

SUGARCANE

Varieties

A number of improved varieties of cane under different maturity group, tolerant to drought or water stagnation are recommended for growing in Orissa. In choosing varieties for factory areas early (maturing in 10 months) and mid late varieties (maturing in 12 months) should be planted in staggered manner in order to ensure a continuous supply of cane to the factory. The recommended varieties with their characteristics are given in the following table. Any variety planted early in November or December will, however, take longer time to maturity than that indicated in the table. If planted late beyond March their duration (peak maturity period) will be shortened.

Sugarcane varieties for Orissa

Sl. No.	Variety	Colour (exposed cane)	Stem girth	Leaf clasping	Reaction to red rot	Identifying character	Special agronomic character
EARLY (maturing in 10 months)							
1	CoC 671	Light purple	Thick	Loose	S	Broad leaf, no bud groove, ligular process absent, prominent buds.	High yield (100t/ha) with high sugar, prone to lodging, suitable for irrigated uplands
2	Co 6907	Light yellow	Medium	Moderate	MR	Bud groove present extending the entire length of internodes	High yield (103t/ha), high sugar, suitable for all land types, late harvest does not reduce much sucrose, good ratooner
3	Co 7508	Yellow to purplish green cane	Thick	Tight	MR	Distinct ivory and weather markings, merging to give brick red appearance, bud groove often present	High yield (90t/ha), high sugar, suitable for irrigated uplands
4	CoC 85036	Light green	Medium thick	Moderate	S	-do-	High yield (110t/ha) with

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							high sucrose.
5	Co 87263 (Saryu)	Purple	Thick	Loose	MR	Ivory marks present, spines many and soft.	High yield (110t/ha), high sugar, tolerant to drought, good ratooner
6	CoA 89085	Light yellow with light green noses	Medium thick	Loose	R	Bud groove present, ligular process absent	Early variety with high yield (95t/ha) and high sugar, resistant to all the 3 tropical races of red rot.
7	Co 90017	Green	Thick cane	Moderate	MR	Ivory marks present, medium waxiness with hard spines on sheath.	Moderately high yield (90t/ha), high sucrose, suitable for irrigated ecosystem
8	Co 87002	Dark reddish pink with yellow tinge	Thick	Moderate	MR	Ivory mark prominent, heavy wax coating, ligular process present, spines present (few and hard)	High yield (92t/ha) and light sucrose.
MID LATE (Maturing in 12 months)							
1.	Co 7219	Yellowish green with purple tinge	Thick	Loose	MR	Moderate to heavy bloom, sheath, splitting, growth ring yellow, root zone purplish yellow	High yield (99t/ha) and high sucrose, suitable for irrigated ecosystem and rice land.
2.	Co 87044 (Uttara)	Greenish yellow	Thick	Loose	MR	Waxiness low, sheath spines few and hard	High yield (104t/ha) and high sucrose, suitable for irrigated ecosystem and rice land.
3.	Co 86249 (Bhavani)	Greenish yellow with purple tinge	Medium thick	Tight	MR	Spines and waxiness absent, ivory marks	High yield (107t/ha) and high sucrose, suitable for

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						present	irrigated ecosystem and rice land.
4.	Co 62175	Yellowish green, turns dark on exposure	Very thick	Loose	S	Sheath spine absent	High yield (105t/ha) with good sucrose, suitable for late crushing, good jaggery type, good ratooner
5.	Co 86032 (Nayana)	Reddish pink	Medium thick	Loose	MS	Prominent ivory marks, waxiness medium, spines few and hard deciduous	High yield (100t/ha) and high sucrose. Not suitable for water logging situations +
6.	Co 740	Green	Medium to thick	Very loose	MR	Sparse spines on leaf sheath	Profuse tillering, high yield (100t/ha), good ratooner, resistant to drought, prone to lodging
7.	Co 8021	Purplish green, turns darkgreen/purple in exposure	Medium thick	Loose	MR	Root zone maize yellow colour, growth ring light green	High yield (100t/ha) and high sucrose, suitable for irrigated ecosystem

Field preparation

For flat planting of cane or for planting in furrows, thorough land preparation is necessary. But for trench planting, it is not necessary to plough the land more than two times. Planting of cane in trenches is the best method of planting. Trenches should be 30 cm wide 20 cm deep and 90 cm apart from centre of one trench to the other. Drainage should be provided wherever necessary. For early maturing varieties spacing between trenches may be reduced to 75 cm. Reduce spacing to 60-75 cm for delayed planting beyond March.

Trench method of planting has the following advantages

- Drainage is facilitated
- Weed growth is considerably reduced
- Early shoot-borer infestation is reduced

- Irrigation becomes easier and also less water is required
- Better anchorage is provided which prevents the crop from lodging
- Better ratoon crop

Seed rate

- Early varieties (50-55 thousand 3 budded setts) : 8-10 t/ha
 - Medium/mid-late varieties (40-45 thousand 3 budded setts) : 8 t/ha
- Ensure planting of 12 buds per metre row length.

Sett cutting

A mechanical sugarcane sett cutter should be used for economical sett cutting and to obtain more viable setts. Care should be taken while detrashing canes before sett cutting to prevent damage to eye buds.

Sett selection and treatment

Collect setts from the whole cane of a 6-8 month old plant crop free from diseases and insect pests. Select the upper 1/3rd of cane if seeds are collected from 12-month-old crop for better sprouting. Do not use seeds of ratoon crops. Soak the setts for 30 minutes in 500 lit of water (solution) containing 750 g of carbendazim 50 WP, 1000 ml of chlorpyrifos (Do not add chlorpyrifos if soil drenching is adopted) and 1 kg urea. If possible pass the setts through Aerated steam treatment (AST) at 50°C for a period of one hour for effective control of sett borne diseases like smut, grassy shoot disease (GSD) and ratoon stunting diseases (RSD). This is important for quality seed production programme.

Manures and fertilizer

Sugarcane is a heavy feeder. It is advisable to apply fertilizer on the basis of soil test results. Where this is not done apply FYM @ 10 t/ha along with 250 kg of N, 100 kg of P₂O₅ and 60 kg K₂O/ha.

Apply full P₂O₅ and 50% K₂O at the time of planting in trenches. Top dress nitrogen in three equal splits at 45, 75 and 105 days after planting. Apply the rest amount of K₂O at the time of the third top dressing of N. Do not top dress N after 120 days after planting as late application delayed maturity, reduces sucrose content and the total cane yield. Delay the N top dressing in February planted crop if irrigation is not available. Apply 10 kg each of Azospirillum and PSB mixed with 1.0 t of FYM in two equal split doses at 30 and 60 DAP at the base of the clumps after irrigation.

Intercultural operation

Use pre-emergence herbicides Atrazine 50 WP or Ametryn 80 WP @ 2.0 kg a.i./ha or Metribuzin 70 WP 1.0 kg a.i./ha within 3 days after planting to reduce the cost of weeding. The sprouting of buds is completed within 25 to 30 days after planting (DAP). Perform a light hoeing at this stage to control the weeds, hasten

early growth and to prevent the attack of early shoot borer. Complete the successive hoeing, weeding and top dressing of N at 30-45 DAP, 60-75 DAP and 90-105 DAP. Follow light earthing up during the first and second top dressing while heavy earthing up during the third top dressing.

Wrapping and propping

Keeping the canes erect results in better juice quality. For this purpose wrapping and propping are useful practices. When the crop is 4 to 5 months old, remove borer affected tillers and late formed tillers, tie the cane shoots in two's or three's with the partially dried lower leaves. Remove the late tillers and water shoots formed from October onwards. They do not mature in time and spoil the quality of juice if crushed along with the main crop.

Repeat the wrapping process two or more times, each time interlocking more cane shoots. Tie the upper portion of the shoots as the canes grow in height. The recent method of wrapping and propping sugarcane are chain method and T-propping. Wrap the canes by chain method each row separately. T-propping is done tying the canes of adjacent rows. Strip out the dried leaves to suppress the development of set roots and buds.

Water Management

Irrigate the trenches before planting of the setts to ensure quick germination. This should be followed by light irrigation periodically to keep the soil moist for better germination and uniform growth and plant stand. Irrigate the crop at 7-10 days interval in the hot summer depending on the soil texture. The critical period for irrigation is between 45-75 days of planting. Irrigate the crop till the onset of monsoon. In post monsoon period irrigate the crop at 15-20 days interval. Stop irrigation before 20 days of harvest for better juice quality. Avoid waterlogging as it decreases the quality of the cane.

Harvesting

Harvest the mature cane when the brix reading reaches 18 or above. Hand refractometers have been provided in all the important cane growing centres and this should be used for testing of the juice and for advising the farmers to harvest the crop at the right stage.

Transport the cane immediately after harvest to the factory for crushing. Maximum recovery takes place when the cane is crushed within 24 hours after harvesting. Further delay in crushing the cane results in lowering the recovery of sugar. Sugarcane harvesting knife should be used for harvesting. A stripper should be used for removing the cane leaves and detopping.

Yield

Under good management condition, a plant crop of sugarcane yields about 100-120 t/ha.

Monsoon planting of sugarcane

Upland rice may be substituted by monsoon sugarcane crop for production of quality planting materials. June planted sugarcane crop may be harvested in January-February (7-8 months crop) and the whole canes can be utilized for seed in the commercial planting. Package of practices are similar to that of the commercial crop usually planted in January-February.

IMPACT POINTS

- Trench method of planting
- Optimum plant population
- Application of nitrogen fertilizer within 90-105 days of planting.
- Irrigation at the critical period i.e. 45-75 days after planting.
- Control of early short borer
- Removal of late tillers and water shoots.
- Trash mulching

Ratooning of sugarcane

Ratooning of sugarcane is one of the important methods of reducing cost of production through elimination of seed cost and preparatory cultivation charges. Ratoon crops in general, mature one month earlier than the plant crop.

Adopt the following practices to raise a successful ratoon crop.

1. Harvesting of canes at ground level or below it to avoid upper buds to sprout.
2. Stubble shaving operation with a spade within a week to allow lower buds to sprout effectively. Irrigating the field and dismantling the ridges so as to encourage the lower buds to germinate. Avoid trash burning.
3. Necessary gap filling where there is a gap of more than 45 cm within the row with poly bag settlings or sprouted single budded setts of equal age as that of ratoon.
4. Trash mulching to help quick germination of buds, conservation of soil moisture, suppression of weeds and reduction of incidence of early shoot borer.
5. Hoeing of the land for suppression of weeds and better aeration.
6. Use of recommended manures and fertilizer. Ratoon crop requires 25% more nitrogenous fertilizer than plant crop. Apply 312 kg of N, 100 kg of P_2O_5 and 60 kg of K_2O /ha as per schedule in the plant crop.
7. Irrigate immediately after fertilization and subsequently at an interval of 10-15 days depending on the type of soil
8. Detrash the leaves as required.
9. Wrapping and propping operations to keep the canes erect.
10. Harvesting of canes on the basis of hand refractometer reading (more than 18).