SUGAR CROPS

Sugarcane

(Saccharum sp*)*

Varieties:

Varieties	Maturity	Harvesting time (%)	Cane yield (t/ha)	*Gur* recover (%)	Sucrose content (%)	Reaction to insect pests	Special feature
Doria	Early	Dec-Jan	70-80	10-12	18-19	Moderately susceptible to top and plassey borer	Profuse tiller, good ratooner and Non flowering
Kalang	-do-	-do-	-do-	-do-	-do-	-do-	-do-
Barak	-do-	-do-	-do-	-do-	-do-	-do-	Profuse tiller, good ratooner, tolerant to lodging and non flowering
Co 997	Early as well as mid	Dec-Jan	70-80	10-12	18-20	-do-	Profuse tiller, good Ratooner & drought resistant
Dhansiri	-do-	-do-	-do-	10-12	18-20	-do-	Profuse tiller, quick growing & tolerant to waterlogging
Lohit	-do-	Dec-March	-do-	10-12	18-20	-do-	Profuse tiller and good ratooner
CoBln 94063 (Nambor)	Early	Dec-Jan	70-90	1-12	18-19	Moderately resistant to borers and red rot	Profuse tiller, good ratooner, tolerant to waterlogging of 10-30cm depth from June to Sept. and flood of 5-6ft depth during July/Aug
CoBln 9006 (Kapilipar)	Mid late	Feb-Mar	70-85	10-12	20-21	-do-	-do-
CoBln 02173 (Doiyang)	-do-	-do-	70-80	11-13	20-21	-do-	Profuse tiller, good ratooner

Selection of Setts:

Top tender portion of the cane (sett) is especially suitable for planting. Late shoots and late planted canes also provide good planting materials. Each sett should be 3or 4 budded. Setts should be free from red rot and borer infestation. It is necessary that planting materials are collected from fields/areas free from red rot.

For obtaining good quality planting materials in large quantities, it is advisable to raise a separate seed crop with extra care. Late planted crop *i.e.* planted in June-July provides good quality setts for planting in next spring. Besides the usual fertilizer dose of 135 : 70 : 60 kg/ha N : P_2O_5 : K_2O) an extra dose of 65 kg N (145 kg urea) should be top dressed to the crop in October. Adequate plant protection measures should also be taken to keep the crop free from pests/diseases.

For planting late in season (April-May) use of pre-germinated materials is beneficial. For this purpose top portions of cane are to be germinated first in nursery by keeping them horizontally underlight earth cover for a month and made to shorter cuttings with 3 buds in each, for planting. The leaves of the shoots are clipped off and planting should be done in rainy or cloudy weather.

Treatment of Setts:

Setts are to be treated before planting by dipping them in 0.2% carboxin or 0.1% azoxystrobin. In the process of treatment of setts when the solution gets reduced by about 50% it should be brought to the original volume by adding a solution of equal strength.

Selection of site and Land preparation:

Uplands and areas free from water stagnation should be selected. Trenches/furrows (25 cm width and 20 cm depth) should be made in well prepared soil at a distance of 75-90 cm. Bottom of the trenches should be loosened by light hoeing before application of manures and fertilizers.

Manures and Fertilizers: Compost or FYM has to be applied @ 10 t/ha intrenches/ furrows before planting cane. Besides, the following fertilizers are to be applied.

Nutrient	**Requirement (kg/ha)**	**Form**	**Fertilizer requirement**	
			kg/ha	**kg/bigha**
N	135	Urea	300	40
P_2O_5	70	SSP or MRP	440 350	60 50
K_2O	60	MOP	100	15
Alternatively the following fertilizers may be used :				
N	135	Urea	235	34
P_2O_5	70	DAP	150	20
K_2O	60	MOP	100	15

Granulated mixed fertilizer may also be used instead of the above fertilizers. The per hectare requirement of mixed fertilizer of 15 : 15 : 15 grade is 450 kg (64 kg/bigha) which should be applied in trenches/furrows at planting followed by topdressing of urea @ 150 kg/ha (21 kg/bigha).

Time and Method of Application of Fertilizers:

Entire quantity of phosphatic and half of potassic fertilizers are to be applied in furrows/trenches and mixed well with the soil before planting the setts. Nitrogenous fertilizers are to be applied in two splits, 1/3rd at planting and 2/3rd at first earthing up. The remaining half of the potassic fertilizer may be top dressed along with urea. Application of nitrogenous fertilizer should be completed within 90-100 days of planting.

Method of Planting:

Three or four budded setts should be planted by end to end method in trenches/furrows. Setts should be covered lightly with about 5cm of soil.

Seed Rate:

About 45,000 to 52,000 setts (6.5 to 7.5 t) are required for planting one hectare. The requirement per bigha would be about 6,000 to 7,200 setts weighing about 1 tonne.

Time of Planting:

March is suitable for planting sugarcane (spring planting). Early planting (late January-February) is advisable where irrigation facilities are available. When autumn planting (October planting) is done it is necessary to put a companion crop of mustard (single row) in between cane rows.

Mulching:

Planting setts in furrows and subsequently mulching the ridges with 50 micron plastic film and mulching the furrows with sugarcane trashes conserves soil moisture and gives higher cane yield.

Weed Control:

One weeding should be given within 30-35 days of planting followed by another within 60-90 days of spring planted crop. In October planted crops weeding should be done as and when necessary.

Irrigation:

Apply three irrigations of 6 cm depth during April, October and November at alternate furrows.

Earthing Up:

A light earthing up should be given to fill trenches/furrows within 1½-2 months after planting. The second earthing up should be done 1½ -2 months after the first earthing up. The second earthing up will transform the trenches/furrows into ridges. The furrows, thus made in between the ridges will facilitate drainage of excess water during high rainfall.

Stripping and Propping:

During the growth period of cane, the old and dry leaves should be removed.

The canes should be provided mechanical support to prevent lodging.

Plant Protection:

a) Termites, red ants and white grubs : Apply bifenthrin 10EC @ 100 g a.i. /ha

b) Borers: Spread of stem borer attack in May-July can be checked by burying/burning of infested canes. Any of the following insecticides may also be used against these pests. Two to three rounds of fortnightly spraying starting from the rush of egg laying should be given.

Insect pests	Insecticides technical names	Quantity (g *a.i.* /ha)
Early shoot borer & Root borer	Fipronil 5SC	75-100
Early shoot borer, Root borer	Fipronil 0.3GR	75-100
Early shoot borer	Flubendiamide 20WG	75
Early shoot borer, Top borer	Chlorantraniliprole 18.5SC	75
White grub (*Holotrichia consanguinea*)	Fipronil 40%+Imidacloprid 40WG	175.0+175.0-200.0+200.0
Termite	Chlorantraniliprole 18.5SC	100.0-125.0
Termite, Early shoot borer	Thiamethoxam 75SG	120

c) Red Rot (*Colletotrichum falcatum*): Red rot infested canes dry up and ultimately die. The canes become shriveled, the leaves and the leaf sheaths dry up and when the stem is split open characteristic reddening of internal tissue with white transverse and are observed.

Disease free setts should be used to prevent the spread of red rot. Setts from diseased cane or diseased fields should be avoided. Water stagnation in the field should be avoided and roguing of the affected plants should be practiced. Canes of the disease affected field should be harvested early and stubbles should be burnt. Field should be newly planted after 4-5 months. Ratooning should be discouraged.

d) Wilt (*Cephalosporium sacchari*): Measures recommended for red rot should be adopted.

Harvesting:

Sugarcane should be harvested at the ground level. Late suckers should be removed at the time of harvesting. Sugarcane is ready for harvest when the desired level of sucrose is attained in juice of different varieties.

In non-flowering varieties, the maturity is indicated by cessation of growth characterized by leaves appearing to emerge from a single point. In the case of flowering varieties, the harvesting has to be completed within two months of flowering.

Sett Preservation:

During dry months (December to April) setts can be preserved by adopting "deep trench trash-cover" method in which three-budded setts keeping in narrow trenches. Setts are to be covered with dry trash and water should be sprinkled at least twice a month.

Ratoon Management:

Field should be properly cleaned after harvesting and ridges should be broken down by hoeing or ploughing. Stubbles should be cut with a sharp knife at ground level for uniform establishment of the ratoon.

Gaps in ratoons need to be filled up by planting pre-germinated materials within a month of harvesting of the crop. One three-budded pre-germinated piece of sett for each 25 cm gap is sufficient.

Cow Dung/compost should be applied immediately after breaking of ridges. Nitrogen, Phosphorus and Potash @ 150, 70 and 60 kg per ha, respectively should be top dressed in two splits. Half of fertilizers should be applied at first earthing up and the remaining half should be applied at second earthing up, within 60 days of stubbles having.

For better control of weeds in ratoon, bispyribac sodium (10%SL) @1 kg a.i/ha should be used as pre-emergence, followed by the same as post emergence application after 3 weeks of stubble shaving.

Other cultural practices are the same as in plant cane. Special attention should be paid to plant protection measures.

The ratoon crops can be raised profitably by proper management practices. Ratooning for more than two years usually makes the crop liable to greater damage by insect pests and diseases. Ratooning of red rot or heavily insect pest infested crops should be avoided.