is also done at this time. Irrigation is given as in plant crop.