

CHAPTER - V

WORKING OF
FERTILIZER SECTION
OF
THE SANGH

- V : 1 Importance of fertilizer.
- V : 2 Role of fertilizer section of the sangh.
- V : 3 Working of Granulated fertilizer plant Rukadi.
- V : 4 Working of fertilizer sales Department of the 'Sangh'
- V : 5 Analysis of cost and price of the Bull brand granulated fertilizer grade 15:5:5.

V : 1 Importance of fertilizer :

Fertilizer helps for increasing agricultural productivity. According to Hendrix and Giri, " the major source of increase in India's agricultural output during the period of 1952-53 to 1964-65 was that of the application of fertilizer which lead to an increase in agricultural output by 10 %. They also estimated the contribution of increase in fertilizer use to growth in crop output of different states during the same, under the assumption of a total yield response ratio and zero consumption ratio in 1952-53 and reported a " fairly close positive relationship between increase in the use of fertilizer and increase in total output. "

In the determination of the volume of food grains output and of agricultural output generally, fertilizer along with modern inputs play a critical role. The importance of fertilizers was merely recognised in general terms in the first five year plan. Fertilizer and manure were expected to contribute 25 % of target of 10 million tonnes of additional production of food grains in the second plan. The role of fertilizer in increasing agricultural production was particularly emphasised in the 1960's when it was realised that little scope existed for being additional land under plough and the Intensive Agricultural District Programme was introduced in 1950-61 in seven district on an experimental basis. The programme and need for importing food grains made fertilizers a factor of strategic importances.

While the fertilizer industry is important for the rapid agricultural progress and overall economic growth of the country. It has other impacts as well. Some of which may be pointed out here. It has a close relationship with the rate of savings. It ~~is~~ would be readily admitted that savings are strongly related to the volume of national income and since National income has a strong positive correlation with

agricultural output. Agricultural production almost fully explains savings made in rural households, but increased agricultural output can be expected to supply cheap raw materials to industry and to increase industrial production and industrial income.

V : 2 Role of fertilizer section of the sangh :

Fertilizer section is considered as the heart of the 'Sangh'. The total investment made by the sangh in fertilizers section as a whole is comparatively greater than all other activities of the sangh. The working capital used in this section is greater as compared to other sections.

The role of fertilizers section can be revealed from the Trade Chart Table No. V : 1. It reveals that the fertilizer section of the sangh plays a key role in the sangh's diversified activities. The table shows the growth and composition of yearwise turnover of the diversified activities.

In the year 1971-72 it is observed that the fertilizers section in agro-services stood first in turnover to the tune of Rs. 369.73 lakhs, next to this comes the jaggery products which stands at Rs. 155.44 lakhs. In this year the percentage of total turnover of the fertilizer section was 36.52 %. Next comes the jaggery section whose percentage contribution was of the order of 15.45 %.

Column No. 5 in the trade chart throughs light on the growth of turnover in the year 1975-76. In the year, 1975-76 fertilizer section's sales stood at Rs. 1089.54 lakhs which seems to be highest among all other diversified activities of the sangh. Next enters Bombay Branch & diesel section whose turnover stood at Rs. 549.66 & 422.50 lakhs. Column No. 6 of the table shows the percentage contribution in turnover of all

the sectors of activity. Fertilizer, shares at 36.62 %. Then Bombay branch and diesel section respectively contributes 18.48 % and 14.20 %.

Column No. 7 of the table indicates the turnover in diversified activities of the sangh in the year 1981-82. Here it is observed that the fertilizer section itself has contributed Rs. 1239.27 lakhs as turnover. Second is of Diesel section & Bombay branch whose turnover stood at Rs. 821.92, 435.67 lakhs respectively, column No. 8 reveals the percentage of turnover of each diversified activities. It seems that fertilizer section contributes 30.38 %, diesel branch contributes 20.15 % Bombay branch 10.68 % turnover and the least contribution is of tobacco section i.e. only 0.22 %.

From all these three years fertilizer section showed a highest turnover compared to all other diversified activities. That is why the researcher has chosen the fertilizer sections working, as a micro unit of study.

TABLE V : 1.

: Trade Chart :

- (Growth and composition)-

(in lakh rupees)

Sr. No.	Diversified Activities	TURN OVER					
		1971.72	% of	1975.76	% of	1981.82	% of
1.	2.	3.	4.	5.	6.	7.	8.
A. MARKETING OF AGRICULTURAL PRODUCE							
1.	Jaggery Section	156.44	15.45	100.44	3.38	148.46	3.64
2.	Tobacco Section	-	-	4.95	0.17	9.16	0.22
B. AGRO SERVICES							
1.	Fertilizers	369.73	36.52	1089.54	36.62	1239.27	30.38
2.	Agro Development Centres 1 & 2	8.06	0.80	20.85	0.70	67.86	1.66
3.	Petroleum Products	145.84	14.41	422.50	14.20	821.92	20.15
4.	Iron and Cement	31.43	3.10	41.92	1.41	86.64	2.12
5.	Machinery & Spare parts	6.98	0.69	18.60	0.63	43.24	1.06

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1.	2.	3.	4.	5.	6.	7.	8
6. Bicycles & Electric Goods	-	-	-	-	-	24.60	0.60
7. Tractor Servicing Centres	-	-	6.67	0.22	21.58	0.53	
C. SERVICES TO CONSUMERS.							
1. Pharmaceuticals	97.10	9.59	289.63	9.74	344.50	8.45	
2. Cloth Section	23.28	2.30	93.17	3.13	149.93	3.68	
3. Ready made Garments	3.33	0.33	8.61	0.29	19.81	0.49	
4. Provision Stores	-	-	29.95	1.01	53.16	1.30	
5. Utensils shop & utensils factory	26.69	2.64	55.93	1.88	188.73	4.63	
6. Food grains & Sugar	96.53	9.54	53.65	1.80	77.85	1.91	
7. Whole sale grain shop	46.92	4.63	144.03	4.84	235.65	5.78	
8. Text Book distribution & stationary	-	-	22.06	0.74	-	-	
9. Sports Material	-	-	-	-	2.14	0.05	
10. Rexin & Accessories	-	-	-	-	3.21	0.08	
D. MANUFACTURING ACTIVITIES							
1. Granualted Fertilizer plant.	-	-	1.02	0.03	44.53	1.09	
2. Oil Mill Wadgaon	-	-	-	-	15.63	0.38	
3. Chilly Powder	-	-	-	-	-	-	
E. MISCELLANEOUS ACTIVITIES							
1. Printing Press	-	-	5.65	0.19	6.68	0.16	
2. Transport Operations	-	-	16.14	0.54	28.88	0.71	
3. Timber yard	-	-	-	-	10.10	0.25	
4. Bombay branch	-	-	549.66	18.48	435.67	10.68	
Total	1012.33	100%	2974.97	100 %	4079.20	100%	

V : 3 WORKING OF GRANULATED FERTILIZER PLANT RUKADI :

By keeping in view the demand for the fertilizer of the area and advantages granulated fertilizer over hand-mixture the 'sangh' decided to establish a Granulated fertilizer plant in Rukadi. The Granulated Fertilizer plant at Rukadi Started its production in April, 1968. The construction of the plant building and erection of the plant took nearly 15 months and started production on 13th April, 1968.

The plant is situated in the centre of the district Kolhapur, at Rukadi. The sangh had its own land at village Rukadi measuring 5 acres and 31 gunths. The site is very near to railway station and river Panchaganga is about two to three miles away. The actual cost incurred in constructing the plant was about Rs. 12.85 lakhs. All the finance to the factory is supported by the head office out of its own funds and bank credit. Fertilizer Section purchases the raw materials required and other maintenance materials as for the requirements of the factory.

As per policy of the sangh " fertilizer section " acts as a whole-saler for the granulated mixed fertilizer from which the retailer i.e. village societies or branches buy the required fertilizer.

At present the factory is having the following cadres personnel, for three shifts a day.

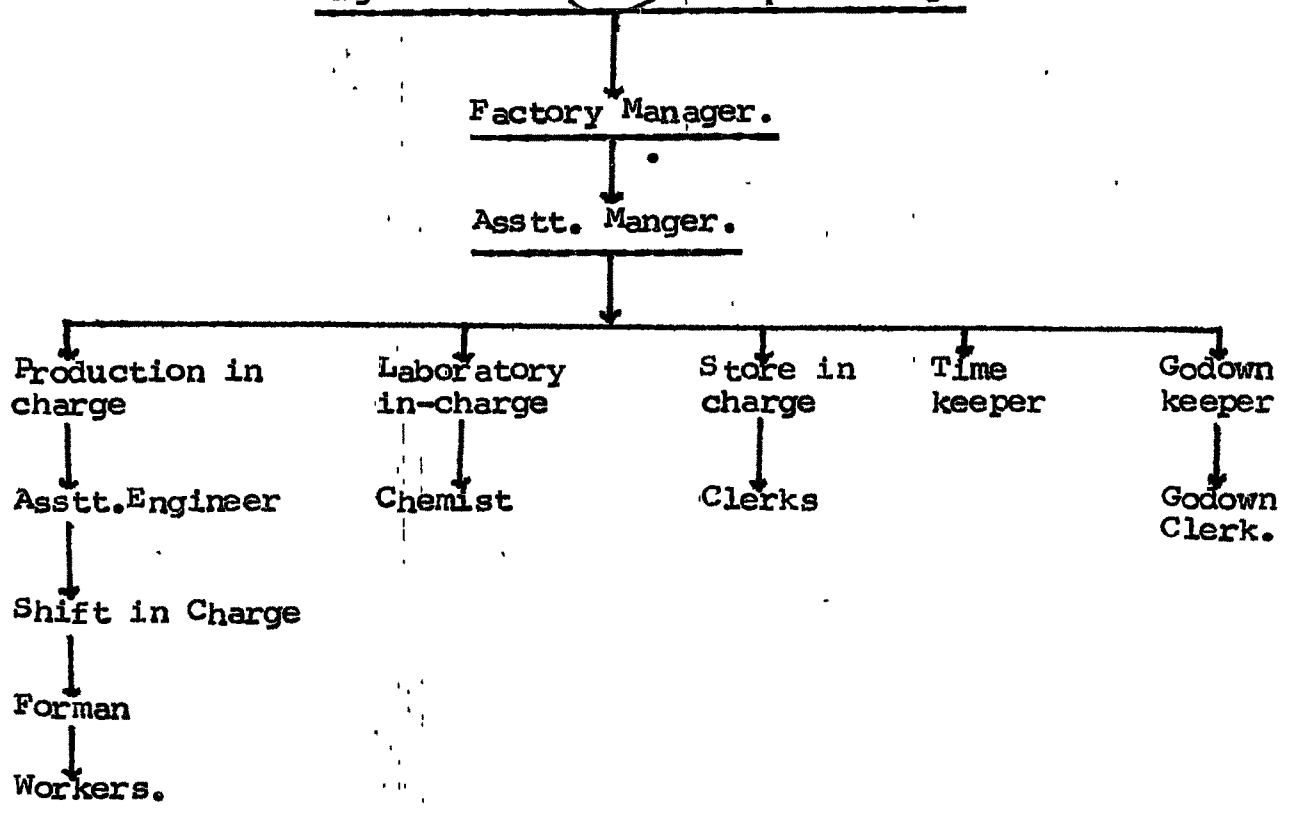
1.	Administrative Staff	14.
2.	Supervisory Staff	4.
3.	Workers	86.

In the factory premises

the workers of the following co-operative, co-operative societies are working on contract basis for inward and outward of raw-materials and finished products respectively.

- 1. Shri. Vithal Society ----- 39 Workers.
- 2. Shri. Tatyasaheb Mohite ----- 30 Workers.
Society Bombay.

CHART. NO: V; 1
Organization Chart of the Factory.



Working of the Plant :

As this factory is a branch of the sangh its working is managed with the help of other sections or branches of the sangh. To keep pace with the increase in demand, recently sangh stepped up its efforts to increase production by the expansion of the fertilizer plant. This was completed speedily and production in the new plant commensed from 17th June, 1982. The capacity of the New Plant is 45,000 tonnes and that of the old one is 30,000 tonnes. The sangh will now be in a position

to cope with the demand for the Bull Brand Manure Mixture.

The fertilizer plant of the sangh receives following raw materials from different parts of Maharashtra State:

1. Ammonium Sulphate :

The fertilizer plant of the sangh gets ammonium sulphate from Gujarat State Fertilizer Company, Fertilizers and Chemicals Travancola Ltd., Maharashtra State Marketing Federation Ltd., Bombay, Maharashtra Warehousing Corporation Poona, Central Warehousing Corporation and Indian Mineral and Fertilizer Company, Kolhapur dealers etc.

2. Urea :

Urea is collected from Fertilisers And Chemicals Travancole Ltd., (FACT), Manglore, Fertilizer and Chemicals, Southern Petro Chemical Industries Corporation Coctin, Rashtriya Chemical and Fertilisers Bombay, Zuary Agro Chemicals Ltd., Goa, Indian Mineral and Fertiliser Company Kolhapur etc.

3. Dia Ammonium Phosphate :

The agencies supplying dia - ammonium phosphate are state Warehousing Corporation, Central Warehousing Corporation, State Marketing Federation etc.

4. Single Sugar Phosphate :

This raw - material is received from West India Chemicals Ltd., Zuary Kalbor Poona etc.

5. Dolomite Powder :

The Sangh's Plant receives this chemical from Sharad Mineral Chhota Udyapur, Swati Mineral Chhota Udyapur, Asian Minerals Kolhapur, Fertichem Industries, Kolhapur M/s. D.G. Jartarhar Hubli etc.

6. Complex Fertilizers of different Grades :

Like 16 : 20 : 0 and 20 : 20 : 0 from Indian Mineral and fertilizer company Kolhapur, 19:19:19, and 28:28:0 from Zuary Agro Chemical Ltd., Goa, 17:17:17 from G.G. Shinde Kolhapur dealer in SPIC Products, 12:32:16 and 14:28:14 and 10:26:26 from Indian farmers Fertilisers co-operative limited.

7. Meriate of Potash :

This raw material is brought exclusively from Indian Potash Ltd., Bombay.

Production of Fertiliser :

At present the plant works in three shifts per day with a capacity of 8 tonnes per hour. There are two types of layouts of the plant.

- i. Vertical Type.
- ii. Horizontal Type.

Latest among the units established recently has preferred horizontal arrangements.

Granulated mixed fertilizer are physical mixture of fertilizer material each of which contains one or more of the main nutrients. Generally straight fertilizer are mixed to offer balanced product suited to special group of crops and in consequence with the deficiency of nutrients in the soil. The raw material consisting of straight fertilizer or complex fertilizers are weighed in such a portion that they provide

nutrients in the ratio required.

For example to prepare 15:5:5 grade fertilizer the following formula is used.

Sr. No.	Ingredients	St/hr	N	P	K
1.	Urea	130	602.6	-	-
2.	Super Phosphate	1190	-	190.4	-
3.	M ₂ O ₃ Potash	425	-	-	255
4.	Factum Phos (16:20)	300	48.0	60.0	-
5.	Amonium Sulphate	500	100.0	-	-
6.	Dolomite	1285	-	-	-
Total		5000	750.6	250.4	255

This arrangement is for 5 tonnes per hour capacity plant .

The capacity of the plant is 100 million tonnes per day and 30,000 million tonnes per annum. For preparation of Bull Brand Granulated Fertilizer mixtures, the raw materials like, Amonium Phosphate, dolomite, Amonium Sulphate, Urea, single super phosphate, and muriate of potash Dia is suitably fed into a crusher on hammer mill. This crushed material is carried into bucket elevator conveyor to the silos, from where the raw material is carried through two volumetric feeders. Each volumetric feeder is adjustable in order to ensure the correct ratio of raw material components.

After having been mixed in the paddle conveyor, the material is delivered to the rotary granulated drum with addition of spraying water. The mixture of components in granulated drums falls through a hopper into the feed, and of the oil fixed co-current drier drum. The combustion air is drawn through the drier and cycloned by a fan and delivered to

the exhausted stock. The dried material is then delivered to the stock. The cooled material is then delivered to two vibrating screen which remove oversize and undersize material respectively. The oversize and undersize is sent back to the system for crushing and recycling. The granulated fertilizer from the screen has dimensions between 2 and 6 m.m. This final procedure is left in position and jute bags for weighting 100 kg. or 50 kg. as required.

Utilization of Capacity :

The capacity utilization of the Granulated fertilizer plant, Rukadi is steadily increasing. In recent years, the production of the factory could not keep pace with the increasing demand. Irregular supply of electricity was a difficult problem, to the factory now a days. Being conscious of the fact, sangh stepped up its efforts to increase production by expansion of the fertilizer plant. This work was completed speedily and production in the new plant was commenced from 17th June, 1982. The capacity utilization of the New Plant is 45,000 tonnes and that of the old one is 30,000 tonnes. The sangh will now be in a position to cope with the demand for the Bull Brand Manure Mixture.

In 1972-73 the capacity was underutilized because of shortage of raw materials, electricity etc. Then up to 1982-83 it is observed from the table that there was a effective utilization of capacity and the percentage utilization of capacities was increasing consistently, of manufacturing dept. Rukadi. When we think of the Rukadi fertilizer plant of the sangh the progress made in different items like Investment, Sales, Production Income, net profit etc. are substaintial in nature.

For the perpose of study the researcher has compiled and computed the figures from 1970-71 to 1982-83.

Table : V.2 :

Growth of the following items of the plant, Rukadi.

Sr. No.	Period	Investment (Amount)	Turnover (Amount)	Ratio 4/3 x 100	Production (Amount)	Ratio 6/3 x 100	Income (Amt)	Ratio 8/3 x 100	(Figures in Rs Lakhs)	
									Net Profit (Amount)	Ratio 10/3 x 100
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.	1970-71	28.47	112.11	393.78	112.76	396.07	9.77	34.32	7.13	25.04
2.	1971-72	32.79	117.38	357.97	110.56	337.18	8.95	27.29	3.71	11.31
3.	1972-73	33.42	97.95	293.09	91.13	272.68	7.61	22.77	2.90	08.68
4.	1973-74	58.43	165.88	283.90	164.23	281.07	20.06	34.33	15.30	26.19
5.	1974-75	36.43	319.62	877.35	274.86	754.49	33.29	91.38	27.41	75.24
6.	1975-76	38.00	291.98	768.37	278.66	733.32	17.75	46.71	12.26	32.26
7.	1976-77	40.73	290.84	714.07	274.30	673.46	20.24	49.69	15.68	38.50
8.	1977-78	35.39	313.46	885.73	305.21	862.42	11.58	32.72	6.37	17.99
9.	1978-79	48.09	321.85	669.27	315.28	655.60	14.06	29.24	6.95	14.45
10.	1979-80	39.96	403.03	1008.58	396.01	991.02	11.64	29.13	6.23	15.59
11.	1980-81	65.92	480.53	728.96	479.08	726.76	7.19	10.91	1.88	02.85
12.	1981-82	49.20	347.78	708.87	345.78	702.80	11.49	23.35	-0.72	-0.37
13.	1982-83	89.50	502.97	561.98	483.11	539.79	25.50	28.49	9.89	11.05

Increase: (+)
Decrease (-)
1983 over
1971

(Compiled and computed the researcher from the factory records)

A) Amount	+61.03	+390.86	-	+370.35	-	-	+15.73	-	+2.04	-
B) Percentage	+314.37	+448.64	+168.2	+428.44	+143.72	5.83	+261.00	+138.71	14.36	-
C) Average growth rate	+4.36	+27.92	-	+33.67	-	-	+1.12	-	+0.15	-

Table No. V:2 shows the increasing tendency of investment turnover, production income and net profit.

Trends in growth and composition of Investment reserve and other items like production, turnover etc. can be explained with the help of the data presented in table V: 2. The data reveals the following features.

1. Column 3 of the table shows an increase in investment in 1983 over 1971. It is observed that the amount increase in investment during the period of study was Rs. 61.03 lakhs. As per as the percentage increase in the plants investment is concerned it is about + 314.37 %.

2. Column 4 through's light on trends in turnover in 1983 over 1971 period. The amount increase in turnover over the period of study was about + 390.86 lakh rupees and the percentage increase was to the tune of + 448.64 %.

Column 5 indicates the ratio of turnover to investment. It shows that a rupee investment in business leads to a number of times increase in turnover. Here the percentage rise in the ratio of turnover to investment was + 168.2 %.

3. Column 6 of the table throughs light on the amount of production in different years. It is observed that the amount increase in production over the period of study was of the order of Rs. 370.35 lakhs. As per as percentage is concerned it was + 428.44 % in 1983 over 1971 figures.

Column No. 7 indicates the ratio of production to investment. Here the p-percentage rise in the ratio was + 143.72% in 1983 over 1971.

4. Column No. 8 of the table indicates the growth of the income of a plant. It is observed that income of the Rukadi plant is increasing consistently. The amount increase in the gross income amounted to Rs. + 15.73 lakhs. The percentage increase in gross income was of the order of + 261.00 %.

Column No. 9 throughsight on the ratio of gross income to investment. It means a rupee invested in a plant generates a particular amount of income. It is observed that over the period of study this income decreased to 5.83 — percentage.

5. Column No. 10 shows about the amount of net profit earned by the factory during the period of study. It is observed that net profit was studily increasing. The highest profit earned compared to all these years was Rs. 27.41 lakhs particularly in 1974-75. In the year 1981-82 the fertilizer plant earned loss to the tune of - 0.72 lakh rupees. In all the amount increase in net profit was + 2.04 lakhs over the period of study and the percentage increase was + 138.71 %.

Column No. 11 indicates the ratio of net profit to investment. It indicates that a rupee invested in the factory yields a particular amount of net profit. Here the percentage rise in net profit in 1983 over 1970-71 seems to be decrease i.e. at the rate of 14.36 %.

In all it is observed that the trends in investment, turnover, income, production net profit seems to be more or less satisfactory.

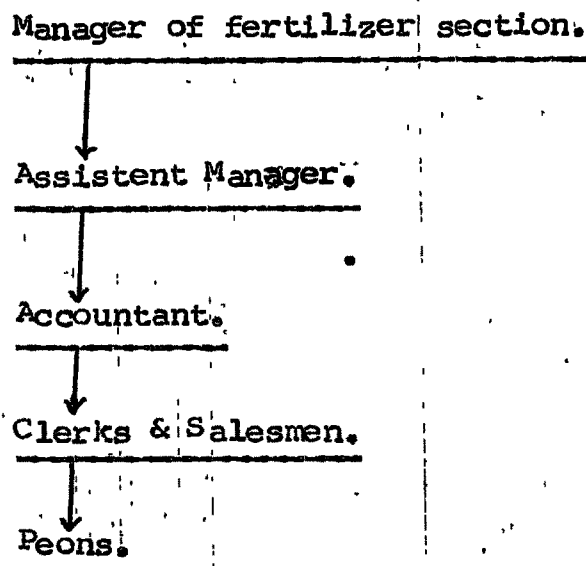
V : 4 WORKING OF FERTILIZER SALES DEPARTMENT OF THE SANGH :

The sangh has not created a seperate marketing department to sell fertilizers. This responsibility is vested with the fertilizer sales department of the sangh. Fertilizer manufactured at Rukadi Plant are transported to the wholesale department of the sangh. This department is solely

responsible for the marketing activities with regards to fertilizer.

Organization set up. :

The organization set up of this section of the sangh is as follows :



In this chart we observe that manager is a responsible person for the fertilizer sales section of the sangh. With reference to his duties he can take decision with the consent of the general secretary. The manager has full authority over the daily transaction. All employees working in the branch work under his guidance and control for the attainment of specific goal of the sangh.

WORKING OF FERTILIZER OF SALES DEPT. OF THE SANGH.

The fertilizer sales department has a typical sales procedure. The customers or Individual farmers societies or co-operative societies interested in buying the fertiliser have to register their order with the KDCC Bank. All such orders are then passed on to the respective buyers by the bank in the form of bank entry letters.

These buyers, then take that letter to the wholesale department of the sangh. After detailed scrutiny of various documents brought by the customers and societies. The fertilizer sales department prepares a delivery note of the respective fertilizer they want. This delivery note should be prepared in triplicate. One copy is to be sent to the transport section. Then transport section in turn will send these delivery challens to Rukadi plant. The challens are to be written with 100 to 150 metric tonnes of fertilizer. As per the delivery challens the Rukadi plant carries distribution programme to different societies.

The dispatch section of the Rukadi plant prepares three copies of invoices of the materials sent to the societies. Out of three copies, one copy will be retained by the factory for accounts purpose, the second will be sent to manure section for accounting purpose and the third copy will be given to the co-operative societies for intimation.

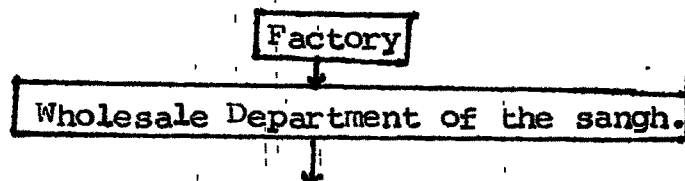
Channels of Distribution :

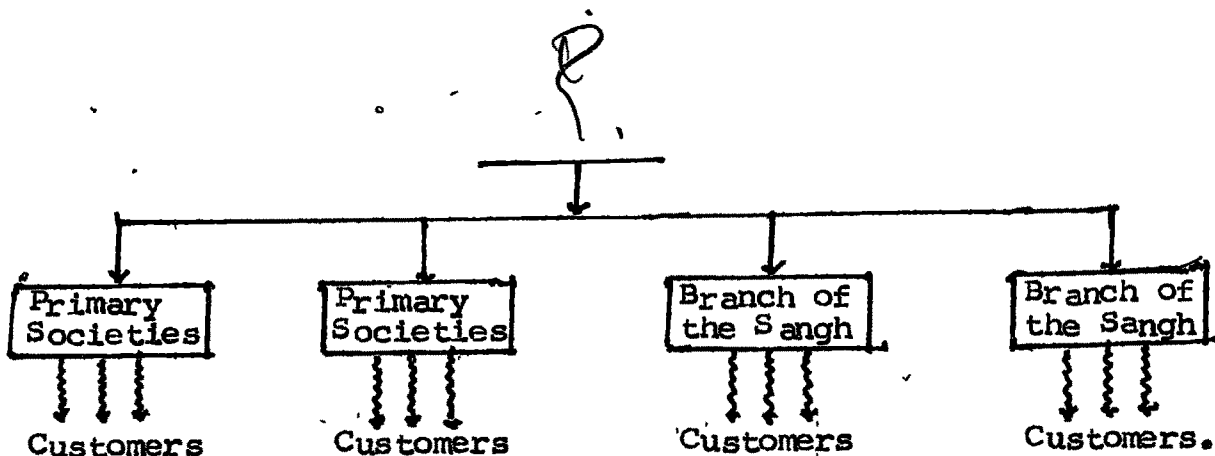
The existing stock of fertilizers are either distributed directly through wholesale department to the customers or indirectly from wholesale department to the primary co-operative societies or branches of the sangh where from customers lift their quantum.

The following chart throws light on the channels of distribution of fertilizer by the sangh's fertilizer section.

Chart No. V : 2 : Channels of Distribution : -

A) Indirect Distribution :





B) Direct Distribution :

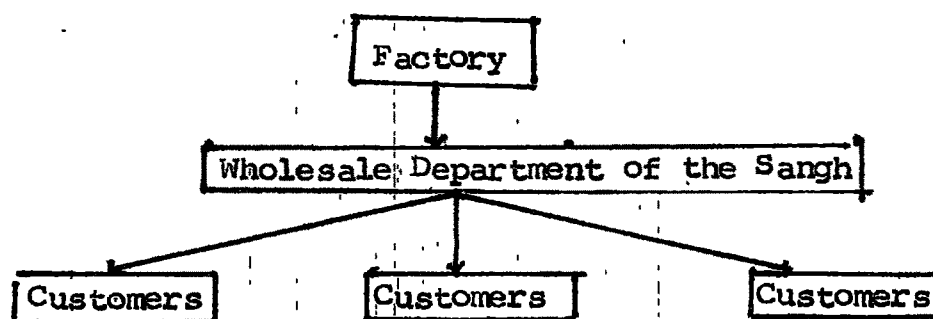


Chart 'A' above indicates the indirect distribution of fertilizer i.e. customers usually farmers are receiving the granulated fertilizer manufactured by the plant of the 'Sangh' indirectly through the Primary Societies or individual farmers association.

In Chart 'B' it is observed that the customer is purchasing the fertilizer directly from the sangh. Here if any customer purchases ten tonnes of Granulated fertilizer grades 15:5:5 or 15:15:15, or 9:20:20 at a time he will be offered free transport by the sangh particularly in Kolhapur District.

The entire sales are made through the co-operative banks. The sangh being a co-operative organization has adopted a policy of operating at a minimum margin. The primary consideration is in the interest of the farming community. In case of chemical fertilizers like Urea Sulpha 15:15:15, Amonium sulphate super posphet, potesh etc, direct purchases are made from different companies and sold directly to the

farmers and other co-operative societies. In such cases the transport cost is added to the price of the fertilizers.

Pricing Procedure of fertilizer of the sangh : -

Sangh adopts now-a-days an active price policy which is little lower than the current market price, in order to protect sangh's interest from private businessmen. The price fixation of the fertilizer is done with the help of the following formula.

' Selling price of Granulated fertilizer = Ex. factory price + Transport charges + Manure Sections commission + Transport sections commission. '

For example if the current market price of a granulated fertilizer per metric tonnes is Rs. 1530/- . Then according to the active price policy sangh fixed the rate at Rs. 1460/- per metric tonne. The amount is distributed in the following ways : -

1. Ex. Factory Price	Rs.	1360
2. Transport Section Commission	Rs.	40
3. Branches & Societies	"	Rs. 35
4. Manure Section	"	Rs. 25
	Total	Rs. 1460

In addition to the sangh's plant granulated fertilizers are manufactured by Kolhapur district Granulated fertilizer co-operative factory Ltd., Kolhapur, Mudshingi M.A.I.D.C. Panvel. The products of Mudshingi plant are sold in Kolhapur district only. More or less, these are the competent agencies to the 'sangh'.

There is a consistent increase in the demand for Granulated fertilizer of the 'sangh'. The demand for fertilizer of the sangh begins from October and continues

up to July. Generally May, June, July are considered as the peak seasons as per as the demand for the sangh's fertilizer is concerned. To start with, in the month of October, November, December the demand will be high. Then in the month of January, February, March the percentage demand for fertilizer is less. August, September Months are utilized for the maintenance of the fertilizer factory and the sales section. To raise the demand the sangh advertizes in daily news papers as and when the need arises.

Progress of Sales Department : -

Shetakari Sahakari Sangh Ltd., Kolhapur operates for the purpose of fertilizer distribution mainly in Kolhapur and sangli district. It is observed that, for all practical purposes Kolhapur district may be considered as a market for the product under consideration. In the year 1982-83 the total sales of fertilizer stood at 19,257 tonnes, and the supply of other mixed fertilizers stood at 3,760 tonnes.

The over all progress made by the fertilizer sales dept of the sangh in different years from 1972-73 to 1982-83 in respect of investment turnover, production etc are expressed in the following table.

Table No. V : 3

Progress made in respect of the following items.: (Growth & Composition)

(Figures in Rs. Lakhs)

Sr. No.	Period	Turnover			Production			Income			Net profit	
		Investment Amt.	4/3 x 100 Ratio	Amt.	6/3 x 100 Ratio	Amt.	8/3 x 100 Ratio	Amt.	10/3 x 100 Ratio	Amt.	Ratio	
1	1972-73	4.60	6512.61	45.24	983.48	6.75	146.96	5.14	111.74			
2	1973-74	3.51	6639.03	18.34	522.51	12.34	351.57	10.95	311.97			
3	1974-75	7.86	9972.14	41.50	527.99	11.82	150.38	9.28	118.07			
4	1975-76	5.98	13337.12	82.63	1381.71	11.86	198.33	8.66	144.82			
5	1976-77	4.29	18321.67	84.33	1965.73	14.29	333.10	11.06	257.81			
6	1977-78	5.50	14845.82	83.42	1516.73	14.35	260.91	10.43	189.64			
7	1978-79	6.93	11566.23	71.51	1031.89	14.60	210.68	9.30	134.20			
8	1979-80	7.99	11755.44	76.90	962.45	12.90	161.45	5.55	69.46			
9	1980-81	7.96	14318.59	110.20	1384.42	18.24	229.15	12.77	160.43			
10	1981-82	19.49	6358.49	110.30	565.93	22.70	116.47	17.15	87.99			
11	1982-83	12.34	8763.53	64.40	521.88	13.85	112.24	7.52	60.94			

Increase (+)
Decrease (-)
1982-83 over
1972-73.

A.	Amount	+7.74	+781.84	+19.16	+7.09	+2.38
B.	Percentage	+268.26	+360.98	+142.35	+204.88	+146.30
C.	Average growth rate per year	+9.70	+71.08	+1.74	+1.26	+0.22

(Source: compiled and computed by the author from Sanghis records)

The data presented in table →

No. V31 indicates the rising trend in investment turnover, income, production etc. The data presented reveals the following features.

1. Column No. '3' of the table reveals trend in investment in 1982-83 over 1972-73. It is computed that investment rose by Rs. + 7.74 lakhs during the period under study. As per as percentage rise is concerned it stood at + 268.26 %. The average yearly growth of investment stood at Rs. + 0.70 lakhs.

2. Column No. 4 and column No. 5 indicates the turnover of the sales department of the sangh. It is observed in column No. 4 that the amount increase in turnover between 1972.73 to 1982.83 was of the order of Rs. + 781.84 lakhs. After 1973-74 the rise in the amount of turnover seems to be tremendous. The highest turnover was in the year 1981-82 amounting to Rs. 1239.27 lakhs.

As per as percentage rise in sales is concerned it was about + 360.98 % and the average growth rate per year was about Rs. + 71.08 lakhs. Column No. 5 reveals about the ratio of turnover to investment. The rise in this ratio stood at + 2250.92 %.

3. Column No. 6 in the table throws light on the amount of production in money terms. We find a greater degree of fluctuation in the amount of production over the period under study. The amount rise in the production stood at Rs. + 19.11 lakhs, in 1982-83 over 1972-73. As per as percentage is concerned it was of the order of the + 142.35 %. And the yearly rise in production on an average was about Rs. + 1.74 lakhs.



Column No. 7 shows the ratio of production to investment. Here we find a percentage decrease in the ratio of production to investment i.e. -461.60 %.

4. Column No. 8 in the above table indicates the income acquired by the sangh out of its sales proceeds during the period under study. The increase in the income or gross profit, amounted to Rs. + 7.09 lakhs in 1982-83 over 1972-73. The percentage rise was of the order of + 204.88 %. And the average growth rate per year stood at Rs. + 1.26 lakhs.

Column No. 9 in the table throws light on the ratio of gross profit or income to investment. We find a decrease in the percentage of income to investment i.e. equal to -34.72 %.

5. Column No. 10 indicates the growth and composition of net profit. The highest profit earned by this section was Rs. 17.15 lakhs in the year 1981-82. The amount rise in the income of the sales department was about Rs. + 2.38 lakhs over the period of study. The over all percentage rise in the income stood at + 146.30 %. And the average yearly growth rate was of the order of Rs. + 0.22 lakhs.

Column No. 11 of the table indicates the ratio of net profit to investment. It was highest in 1973-74 i.e. 311.97%. But we find a decreasing tendency of this ratio. It was to the tune of 50.80%.

In all, it is observed that more or less there is a satisfactory progress in the items computed in the table of the fertilizer section of the sangh.

V : 5 Analysis of Cost & Price of the Bull Brand granulated Fertilizer 15:5:5 Grade :

The Bull Brand Granulated Fertilizers of the sangh are playing a dominant role in satisfying the demands of the member farmers.

Day to day the demand for granulated fertilizer is exceeding the supply of it. So in order to satisfy the increasing demand the sangh has made an expansion in the existing plant and started producing high grade 15:15:15 and 9:20:20 Granulated fertilizers from the year 1982. In the current year i.e. 1982-83 sangh's turnover of Granulated and hand mixed fertilizer was to the tune of Rs. 10.81 crores. Sangh earned the profit worth Rs. 7.52 lakhs from this section.

Since beginning the main granulated fertilizer of the sangh is of the Grade 15:5:5. There is a consistent demand for this grade of fertilizer. The demand for granulated fertilizer 15:5:5 is increasing continuously even though there are many competitors for this product in Kolhapur District. The main competitors are Tambaku Kharedi Vikri Sangh Ltd., Kolhapur granulated fertilizer plant, kagal taluka sangh, sale purchase society & Maharashtra Agro Industrial development Corporation. Sangh has got a monopoly position in granulated fertilizer 15:5:5 among all these above competitors.

Sangh acquired a monopoly position in granulated fertilizer 15:5:5 because of its peculiar cost and price analysis.

The cost we mean the selling cost fixed by the sangh. The selling cost of the fertilizer Grade 15:5:5 sold by the sangh includes cost of transport per tonne from factory to warehouse, rent per tonne per month of the warehouse, cost of transportation to the branches and wages and salaries of the persons directly employed in this service. The selling cost of granulated fertilizer 15:5:5 includes—

1. Transport Section commission :

This commission is fixed at Rs. 40/- by taking into consideration the expenses incurred in transporting the fertilizer upto farmers, in current years. It includes the average transport charges of different branches and

situated in Kolhapur district and other related district from Head Office. The distance of some of the branches like Gagan-bawada is very high in turn transport charges are higher and some of the branches are very near to the head office in turn transport charges are low. The average distance and expenses incurred for it, of all branches and centres to transport grade 15:5:5 is taken into consideration and arrived at Rs. 40/- per tonne. Since beginning the sangh has fixed this norm to calculated transport section commission per metric tonne of the granulated fertilizer 15:5:5 year by year.

2. Branches and Societies Commission :

In recent years the commission fixed for Branches and societies is worth Rs. 35/-. It is just an incentive given to these branches and societies to cover their administrative expenses and other contingency expenses. This will also act as a profit for distributing Grade 15:5:5 to farmer members, per metric tonne. It varies according to the variation in the expenses included by the branches & societies from time to time.

3. Manure Section Commission :

In the year 1983-84 the manure section commission was fixed at Rs. 25 per metric tonne. This amount acts as an incentive given to the manure section to face the expenses incurred day to day, concern to the granulated fertilizer 15:5:5. It also varies from time to time.

The price of granulated fertilizer Grade 15:5:5 has been taken from the sangh's records printed from time to time. Price of the Granulated fertilizer Grade 15:5:5 is considered as most reasonable compared to other competitive producers.

The researcher has focused more light on the analysis of cost and price of the granulated fertilizer 15:5:5. To make the concept more clear the investigator has taken into consideration the current figures of the selling cost and actual sale price of the Granulated fertilizer 15:5:5 per metric tonne of five years from 1980 to 1984.

We find a positive co-relation between the selling cost and the actual price fixed by the sangh for Grade 15:5:5 Granulated fertilizer, per metric tonne. It is because, the co-relation (r) between these two variables is calculated at + 0.30 and the probable error is less than ' r ' value i.e. at 0.28. As co-relation between these two variables is certain we can find out the most probable value of price for a given amount of selling cost or the most probable value of selling cost for a given value of selling price per metric tonne of granulated fertilizer grade 15:5:5. For this the regression analysis is used to describe the variations in the values of selling cost for given changes in price or the variations in the values of price for a given changes in selling cost.

The relationship between these two variables and their effects on each other is explain^{ed} in the following table.

Table No. V : 4.
Calculation of Regression of selling costs & prices of Granulated fertilizer 15:5:5

Year	Selling Cost X (CRS)	$X - \bar{X}$ x	X^2	Price Y (CRS)	$Y - \bar{Y}$ y	Y^2	XY	Regression of Y on \bar{X}	Percent of 9	Regression -ssion of \bar{X} on Y	Perc -nta of 1		
1	2	3	4	5	6	7	8	9	10	11	12		
1980	80	-10	100	1340	-125	15625	+1250	1442.5	19.69	85.0	18.8		
1981	80	-10	100	1515	+50	2500	-500	1442.5	19.69	92.0	20.4		
1982	90	0	0	1525	+60	3600	0	1465.0	20.0	92.4	20.5		
1983	100	+10	100	1460	-5	25	-50	1487.5	20.31	89.8	19.9		
1984	100	+10	100	1485	+20	400	+200	1487.5	20.31	90.8	20.1		
$N = 5$ $\sum X = 450$ $\sum x = 0$ $\sum X^2 = 400$ $\sum Y = 7325$ $\sum y = 0$ $\sum Y^2 = 22150$ $\sum XY = 7325$ $\sum X \sum Y = 450 \times 1465 = 65925$							$\frac{\sum XY}{N} = \frac{7325}{5} = 1465$					$\frac{\sum X \sum Y}{N^2} = \frac{450 \times 1465}{25} = 2637$	

(Source compiled and computed from the sanghs records by the researcher.)

The data presented in Table : —

Shows the calculation of regression of selling costs and prices of granulated fertilizer grade 15:5:5 inbetween 1980 and 1984 of the 'sangh'.

Column No. 2 represents the selling cost which is denoted as X, from 1980 to 1984. It shows an increasing tendency is the years under study. It is due to increase in the price of petrol, transport charges, administrative expenses etc.

Column No. 3 and column No. 4 indicates the selling cost after deducting its average mean and the square of this item.

Column No. 5 indicates the actual sales price of fertilizer 15:5:5 which is denoted by 'Y' from 1980 to 1984. We observe that prices were increased from 1980 to 1982. And in 1983 the price of granulated fertilizer 15:5:5 has decreased to 1460 rupees per tonne because of the decrease in the cost of raw material used to produce the respective Bull brand. Again the price of respective fertilizer has increased in the year 1984, to 1485 rupees per tonne due to increase in the administrative and other expenses.

Column No. 6 and column No. 7 express the sales price of granulated fertilizer 15:5:5 after deducting its average mean and the multiple of this item is given in column 7 column No. 8 indicates the multiplication of price and selling cost of respective granulated fertilizer after deducting the concerned average mean. The summation of price and selling cost comes here to 900.

Column 9 and column No. 10 are very important aspects in the table. Column No. 9 indicates the regression equation of 'Y' on 'X' Here $Y = 1262.5 + 2.25 X$. It shows the expected value of sales price of granulated fertilizer 15:5:5 for the

given value of selling cost. In the year 1980 when selling cost was Rs. 80/- per metric tonne the expected value of price of the respective fertilizer was Rs. 1442.50, but the actual value was Rs. 1340/- When selling cost increases to Rs. 90/- per metric tonne in the year 1982 the expected selling price of the fertilizer 15:5:5 was Rs. 1465.00 but the actual price was little higher i.e. to Rs. 1525/-. And in the year 1984 when selling cost of fertilizer increase to Rs. 100/- per metric tonne the expected price of the Bull Brand 15:5:5 was at Rs. 1487.50. But the actual price is little less i.e. Rs. 1485.00

Column No. 10 indicates the regression equation of 'X' on 'Y'. Here $X = 31.4 + 0.04 Y$. It shows the expected value of selling cost (X) for a given value of price of Bull Brand 15:5:5 (Y). In the year 1980 when sales price of said fertilizer was Rs. 1340, the expected selling cost was calculated at Rs. 85/- but the actual selling cost of fertilizer was less i.e. to Rs. 80/- When price increase to Rs. 1525., the expected selling cost was calculated at Rs. 92.4 but the actual selling cost fixed by the sangh was to Rs. 90. And when price was fixed at Rs. 1485/- per metric tonne in the year 1984 the expected selling cost was computed at Rs. 90.80/- But the actual selling was Rs. 100/-

It is in this context it may be suggested that at present the price policy in respect of granulated fertilizer adopted by S.S.S. Ltd., is not based upon any scientific procedure. A co-operative organization like S.S.S. Ltd., should adopt a scientific procedure of price fixation. The price fixed for the product manufactured by the sangh should be such that it may not be competitive but also related to the cost of inputs used for the purpose of production.

As the Sangh . . . is a big consumer it can enter into the contract of supplies of raw materials on long term bases, so that it improve its competitive strength.