

## Sugarcane Cultivation.

*In the Northern taluks of Ganjam District.*

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*Introductory* :—The cultivation of this important, industrial crop is done in small and scattered areas in the district. Conditions in the Northern Taluks seem to favour more extensive and concentrated cropping. A copious supply of sub-soil moisture, plentiful rainfall from June to December and well drained loamy soils of a good depth help good growth, while the sugar factory at Aska creates a good demand for the raw material. However, in recent years, owing to the rise in prices, and the heavy cost of cultivation, want of cheap credit, risky nature of cultivation, the area under sugar-cane has been on the decline. A deficient supply of water under the Rushikulya system, due to the uncertain pre-monsoon showers, and absence of a good number of wells in the cane growing areas, are responsible for the restricted cane area. The extent of cane cultivated by each ryot varies from one *bharanam* to four *bharanams* (one *bharanam* = 20 cents)

2. There is only one Local variety. It is a dwarf cane green in colour, with many aerial roots. This variety ripens in about 8 to 9 months. Locally Oriyas call it "Dhobo Akku" which means "White Sugar Cane". A long jointed, slender, and purple coloured cane is also found here and there. This may be the variety known as "Yerra". Of recent introductions are Java and Barbados, cultivated in the neighbourhood of Aska. Except in one or two villages these are grown almost mixed.

3. *Soils* :—Cane is cultivated in all taluks in wet lands, and to a small extent under garden land conditions also, water being lifted either from wells or from the nearest hill stream. It is cultivated on a variety of soils. In most cases, a rich loamy soil with a loose texture having good drainage facilities is preferred. Drainage in cane fields is not a serious trouble in the district.

4. *Rotations* :—Throughout the tract, on wet lands, cane is cultivated in rotation with paddy though there is no fixed rule followed regarding the interval. As a rule however sugarcane is not planted a second time on the same land before at least one crop of paddy is taken. Sometimes in parts of Dharakota (near

Aska) a crop of green gram is raised after paddy, and the land prepared for sugarcane. In the case of garden lands, ragi precedes a cane crop. In some cases as in parts of Halyabada etc., villages (near Chatrapore), it is again a practice to raise a crop of pumpkins, harvest the same in about February—March, irrigate the plot, and then prepare the land for cane. Though not grown as a regular mixture crop, it is a common practice to sow seeds of gogu *H. cannabinus* mainly for leaf, which is used for cooking purposes. These plants are however removed when sugarcane is about 3 months old.

5. *Preparatory cultivation* :—Whatever crop may precede sugarcane, the earliest time to commence preparatory cultivation is January and latest March. Where paddy is succeeded by cane, the former is possible, while the latter is adopted, when either green-gram, or other crops precede a cane crop. From the time of the commencement of the preparatory cultivation till the setts are planted, the plot is ploughed at least once a week, and after about a dozen ploughings, the land is brought into a friable condition and levelled. The soil is ploughed to a depth of about 5 to 6 inches and farm yard manure is applied or penning of sheep or cattle is done. In the case of farm yard manure, about 30 cart loads are applied; and in regard to penning, cows are preferred; and very rarely sheep. It is generally believed, that cane cracks when sheep penning is done. 100 to 150 animals are penned for 10–15 days. After the application of manure, the plot is invariably ploughed and levelled.

6. *Planting season* :—Throughout the Northern taluks the planting season is generally from May—June depending on the showers.

7. *Seed rate* :—The number of setts used is very high being from 36,000 to 54,000 setts per acre. The cost of setts varies from Rs. 80 to Rs. 100. Locally the price of one bharanam of setts (7200) is about Rs. 16.

8. *How setts are obtained* :—It has been mentioned that the variety cultivated is a short duration one. The planting season is about the last week of May or the beginning of June; and the crushing season is in February. Thus there is more than 2½ months interval between planting and crushing. The conditions of water supply and climate in the district do not

admit of a portion of the crop being reserved for seed until May, nor do they permit the planting of the cane at the latter end of the harvest season February—March. It is under these circumstances, that the Oriya ryot was able to evolve a system of obtaining setts from a nursery cane crop which is indeed the best and which is perhaps unknown in other districts. This system of cultivating cane on nursery system for setts, is known as "*Gonda Monjee*" which means a seed cane crop. Hence, in this tract, there are two kinds of cane growers, the first is always a seed cane grower, supplying the seed cane and setts to the second who cultivates the regular crop either for wholly crushing or chewing. The latter never reserves any portion of the crop for seed but invariably obtains it from the former. Thus cane growers go to villages even more than 30 miles distant and obtain seed cane to plant up their crops. The origin of the seed cane growing may have been due to the short-lived nature of the local variety, the liability of the cane getting hard and dry if any portion of the crop is reserved for seed where water supply and climate conditions are not favourable, the impossibility of synchronising safely the planting of one crop and the harvesting of the other owing to defective water supply and finally, to the abnormal development of whorls of aerial roots at the nodes to about the three-fourths of the length of the cane, which causes the neighbouring buds to shoot, impairing their vitality, and making them unsuitable as setts.

*Cultivation of seed cane:*—The chief centres for growing seed cane are Hundetho, Bhimpur, Jamini, and Chandili in Chatrapore taluk; Kalasandapur, Kurla, Bhavanipur and Boyida in Aska taluk. Of all these places, setts obtained from seed cane raised at Hundetho are preferred and are esteemed by the ryots. There are two distinct stages in the cultivation of seed cane (1) Raising of seedlings in a small nursery and (2) transplanting the seedlings into the regular seed cane plot *Gonda Monjee* which will supply setts later to the cane grower for the regular crop known locally as "*Akku*"

(a) *Raising seedlings in the nursery beds:*—The place selected for raising these is generally high level, well drained land and near a village, so as to enable the ryots to bestow great attention on them. The seed bed is ploughed a number of times, and fine powdered cattle dung is applied at 10 to 15 baskets per cent.

About the middle of July, canes obtained from the seed cane crop (Gonda Monjee) and reserved for the purpose are cut into setts of 3 nodes each, and about 6 inches in length, and planted in the seed bed one touching the other. The number of setts used is about 7200 in a cent of land. The setts being laid in the nursery, fine powdered oil cake is sprinkled over them, and a layer of moist earth is spread over. The seed beds are small in size and rectangular in shape, so that it may be convenient for watering, subsequent weedings etc., After the setts are planted water is sprinkled with pots. Too much watering is avoided, to prevent the shoots, from taking such a firm hold of the soil, as would afterwards render lifting them up impossible or difficult. The seed bed is said to produce seedlings sufficient to plant five times its area of seed cane plot. The seedlings having remained in the nursery for 6 weeks and having put forth 6 to 8 leaves, are removed and transplanted on the seed cane plot.

6. *Seed cane plot* :—Well drained soils with a loose texture are preferred. Stiff clays are unfavourable. By the middle or end of August the field is got ready by ploughing it a number of times and getting the soil into a friable condition. Cows are penned by way of manuring; and after penning, the plot is ploughed and levelled. Afterwards plough furrows at a distance of 18 inches are made in lines, so that the seedlings may be planted. The seedlings as they are removed from the seed bed in August, are transplanted in the seed cane plot in the furrows or holes made. The distance from row to row is 18 inches and plant to plant 8 to 10 inches. The seed cane plot receives oil cake thrice during its growth. The total quantity of oilcake given is from 1500 to 1700 lbs. per acre; a mixture of gingelly, groundnut, castor and pungan cake etc., is applied. The first application is within a week or ten days after planting seedlings; a month later the second dressing and again a month afterwards the final dose is given. A crop of seed cane is hoed twice, and wrapping also done twice. The first wrapping is done about three months after planting, when the internodes are visible. The second wrapping is done, a month after the first. At this time, 3 or 4 canes are wrapped together with their leaves. The fact that the seed cane crop does not grow tall, and its maximum height is only 3 to 4 feet, renders propping unnecessary. The seed beds (nursery) are watered for a period of 1½ months. After the seedlings are transplanted into the seed cane plot in August a continuous rainy

weather follows which economises irrigation. In the absence of rainfall the seed cane plot however, is irrigated once in ten days or a fortnight. In the month of May, the crop is cut and sold for seed. The portion of the crop reserved for setts for planting in the seed bed needs constant irrigations at least once a week until it is cut for setts in July. This is how setts are obtained by the regular sugarcane growers for planting their sugarcane crops.

10. Some peculiarities noted in a seed cane crop (Gonda Monjee) are mentioned below *Firstly*, the seed cane crop appears to be twelve months in duration, the regular cane crop being only a crop of 9 to 10 months, about  $1\frac{1}{2}$  months (July to the end of August) being in a nursery, and from September to July next being in the seed cane plot itself though a major portion of it is cut in May and sold for setts and only a small portion of the crop remaining till July *Secondly*, a seed cane crop is short not growing more than 4 feet; *Thirdly* it has a thin rind, throws out comparatively less aerial roots at fewer nodes, each clump puts forth 8 to 10 canes and *Finally* the canes of a seed cane crop are not sweet and yield less jaggery even when ten months old and are unfit either for chewing or for crushing. The fact that the seed cane crop is planted late in the year, and grows during the rainy weather may account for the peculiarities in a seed cane crop and the points of difference between it and a regular sugar cane crop. The seed cane crop is affected, the ryots say by the high hot winds blowing during the summer months which dries up the moisture of the crop to a great extent.

11. *Treatment of setts for planting* :—The field having been prepared and manured, furrows are made by means of a country plough about one foot apart. The canes setts after they are purchased from the seed cane grower undergo some slight treatment — germination test — before actual planting. This consists in putting the cane setts with a sprinkling of water in small rectangular pits  $6' \times 2' \times 6''$ . Before the setts are put in, they are mixed, or smeared with finely powdered farm yard manure. After the pit is full it is covered with a sprinkling of the same manure and then with loose earth. In this state the setts remain 24 hours. Some ryots keep the setts in this state for even 72 hours. The setts after they are removed from the pit are planted in the plough furrows made and covered. It is usual to leave 2 to 4 inches of space between setts. After planting and covering, the field is irrigated.

12. Aftercultivation consists chiefly in hoeing and weeding, manuring and earthing up and formation of irrigation channels or beds for irrigation purposes, wrapping and propping.

A week after planting the field is hoed with a small hoe, the soil loosened, and weeds removed. Next hoeing is given 3 to 4 weeks after. Again when the rains commence heavily in July deep hoeing is given with a mammiaty and plants earthed up and irrigation channels formed. In parts of Chatrapore taluk it is common to have one or two irrigation channels in the middle of the plot and to divide the whole field into convenient beds, so as to allow irrigation water into them by flooding.

13. *Manuring*:—Manuring the canes with oilcake is a practice followed without exception. In parts of Atagada estate gingily cake is applied; elsewhere in the northern taluks a mixture cake of groundnut, castor, pungam, etc., is applied in two doses. The quantity applied per acre is 1600 lbs. In local terms it is one bharanam, (320 lbs.) of oil cake to one bharanam of cane. (20 cents). The first application is given when the crop is a month old. A very little quantity is now given per plant. The second dose is given in the month of August when the crop is about three months old.

14. *Wrapping and propping*:—Wrapping is done mainly to prevent exposure of canes, their drying and cracking. Wrapping is commenced when at least 2 internodes appear. This is done from the middle of July. Excepting the leaves which are erect, they are wrapped spirally downwards terminating in a knot. This operation is repeated as the cane grows, and it is done from 3 to 4 times before the crop is cut. Propping the canes is not done so elaborately as in the Godavery district. The dwarf nature of the cane, raised on less rich soils than those of Godavery district, perhaps does not also demand of such an elaborate propping, as is in vogue in that district, where tall growing canes are raised on rich soils. The method practiced by Oriya ryots is different. It is easy, economical, and less expensive. It is done on a railing system, where only a small number of bamboos are required. The process of doing it is as follows. Long and stout bamboos are planted vertically along the cane rows 8 to 10 feet distant. Over these slender and tall bamboos are tied horizontally at a height equivalent to the growth

growth of the cane, excluding the tops. The leaves of each cane clump are fastened to this horizontal bamboo. Depending on the height and growth of the cane the horizontal bamboos are either shifted high or later on another series tied parallel to the first. In some villages near Hingili, (Chatrapore taluk) this is entirely given up ;

15. *Irrigations* :—The first irrigation is given 3 or 4 days after planting. On an average an irrigation is given once in 10 days in the absence of rainfall. Irrigations are generally stopped a week or at least 4 to 5 days before harvest. However, in parts of Aska taluk, where cane is sold to the factory there is a practice among some cane growers to irrigate their cane crop the day previous to harvest so as to gain some more weight.

16. *Harvest and treatment of raw materials* :—The age of the crop is generally used as a guide to determine its ripeness. Harvest commences from the middle of February and finished by the end of March. Canes intended for chewing are cut a fortnight earlier. Generally buyers go to cane fields, purchase them and take them to the nearest town or shandy for marketing. Canes grown near Berhampore in the villages of Lati, Mohada and Ankusapuram, are mostly cut for chewing and very little jaggery is made in these villages. Cane growers in the neighbourhood of Aska sell their raw produce to the local sugar factory. This practice is now getting less common partly on account of the lower rates offered by the factory, for it does not pay the factory to offer high rates and manufacture jaggery, specially when there is a lot of sugar got from outside markets at considerably cheap rates and partly owing to the jaggery also selling at the same price as sugar, the ryots prefer preparing their own jaggery. Generally enough cane is cut to keep the mill working; but the cane cut during the close of the day is reserved for milling early next morning. Canes are cut to the bottom and leaf sheaths removed. The canes thus stripped and bundled are carried to the mill. In parts of the Chatrapore taluk in the villages of Sary, Sikiri, etc., women harvest the cane. These women belong to the caste known locally as "BAVURI."

17. Till recently, wooden mills were in use for crushing the cane, specimens of these are in existence in the villages of Aska taluk and are known to be still in use in isolated villages near

Gangupuram and Dowgam (Aska taluk). Wherever wooden mills are in use the cane is passed twice through the rollers. It is believed by ryots that cane juice extracted through wooden mills is far clearer, healthier, and less insipid in taste, though the quantity expressed is less.

The small three roller iron mills are in use in most of the cane growing villages. Most of the cane growers do not own them. The mill, together with the jaggery making pan—if an iron pan is used for making jaggery—is obtained on a system of hire for the whole working season. Certain merchants and proprietors of firms of Bengal—Calcutta—have got their mills and pans stocked in all the cane growing centres of the district in charge of their own agents who work on their behalf for keeping the articles, looking after them, and let them out during the crushing season and collect rent. At each cane growing centre at least 20 mills and pans are stocked. Pans are not stocked invariably along with mills, for, they are not used universally in the northern taluks. Every year each proprietor of the mills and pans stocked sends a man from Calcutta in the month of December or January to attend to any petty repairs of mills either for replacing the bearings or to attend to lathing etc. The amount of hire charged is from 30 to 35 rupees for any period up to a month. 3 or 4 ryots join together and get a mill and pan for hire. Owing to the existence of such a system locally, the local cane growers are not for purchasing cane mills and pans for themselves nor is the industry of either making mills or attending to any petty repairs in existence in the tract. The chief centres where these are stocked are Purushottapur, Boirani, Hingili and Saru in Chatrapore taluk, Kurla, and Gangupur in Aska taluk and Haripur in Mandasa estate.

18. *Preparation of jaggery*:—The construction of the furnace consists in digging a long and narrow trench 6 inches deep, 6 inches wide and 6 feet long terminating in a circular hole of about 2 feet in diameter or a rectangular pit 4 to 5 feet deep. At the top of the circular hole a wall 1 foot high is built leaving an opening about a foot below the ground level. The sides of the trench are protected by small walls 4 inch thick. On the circular hole the jaggery making pan is placed, beneath it the fire is lit, fuel being fed through the opening made. On the narrow trench small pots 6 to 8 in number are placed. The local iron pan is in the shape of a frustum of a pyramid: the top and



bottom dimensions being about 5 feet by 2 feet and  $4\frac{1}{2}$  feet by  $1\frac{1}{2}$  feet respectively, vertical height about one foot and the slant height being about 18 inches.

The use of an iron pan for making jaggery is mostly known throughout the area.

To begin with about 4 or 5 potfuls of juice are first poured in the pan and the boiling started. Afterwards as the juice is expressed from the mill it is brought and filtered immediately in the small pots placed on the narrow trench where the juice gets a preliminary heating. As more juice is expressed the contents of the small plots are emptied into the big pan or earthen pots boiled on the circular hole while the small pots are again filled with juice. This process continues for about 4 to 5 hours and then stopped so that after the necessary evaporation and boiling the syrup gets concentrated and jaggery made. Liming the juice is common but removal of scum and albuminoid matter is not done. The sign of sufficiency of boiling is that, if a small quantity of syrup be taken out with the thumb and another finger and drawn out the resultant curved thread like formation of the syrup between the thumb and the finger should not break. After thus determining the sufficiency of boiling, the hot jaggery is put into pots by means of coconut shells with wooden handles. Before the jaggery is put into pots they are measured with water as to their capacity in "Addas"—a local measure equivalent to  $\frac{1}{4}$  of a kuncham. The capacity is then marked on the pot so that at a later date when it is marketed, the price of the pot can be fixed according to the number of Addas sold per rupee. This method of measuring jaggery is peculiar to Ganjam. The jaggery prepared is black in colour and liquid in form. The quality is however preferred by the Oriya population as it is believed to be sweeter than the jaggery of Vizagapatam district brought to Berhampore market for sale. On an average about 100 to 120 pots per acre are obtained and each pot weighs from 30 to 35 lbs. A pot measures locally 16 to 20 addas. The cost of a pot varies from 3 to 4 rupees which means a total outturn of 300 to 480 rupees per acre.

19. *Preparation of brown sugar*:—In the process of manufacture of brown sugar no machinery is concerned. Though no detailed description of its preparation can be given here suffice it to say, that it is done on an ordinary hearth, with the

boiling of raw jaggery. The juice is boiled milk added in the course of boiling impurities removed and by concentration and crystallisation brown sugar is obtained. It is then put into conical shaped pots specially made. At the time of marketing, the pots are broken and good crystalline brown sugar in moulds of conical shape is sold. When made into powder it turns into granular brown sugar. Each mould weighs from 5 to 8 pounds and is sold at the same rate or 6 pies more per pound than the white sugar. It is generally believed that this brown sugar is sweeter than the factory made sugar. This may perhaps have a greater vitamin content and thus may be healthier than the white sugar.

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## EXTRACT

### Agriculture in Poetry.

#### SEASONAL EPICS AND VIGNETTES.

#### *Virgil's Classic.*

What minor poet is there that has not seen a ploughman silhouetted against a skyline? The verse of all ages is full of blithely-singing milkmaids and garrulous shepherds; the plough and the harvest provide half the metaphors of every language. The fashion for sophisticated shepherds and shepherdesses that began with Theocritus and ended in Dresden china soon after Louis XIV. is gone out now, though smocks and the simple life are always with us.

Theocritean idylls and Court Masques are not, however, the only poetic form that agriculture has taken; but it is surprising how little else poets have done with it. Agriculture does not seem to inspire poets just for itself; it provides them with a background and with a magnificent array of symbols. But it does not seem to move them as an imaginative, thought-creating thing as a triumphant human activity. In agriculture men are so much the instruments of Nature, so small and impersonal against the huge wheeling of the seasons, the birth and death of Nature, the infinite labour and sorrow that the fulfilling of her demands imposes. Poets have always tended to be rather frightened of agriculture. Crabbe, writing in 1807, said:—