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Infrastructure Development for Agro-Processing Cooperatives in Maharashtra: An Ex-Post Evaluation

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Background:

The land-use pattern in Indian agriculture has traditionally promoted cereal-based cropping systems. However, diversification to more productive and remunerative crops has become the new milestone to be achieved in Indian agriculture. A shift in favour of horticultural development as a more viable and attractive alternative is a part of such diversification drive and strategy (Kaul, 1993). The diversity of physiographic, climatic and soil characteristics of our country has largely contributed to the planned exploitation of various horticultural crops. The era of liberalization ushered in since July 1991 has further given rise to the exploitation of these crops with a view to increase their export trade.

The activities aimed at increasing the export trade of horticultural produce, with particular reference to gearing up the production of export quality produce, are indeed quite essential to the development of horticulture industry in India. However, the rising domestic demand coupled with increasing post-harvest losses have often hampered the net horticultural exports of the country. Many studies in the past have indicated the poor post-harvest infrastructure (PHI) to be the major cause for the deteriorating health of horticulture industry in the country (Ramaswamy, 1995; Kaul, 1997). Because of lack of adequate infrastructure and post-harvest technology, India is reported to be losing a substantial quantity (20-30 per cent of the total harvest) of horticultural produce (Singhal, 1995; Kaul, 1997; Viswanathan and Satyasai, 1997). In order to curb these losses, some of the agencies like National Horticulture Board (NHB) and National Cooperative Development Corporation (NCDC) are making sincere efforts to create adequate post-harvest infrastructure facilities for horticultural crops. In this sequel, among various states, Maharashtra is seen to have received considerable amount of assistance from both NCDC and NHB (Appendix 1). Majority of the beneficiaries of NCDC/NHB assistance are fruits and vegetable (F&V) processing cooperatives. Further, among various schemes introduced by NCDC and NHB, the Soft Loan Scheme (SLS) of NHB is noteworthy. Under SLS, an assistance is provided to cooperative societies, public and private limited companies, and farmers association with a maximum limit of one crore at 4 per cent service charges per annum with one year moratorium period to set up projects related to infrastructure development. In the cooperative sector, Maharashtra is noticed to be the only state which has received about 52 per cent of the total soft loan distributed by NHB

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to 26 beneficiaries in the country (Appendix 2). These beneficiaries are also processing cooperatives. Various floriculture units of Maharashtra have also received substantial amount of assistance under NHB's soft loan scheme (Appendix 1).

Although the soft loan scheme of NHB was implemented with the objective of strengthening not only the existing infrastructure facilities for horticulture crops but also to create modern post-harvest infrastructure, reduce losses, improve quality of produce and create an efficient marketing system, however, after a span of five years from the implementation of the scheme in 1993-94, it was realised that a sizable number of projects assisted under the SLS entered into a depressed position. This had necessitated to evaluate the scheme, particularly in respect of the facilities created. The present study is an attempt in this direction and it not only assesses the NHB soft loan scheme but also the impact of the scheme on development of PHI for horticultural crops in Maharashtra. Such assessment is expected to help in enhancing future investment opportunities in this sector.

Data and Methodology

Among various units assisted under NHB soft loan scheme in Maharashtra, two processing-cum-export oriented grape growers cooperative societies have been selected for the present investigation. Both the cooperative societies are located in Pune district of Maharashtra. Pune district has been selected purposely due mainly to the fact that this district not only has large area under horticultural crops but it is also a major trading centre for several horticultural product processing and export units. Besides, this district has received maximum amount of assistance from NHB under the SLS. The selected processing cooperatives were: (a) Abhinav Grape Growers Cooperative Society Ltd. (AGGCS), Agar, district Pune, and (b) Vignahar Grape Growers Cooperative Society Ltd. (VGGCS), Narayangaon, district Pune. The present study attempts to evaluate the performance of both the cooperatives not only on processing and export fronts but also in respect of the impact of these cooperatives on member farmers. The major foci of attention of this investigation are on infrastructure facilities created through soft loan, cost of processing of produce, trading of produce in domestic and export markets, cost of trading, etc. Besides, it also evaluates the constraints faced by the societies in respect of sanctioning of loans, repayment of loan, processing and marketing of produce, etc.

Project Finance and Initial Investment for Infrastructure Development:

Although NHB provides soft loan with a maximum limit of Rs. 1.00 crore, there is also a ceiling for various components covered under the scheme. The various components covered under SLS with their respective ceiling of NHB loan are provided in Table 1. It is to be noted that NHB assistance is limited to 50 per cent of the actual cost or limit prescribed for each component, whichever is less.

Table 1: Components Covered and Ceiling Prescribed under NHB Soft Loan

Sr. No.	Components	50 % of actual cost or maximum limit of NHB loan (in lakh rupees)
1.	Mechanical grading and packing centre	6.10
2.	Pre-cooling units	5.00
3.	Cold storage	35.00
4.	Refrigerated truck/van	5.00
5.	Specialised transport vehicle	1.70
6.	a. Retail outlets (ordinary)	0.18
	b. Retail outlets (air-conditioned)	0.75
7.	Auction platform	0.50
8.	Ripening and curing chamber	5.00
9.	Marketing kits, quality testing equipments, etc.	To be decided on case to case basis
10.	Improved packaging such as plastic crates [@]	Subsidy to be decided on case to case basis

Note: * - in case of plastic crates, NHB assistance would be provided in the form of subsidy upto 50 per cent of the actual cost or Rs. 70 per crate, whichever is less

Information relating financial assistance received by the selected societies are provided in Table 2. The total project cost for AGGCS and VGGCS turned out to be Rs. 232.87 lakhs and Rs. 81.84 lakhs, respectively. It is to be noted that both the societies are not only dependent on NHB but also on various other financial institutions. While for the establishment of pre-cooling unit, cold storage plant and pack houses, the major financial assistance is received by the societies from NHB, for civil and mechanical work the societies have received assistance from Bank of India. The AGGCS had also received assistance from Food Processing Department, especially to construct its processing unit. With the help of financial assistance received from various institutions both the societies have developed the required infrastructure. Information relating to initial investment made by the societies towards creation of infrastructure facilities are also provided in Table 2.

The total initial investment towards creation of infrastructure facilities was seen to be Rs. 142.42 lakhs for AGGCS and Rs. 81.84 lakhs for VGGCS. It is to be noted that construction of building and packing lines accounted for the highest share in total initial investment of the societies. The other major investments were seen to be on air handlers, generator set and domestic electrification. Import of some machinery and equipment was seen in the case of VGGCS. The import duty on these material was included in the initial investment of VGGCS. However, this import duty accounted for only 4 per cent share in total initial investment of VGGCS towards creation of infrastructure facilities.

It is to be further noted that both the selected societies had their own processing plants. An attempt, therefore, has been made in the subsequent section to estimate the processing cost of grapes.

Table 2: Projects Finance and Initial Investments of the Societies on various Facilities
(during 1994-95)

(Amount in Lakh Rupees)

Particulars	Project Finance / Initial Investment	
	AGGCS	VGGCS
I. Projects Finance		
1. Term loan from Bank of India *	114.75 (49.07)	32.64 (39.88)
2. Soft Loan from NHB @	41.00 (17.53)	40.00 (50.10)
3. Member Share Capital	18.12 (7.75)	8.20 (10.02)
4. Loan from Food Processing Department	60.00 (25.65)	-
Total Loan	233.87	81.84
II. Initial Investment		
1. Land and land development	0.47 (0.33)	Received in Gift
2. Buildings	50.34 (35.35)	25.96 (31.72)
3. Utilities		
a. H.T. Station	2.47 (1.73)	-
b. Generator Set	5.40 (6.04)	8.60 (10.51)
c. Domestic electrification	9.31 (6.54)	-
4. Pre-cooling, cold storage and others		
a. Air handlers	21.81 (15.31)	18.53 (22.64)
b. Refrigeration equipment	-	-
c. Packing lines	49.42 (34.70)	25.47 (31.12)
5. Customs duty on imported Machinery and material including Transport cost from port to site, etc.	-	3.28 (4.01)
6. Margin money for working capital	23.00	-
Total Cost of the Project (excluding margin money for working capital)	142.42	81.84

Notes : 1) * - Term loan sanctioned by the Bank of India for civil and mechanical work

@ - Soft-loan sanctioned by NHB for one pre-cooling unit, one cold storage and one pack-house

2) Figures in parentheses are percentages to the total project cost

Processing Cost of Grapes:

It deserves mention here that while AGGCS did not have any technical collaboration with any firm or organization to process or market its produce, the VGGCS had developed technical collaboration with California Humifresh (I) Pvt. Ltd., which supplied plant and machinery to VGGCS. Further, the processing of grapes included various components of cost. These costs were estimated for both the societies. While working on the estimation of processing cost, the total cost of processing was broadly classified into three components of cost such as: (a) cost of labour used for grading, packing, pre-cooling, loading, unloading, etc., (b) cost of packing material –boxes, plastic sheets, pouches, tissue papers, air bubble sheets, grape guards, pallets, angle boards, strap and clips, and wastage, and (c) cost of pre-cooling and cold storage expenses. Operation-wise estimates of processing cost of grapes at the selected society level plants for the year 1997-98 are given in Table3.

During 1997-98, while AGGCS was seen to process 24,000 boxes, the number of boxes processed by VGGCS were 45,601 during the same year. Each box was seen to contain 5 kgs of grapes. The per unit (box) cost of processing was estimated at Rs. 58.82 for VGGCS and Rs. 63.02 for AGGCS.

Table 3 : Item-wise Processing Cost of Grapes at the Society Level Plant : 1997-98

Item	AGGCS		VGGCS	
	Per Unit Cost (Rs)	Total Cost (Rs)	Per Unit Cost (Rs)	Total Cost (Rs)
1. Labour used for grading, packing, pre-cooling, cold storage, loading, unloading, etc.	6.00	144000	5.50	250806
2. Packing Material	50.32	1207680	54.77	2497567
a. Boxes	25.00	600000	26.00	1185626
b. Plastic sheets	1.40	33600	1.30	59281
c. Pouches	5.80	139200	6.84	311911
d. Tissue papers	0.81	19440	0.85	38761
e. Air bubble sheets	2.80	67200	2.80	127683
f. Grape guards	4.35	104400	6.25	285006
g. Pallets	2.25	54000	2.25	102602
h. Angle boards	2.75	66000	3.00	136803
i. Strap and clips	0.50	12000	0.50	22801
j. Wastage	4.66	111840	4.98	227093
3. Pre-cooling and cold storage	2.50	60000	2.75	125403
Total	58.82	1411680	63.02	2873776

Note: The number of boxes processed were 24,000 for AGGCS and 45,601 for VGGCS. Each box contained 5 kgs of grapes.

In the processing of grapes, various types of materials used for packing put together accounted for the maximum share in the total processing cost. The next important item of processing cost turned out to be expenses on labour used during various processing activities such as grading, packing, pre-cooling, etc. Pre-cooling expense accounted for the least share in total processing cost. Among various materials, the major expenses were seen to be on packing boxes, followed by expenses on pouches, grape guards, air bubble sheets, angle boards, etc. Wastage of packing material also accounted for considerable share in total processing cost.

It is to be noted that in the processing of grapes, pre-cooling is by far the most important activity. Pre-cooling is the removal of field heat from freshly harvested produce. Within a specific time after harvest, the field heat is need to be removed from the fruit through pre-cooling. Pre-cooling not only prevents spoilage of fruit but also helps in maintaining pre-harvest qualities of the produce such as freshness, flavour, firmness and appearance. In fact, the fruit cannot be kept directly in the cold storage if the field heat from the fruit is not removed.

The pre-cooling capacity of both the selected societies was seen to be 6 tons in 6 hours. As for the cold storage capacity, it was 24 containers in the case of AGGCS and 30 containers for VGGCS. It is to be noted here that grapes are supplied in reefer container of 40 feet size. Each such container contains about 3000 boxes of grapes. Thus, the capacity of a container works out to 15 tons (3000 x 5). As for capacity of cold storage, it works out to 360 tons (24 x 15) for AGGCS and 450 tons (30 x 15) for VGGCS. However, these estimates work out for export trade of grape.

During the period from 1994-95 to 1997-98, the utilized capacity was found to be much lower than the actual capacity of cold storage. Further, during the given period the productivity of grapes on the farms of member farmers was found to vary from 20 to 25 MT/Hectare (Table 4).

Table 4 : Broad Performance Indicators of AGGCS and VGGCS

Indicators	1994-95	1995-96	1996-97	1997-98
AGGCS				
1. Actual Storage Capacity (in no. of containers)	24.00	24.00	24.00	24.00
2. Storage Capacity Utilized (%)	40.00	75.00	75.00	40.00
3. Productivity of Grapes (in MT/ Hectare)	22.00	24.00	24.00	24.00
4. Post-harvest Loss of Grapes (%)	13.00	10.00	12.00	12.00
5. Grape Exports (in MT)	120.00	285.00	289.00	120.00
6. Export Cost of Grapes (in Rs. / Box)	140.00	140.00	150.00	150.00
7. Export Price of Grapes (in Rs. / kg) -From U. K	37.50	28.07	28.72	44.17
VGGCS				
1. Actual Storage Capacity (in no. of containers)	30.00	30.00	30.00	30.00
2. Storage Capacity Utilized (%)	40.00	65.00	70.00	70.00
3. Productivity of Grapes (in MT/ Hectare)	25.00	27.00	25.00	22.00
4. Post-harvest Loss of Grapes (%)	11.00	11.00	11.00	11.00
5. Grape Exports (in MT)	106.22	287.24	243.08	264.49
6. Export Cost of Grapes (in Rs. / Box)	130.00	140.00	150.00	155.00
7. Export Price of Grapes (in Rs. / kg)				
- From U.K.	34.82	30.94	28.16	35.50
- From Netherlands	30.76	29.08	26.18	32.17
- Average	33.02	29.58	27.53	34.59

The post-harvest losses during this period accounted for 10-13 per cent of the total production of grapes. As for the export trade of grapes, both the selected societies have shown considerable progress during the given period (Table 4). However, the detailed analysis with respect to trade performance of the selected societies as well as costs incurred by them in the export trade of this valued crop is delineated in the subsequent sections.

Domestic and Export Trade of Grapes:

While AGCCS was trading grapes only in international markets, the grapes procured by VGGCS found their place both in export and domestic markets. Domestic trade estimates of grapes, both in quantity and value terms, for VGGCS are provided in Appendix 3. It could be seen from Appendix 3 that initially VGGCS was trading grapes only in Ludhiana and Mumbai markets. However, in course of time it had switched its trade from Ludhiana to Delhi market as the prices of grapes in Delhi markets were more favourable as compared to Ludhiana market. Further, during the given period of time, England was found to be the only country where grapes were exported from AGCCS. However, the VGGCS had exported grapes to both UK and Netherlands. The estimates related to quantum as well as value of grape exports of the selected societies to various destinations over the period from 1994-95 to 1997-98 are provided in Appendix 4. The export trade also involved export cost, which has been evaluated in this study.

Export Cost of Grapes:

The export cost of grapes was broadly classified into three components: (i) *inland expenses* which included inland transport expenses, clearing and forwarding expenses, customs duty, terminal handling charges, etc., (ii) *freight for transport* from Indian port to the port of the importing country, and (iii) *expenses at destination* which included custom clearing charges, port cost per container, duty per unit, transportation charges from port to agent's depot, agents depot handling charges including cold storage charges, delivery charges from depot to super markets, super market preparation expenses, etc. The export cost estimates of grapes for the selected societies for the year 1997-98 are provided in Table 5.

Table 5: Estimated Export Cost of Grapes during 1997-98 (in Rs/Box)

Particulars	AGGCS	VGGCS
A. Inland expenses		
1. Inland transport etc.	5.63	5.76
2. Clearing and forwarding	0.97	1.03
3. Customs duty	2.10	2.21
4. Terminal handling charges	4.67	4.93
5. Other charges	0.50	0.50
Total	13.87 (9.24)	14.43 (9.35)
B. Freight		
JNPT to Thomas Port	61.02 (40.67)	-
Mumbai to U.K.	-	67.62 (43.82)
Mumbai to Rotterdam	-	67.62
C. Expenses at destination		
1. Duty per unit, Custom clearing charges and Port cost per container	34.08	29.43
2. Transport from port to agent's depot	2.18	2.00
3. Agent's depot handling and cold storage	11.97	13.70
4. Delivery charges from depot to super market	20.03	19.22
5. Super market preparation expenses	2.45	2.76
6. Other expenses	4.45	5.17
Total	75.16 (50.09)	72.28 (46.83)
Grand Total (A+B+C)	150.05	154.33

It could be readily discerned from Table 5 that expenses at destination accounted for the maximum share in total export cost of grapes, which turned out to be Rs. 150.05 (Rs. 30.01/Kg) for AGGCS and Rs. 154.05 (Rs. 30.81/Kg) for VGGCS. The next important item of export cost was the freight for transport from the Indian port to the port of the importing country. Inland expenses accounted for the least share in total export cost of grapes. In general, although VGGCS had shown higher inland expenses and freight for transport as well as total export cost of grapes, the expenses incurred at destination tended to be higher for AGGCS as compared to VGGCS.

It is to be noted that in the total export cost of grapes only the inland expenses are incurred by the society. The freight charges are completely borne by the export agent, whereas expenses at destination are borne by the import agent. The import agent makes the payment to the society after making deductions with respect to various costs incurred by him and his profit margin. After receiving the payment society fixes the export price of grapes for

the farmers/members. However, these export prices are fixed after making deductions with respect to processing cost and inland expenses incurred by the society. It could be readily discerned from Table 4 that the average export prices finally received by the farmers were around Rs. 44 /- per kg in the case of AGGCS and Rs. 35 /- per kg for VGGCS. These were certainly much higher than what the farmers would have received in the domestic market. Generally, a farmer receives around Rs. 15 /- per kg of grapes in the domestic market.

Constraints Faced by the Societies:

The constraints faced by the societies are broadly classified into three groups such as constraints relating to: (a) sanctioning of loans, (b) processing of produce, and (c) marketing of produce.

(a) Sanctioning of Loans: The procedures followed by the NHB towards sanctioning of loans for PHI related activities were not only time consuming but also quite cumbersome. It is to be noted that it took more than two years for the selected societies to get the loan money sanctioned from NHB. This had not only delayed the project but also raised the project cost. Thus, the need of the hour for the NHB is to have quick and more effective loan processing and disbursing machinery. The early clearance of loan applications will certainly help in making the soft loan scheme more effective. Equally important is the financing of the entire and comprehensive project rather than for certain specific components.

(b) Processing of Produce: Lack of availability of skilled labour in grading and packing of produce, voltage fluctuations, electricity supply at low voltage and frequent cuts in electricity were some of the processing related constraints. It is to be noted that during processing of grapes both pre-cooling and cold storage plants not only require regular supply of electricity but also its normal voltage. Any fluctuation in electricity supply, therefore, might hamper continuous processing of grapes. Nonetheless, both the societies not only faced the problem of electricity supply at low voltage but also frequent cuts in electricity. As for electricity use, another problem was related to its tariff. In fact, both pre-cooling and cold storage plants received normal electricity tariffs as charged from firms operating in urban or semi-urban areas. It was, therefore, felt that agricultural tariffs be applied on pre-cooling and cold storage plants rather than normal electricity tariffs as charged by the Electricity Board from the firms operating in urban areas.

(c) Marketing of Produce: As regards marketing, it deserves mention that marketing of produce beyond national boundaries pose special problems. There is always greater risk involved in the transportation of perishable products like grapes. For the perishable products, final acceptability by the importing country is, therefore, most essential. Further, it is to be noted that most of the fruits and vegetables are exported on consignment basis. These consignments are not sold at the port of shipment but they remain as stocks abroad on the

supplier's account. The stocks are cleared whenever market demand for them arises. When shipment takes place, the pre-shipment credit is carried over to the special post-shipment credit account, which is adjusted when the goods are sold abroad and the sales proceeds received. The overseas stocks may be sold on cash or on credit basis. Here, post-shipment credit is the credit which the banks extend to the exporter during the period from the point of shipment abroad to final receipt of sales proceeds by the exporter.

One of the major constraints in the marketing of produce is related to freight. It has been indicated by the Chairman of the selected societies that air freights for the transportation of grapes are subsidized by APEDA. However, such subsidies are not available for the grapes being transported through ships. The selected societies, therefore, wanted the sea freight also to be subsidized. Added to this, they also wanted various organisations to come forward to subsidize inland transportation of grapes, apart from providing insurance cover to their produce. They were also seen to be in favour of receiving funds for setting up of Research and Development (R & D) units for the marketing of grapes. It has been indicated that the exports of grapes require huge working capital which the societies alone can not arrange. These societies, therefore, wanted the State Government to come forward and recommend to National Cooperative Development Corporation (NCDC) to participate in the working capital requirements of the grape grower's societies. However, it was felt that such recommendation should be need based and free from any condition of minimum dividend. Further, they also wanted the State Government to come forward to help them in providing market intelligence service for the exports of grapes and other fruits and vegetables round the year. Reimbursement of extension service cost from Maharashtra State Agricultural Marketing Board (MSAMB) was another suggestion put forward by the selected societies. However, how best these suggestions are taken care of by the NHB and various other organizations/ Government will depend on their future strategies and policies relating to financing of PHI related facilities for horticultural crops.

Conclusion:

Undoubtedly, the infrastructure facilities created by the NHB have not only helped various grape growers societies to boost their export trade of grapes but also reduced post-harvest losses and raised productivity of this valued crop in the area. This could be considered as positive impact of NHB's soft loan scheme. Nonetheless, in order to improve the efficiency of the SLS, there is need to simplify the procedure of loan disbursement, besides making an effort to finance the entire comprehensive project rather than for certain specific components. Subsidization of electricity tariffs for the processing units, provision of funds for setting up of Research and Development (R&D) unit for the marketing of produce, provision of foreign market intelligence for the exports of horticultural crops, Government's participation in share capital building, etc. could be given due consideration by various organizations/ funding

agencies if the horticulture sector is to be promoted and saved. However, in general, the facilities created through soft loan not only helped the member farmers to increase their family income but also helped in creation of additional employment opportunities in the area (Appendix 5).

References:

Kaul, G.L. (1993), 'Development of Horticulture: A Boost in the VII Plan', *Indian Horticulture*, April-June, 1993.

----- (1997), 'Horticulture in India-Production, Marketing and Processing', *Indian Journal Of Agricultural Economics*, Vol. 52, No. 3, pp. 561-573.

Ramaswamy, P. (1995), 'Impact of Globalization on Agricultural Marketing Systems and Procedures' in Harish Nayyar and P. Ramaswamy (eds.), 'Globalization and Agricultural Marketing' *Rawat Publications*, New Delhi.

Singhal, Vikas (1995), 'Handbook of Indian Agriculture', *Vikas Publishing House Pvt. Ltd.* New Delhi.

Viswanathan, K.U. and K.J.S. Satyasai (1997), 'Fruits and Vegetables: Production Trends and Role of Linkages', *Indian Journal of Agricultural Economics*, Vol.52, No.3, pp. 574-583.

Appendix 1: Financial Assistance Sanctioned by NHB and NCDC towards Creation of Infrastructure Facilities for Horticultural Crops in Maharashtra

(Amount in Lakh Rupees)

Type of Scheme	Year/Period	No. of Project Assisted / Beneficiaries	Amount Sanctioned	Type of Beneficiary	Purpose/Activities
NHB Soft Loan Scheme	1993/94 – 1996/97	15 Beneficiaries	368.39	F & V Cooperative Societies	Mechanized grading & packing centres, Pre-cooling units, Cold storage plants, Refrigerated trucks, Specialized transport vehicles, Retail outlets, Auction platform, Ripening curing chambers, Marketing kits, etc.
NHB Soft Loan Scheme	1993/94 – 1996/97	8 Beneficiaries	737.26	Floriculture Units	Green houses, Pre-cooling units, Cold storage plants, Refrigerated trucks, Specialized transport vehicles, etc
NCDC Assistance	As on 31-3-1998	167 Projects	2490.01	F & V Marketing Societies	54 NCDC-NHB Scheme, 32 Grape Export Project, 1 Mango Export Project 1 Margin Money, 79 Share Capital
NCDC Sponsored Scheme	1997/98	40 Societies	203.128	F & V Cooperative Societies	Post-harvest Management, Grape Export Projects, Margin Money/ Strengthening of Share Capital
Central Sector Scheme	1993/94 1995/96 1996/97 1997/98	- - - -	26.95 34.54 14.71 5.50	F & V Marketing Societies	Subsidy for Post-harvest Processing of Fruits and Vegetables
Central Sector Scheme	1996/97 1997/98		16.00 50.00	F & V Marketing Societies	Subsidy for F & V Marketing (Ministry of Food Processing)
Central Sector Scheme	1995/96	-	24.00	F & V Marketing Societies	Subsidy for F & V Cold Storage (Ministry of Food Processing)
Central Sector Scheme	1997/98	-	25.00	Potato and Onion Coop. Societies	Subsidy for Construction of Godown for Potato and Onion (Under VIIIth Plan Outlay)

Sources: Compiled from: Annual Reports of NCDC, 1993-94, 1995-96, 1996-97 and 1997-98; and 'Cooperative Movement at a Glance in Maharashtra, Office of the Commissioner For Co-operation and Registrar of Co-operative Societies', Maharashtra State, Pune.

**Appendix 2: Number of Projects Sanctioned under Soft Loan Scheme of NHB during the Period
Between 1993/94 and 1996/97**

(Amount in Lakh Rupees)

Name of the State	Number of Beneficiaries	Amount Released Under SLS
Maharashtra	15	368.39 (52.19)
Karnataka	3	95.00 (13.46)
Punjab	5	137.48 (19.48)
Madhya Pradesh	3	105.00 (14.87)
Total	26	705.87

Note: Figures in parentheses are percentages to the total amount of SLS released by NHB

Appendix 3: Domestic Trade of Grapes by the VGGCS

Domestic Trade	1993-94	1994-95	1995-96	1996-97	1997-98
1. Place	Ludhiana	Ludhiana	Delhi	Delhi	Delhi
- Quantity (MT)	35.00	37.00	41.00	45.00	50.00
Total value (Rs in lakh)	4.50	4.81	5.33	6.30	7.00
Value (Rs./Kg)	12.86	13.00	13.00	14.00	14.00
2. Place	Mumbai	Mumbai	Mumbai	Mumbai	Mumbai
- Quantity (MT)	30.00	32.00	36.00	40.00	48.00
Total value (Rs in lakh)	3.60	3.84	4.68	6.00	7.20
Value (Rs./Kg)	12.00	12.00	13.00	15.00	15.-00

Appendix 4 : Export Trade of Grapes by the Selected Grape Grower's Society

Exports	1994-95	1995-96	1996-97	1997-98
AGGCS				
1. Country	UK	UK	UK	UK
- Quantity (MT)	120.00	285.00	289.00	120.00
Total Value (Rs in lakh)	45.00	80.00	83.00	53.00
Value (Rs./Kg)	37.5	28.07	28.72	44.17
VGGCS				
1. Country	U.K.	U.K.	U.K.	U.K.
- Quantity (MT)	59.04	77.39	165.16	192.48
Total Value (Rs in lakh)	20.56	23.94	46.51	68.33
Value (Rs./Kg)	34.82	30.93	28.16	35.50
2. Country	Netherlands	Netherlands	Netherlands	Netherlands
- Quantity (MT)	47.18	209.85	77.92	72.01
-Total Value (Rs in lakh)	14.51	61.02	20.40	23.17
Value (Rs./Kg)	30.75	29.08	26.18	32.18

**Appendix 5: Annual Income of the Average Category of Sampled Members and Non-Members of
the Selected Societies Before and After Creation of PHI Facilities in the Study Area**
(in Rupees / Household)

Source	Members		Non-Members	
	1992-93	1997-98	1992-93	1997-98
1. Crop	9,758	14,217	13,008	19,000
2. Fruits, Vegetables & Flowers	1,73,300	2,28,200	61,367	85,017
3. Livestock	3,377	3,837	5,358	10,250
4. Regular Job	8,210	17,867	4,000	8,433
5. Others	-	-	-	-
Total	1,94,645	2,64,121	83,733	1,22,700