

CHAPTER - X

PROBLEMS OF DEVELOPMENT OF THE INDIAN SUGAR INDUSTRY

Problems of Development of the Indian Sugar Industry:

Introduction :

The Sugar industry is one of the biggest organised industries in the country employing about two lakh persons. After grant of protection in 1931, the industry received great impetus. The number of factories increased from 31 in 1931 to 139 in 1950-51 and to 215 in 1969-70 and the production increased from 1.63 lakh tonnes in 1931 to 11.34 lakh tonnes in 1950-51 and to 42.62 lakh tonnes in 1969-70 - a record. The production was only 37.40 lakh tonnes in 1970-71.

After Independence a remarkable expansion of sugar industry was held in the co-operative sector. By 1973-74, the Fourth Plan envisaged an output of 47 lakh tonnes. This was based on assumption, ^{but} ~~and~~ about 42 lakh tonnes of sugar ^{will} be required for internal consumption and 5 lakh tonnes for export and buffer stocks. During 1970-71, the internal consumption was 40.25 lakh tonnes. Production in the industry suffer considerably because of various problems. The paper analysis the problems of the industry in different States of the country.

The Gundu Rao Committee considered in detail the specific problems encountered by the industry in each State

during the period of about ten years upto 1963. Though the problems of the industry have undergone some changes since then still the basic problems remain more or less the same. Therefore, some of the point mentioned by the said Committee in its report are furnished below :

Problem of Old Units :

In Punjab there are three plants, aged more than 30 years and the other 4 are new. The old units require modernization where as the new units have to be expanded.

But in West Uttar Pradesh out of 38 factories, 33 are over 30 years old, 3 are over 20 years and the remaining 2 are aged about 10 years. Most of them are carrying on with heavy repairs and renewals and need considerable degree of modernisation. The general capacity level is somewhat high, and there are some factories which are below the economic capacity level and need not only modernisation but also expansion.

The sugar industry is the only major industry in East Uttar Pradesh. Out of the 33 factories 5 are about above 45 years old and as many as 26 are above 30 years. The age of two units is not known. Heavy repairs and renewals are needed. Besides, several factories are not on the above or margin of the economic capacity level. The Committee states : -

"The expansions have not been considerable, and such expansions as have taken place have generally been done in a haphazard manner. The maintenance of the equipment did not appear satisfactory and reflected a rather poor standard of technical background".

In Bihar out of 28 factories, 5 factories are over 50 years old and the remaining are over 30 years. The plants in most of the factories are out-moded and out dated and most of them are carrying on with heavy repairs and renewals. Several factories are below the economic capacity level.

In West Bengal, at present only one factory is functioning with a crushing capacity bordering the economic level.

But in Assam, only one co-operative factory established in 1955 and it went into production in December, 1958. Due to a larger percentage of cane production having been delivered to gur manufacture, the factory has been facing the shortage of cane. Therefore, the factory has been incurring loss year after year.

At present two factories are working in Orissa. One factory is small about 30 years old, and the other is new, has been established recently. Both do not get adequate supply of cane.

Problem of old unit is a main problem in Madhya Pradesh. Out of the 5 factories, one is about 27 years old, another about 30 years and the remaining 3 are about 35 years old. Most of them are carrying on with heavy repairs and renewals. These factories are below economic capacity level.

At present two factories are working in Rajasthan, here also found the old unit problem as found in Madhya Pradesh. One is more than 20 years old while the other is above 30 years. Due to below economic crashing capacity level in Rajasthan both the factories need considerable degree of modernization.

All the three factories functioning in Gujarat are in co-operative sectors. Two factories have new plants. ^{The age of other plant} is unknown. The factory needs considerable degree of modernisation.

Out of 30 plants, 7 are over 30 years old, 4 are over 20 years and the remaining 19 are below 20 years in Maharashtra. The old plants are being fairly well maintained. A large number of the factories are in co-operative sector.

In Andhra Pradesh out of the 18 factories, 5 are above 30 years old, one above 20 years, 10 are between 7 and 18 years old. The information in regard to the age of two factories is not found. A large number of them are below the economic

crushing capacity level. A considerable degree of modernization and expansion need for several of the factories.

Out of 8 factories, of which 2 are over 35 years old, one is over 25 years old and 3 are ranging between 9 years and 17 years old in Mysore. The large scale modernization is required by the 3 factories. Except a few, other factories are below the crushing capacity level.

The problem of old unit makes a serious problem in Tamil Nadu. There are 9 factories in the State, of which one is above 30 years old, 2 above 20 years and the remaining 6 are between 7 and 14 years old. The older factories are being fairly well-maintained. The economic crushing capacity level is below in most of the factories in Tamil Nadu.

In Pondicherry there is only one factory. It went into production in 1960-61. The cane supply is adequate but the poor quality of the cane makes a problem in Pondicherry.

Whereas in Kerala, there are 3 factories, one was established about 20 years ago and the other two are new. The quality of sugarcane is poor in Kerala due to inadequate of land for cultivation of sugarcane.

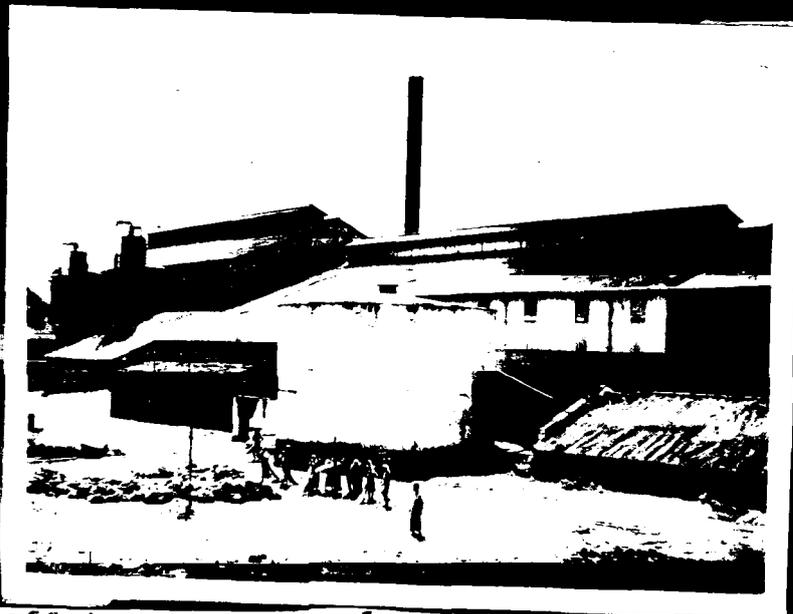
Seasonal character of the Industry - Labour Problem :

No surplus labours are found in any factory of Punjab. About 70 unskilled workers would be rendered surplus and it's the estimation of one unit. When the expansion accompanies modernization and there would be scope for additional employment by the expansion of the unit, the problem of surplus labour will not arise. Except one factory, where the labour productivity was 17.6 in 1962-63 season, ⁱⁿ other units this productivity has been reasonable, viz., 8.5 to 12.0 mandays per tonne of sugar.

In West Uttar Pradesh out of 26 factories, the labour productivity is low in 10 factories, ranging from 13.0 to 17.5 mandays per tonne of sugar. In several factories, there is a considerable surplus labour.

In East Uttar Pradesh there is an appreciable number of surplus labour and that there would be quite a large number of surplus labour after effecting modernization in more than half the number of factories. The labour productivity is low viz., from 12.5 to 26.1 mandays per tonne of sugar. Sugar, except in 8 factories, is reasonable viz., from 9.0 to 12.5 mandays per tonne.

Plate-20



Drying off jutes as one of the alternative works outside the Factory during their off season (Those who are seasonal employees)



Plate-21

Preparation for the sale of raw jutes (one of their alternative works during their off season)

There is appreciable number of surplus labour in about half the number of factories in Bihar and West Bengal (Plate Nos. 20,21). The Committee, however, expressed the view that the surplus labour would not present a serious problem if the industry is expanded and utilization of by-products developed simultaneously. In about 6 factories, labour productivity is reasonable viz., 6.0 to 12.5 man-days per tonne of sugar.

In West Bengal there has no surplus labour. The plant is more than 30 years old.

In M.P. there is surplus labour in one factory and it will, however, be reduced by the gradual process of wastage, retirement etc. The labour productivity in the factories is low, ranging from 13.5 to 22.5 man-days per tonne of sugar.

Surplus labour does not exist in the factories of Rajasthan. The labour productivity in one unit is reasonable viz., 9.8 to 12.8 while in the other, it is lower, ranging from 16.4 to 19.7 mandays per tonne of sugar.

The labour productivity in two units is good, viz., 5.6 to 9.0 mandays per tonne of sugar, while that in the other factory has been poor, viz., 31.00 in 1962-63 due to its small capacity in Gujarat.

In Maharashtra the productivity of labour has been reasonable, viz., from 2.6 to 10.4 mandays per tonne of sugar. The productivity of labour is still better ranging from 2.6 to 5.5 in 4 factories. The labour estimated as surplus in some of the factories is not significant.

Practically, no surplus labour excepting in two factories, is found in Andhra Pradesh. The productivity of labour in 4 factories has been good ranging from 3.2 to 7.2 mandays per tonne of sugar and in another 3 factories, it is between 8.9 and 11.1, while in others it is lower between 11.2 and 14.6.

Problem of the surplus labour in Mysore is not so significant. The labour productivity varies from 5.0 to 12.9 mandays per tonne of sugar. In some factories it has been around 13.0 to 16.3 also.

In many factories, there is practically no surplus of labour in Tamil Nadu. The labour productivity is between 5.7 to 8.6 mandays per tonne of sugar in two factories. It is fairly good. In 3 others, it is between 8.6 and 12.7, while in the remaining 3 factories, it is somewhat lower being above 12.7.

Problem of Sugarcane Quality :

The cane productivity is low and the quality of cane is about the lowest in Punjab, due to unfavourable weather conditions with extreme temperature, occurrence of frost, water logged with extreme water, and extensive incidence of pest and diseases.

Cane quality is somewhat poor in East Uttar Pradesh. Technical efficiency of several factories is poor. A large number of factories are consuming extra fuel. Labour strength is fairly high. The productivity of a majority of factories is low.

The bulk of the sugar factories are situated in North Bihar. The yields per acre are between 14 and 16 tonnes in North Bihar. The continuous fall in the quality of cane is also found here.

The cane yields per acre are high and the cane quality is also good in Maharashtra. The yield of sugar per acre recorded in this State compares favourably with those of some of the most advanced sugar producing countries of the World, viz., Hawaii, Australia, Indonesia etc. The economic crushing

capacity level is below in some of the factories. But in view of the high productivity both in the field, and in the factory as also the high level of profitability, the factories cannot be categorised as uneconomic at present.

In Andhra Pradesh the quality and yield per acre of cane are quite good and high.

The yield of cane per acre and the quality of cane are good in Mysore. In some factories, the duration of the crushing season is also good. It goes beyond 200 days.

The average sugar cane yield is 30 to 45 tonnes per acre but the cane quality in general is rather poor in Tamil Nadu.

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Problem of Cane Supply:

In recent years the cane supply to the factory in Punjab has also been affected due to competition with gur manufactures.

The Committee also states : "In West Uttar Pradesh cane supplies to white sugar factories have suffered from vicissitudes of over and under supplies depending on whether gur prices have been low or high. In years of low gur prices, gur manufacture is not remunerative and the factories

get abundant supplies, so much so that they are unable to crush it in the available duration but when gur prices go high white gur factories have to starve for cane. This is the greatest problem of white sugar industry in West Uttar Pradesh."

"As regards sugarcane production in East Uttar Pradesh the growers' holdings are small, irrigational and other facilities are lacking, the growers' resources to provide the where-withal for the cane crop are meagre and as such, the cane yields are low and incidence of pests and diseases is increasing. Cane areas are scattered and means of communication are lacking which are affecting cane supplies to sugar factories. Facilities for cane development are not adequate to meet the requirements of the industry.

A large number of the cane cultivators own small holdings with the result that they are not able to adopt the improved methods of cane cultivation in Bihar. Very often, several factories do not get their full cane requirements. In recent years, the factories also started facing keen competition from gur manufacturers for the supply of cane.

The uncertain supply of cane is a serious problem in West Bengal.

The irrigational facilities for the cultivation of sugar cane are inadequate in Madhya Pradesh. Sometimes, drought condition also affect the cultivation of cane. Cane areas are widely scattered, resulting in high transport cost. Sometimes, acute competition from gur manufactures prevents the factories from getting their full requirements of cane.

In Gujarat the cane supply position to these factories is satisfactory. Because of their increasing production of sugar cane, the factories have also asked for expansion.

The cane is diverted in large scale to gur manufacture during the season when price of gur goes up in Maharashtra. Consequently several factories do not get full supply of cane in such times. Due to establishment of the several new mills too close to the previously existing factories, there is a scramble for cane in most of them.

The problem of diversion of cane supplies exists to some extent in some years but it has not materially affected the supplies to the sugar factories in Andhra Pradesh. However, in recent years, it has caused some anxiety.

The diversion of cane to Jaggery manufacture sometimes affects the cane supply to the factories in Mysore.

Conclusion :

In conclusion the foregoing particulars would show that in West Uttar Pradesh, East Uttar Pradesh and Bihar apart from the existence of some surplus labour, the productivity of labour is also low. As the low productivity of labour, the surplus labour is not so significant in Madhya Pradesh. In all other States, not only there is no surplus labour but the productivity is also reasonable. The oldest and ill maintained plants are found in West Uttar Pradesh, East Uttar Pradesh and Bihar. In all the factories of production, Maharashtra has the advantage over all the other States. Except of some poor quality of cane, the Tamil Nadu also maintains fairly a good position in all other directions.

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1. Report of the Second Central Wage Board for the Sugar Industry, 1970, PP. 47-52.

Sugar Development and Research :

In 1950-51 the base year of the first five year plan, the area under sugarcane was 17 lakh hectares and cane production was 699 lakh tonnes. However, having regard to the requirement of internal consumption of sugar, gur and khand-sari, the target for cane production during the 1st plan period was fixed at 462 lakh tonnes. Against this the actual production was much higher at 667 lakh tonnes. Again during the second plan period also the area and production of cane showed an increasing trend. In 1960-61, the final year of the second plan, 1105 lakh tonnes of cane was produced against the plan target of 793 lakh tonnes. Also, the area under cane increased from 20.5 lakh hectares in 1955-56 to 24.1 lakh hectares in 1960-61. The yield per hectare during the corresponding period increased from 39.6 tonnes to 45.8 tonnes. Thus the targets for cane production and cane acreage were fully achieved during the 1st and 2nd plan periods.

During the third plan, against cane production target of 1118 lakh tonnes from an expected area 24 lakh hectares, the actual area and production of cane during the last year of third plan was 28.4 lakh hectares and 1195 lakh tonnes respectively. Thus the third plan targets in respect of both area under sugarcane and sugarcane production also were fully achieved.

Unfortunately, this rising trend of production received serious set back by the unprecedented droughts that followed in the subsequent two years. The area under cane was also diverted to high yielding varieties of food grains and as a result of this, the acreage under cane dwindled to 23.0 lakh hectares in 1966-67 and 20.5 lakh hectares in 1967-68. However, with the introduction of partial decontrol, the sugar factories in their limited flexibility allowed to them paid much higher cane prices which restored the area under sugar cane.

For the 4th Five-Year Plan initially it was proposed to produce about 1350 lakh tonnes of sugarcane from an area of 25 lakh hectares thereby giving an average yield of 54 tonnes per hectare. Subsequently, however, the cane production target for the 4th Five-Year Plan was revised to 1500 lakh tonnes whereas the target for area was kept at the same figure i.e. 25 lakh hectares. Thus, it was proposed to increase the average yield per hectare to a figure of 60 tonnes during the 4th Five-Year Plan period by progressive extension of the application of modern technology for the cultivation of sugarcane

The table below gives the annual targets.

Table 119

Base Year 1968-69	'69-70	'70-71	'71-72	'72-73	'73-74	Percent increase over the base year	
Area in lakh hectares	24	25	25	25	25	4.0	
Production of cane in lakh tonnes	1250	1300	1350	1400	1450	1500	20.00
Average yield of cane in Tonnes per hectare	52.0	54.00	54.00	56.00	58.00	60.00	15.4

In the year 1969-70 both cane acreage and sugarcane production had exceeded the targetted figures. The cane acreage and sugarcane production during 1969-70 was 27.5 lakh hectares and 1312 lakh tonnes against the target of 25 lakh hectares and 1300 lakh tonnes. However, a reversed trend in regard to both both cane area and its production was noticed in the year 1970-71, the decline being more marked in regard to sugarcane production. While the area under cane was 26.2 lakh hectares against the target of 25 lakh hectares, the production of cane

was much below the target of 1350 lakh tonnes by about 90 lakh tonnes i.e. 1260 lakh tonnes due to lower yield of sugarcane. There was a further decline in both area under sugarcane and its production during 1971-72, the area under cane being 24.2 lakh hectares and cane production 1154 lakh tonnes.

Intensive Development Schemes in the State :

Uttar Pradesh :

In order to step up cane yields, intensive development package programme were introduced in Uttar Pradesh in 1963-64 Bihar, Madhya Pradesh, Maharashtra and Tamil Nadu in 1964-65; West Bengal in 1967-68 and Assam in 1968-69. The scheme was discontinued in Uttar Pradesh during 1969-70 and no such scheme was taken up during the Fourth Plan period due to (i) discontinuance of financial aid from Central Government, (ii) the main target of the scheme for increasing irrigation potential in sugar factory areas was fulfilled. The scheme was also discontinued in Madhya Pradesh during 1970-71 due to paucity of funds. The scheme in Maharashtra has been merged with sugarcane development scheme during 1971-72.

Bihar :

The intensive development scheme which started in 1964-65 in 5 sugar factory areas covering an area of 2,000

Plate-22



Maximum height of sugar cane
in West Bengal due to
good preparation of
land and manuring.

hectares around each sugar factory has given encouraging results as compared to the total yield figure of the State as a whole. In 1971-72, the area under the scheme was 17,945 hectares. The yield achieved in these areas was 65.50 tonnes per hectare as against 35.00 tonnes per hectare for the whole State.

Tamil Nadu :

The scheme was introduced in 1964 in one sugar factory area. During 1971-72 the scheme was running in 8 sugar factory areas covering an area of 13,706 hectares and the yield achieved in the intensive area was 95 tonnes per hectare as against 85 tonnes per hectare for the whole State.

West Bengal :

The intensive development scheme was introduced in West Bengal in 1967-68. By the end of 1971-72, the area under intensive development in this State was 1,000 hectares and the yield achieved was about 65 tonnes per hectare as compared to the average yield of 33 tonnes per hectares in the State as a whole. (Plate 22)

Assam :

The intensive development scheme was introduced in Assam in 1968-69. In 1971-72, the area under the scheme was 4,846 hectares. During 1970-71, the yield achieved in these areas was 50 tonnes per hectare as against 37 tonnes per hectare average yield for the whole State.

Sugarcane Research :

The research on Sugar crops in the country is being conducted at the Indian Council of Agricultural Research Institutes, Agricultural Universities and State Department of Agriculture. In an effort to coordinate research activities to achieve a common goal the Indian Council of Agricultural Research has launched All India Coordinated Research Project on Sugarcane and All India Coordinated Research Project on Sugarbeet. Both the projects are coordinated by the Indian Institute of Sugarcane Research, Lucknow.²

2. Indian Sugar Year Book, 1971-72, PP. 24-27.

Table 120

STATEMENT SHOWING THE AREA AND YIELD OF SUGARCANE IN DEVELOPMENT AREAS AND IN THE
WHOLE STATES 3

STATES	Area under cane in .000 hectares				Yield of sugarcane in tonnes per hectare			
	1968-69	1969-60	1970-71	1971-72	1968-69	1969-70	1970-71	1971-72
1. Andhra Pradesh	119 (156)	111 (158)	96 (135)	104 (126)	82 (71.1)	74 (70.1)	81 (77.6)	88 (82)
2. Assam	N.A. (32)	11 (33)	13 (33)	- 38.8	N.A. (35.3)	- (47.8)	54 (37.3)	- (38)
3. Bihar	95 (152)	99 (168)	80 (162)	107 (142)	49 (39.0)	51 (39.1)	51 (40.1)	38 (32)
4. Gujarat	8 (35)	10 (37)	15 (37)	17 (36)	65 (47.7)	65 (50.8)	67 (51.8)	55 (51)

3. Directorate of Sugarcane Development.

STATES	<u>Area under cane in .000 hectares</u>				<u>Yield of sugarcane in tonnes per hectare</u>			
	1968-69	1969-70	1970-71	1971-72	1968-69	1969-70	1970-71	1971-72
5. Haryana	41 (160)	36 (165)	41 (156)	35 (114)	48 (41.8)	52 (46.9)	52 (45.0)	55 (45)
6. Kerala	6 (8)	6 (8)	6 (8)	6 (8)	N.A. (63.7)	N.A. (64.3)	71 (48.9)	52 (51)
7. Madhya Pradesh	42 (55)	44 (67)	46 (62)	44 (60)	29 (25.6)	32 (25.1)	31 (26.4)	28 (27)
8. Tamil Nadu	151 (172)	124 (135)	N.A. (135)	112 (121)	85 (79.9)	80 (75.7)	N.A. (77.4)	N.A. (81)
9. Maharashtra	174 (190)	194 (222)	N.A. (217)	105 (182)	85 (66.2)	82 (65.0)	- (68.0)	86 (63)
10. Mysore	89 (99)	80 (91)	86 (97)	38 (107)	- (92.1)	- (84.7)	89 (87.7)	98 (82)

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STATES	Area under cane in .000 hectares				Yield of sugarcane in tonnes per hectare			
	1968-69	1969-70	1970-71	1971-72	1968-69	1969-70	1970-71	1971-72
11. Orissa	N.A. (37)	10. (39)	12 (37)	12 (34)	N.A. (57.6)	89 (52.1)	94 (51.9)	81 (58)
12. Punjab	44 (156)	43 (149)	89 (128)	32 (104)	47 (33.0)	50 (41.6)	44 (41.2)	47 (39)
13. Rajasthan	N.A. (38)	N.A. (51)	37 (37)	20 (28)	N.A. (13.8)	N.A. (13.3)	33 (32.7)	44 (44)
14. Uttar Pradesh	879 (1203)	1046 (1377)	1078 (1369)	955 (1274)	44 (42.0)	45 (44.1)	43 (40.7)	41 (39)
15. West Bengal	15 (27)	16 (32)	16 (32)	14 (38)	60 (44.1)	61 (47.0)	52 (47.0)	48 (47)

Figures in bracket relate to whole State

N.A. - Not Available.

Table 121
Sugarcane sowing and Harvesting
Seasons⁴

STATE	Sowing/Harvesting	Duration
Uttar Pradesh	Sowing	Sept. Oct. & Feb-April
	Harvesting	Nov. May
Bihar	Sowing	Sept. - Oct. & Feb.-April
	Harvesting	Nov.-May
Punjab	Sowing	March - April
	Harvesting	Dec. -March
Madhya Pradesh	Sowing	Dec. - March
	Harvesting	Dec. - March
Rajasthan	Sowing	Jan. - May
	Harvesting	Dec. - April
West Bengal	Sowing	Dec. - April
	Harvesting	Dec. - March
Orissa	Sowing	Feb. - May
	Harvesting	Nov. - Feb.
Assam	Sowing	March - April
	Harvesting	Sept. - January
Maharashtra	Sowing	Nov. - Dec. Jan. - March
	Harvesting	Oct. - March, Dec. - Feb.

Contd...

4., Indian Sugar Year Book, 1971-72, PP. 31-35.

Table contd.

STATE	Sowing/Harvesting	Duration
Andhra Pradesh	Sowing	Jan. - April
	Harvesting	Dec. - March
Tamil Nadu	Sowing	Dec. - Sept.
	Harvesting	Dec. - August
Mysore	Sowing	January
	Harvesting	December
Gujarat	Sowing	Nov. - Dec., Jan. - March
	Harvesting	Oct. March, Dec. - Feb.
Kerala	Sowing	Nov. Feb.
	Harvesting	Jan. March
Pondicherry	Sowing	Dec. September
	Harvesting	Dec.-September

Plate-23



U.I.S.R. Bullock drawn sugar cane planter,
(Intensive development scheme)

Plate-24



Tractor drawn sugar cane planter
(Intensive development
scheme)

Indian Institute of Sugarcane Research, Lucknow :

The Institute at Lucknow conducts researches in agronomy, plant Physiology, Agricultural Engineering, Soil Science, Microbiology, Plant Pathology, Entomology, Botany and Breeding. Recently in 1971 one more section of Extension has been added in the Institute for the quick dissemination of research results of practical value (Plate No.23). The overall objective behind these researches is to produce more in lesser time and space besides giving longer lease of life to good sugarcane varieties by exploiting their genetic potential in more favourable environment than in existence at present (Plate No.24).

Research on Sugarbeet and Sweet Sorghum is also undertaken by the Institute. It has been established that Sugarbeet cultivation in the plains and its seed production in the hills are economically viable propositions in India. Experiments in sweet sorghum are on hand at the Institute and recently for the first time jaggery has been prepared with the juice of its stalks.

Sugarcane Breeding Institute, Coimbatore (Tamil Nadu State) and its Regional Sub-Stations :

The functions of the Institute are (a) to breed improved sugarcane varieties for the various agroclimatic regions in the

Indian Union (b) to conduct research related to the breeding on the genetics, botany and cytogenetics of sugarcane as also on physiological, chemical, mycological and entomological aspects, and (c) to impart post-graduate training in sugarcane breeding and botany.

Regional Sub-Stations

1. Karnal in Haryana For original testing of parental stocks.
2. Motihari in Bihar Conduct of progeny tests to help the breeding works
3. Cannanore (Kerala) For maintaining the world germ plasm.

Two all India Coordinated Research projects - One on Sugarcane and the other on Sugarbeet have been in operation since 1970. The studies under the 1st project are being conducted at 7 main centres viz., Lucknow, Pantnagar (U.P.), Jullundur (Punjab), Padegaon (Maharashtra), Pusa (Bihar), Anakapalle (Andhra Pradesh) and Coimbatore (Tamil Nadu) and 7 Sub-centres, namely, Jagadhari (Haryana), Bethuadhari (West Bengal), Sehore (Madhya Pradesh), Navsari (Gujarat), Mandya (Mysore), Kolhapur (Maharashtra) and Cuddalore (Tamil Nadu).

Studies under the second project are being carried out on two aspects viz., (i) multi-location testing of sugarbeet varieties under different agro-climatic regions and (ii) seed production. The Indian Institute of Sugarcane Research, Lucknow coordinates the research work of both the sugar crops with the help of the two Project Coordinators one each for sugarcane and sugarbeet.⁵

5. Indian Sugar Year Book, 1971-72, P. 30.