

CHAPTER - III

MEASURES FOR INCREASING SUGARCANE

Production - I

1. Sugarcane Seed Improvement Schemes.
2. Water Supply Schemes.

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C H A P T E R - I I I

M E A S U R E S F O R I N C R E A S I N G S U G A R C A N E P R O D U C T I O N - I

The Prosperity of the Karkhana directly depends upon the quantity as well as quality of sugarcane supplied by its members. Therefore, agricultural development efforts have become the integral part of the activities of the Karkhana. The Board of Directors have been active enough in implementing the intensive sugarcane development schemes. For getting maximum sugarcane for crushing the Karkhana has adopted following measures for increasing sugarcane production, yield per hectare and sugar recovery percentage.

Measures taken by Rajaram Karkhana for increasing sugarcane production are grouped as under -

1. Sugarcane Seed Improvement Schemes.
2. Water Supply Schemes.
3. Intra-structure Facilities.
4. Protective Measures.
5. Incentive Schemes.

The first two measures are discussed in chapter III, and the remaining in chapter IV.

1. Sugarcane seed Improvement Schemes :

Till recently majority of the farmers in the area of the Karkhana have been using seeds from the commercial crops, which results in poor germination and also in spread of pests and diseases. In order to increase sugarcane yield, sugar recovery and sucrose contents sugarcane seed improvement programme was undertaken by the Karkhana in the following manner.

i. Distribution of disease-free-seeds

Improved varieties of seeds are provided to cultivators on the basis of "No Profit No Loss" by Rajaram Karkhana. The Karkhana has tried its level best to supply the quality sugarcane seedling to its members in required quantity on credit at reasonable price. The improved varieties Co 740, Co 7704, Co 671, Co 7219, Co 7527, Co 8014 are procured from Research Centres as shown in the following table.

Table 3.1 : Statement Showing Details of Procurement
of Seedlings.

SR.NO.	NAME OF RESEARCH CENTRE	VERIETY
1.	Padegaon Cane Research Centre	Co 740
2.	Akaluj Cane Research Centre	Co 740
3.	Radhanagari Cane Research Centre	Co 740
4.	Rajarshi Shahu Cane Research Centre, Kolhapur.	Co 671
5.	Panchganga Sahakari Sakhar Karkhana Nursery	Co 740
6.	Samirwadi (Karnatak)	Co 671
7.	Gangawati Sugar Mill (Karnatak)	Co 671
8.	Nursery of Karkhana	Co 740 Co 7527 Co 671 Co 7219 Co 8014
9.	Cultirator's Plot or Nursery	Co 740 Co 671 Co 7219 Co 7527 Co 8014

SOURCE : Office records of Rajaram Karkhana.

A three tire foundation seed programme has been formulated by the Sugarcane Development Department. The three tires are (a) Production of foundation seeds with

'Heat Therapy' (b) Multiplication of the foundation seed (c) Distribution of the seed. For implementation of the above programme, Rajaram Karkhana has established an experimental-cum-seed-farm of 20 acres at Bavachi and 15 acres at Kasegaon both in Tal.Walwa, Dist.Sangli. New varieties of Sugarcane are to be tested on this farm to verify their suitability for this region. Seeds of sugarcane are multiplied and supplied to the cultivators. Rajaram Karkhana encourages the farmer-members nurseries by providing fertilizers, seeds insecticides and pesticides worth Rs.1000 per acre out of Cane Development Fund of the Karkhana. In order to increase early ripening varieties Rajaram Karkhana provides subsidy upto Rs.400 per acre or the actual transport charges, whichever is less. The seed dressers like Bavestine for protecting the sets from primary infection and giving better germination are also supplied to the farmers at 40% subsidy. Cane Development staff also give advise to the cultivators to use fresh seed every 3 or 5 years.

Immature cane of 8 to 10 months is good as seed material as it gives good germination. So Rajaram Karkhana tries to procure and supply such type of seeds to the farmers at no extra cost. The following table shows distribution of seeds made by Rajaram Karkhana.

Table 3.2 : Statement Showing Distribution of Sugarcane Seeds.

YEAR	VARIETY	SEEDS IN SETTS OR KANDI
1979-80	Co 740	11,77,450
1980-81	740	15,77,175
1981-82	740 (Three bud setts)	1,19,500
1982-83	740 (Three bud setts)	5,54,300
1983-84	Co 740, Co 7219 (- " -) Co 671, Co 7704	2,11,400
1984-85	Co 740, Co 671	15,31,450
1985-86	Co 740 Co 671 Co 7527	63,12,000 1,389 M.T. 16,000 M.T.
1986-87	Co 740, Co 7704 Co 7527, Co 7219	60,34,580
1987-88	Co 740, Co 7219 Co 7527, Co 7527	26,86,530 . 170 M.T.
1988-89	Co 740, Co 671 Co 7219	39,56,585

SOURCE : Office Records of Rajaram Karkhana.

ii) Hot Water Treatment Plant :

In order to avoid the spread of virus diseases like ratoon stunting and grassy shoot, the seeds of sugar-

cane are kept in hot water treatment plant for 30 minutes and the temperature of water is kept 52°C. Hot water treatment of seeds is a must for getting higher yield and in prolonging the life of cane varieties to a great extent.

A hot water treatment plant was installed for treating sugarcane seedling by Rajaram Karkhana on the factory premises in the year 1985-86. The Chief Sugarcane Development Officer is incharge of this plant. The seed after heat therapy and treatment with seed dresser is delivered at seed farms of Rajaram Karkhana and farmer's nurseries. The cane cultivators in the area of Rajaram Karkhana are able to get disease free seed from this plant. The Chief Sugarcane Development Officer tries to bring more and area under such treated seed every year.

iii) Trial of New Varieties :

Acceptance and propogation of cane seed variety without taking trial is dangerous. The operational area of Rajaram Karkhana consists of 103 villages. The trials are to be taken in six zones, in each of which one finds different atmosphere and other environment factors. The planting of the new varieties is done

monthwise all the year round and the cane development staff make a study of plantation, time taken for maturity, a manurial and water requirements needed to grow a good cane crop from the new variety of seed planted. The cane development Department also study the draw-backs or - negative aspects. A new variety is introduced only when it is found suitable for such trials are taken in seed farms of Karkhana at Bavachi and Kasegaon as well as in cultivators' plots.

iv. Lectures Seminars and Conference :

An active involvement of Agricultural Department, Sugar factory and the farmer is necessary for quick transfer of new technology. This can be done by organising lectures, seminars and conferences. Rajaram Karkhana organises lectures, seminars and conferences from time to time and the experts from Deccan Sugar Institute, Poona, various agricultural universities and sugarcane research centres are invited. Guidance regarding use of improved seeds soil preparation, use of fertilizers and insecticides, water management, alternative crops etc. is given. Adoption of proper harvesting techniques and efficient cane management to minimise the

time gap between the harvesting and crushing of cane is also suggested so that the intensity of cane cultivation would not decline. The cane development office organises eight to ten seminars in every zone every year. Demonstrations are conducted in every zone as farmers believe what they see and not what they listen. For transferring technology from laboratory to the field, training at staff and canegrowers level is given by organising seminars and lectures.

v. Seed-farm :

Generally sugarcane crop is not specially raised by individual farmer for his seed requirement. The use of any crop for seed results in poor germination and spread of pest and diseases. For production of foundation seeds and multiplication of the foundation seeds, Rajaram Karkhana has instituted seed farms at Bavachi (20 acres of land) and at Kasegaon (15 acres of land). Chief sugarcane Development Officer is incharge and two supervisors, who are agricultural graduates, are appointed to look after the seed farms. In seed farm experiments relating to different varieties of sugarcane, water management, fertilizer application, etc. are conducted. Alongwith production of seeds new varieties are tested and verified as to their suitability to a particular region.

2. WATER SUPPLY SCHEMES :

In order to bring more and more land under the sugarcane cultivation Rajaram Karkhana has implemented various water supply schemes. The details of such schemes are given below :-

i. Irrigation Schemes :

Scarcity of water was the main hurdle for the agricultural development in the area of Rajaram Karkhana. Acute shortage of water was felt for sugarcane during the months of March to June every year. This problem was further aggravated by vagaries of Monsoon. In order to solve the above problem and to bring maximum area of land under irrigation, the lift irrigation schemes on co-operative basis were encouraged by Rajaram Karkhana by providing finance, technical know-how and managerial help.

Rajaram Karkhana helps the co-operative lift irrigation schemes in -

1. preparing plan and estimates,
2. Preparing proposals of the schemes,
3. Obtaining water permits,
4. registration of co-operative irrigation scheme,
5. getting sanction of NABARD and

6. providing additional finance required for sub-pipeline, repairs and maintenance, meeting preliminary expenses, paying electricity bill, paying salaries of employees etc.

The financial assistance given by Karkhana is to be recovered from water charges collected by irrigation schemes in instal-ments. For maintaining and running the lift irrigation schemes there is separate Irrigation Department. The Chief Engineer is incharge of Irrigation Department and overseer, sub-over-seer, sapervisors, tracers, clerks and helpers assist in running this Department.

Rajaram Karkhana has taken following steps for assured supply of water to sugarcane and other crops -

1. Rajaram Karkhana has taken over management of 6 irrigation schemes which were not functioning properly, Providing them with financial assistance (by paying the overdue electricity bills, doing repairs and maintenance etc.) and managerial help, Rajaram Karkhana saw to it that these schemes started functioning in due course of time. The details of these schemes are shown in the table that follows -

Table 3.3 : Statement Showing Details of Irrigation Schemes Taken Over by Rajaram Karkhana.

Sr. No.	Name of Irrigation Scheme	Member (No.)	Total acreage	Acrage under Sugar-cane.	River
1.	Shri Shivaji Seva Sahakari Jalsinchan Yojana Ltd., Dudhondi Tal. Tasgaon.	112	430	150	Krishna
2.	Shri Shivaji Sahakari Pani Puravatha Seva Sanstha Ltd., Dudhondi Tal. Tasgaon.	109	470	142	Krishna
3.	Shri Bajarangabali Sahakari Pani Purvatha Mandal Ltd., Kundalwadi, Tal. Walwa.	243	380	50	Warna
4.	Shri Manaji Patil and Purvatha Yojana Ltd., Urun-Islampur, Tal. Walwa.	27	200	45	Krishna
5.	Shri Ganesh Sahakari Pani Purvatha Sanstha Ltd., Bagani, Tal. Walwa.	52	200	105	Warna
6.	Shri Jotirling Sahakari Pani Purvatha Sanstha Ltd., Sakharale, Tal. Walwa.	313	1800	862	Krishna
TOTAL...		856	3480	1334	

SOURCE : Compiled from Office Records of Rajaram Karkhana.

2. The following 20 irrigation schemes were completed by Rajaram Karkhana by taking long term financial assistance from state Land Development Bank Ltd., Bombay, Bank of India, Indian Bank and NABARD.

Table 3.4 : Statement Showing Details of Irrigation Schemes, completed by Rajaram Karkhana.

Sr. No.	Name of Irrigation Scheme	Members (No.)	Total acreage	Acrage under sugar-cane in 88-89	River
1.	Shri Hanuman Sahakari P.P.Sanstha Ltd., Walwa, Tal.Walwa.	45	56	42	Krishna
2.	Shri Jotirling Sahakari P.P.Sanstha Ltd., Bavachi, Tal.Walwa.	60	150	53	"-
3.	Vaibhav Sahakari P.P. Sanstha Ltd., Borgaon Tal. Walwa	400	700	342	"-
4.	Bavachi Sahakari P.P. Sanstha Ltd., Bavachi Tal.Walwa.	1025	2500	725	"-
5.	Vikas Sahakari P.P. Sanstha Ltd., Mirajwadi Tal. Walwa.	64	150	65	"-
6.	Sahyadri Sahakari P.P. Sanstha Ltd., Nagarale Tal. Tasgaon.	178	368	190	"-
7.	Shri Bhairavnath Sahakari P.P.S. Ltd., Kasegaon, Tal. Walwa.	613	1550	350	"-

Sr. No.	Name of Irrigation Scheme.	Members (No.)	Total Acreage	Acragc under sugarcane in 88-89	River
8.	Rajarambapu Sahakari P.P.S. Ltd. Walwa No.1, Tal. Walwa.	37	100	27	Krishna
9.	Rajarambapu Sahakari P.P.S. Ltd., Walwa No.2, Tal. Walwa	38	100	50	"-
10.	Shri Maharshi Ram Dhanawde Sahakari P.P.S. Ltd., Walwa, Tal. Walwa.	47	150	35	"-
11.	Urun Islampur Sahakari P.P.Sanstha Ltd., Urun Islampur, Tal. Walwa.	550	2550	619	"-
12.	Shri Shivchhatrapati Sahakari P.P.S. Ltd., Borgaon, Tal. Walwa.	350	600	370	"-
13.	Mahalaxmi Sahakari P.P.S. Ltd., Ashta, Tal. Walwa.	600	1450	450	"-
14.	Pach-Amba Sahakari P.P.S. Ltd. Ashta, Tal. Walwa.	525	1550	387	"-
15.	Basveshwar Sahakari P.P.S. Ltd., Kundal, Tal. Tasgaon.	600	2500	825	"-
16.	Dahyari Tupari, Ghogaon, Ganeshwadi Sahakari P.P.S. Ltd. Kundal, Tal. Tasgaon.	430	1500	256	"-
17.	Pandharmala Sahakari P.P.S. Ltd., Bagani, Tal. Walwa.	52	190	120	"-
18.	Rajarambapu Sahakari P.P.S. Ltd., Bhadkambe, Tal. Walwa.	264	850	345	"-

Sr. No.	Name of Irrigation Scheme.	Members (No)	Total acrage	Arage under sugar-cane in 88-89	River
19.	Vittal Sahakari P.P.S. Ltd., Devarde, Tal.Walwa.	57	100	55	Warna
20.	Shri Laxmi Sahakari P.P. Yojana Ltd., Farnewadi (Shigaon) Tal.Walwa.	45	150	65	"-
TOTAL...		5981	17264	5371	

SOURCE : Office Records of Rajaram Karkhana.

3. Following 15 irrigation schemes taken-up by Rajaram Karkhana are in the various stages of completion.

Table 3.5 : Statement Showing Details of Irrigation Schemes in the various Stages of Completion

Sr. No.	Name of Irrigation Scheme	Members (No.)	Total acrage	River
1.	Kameri Yedenipani Sahakari P.P.S. Ltd., Kameri, Tal, Walwa.	2115	4000	Krishna
2.	Shri Wateshwar Sahakari P.P.S. Ltd., Wategaon, Tal.Walwa.	452	1930	"-
3.	Walwa Sahakari P.P.S.Ltd., Walwa, No.1, Tal.Walwa.	42	150	"-
4.	Walwa Sahakari P.P.S.Ltd., Walwa No.2, Tal. Walwa.	34	80	"-

Sr. No.	Name of Irrigation Scheme	Members (No.)	Total acreage	River
5.	Wategaon, Shene, Bhatwadi Kalamwadi Sahakari P.P.S. Wategaon, Tal. Walwa.	1332	3000	Krishna
6.	Shri Khatideshwar Rayat Sahakari P.P.Yojana Peth No.2, Tal. Walwa.	860	2400	"-
7.	Yelur Sahakari P.P.S.Ltd. Yelur, Tal. Walwa.	453	1350	Warna
8.	Hanuman Sahakari P.P.S.Ltd., Kurlap, Tal. Walwa.	363	1050	"-
9.	Vashi, Ladegaon Jakaiwadi Sahakari P.P.S., Vashi, Tal. Walwa.	835	2500	"-
10.	Rajarambapu S.P.P. Yojana Ltd., Karnjawade, Tal. Walwa.	340	1050	"-
11.	Itakare Sahakari P.P.Yojana Itakare, Tal. Walwa.	440	1155	"-
12.	Rajarambapu Sahakari P.P.S. Ltd., Malewadi, Tal. Walwa.	385	850	"-
13.	Nagaon Pokharni Sahakari P.P.Yojana, Ltd., Nagaon, Tal. Walwa.	287	800	"-
14.	Jayant Sahakari P.P.Yojana Bahadurwadi, Tal. Walwa.	320	650	"-
15.	Rajarambapu Sahakari P.P.S. Ltd. Shigaon, Tal. Walwa.	38	130	"-
TOTAL...		8296	21095	

SOURCE : Office Records of Rajaram Karkhana.

4. Following 3 Irrigation schemes are waiting sanction of NABARD.

Sr. No.	Name of Irrigation Scheme	Members (No.)	Total acreage	River
1.	Bhairvanath Sahakari P.P.S. Ltd., Ashta.	845	2500	Krishna
2.	Ozarde, Sururl, Dhabakwadi Mahadewadi Manikwadi, Naikalwadi, Sayukta Sahakari P.P.S.Ltd., Ozarde, Tal. Walwa.	1652	3000	Krishna
3.	Anant Sahakari P.P.S.Ltd. Bagani, Tal. Walwa.	285	800	Warna
TPTA:...		2782	6300	

SOURCE : Office Records of Rajaram Karkhana.

5. Preliminary work of following schemes is already in progress :-

Sr.No.	Name of Irrigation scheme	Total acreage	River
1.	Shivadhara, Gotkhindi, Shekhar Wadi, Dhagewadi S.P.P.S. Ltd., Gotkhindi, Tal. Gotkhindi, Tal. Walwa.	1375	Warna
2.	Rajarambapu Sahakari P.P.S.Ltd. Dhongarwadi, Tal. Walwa.	675	Warna
3.	Hanuman Sahakari P.P.S. Ltd. Shekarwadi Tal. Walwa.	600	Warna

Sr.No.	Name of Irrigation Scheme	Total acrage	River
4.	Bhairwanath Sahakari P.P.S.Ltd, Tujarpur.	675	Warna
5.	Rajarambapu Sahakari P.P.Ltd.Dhavali, Tal. Walwa.	100	Warna
TOTAL....		3425	

SOURCE : Office Records of Rajaram Karkhana.

Above detailed 49 co-operative lift irrigation schemes benefit 52000 acres of land. Under these schemes sugarcane crop is taken alongwith Kharif and Rabbi crops according to the water permission obtained.

ii) BORING OF OPEN WELLS :

Though there are a number of wells in the area of operation of Rajaram Karkhana, there is a problem of insufficient water in wells. Some wells, however, require deepening in consequence of the lowering water table due to extreme drought conditions. The shortage of water in months of March to June affects the sugarcane crop badly. Rajaram Karkhana has, therefore, taken measures like boring of open wells. Bore well scheme was undertaken by

the Karkhana in which subsidy from Share Development Fund at 25% of estimated expenses of boring or Rs.500 whichever is less is given to the members who take the advantage of the scheme. The member who takes bore of 6" diametre and instal electric pump set is entitled to a subsidy of Rs. 2,000, (Rs. 1,500 for electric pump and Rs. 500 for boring). The types of bore taken are 1.5" to 2" and 4.5" and 6" diametre. The following table shows the subsidy given by Rajaram Karkhana under bore well scheme during the period of study.

Table 3.6 : Statement Showing Details of Bore Well Scheme.

Year	No.of members	Work in running feet	Total cost Rs.	Subsidy given by Karkhana Rs
1979-80	78	6,165	1,01,595	22,657
1980-81	62	10,651	1,65,220	27,135
1981-82	185	23,194	5,16,701	75,956
1982-83	169	20,945	5,08,962	87,398
1983-84	124	14,462	4,20,866	53,201
1984-85	57	6,853	1,20,324	23,428
1985-86	40	5,170	1,13,893	16,112
1986-87	54	7,619	1,47,945	25,328
1987-88	40	4,885	1,20,145	16,744
1988-89	5	1,080	42,863	2,500

SOURCE : Office Records of Rajaram Karkhana.

In the year 1988-89, only 6" diameter bores are taken.

iii) SPRINKLER AND DRIP IRRIGATION :

Wide use of sprinklers and drip irrigation will go a long way towards not only modernising agriculture but also making irrigation schemes profitable. It also increases sugarcane yield and solves to a certain extent, water logging problem. As an experiment and for demonstration purpose, sprinkler is used in the garden of Rajaram Karkhana. For wide use of sprinklers and drip irrigation, seminars were conducted by the Sugarcane Development Department in every zone of the Karkhana. The Chief Sugarcane Development Officer also gives advise to the cultivators for using sprinklers and drip irrigation system.

iv) WATER MANAGEMENT :

Boosting up sugarcane production is possible by better water management. For effective water management Rajaram Karkhana has installed a computer on 27th August, 1985. A separate water management department was created in 1988 and officer on water Management Department, three supervisors (B.Sc.Agr.) and six clerks were appointed. The water Management Department, for economical use of water prepares water budget and fix the cropping pattern.

The irrigation schedule is prepared through computer and made applicable in certain irrigation schemes of the Karkhana. The schedule of water is prepared by computer in Vaibhav Co-operative Irrigation Scheme Ltd., Borgaon, (Tal. Walwa, Dist. Sangli) and in Bawachi Sahakari Pani Purvatha Sanstha Ltd., Bawachi (Tal. Walwa, Dist. Sangli). In these schemes on every T, Chamber is built and to measure water V. notch is attached. The new method of computation of sugarcane water budget will be made applicable to other irrigation schemes after making a survey. The work of making survey has been started by Water Management Department.

Water Management Committee has been formed by the Board of Directors of Rajaram Karkhana, containing two experienced members to look after overall programme of water Management in all the lift irrigation schemes of the Karkhana and to guide the staff of irrigation schemes and Water Management Department.