

**PRODUCTION AND MARKETING OF  
VEGETABLES OF KAMRUP DISTRICT OF  
ASSAM**

**A Project Report Submitted to the UGC  
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## CHAPTER I

### INTRODUCTION

The green revolution in India has contributed substantially to the increase of agricultural production. This has however, been mainly the cereal revolution or more specifically the wheat revolution. The increase in productivity has been restricted to a few cereal crops only. Vegetables crops have not been given due attention in agriculture development programmes in India. Agriculture sector has the highest potential for employment and at the same time increased out put in the short gestation period. Vegetables production can provide much higher yield, income, employment and nutritious food than most of the other agricultural crops.

India produces numerou kinds of tropical, sub-tropical, as well as temperate vegetables throughout the year in various parts of the country. However, the potentiality has not been fully exploited due to non availability of infrastructural facilities and inadequate extension media to motivate people towards its production. Vegetables industries can play a role of vital importance in a country like India where there is food shortage mass of the population are under nourished, lower farm income due to higher concentration of farm house holds in marginal and small holdings and existence of disguised unemployment and surplus labour force in the rural sector.

During recent decades interest in vegetables production and marketing has increased rapidly as a result of greater appreciation of the value of vegetable foods and in the context of our large population being vegetarian. The importance of vegetables in the balance diet of the people needs to emphasis in a developing country like India; where high percentage of population is suffering from malnutrition. In around 1980

the per capital intake of fruit and vegetables was far below the recommended standard requirement of 230 gms per day<sup>1</sup>. The situation has not been much improve till now. After the advent of planning the achievement in the production of food grains through high yielding varieties and fertilizers helped our country to achieve the goal of self-sufficiency in food grains. Thereafter the scientists and planners directed their attention to quality aspects of food taken by the people; as a problem of nutrition was serious and it was estimated that about one million children die of malnutrition every year in India<sup>2</sup>. It is in the context that the production of vegetables assumed a still greater significance.

Though, India produces numerous kinds of vegetables, no accurate data of area under vegetables is available. On the basis of Pilot Sample survey conducted by the institute of agricultural research statistic revealed that collection of data for vegetables was beset with difficulties because of various factors like short duration of crops, continuous sowing and harvesting and multiple pickings<sup>3</sup>. However according to information available the area under vegetable crops was of the order of 3 per cent of the gross cropped area<sup>4</sup>. According to the rough estimate the area under vegetables crops in 1979 was 1 million hectares including potato and the production stood at about 10 million tons<sup>5</sup>. The

<sup>1</sup> Arkeri, H., Indian Agriculture, Oxford and IBH publishing Co, New Delhi, 1982, p. 236.

<sup>2</sup> Drillon, J.D Jr. and Eaguriguit, G.F., "The Need for Tropical vegetable Research and Development Net Work for Asia" in proceedings of workshop on pre and post harvest vegetable technology in Asia, Asian vegetable Research and Development Center (AVRDC) Taiwan, 1977, p.5.

<sup>3</sup> Report of the National Commission on Agriculture 1976 Part VI, Chapter 23, P.P 229.

<sup>4</sup> Bhatia, G.R and P.K.Rao, Fresh fruit and vegetables grading. Agricultural Marketing. Vol xxiv, No4. 1982.

<sup>5</sup> Chaudhury, B.Role of Vegetables crops in meeting food recruitment. Commerce Annual 1979, P.P 279.

area under vegetables crops in the country is very inadequate to meet the national requirement. The yield per hectare and intake in the daily diet by an average Indian are very low. Therefore, a systematic approach is required to increase production and consumption of vegetables.

Agriculture is the main stay of the rural population of most of the States in our Country. Majority of the rural population in these states are cultivators and agricultural labourers. Therefore, the farm sector shall continue to play an important role in the rural economy of the states. Besides main source of income, this sector has great potentialities for providing employment opportunities to the rural population. Land is however a limiting factor. The availability of the land for agriculture is limited as per capital cultivated land is negligible in most of the States for providing livelihood to an individual. The question is whether the available resources will be able to generate enough income so as to absorb the relative increase in the size of the farm labour force. Under the traditional agriculture system it will not be possible to provide a satisfactory rate of increase in income and employment opportunities. The obvious need, therefore is of evolving such a pattern of agricultural growth that will ensure more and more production, income and disturbing the ecology. The only alternative for us is to select such pattern of agriculture as would provide maximum return per unit area. In the recent years it has been beyond doubt that the productivity of land can be increased many fold by raising cash crops like fruits and vegetables. Fruits and vegetables farming is not only more remunerative as compared to other crops but is also labour intensive and thus helps in absorbing ever growing size of farm labour force in the rural areas. Vegetables are generally of short duration in nature and hence several seasonal vegetable crops can be grown in the same plot in a year.

Therefore, production of vegetables can make efficient and proper use of small fragmented holding of the farmers.

Vegetables have not been the locus study in the agriculture development of the country/ through interest in production of vegetables has rapidly increased during recent years. Vegetables did not receive the scientific and developmental attention till now in our country. The measures taken towards the development of vegetables in the country so far are quite inadequate as compared to the requirements. Owing to some inherent characteristics of the majority of the agricultural population like landlessness, small size of holdings, poverty, indebtedness, illiteracy, lack of incentive to produce or earn more has always came in the way of agricultural development of the country.

Apart from the basic problems of credit, marketing and infrastructural facilities faced by agricultural sector as a whole vegetables production has other graver production and marketing problems of its own due to various reasons. Most of the vegetables being seasonal and perishable in nature need more care in its production and adds to the problem of marketing. The very perishability of most of the vegetables stands to discourage its production for marketing purpose. The absent sent of proper marketing infrastructure further aggravate the situation.

The above mentioned points are not out of the picture of vegetables production in the State of Assam in general and Kamrup District, in particular. Although recently some of the vegetable producers in the district are trying their best to produce various vegetables in commercial line, they are facing a number of problems in deriving proper prices of products due to lack of proper marketing system in the district and in the State. For encouraging vegetables production in the district several information on productivity, suitability

of land resource, proper technology of production, supply of quality and genuine inputs, cost of production, marketing structure and system and others are very much important. Therefore, research studies in these directions are imperative for increasing quantity and quality of various vegetables grown in the district. However, few systematic studies have so far been conducted in the State and in the district uptill now. This study was therefore, designed to examine the utilisation pattern of various farm resources in vegetables production in relation to that in other crop production, cost of production and return from various vegetables, marketing system, marketing channels and producer's share in consumer's rupee in the marketing of various vegetables, in Kamrup district of Assam.

### **Objective of the Study**

The objectives of the present study are given below.

- (i) To study the resource use pattern in vegetables production.
- (ii) To estimate the cost of production of vegetables on commercial scale.
- (iii) To study different marketing channels and marketing cost of vegetables
- (iv) To study the producer's share in consumer's rupee under different channels and marketing efficiency in vegetables marketing system in Kamrup district of Assam.

### **Scope of the Study**

Systematic studies have been furnished so far on the production and marketing of vegetables in Assam, in general district of Kamrup in particular. This is an unique endeavour made on the subject in the district for encouraging of vegetables in

various parts of Kamrup district, this investigation would be of high value. The planners could use the results of the study for better planning in ameliorating the growth and development of vegetables in the area. The vegetable growers of the district and of the State would be benefited through this study in raising their farm income. The results of the study would be useful to various businessmen, middlemen and consumers of vegetables in the district.

It is expected that the credit institutions and other financing agencies would be benefited from the findings of the study. The extension personnels would derive important informations suitable for their extension work. Further, the teachers, research workers and the students would be benefited from the results of this investigation.

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## CHAPTER II

### REVIEW OF LITURATURE

A few research studies on the production and marketing of vegetables are found to be furnished in the State of Assam. However, a considerable number of investigations have been carried out in India and aboard. Most of these studies attempted to focus on the marketing system and on the marketing structure, marketing channel and price spread of various vegetable enterprises. A few studies examined the cost of production and return from selected vegetables grown in some specific areas in India and abroad. Some of the important research works are reviewed under the following heads.

1. Utilization of resources in production.
2. Cost of production.
3. Marketing channels.
4. Producer's share in consumer's rupee.

#### **Utilization of Resources**

Gurung (1984) furnished a study on Marketing of vegetables in Dimapur. It was reported that total area was 78.329 hectares of which home stead and orchard was 2.356 hectares (3.01%), area under miscellaneous crops and groves like pineapple, banana, sugarcane and bamboo accounted for 1.610 hectares (2.06%). The net area available for cultivation was 67.57 hectares (86.20%) and the cultivable waste land was 0.537 hectares (0.69%). The total net area sown was 66.980 hectares (85.51%). Of the total net sown area, area under kharif crop accounted for 65.795 hectares (98.23%) and crop under rabi crop was

50.683 hectares (73.67%). The total area sown more than once was 49.498 hectares (73.90%) of the total net sown area.

As regards cropping pattern, paddy was found to be main crop growth with size of holding above 1.5 hectares and maize and vegetables were grown as minor crops under kharif cropping pattern. Small farmers are mainly vegetable growers. Vegetable was the main crop grown by the farmers in rabi season. A few large farmers grew wheat mustard and pulses as minor crop. Out of the total net sown area, area under vegetables occupied 48.268 hectares (72.06%). It was found that cauliflower and cabbage alone accounted for 24.112 hectares (49.92%) of the total area under Rabi vegetables. Pea occupied 4.350 hectares (9.01%), tomato 3.787 hectares (7.85%), knolkhol 3.135 hectares (6.50%), and spinach 2.940 hectares (6.09%), Brinjal, carrot, radish, French bean, onion and others were grown less extensively, and the total area under them accounted for 9.944 hectares(20.60%) of the total area under rabi vegetables.

Singh (1990) in his study on production and marketing of off-season vegetables in Himachal Pradesh reported that out of total area owned by the sample farmers 56.60% on marginal, 58.54% on small and 46.69% on medium is uncultivated. This class of land was mostly covered by Ghasni. The area under fruit orchard was proportionately very little, of total area 1.26, 2.98 and 6.42 per cent on marginal, small and medium farms respectively fell under this class. Of the total area cultivated land accounts for 42.14% on marginal, 38.48% on small and 46.89% on medium farms.

Regarding cropping pattern the study revealed that of the gross cropped area, cereals accounted for 65 % on the marginal and small farms and 60% on medium farms. The area under pulses accounted for

6.39%, 8.33% and 10.07% on marginal, small and medium farms respectively. The other commercial cash crops were off season vegetables. Area under this class of crop accounted for 70.09, 15.25 and 17.87 per cent on marginal, small and medium farms respectively. Among the important vegetables grown were peas, tomato, cauliflower, capsicum, cabbage and beans, the first four of these had been taken up for the study and together accounted for 97.21, 89.50 and 90.88 per cent of area under all vegetables on marginal, small and medium farms respectively. The total cropped area was 1.065, 2.243 and 3.676 hectares per farm on marginal, small and medium size farms respectively.

Acharyya (1992) conducted a study on "Labour Use in Indian Agriculture": Analysis at Macro level for the eighties investigated that the total human labour days used in Assam was 94.48 man days in paddy, Jute 208.05 man days and in mustard 39.09 man days. The study was based on the data produced by Economic and Statistic, Ministry of Agriculture Govt. of India.

Bhatia (1994) studied strengthening fruit and vegetables marketing for export with special reference to farmer's participation. The author reported that India had become the second largest producer of fruit and vegetables in the world. While agricultural commodities competed with one another for land, irrigation facilities and other resources, horticultural crops were labour intensive and offered growth potential in developing countries where labour was cheap. The availability of more land for horticulture was restricted due to limitation of irrigation facilities, rapid urbanization and industrial development. However productivity of fruit and vegetables was low compared to developed countries. Special export enhancement

programs for horticulture produce had been device including post harvest management technique, export promotion, export oriented production and market development measure.

Barman (1995) studied Resource utilization patterns in the plains Tribal Areas of Kamrup District of Assam and stated that the land utilization patterns primarily included the area under crop production, under horticulture crops and the land under other enterprises. In this study the crop production entailed the enterprises of HYV ahu rice, local ahu rice, HYV sali rice, jute, oilseeds, pulses, sugarcane, potato, brinjal, and chilly and other vegetables. Amongst rabi crop vegetables were the dominant crops in all farm sizes occupying 3.26 to 8.43 per cent cropped area.

Saikia, N. (1997) in her study “production and Marketing of milk in Nagaon District of Assam”, studied Resource use pattern in the production of milk. She found that the existing land use or cropping pattern under traditional and organized technological situations, the sali rice was the most important crop in each technological situation occupying 82.63 per cent cropped area under traditional, 83.01 per cent in organized situation and 83.28 per cent under entire area.

The analysis of human labour utilization under different technological situation showed that the annual use of human labour in crops and diary enterprises for the entire area was 38.06 and 61.93 per cent respectively of the total human labour utilization per farm. These figures were 67.46 and 32.53 per cent in traditional, 38.81 and 61.18 per cent in organized and 10.79 and 89.20 per cent in commercial situation.

The annual use of working capital indicated that out of total annual working capital invested per farm, dairy enterprise claimed

higher amount working capital than enterprise in the entire technological situation with 52.23 per cent traditional 78.00 per cent in organized and 63.65 per cent of total working capital used per farm in commercial situation. The annual farm yard manure utilization indicated that the per farm use of this resource was the highest (154,40 q.) in organized situation and it was the lowest (8.80q.) in commercial situation. The per hectare use was however, the largest (63.00q.) in commercial situation and the smallest (34.40q.) was in traditional situation.

Borah(1998) conducted a study on the resource utilization pattern in field crops and in vegetables crops in Nagaon district of Assam . He reported that the size of operational holding and the area under vegetables of indicated direct relationships to the size of holding under each farming situation. Area under winter rice was the largest in each farm category under each farming situation. The use of almost all the farm resources under field crops and under vegetables crops showed positive relation to the sizes of farms. The per hectare utilization of most of the farm inputs under vegetables production was considerably higher than that under crop production. The rainshadow farming situation consumed substantially higher amount of almost all the resources than the normal area.

### **Cost of Production**

Naidu, Venkateswarlu (1988) in their study of Production and Marketing of Major vegetables in Gunter District of Andhra Pradesh examined the cost of production of major vegetables and found that the green chilies needed the highest cost followed by tomato and Brinjal and the lowest being the bhendi. Out of the total cost of cultivation the rented value of land has occupied 41.00 to 53.00 per cent indicating

that the vegetables were grown in highly fertile garden lands. In general as the vegetable crops are labour intensive and the fertilizer responsive in nature the total labour and the manures and fertilizers together absorbed a little over 40.00 per cent of the total cost.

Dangat and Nawadkar (1988) of Mahatma Phule Agricultural University, Rahuri studied the cost of production of chrysanthemum in Maharashtra. The study revealed that the per hectare cost of production of chrysanthemum worked out to Rs.11392.38. The per hectare total returns accounted to Rs.17813.25 leaving net returns of Rs.6420.87. The per kg cost of production of chrysanthemum was worked out to Rs.1.33 there by leaving the net return of Rs.0.75 only. The output ratio worked out to be 1.56.

Suryawanshi Hinge and Gune (1988) in their study "An Economic Appraisal of production and marketing of Commercial Rose Cultivation" in Maharashtra. A case study "Estimated the Cost of Production and found that the per hectare establishment cost and the operational cost worked out as high as Rs.2370.00 and Rs.72850.00 respectively. Amongst the important items of these costs, labour alone accounted for almost 20 per cent in both the cases. Stocks, buds and budding material attributed nearly 30 per cent of the total establishment cost.

Singh (1990) performed a study on "Production and Marketing of off Season Vegetables" in Himachal Pradesh worked out the cost of selected vegetables viz. peas, tomato, cauliflower and capsicum. On the average Rs. 201.42 per quintal is the total cost of production of pea in the state. As regards the total cost of production on marginal farms it is Rs.253.41 and out of which 20.79 (8.20 %) per quintal is marketing cost. The total cost of production is Rs. 173.22 in which only Rs. 8.32

(4.8 %) is the marketing cost. The total cost of production of tomato determined on different size of farms is Rs.164.62, Rs.149.94 and Rs.155.40 per quintal on marginal, small and medium farms respectively. In case of cauliflower, on medium farm cost of producing one quintal of cauliflower is the highest (Rs.201.81) as compared to other class of growers as well as implicit price is also the highest Rs.410.14 per quintal. The average cost of production for one quintal of capsicum was Rs.167.54 and the figure was observed to be increasing with the increase in the farm size. It was Rs.134.72 on marginal farms, Rs.179.21 on small farms and Rs.198.73 on medium farms respectively.

Singh and Bhatia (1992) explored the scope of increasing farm income and employment in hilly areas of Himachal Pradesh. The article attempted to answer the question of whether farm sector in hilly areas of Himachal Pradesh alone was able to absorb the growing labour force gainfully. A comparative study of profitability and labour use in cereal and vegetables production would stimulate growth in farm income and would lead to greater employment opportunities. This would have to be supported by the development of marketing and other infrastructural facilities in the region.

Thakur, et.al. (1994) studied economics of off season vegetable production and marketing in Himachal Pradesh. They reported that tomato was the most profitable vegetables followed by cabbage and capsicum. It was concluded that the vegetables production was highly profitable in hill areas and could be used significantly increase the income of small and marginal farmers. There was a need for an integrated approach to tackle the production and marketing problems faced by farmers.

Borah (1998) examined the costs of production along with the income from vegetables crops in Nagaon district of Assam. He indicated these among the various factors of production farm family labour, casual labour, bamboo, marketing cost and fertilizers were the dominant resources for production of vegetables . Rented value of land for brinjal and seed for potato cultivation were also dominant inputs. The least important item of cost was the interest on fixed capital for almost all the selected vegetables under each farm categories. No particular trend was observed in the case of almost all the cost items in relation to the sizes of farms. The gross margins, the net return and the output – input ratios also did not follow any trend with the farm sizes for almost all the vegetables.

### **Marketing Channel**

Lal Gupta and Tewari (1969) carried out a study on “Marketing of Eggs in Varanasi City” and they observed that the egg collectors formed the main channel in marketing eggs and handle about 70 percent of the locally produce eggs. They personally collected eggs from local farms and supplied them to wholesaler as well as retailers. They mostly purchased on their own account and sometimes operated on commission basis as well. Generally the egg collectors agreed to sell to a particular dealer on the understanding that the later would buy eggs throughout the year. Under another system, some farmers delivered egg directly to bulk consumers (such as wholesaler dealers, restaurants, backers, confectioners etc.) either on rte contract for the whole year or on the prize prevailing on the market. This channel handled about 25 percent of the locally produced eggs. Consumers residing in the vicinity of the farm consumed a small amount i.e. 5 per cent of the locally produced eggs.

Mian and Khan (1976) studied the marketing of selected vegetables, pulses and fruits in NWEP and Baluchistan of Pakistan. They found that the existing marketing channels were lengthy and cost inflating. The vegetable growers sold over 70 per cent of the produce in the urban center through commission agents, the rest were sold either to Bepari or on the retail basis. The pulse growers sold off their produce within their own village and about 35 per cent in the urban market. The channels were shorter in case of fruits, nearly all the produce went from the orchards to the Arthie and then on to the retailers; wholesalers were not very prominent. It was considered that market intermediaries charged excessive price for their service.

Malik (1979) conducted a study entitled "Marketing Channel and Price spread in perishable Commodities" (on Himachal's apple) and revealed that 18 per cent of the orchards were leased out to pre-harvest contractors, and rest were marketed by producers themselves, through seven well established marketing channels. Of these the most important was; Producer- Forwarding Agent- Commission Agent- Masakhor- Retailers- Consumers.

Nandal and Karwasra (1979) undertook a study entitled "Onion price spread in Haryana" in the Kurukshetra District of Haryana, which constitute major onion growing region of the state. The data pertains to the marketing year 1978-79. The revealed that 81.43 per cent of the farmers disposed off 76.85 per cent of the marketed of the village through itinerant merchants which accounted for 56.84 per cent, village merchant 17.59 per cent, petty village retailer 1.29 per cent and direct to consumer 0.50 per cent of the village sale of 76.85 per cent. The remaining 23.15 per cent of the marketed surplus was sold by 18.57 per cent of the onion growers in the market, through commission

agents. About 88.48 per cent of the marketed surplus was disposed off by the farmers during the peak marketing period (June-July).

Chand and Sikka (1979) in their study on "Price spread and behavior in the marketing on eggs in Himachal Pradesh" observed the following marketing channels.

- i. Producers- Egg Collectors-Whole sellers- Retailers- Consumers.
- ii. Producers- Egg Collectors- Retailers- Consumers.
- iii. Producers- Hawkers-Restaurants/ Bakers
- iv. Producers- Agents-Whole sellers- Retailers- Consumers.
- v. Producers- Consumers.

The study revealed that the egg collectors were the important intermediaries, which handled 80 per cent of the locally produced eggs, 5 per cent directly by the consumers in the vicinity of the farm; however, this system was not common. The remaining produce were handled by hawkers, who collected egg from producers and sold door to door or to bakeries, restaurants, confectioners etc., either at a rate contracted for the whole year or at the current market price.

Ramaswamy and Puhazhendhi (1981) conducted a study "Economics of Marketing of Brinjal" in Coimbatore District of Tamilnadu. They reported that, major parts of the produce were directly taken to the assembling markets by themselves.

To a smaller extent, the produce were disposed off in nearby weakly shandies. The channels identified by them were as follows:

- i. Producer- Commission Agent-Whole seller- Retailer- Consumer.
- ii. Producers- Agents - Retailers- Consumers.

- iii. Producers- Retailers- Consumers.
- iv. Producers- Commission Agents-Cooperative Super Market- Consumers.
- v. Producers- Consumers.

The author observed that the first channel was the most important channels in the study area and estimated that about 83 per cent of the total quantity marketed moved through this channel.

Subramanyam (1982) in his case study "Efficiency of different marketing channels" in marketing of cabbage, carrot, cauliflower of Madurai District in Tamilnadu identified the following important channels.

- i. Producer- Commission Agent (at market)
- ii. Producer- Whole seller (at field)
- iii. Producer- Retailer (at field)
- iv. Producer- Pre harvest contractors (at field)

In regards to extent of use of different channels they observed that both the presence of cultivators and quantity sold (percentage of area was used as a proxy for quantity) at the field was very high i.e. 70.96 percent for all the selected crops. Hardly 13-25 percent of the areas involving 3-30 percent of the cultivators were sold at the market through commission agent which indicated that majority of the cultivators preferred field sales over market sales. Among the different channels at the field sales, pre-harvest contractors were preferred over whole sellers and retailers by the cultivators of two crops cabbage and carrot.

Niwas and Singh (1982) in their study "Economic aspects of Cole crops in the hinterland of Hisser city" identified that mainly one marketing channel existed in Hisser vegetable market i.e. Producer-Commission Agent- Retailer- Consumer. The produce was brought by the growers to the commission agent's shop and was sold through auction.

Gurung (1984) in his thesis "Marketing of vegetables in Dimapur" studied various marketing channels. The study identified the marketing channels of vegetables in Dimapur as follows:

- i. Producer- Wholesaler cum Commission Agent- Retailer- Consumer.
- ii. Producer- Retailer- Consumer.

It constituted 19 and 26 per cent to the total marketing cost in Bombay and Pune markets, hamali, weighting and miscellaneous charges of the produce for both the market was observed to be more or less than the same.

Mahandule, Dangat and Nawadkar (1988) of Mahatma Phule Agricultural University, Rahuri Studied "Marketing of Chrysanthemum in Maharashtra".

Kalyankar and Hedgiri(1988) in their study "marketing of perishable commodity in Marathwada Region with special Reference to Potato" estimated per quintal cost of marketing. It was revealed that market commission was the major cost which accounted for 26.42 percent in the total marketing cost. The next important cost was transportation cost(22.21 percent) followed by grading and packing charges(19.15 Percent) . Marketing cost on account of octori, loading and uploading and weighting charges and transporting charges were

the other major items of cost among different agencies indicated that  $\frac{3}{4}$  of the marketing cost was paid alone by the producer i.e. 74.25 percent . This cost could be minimized through certain measures like efficient transportation facilities and provision of marketing facilities at the producing centers. It also further called for minimizing the commission in the marketing of potato.

Bhupal (1989) examined price spread in the marketing of vegetables in Delhi. The study reported that despite favorable economic incentives, the acreage and production of vegetables around Delhi was inadequate and a substantial part of the marketed vegetables were brought in from outside. None of the ten formal and informal marketing channels were satisfactory in all respects. The semi government and cooperative trade channels handled a very small amount of vegetables and thus served a limited number of consumers. On the other hand, the margins of middlemen in private trade channels were so high that producers scarcely obtained 40 percent of consumers price. There was thus a case for the expansion odd area under vegetables and marketing network required important through strengthening of the cooperative sector and regulation of middlemens margin.

Singh(1990) in his study “ Production and marketing of off season vegetables “ studied the various marketing channels which were available or common to the growers of Himachal Pradesh for the marketing of vegetables are as follows:

- i. Producer – local Agent – Commission agent – Retailer – Consumer
- ii. Producer – Local Agent – Wholesaler – Retailer- Consumer

- iii. Producer – Commission Agent – Retailer – Consumer
- iv. Producer – Whole saler /Wholesale Merchant – Commission Agent – Retailer- Consumer.
- v. Producer – Retailer – Consumer

Borah (1998) explored the marketing channels associated with some of the major vegetables crops in Nagaon district of Assam. The author stated that the magnitude of marketing cost of the producers in marketing channels I, II and IV were more or less same. The marketing cost of the retailer under marketing I, II and III for all the vegetables. In the case of bepari and wholesaler under channel II, these were same for all the vegetables. The marketing costs of all the market agents were less than Rs.50.00 per quintal for most of the vegetables. The dominant components of marketing costs under each marketing agents were labour, packing materials and transport for all the vegetable.

### **Producer's Share in Consumer's Rupee**

Bhalerao et.al (1979) undertook a sample study in Kashi Vidyapith block in Andhra Pradesh “ Price spread in vegetables “ and observed that the producer's share in the consumer's rupee for vegetables ranged from 61.1 percent in tomato to 74.9 percent in potato. The wholesaler's margin ranged from 5.6 percent in potato to 13.7 percent in tomato, the retailer's margin also behaved almost similarly. On the whole the price spread accounted for more than  $\frac{1}{4}$ <sup>th</sup> of the price paid by the consumer for the major vegetables under study.

Das (1979) conducted a study “Marketing efficiency and price spread in fruits and vegetables” in Papua New Guinea. For the purpose of then study lettuce, tomato , bean Carrot , cauliflower, cabbage and pineapple were selected. The price spread was estimated by comparing

prices at producers, wholesalers and retailers' level at a given time, and the costs and margins involved in different stages of marketing channel was estimated considering lao as terminal market the average total price spread was found to be 90.10 percent and the producers received 30.80 percent of the consumer's dollar.

Prasad (1979) made a study on "price spread for selected vegetables" in Bangalore city. The study revealed that the wholesale and retail prices of vegetables were fairly stable. The price spread between the retail price and the net price received by the producers of vegetables at the farm level were of the order of Rs. 0.55, Rs.0.51 and Rs. 0.49 for every kilogram of beans, cabbage and brinjal, respectively. The producer's net share in the consumer's rupee was low, i.e. 58.90 percent for brinjal . The intermediaries were making huge profits.

Gupta and Ram (1981) in their study "Price spread behavior of vegetables in Delhi for which brinjal, cabbage, carrot, cauliflower and green pea were selected. They found that the producer received only about 37.6 percent of the consumer price for all vegetables and the intermediaries share were – wholesaler – 10.7 percent , retailer – 24.3 percent and commission agent – 2.6 percent and marketing cost accounted for 24.6 percent . This indicates high profit margins of the intermediaries and a high marketing cost and wide price spread.

Ramaswamy and Puhazhendhi (1981) in their study on "Economics of marketing of Brinjal in Coimbatore district of Tamilnadu revealed that the percentage of producer's share in the consumer price varied from 36.81 percent to 57.4 percent among different market centers. About one third of the consumer price constituted wholesaler's and retailer's margin put together. The wholesaler received 25 percent of the consumer rupee in two of the

market centers and commission agents sliced away 7 percent of the consumer's rupee.

Tayade and Patil(1981) studied price spreads in marketing of selected vegetables and revealed the marketing margins earned by different intermediaries in the Mahatma Phule market, Pune. The study exposed a wide margin between wholesale and retail prices . Retailer's margin were very high for onion, potato, garlic, green chillies, brinjal and tomato. On the whole, the retailer's margin ranged from 33 to 60 percent, while the producer net share ranged between 32 to 57 percent of the consumer price.

Chatha and Kaul (1982) in their study in to the price behavior and marketing margins of potato considered producer- primary wholesaler – secondary wholesaler – retailer channel in the three different selected markets, Jullundhar, Ludhiana and Pathan Kot. The study revealed that the net price received by the producer was 52.17 percent of the price paid by the consumer, 47.83 percent was the mark up because intermediaries. This gap of 47.83 was considerable and the margins of intermediaries were calculated at, primary , whole saler – 3.78 percent , secondary wholesaler – 4.5 percent and retailer's margin was 19 percent.

Subramanyam (1982) undertook a case study on “ Efficiency of different channels in marketing of cabbage , carrot and cauliflower” in Madurai district of Tamilnadu. The study observed that, selling to pre harvest contractors was the least desirable one but of all the four channels of marketing . Between the other three channels of marketing i.e.

- i. Producer – wholesaler at field

ii. Producer – retailer at field

iii. Producer – Commission agent at market

There existed no statistically significant difference in the net price received by the producers. The study concluded that, selling the produce at the market did not necessarily result in higher returns to cultivators compared to field sales. Criteria for taking decision seemed mainly to rest on the marketing cost and the price that could be realized and not on the ruling price at the market.

Gurung (1984) in his thesis entitled “ Marketing of vegetables in Dimapur”. Studied efficiency of marketing channels and on the basis of statistical analysis it was found that none of the channels could be adjudged to be the most efficient one, however , the channel producer to wholesaler cum commission agent was found to be relatively efficient than other channels.

Deshmukh and Bhosale (1986) in their study “Marketing of Tomato in Maharashtra studied the producer’s share in consumer’s rupee. The producer’s share in consumer’s rupee was worked out by taking the percentage of net price received by the producers to the consumers price. The producer’s share in consumer’s rupee in Pune market was higher (41.10 percent) as compared to that in Bombay market (22.06 percent) . The margin of profit to the intermediaries was higher in Bombay market (61.00 percent) as compared to that in Pune market (47.12 percent). The cost incurred by wholesalers was higher in Bombay market (Rs. 71) as compared to that of Pune market (Rs.36).

Kalita, Baruah and Ahmed (1988) in their study entitled to “A study on vegetables marketing in the urban and sub urban areas of Jorhat, Assam. Studied the price spreads involved with different

marketing channels. It was observed that the Channel-I was the best among the all channels. In this channel producer was recovering all the prices paid by the consumers. In addition to this the consumers were paying the lowest price per kg. of vegetables in this channel. In channel II the producers are receiving comparatively lower price and the consumers are paying higher price per kg. in this case the producers were receiving 65 percent of what the consumers were paying. The remaining part of 35 percent was for the itinerant merchants. The itinerant merchants has to be incurred a cost Rs. 0.62 per kg. of vegetables. The channel-III was found to be the worst one where a number of middlemen are involved. The producers share is 43 percent of the consumer's price here. In this channel a share of 23 percent are derived by the itinerant merchants 17 per cent by the market fariahas and 17 percent by the retailers.

Naidu and Venkateswarlu (1988) in their study on " Economics of production and marketing of major vegetables in Guntur District of Andhra Pradesh examined efficiency of marketing channels and found that marketing efficiency was the highest in channel – I over channel II. The transportation cost, abnormal profit margins to wholesaler and retailer and the commission charges were accounted for the higher marketing cost in Channel II.

Kalyankar and Hedgiri of Marathwada Agricultural University (1988) in their study "Marketing of perishable commodity in Marathwada studied producers share in consumer's rupee and found that producer's share in consumers rupee was 65.71 percent, 34.39 percent of amount paid by the ultimate consumer was spread over different intermediaries like transportation, Octori, grading and packing tucii, hemali, wholesaler's margin, retailers margin etc.

Retailer's margin was substantially high in case of these potato i.e. 11.3 percent followed by wholesaler's margin 7.44 percent. An amount of Rs. 167.99 per quintal was paid by consumer's and hardly Rs. 110.40 per quintal gone to the producers in case of potato while rest of the amount i.e. 57.59 gone to the inter mediaries. There was a wide gap 34.29 per cent between price received by the producer and price received by the producer and price paid by the consumer.

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## **CHAPTER III**

### **METHODOLOGY**

Being a metropolitan city in Assam Guwahati has been faced a big gap between the demand and supply of various types of leafy and other vegetables. Due to perishable nature most of the vegetables, some unavoidable problems associate in smoothening the gap between the supply and demand of the commodities. Reduction of these problems could however, be made through commercial production of the most of the necessary vegetables in the surrounding areas of the city. To mitigate these more and more areas surrounding the city and in broader sense in covering the whole of the Kamrup district have been shifting to commercial vegetables crops, As such, Kamrup has been one of the most important vegetables growing area of commercial line in the state. The present study is therefore, designed to explore the various objectives of the study associated with the commercial production and marketing of some important vegetables grown in Kamrup district.

#### **Selection of Vegetables Enterprises**

Many types of vegetables are grown in Kamrup district with area ranging from very small plot of 0.02 hectares to more than 1.00 hectares under a particular vegetables enterprise on commercial basis. Of course number of vegetables crops grown by a farmer is restricted by the suitability and availability of land along with other facilities. The major six vegetable enterprises were selected for this study based on the magnitude of area allotted to various vegetables. This was done with the help of the information collected from the selected vegetables

growing villages on commercial line. The selected vegetables enterprises were cauliflower, cabbage, tomato, brinjal, potato and lady's finger. These vegetables were considered based on the magnitude of area for present investigation.

### **Selection of the Samples**

Purposive and two stage random sampling techniques were used for selection of the samples of the study. The development block were selected purposively. On the other hand selection of villages and the farm households were taken randomly. The details of selection of samples for this investigation are given below.

### **Selection of Development Block**

One Development block from each of the southern and northern bank of the Brahmaputra under Kamrup district was considered purposively based on the existence of the largest commercial vegetables growing area in each bank of the river.

### **Selection of Villages**

A list of the villages under each of the selected blocks were compiled ignoring those villages which were not involved in commercial vegetables production. Out of the lists of the villages under each block a sample of 20 per cent villages was selected at random for this investigation. This was resulted in a sample of 4 villages from the block of south bank and 5 villages from that of northern bank of the river in the district.

### **Selection of Vegetables Growers**

The vegetables growing area of the farms in each selected village were listed separately and arranged in ascending order of their

size of operational area under vegetables and their distribution was transformed to show the size classes of marginal (below 0.30 hectares), small (0.30 to 0.60 hectares) and large holding (0.60 hectares and above) using the statistical method of optimal classification. A sample of 20 per cent holdings was selected at random without replacement from each stratum and from each selected village for detailed study. Thus a total sample of 38 marginal, 36 small and 32 large holdings was selected for this investigation resulting in a grand total of 106 commercial vegetables growers as representative farms of the study area.

### **Collection of Data**

Relevant primary and secondary data were collected for the purpose of this investigation. The detailed of the data collected are discussed below.

The primary data necessary for the present investigation for the year 2010-11 were collected with the help of a set of specially designed and pretested questionnaires through personal interview with the respondent commercial vegetables growers. The information on input-output coefficient of various vegetables and field crops along with the areas under various crops and vegetables enterprises allotted during the year were collected for the study. Further, details of the selling prices of various vegetables products, pattern of vegetables marketing, information on transport and price spread of vegetables were also collected from the sample households. Moreover, the information of various intermediaries involved with the chain of vegetables marketing, their function and profit margins along with the marketing costs were also obtained for this investigation.

The secondary data on the magnitude of various vegetables handled with different selling prices at different points of time were collected from the bepari middleman, wholesalers, retailers and the consumers of respective vegetables in Kamrup district. A brief note on each of these marketing agents are given at the end of this Chapter.

### **Analysis of Data**

The primary data collected from the commercial vegetables producers were rationalized, processed and tabulated to get the average farm situation under each farm category of the study area. Another farm situation was worked out ignoring the farm groups considering the average over the whole sampled farms and it was represented as 'all farms' through out this research work.

Simple statistical approach has been used for the analysis of the data of this study. Arithmetic mean and percentage were estimated for presenting various objectives of the investigation. Further, the intensity of cropping, gross margin (farm income), net return and output –input ratio were estimated using different relationships and these are discussed below in details.

### **Cropping Intensity**

To examine the extent of land utilization intensity, the important measuring tool was cropping intensity (CI). For estimating CI the following relations were used for all the farm situations.

$$CI = \frac{\sum a_i}{A} \times 100$$

Where,

$$i = 1, 2, 3, \dots, n$$

$n$  = number of crops enterprises

$a_i$  = area under  $i^{\text{th}}$  crop during the year, and

$A$  = net cropped area in hectare

### **Gross Margin**

The concept of gross margin was very important in decision making process of the farmers. Gross margin was generally used for the farm income which was gross income less variable cost in connection with the production of crop enterprises. This was worked out for this investigation using the relationship as given below.

$$GM = GR - OC$$

Where,

$GM$  = Gross margin in Rupees,

$GR$  = Gross return in Rupees and

$OC$  = Operational or variable cost of vegetables in Rupees.

### **Net Return**

The net return of a particular vegetable enterprise was calculated with the help of following relationship.

$$NR = GR - (OC + FC)$$

Where,

$NR$  = Net return in Rupees,

$GR$  = Gross return in Rupees,

$OC$  = Operational cost in Rupees and

FC= Fixed cost in rupees associated with the production – vegetable crop.

### **Output-Input Ratio**

This is a measuring tool used in examining in viability (profitability) of farm enterprises. This was estimated for each of the selected vegetables in this investigation using the following relationship.

$$\text{Output - Input ratio} = \frac{\text{Gross return/hectare for a vegetable crop}}{\text{Variable cost/hectare for the same crop}}$$

### **Operational Holding**

The total area under operation of each of the selected vegetable farms was worked out considering the area owned by the farmer including the area leased in and excluding the area leased out of the holding. This was the total operational area in hectare for the farm. This area was further broken up into area under the field crops and area under vegetables for each farm based on the data collected from the respondents. The classification of the farms was made on this operational area marked for vegetables growing by the farmers.

### **Land Rent**

For utilization of the leased in land farmers had to pay land rent to the owner of the plot in cash or in kind, annually. For calculation of the cost component of production of a vegetables enterprise the annual land rent per hectare was deflated by the number of crops raised in the same plot of land during the year. This same average land rent was imputed for the land owned by the farmers also in working out cost of production of various vegetables included in the present investigation.

## Human Labour

The human labour force of the farm consisted of farm family labour, permanently hired labour and also casually hired labour. Again, from the view point of efficiency it created discrepancy in composition of labour mandays as it comprised of adult male, adult female and child labour. To make the human labour utilization efficient, labour units were converted to standard mandays in the study. This was done based on the hiring charges per day of labour work in the study area. A day of 8 hours continuous work put in by an adult man over 16 hours of age was considered as equivalent to one standard manday and that put in by an adult female over 16 years and a child between 10 to 16 years as equivalent to 0.75 and 0.50 mandays, respectively. The annual average of these transformed mandays utilization was estimated for the farm, for the crops and for the vegetable enterprises separately under each farm sizes of the study area. For working out cost of human labour for vegetables production the cost for casually hired labour was placed under the operational cost and cost of farm family labour along with the permanently hired labour in the fixed cost. The total hiring charge of casual labour per day included the cash payment, the value of kind payment, value of tea and meals and the value of others given to the labour during the day. For the farm family labour utilized in the production process, an imputed value of labour charges was taken considering the going on rate of labour charge in the locality of the study area. For estimating the cost of permanently hired labour, cash payment, value of tea and meals, value of clothing and others were taken together for the whole month. From this the cost per day was calculated in the inquiry.

## **Machine and Animal Power**

Land preparation of the basic and most important operation for agricultural production. For this on an average animal power alone was needed atleast for 5 number of ploughing with leveling. On the other hand machine power alone needed for 3 or 4 times of ploughing and harrowing .The farmer preference was to use machine power (tractor/ power tiller) for initial 2 or 3 ploughing followed by 1 or 2 plowing and harrowing by animal power.

## **Working Capital**

The magnitude of working capital utilization in the production of various farm activities was important as the intensity of different resource utilization was highly correlated with the productivity of the farm enterprises. The fund expended on the purchase of seeds, fertilizers, manure, pesticides, human labour animal and machine power and the others in the production of each of the vegetables and field crops was aggregated for each farm. Thus the average expenditure or working capital was calculated for crops, for vegetables and for the farms as a whole on per farm and per hectare of the cropped area under each farm category of the study area.

## **Farm Yard Manure (FYM)**

Farm yard manure was very important for crop production particularly for vegetables production in the farms of study area. Vegetables growers generally purchased FYM, mostly cowdung in addition to home produced FYM to use in vegetables production. In the commercial vegetables growing farms, FYM was found to be utilized for vegetables enterprises only. The average annual use of FYM per farm was worked out considering the purchased and home

produced FYM together. This was estimated for vegetables production only. For calculating cost of production of vegetables, the cost of the FYM used per hectare of a particular vegetables production was estimated considering cost of purchased FYM and the imputed value of home produced FYM. For the analysis of annual utilization of this resource both the purchased and home produced FYM, were taken together and were expressed in quintals.

### **Fertilizers**

Farmers generally used to purchase various chemical fertilizers in various trade names and forms. These differential fertilizers were converted to 3 types of major fertilizers namely, urea, SSP (Single Super Phosphate) and MOP (Muriate of Potash) and were calculated in kg (Kilogram) for the analysis of utilization of fertilizers per farm and per hectare of gross cropped area. In addition farmers utilized some minor fertilizers needed differently for different vegetables crops in small quantities. Due to paucity of analysis, these fertilizers were ignored in this investigation and only the major fertilizers were considered. The total amount of different fertilizers purchased and used for each of the crops and vegetables production and for farm as a whole, during a year, was estimated for various farm groups of the study area. These were considered as the annual use of fertilizers in the study. Further, the cost of the fertilizers used to produced each of the selected vegetables was taken as the cost of production of vegetables in the representative farm of the study area.

### **Cost of Seeds**

The cost of seeds of vegetables was generally high. On the other hand, some of the vegetables crops require higher amount seeds than that of the recommended amount of seeds per hectare due to the failure

in germination. The average requirement of seeds per hectare for each of the vegetable enterprises was multiplied by the market price to get the cost of seeds of the vegetables. These were estimated for each of the farm categories and also for the average farm (all farm situation) separately.

### **Cost of Plant Protection**

Successful cultivation of vegetables needed to control the pests and diseases. Farmers producing vegetables utilized pesticides of various types and brands depending upon the availability in the market. Sometimes for controlling a particular pest more than one or two pesticides might be used if the first or even the second one was failing to work. In this case, statement of use of each pesticide might not be possible to include in the study. To overcome the problem value of the used pesticides was considered to prevent in the study. Hence, the total expenditure on different items of pesticides and insecticides per farm and per hectare of each vegetables was included for calculating the cost.

### **Marketing Cost**

Marketing cost is yet another item that accounts for a considerable proportion of the total cost of cultivation in the case of vegetables production. In the present study marketing cost as one of the components of production cost included the charge of marketing and other costs associated with the process of selling the commodity. Transportation cost which was a separate item of production costs of the vegetables was not included in marketing cost in the present investigation. However, the marketing cost in the process of selling the commodity under various marketing channels included one item of

transportation for carrying the commodity from one marketing agent to another.

### **Cost on Irrigation**

Provision of irrigation for irrigating the vegetables grown on commercial line was one of the most important aspect. The commercial vegetables growers of the study area used to arrange for irrigation of their crops. The information of cost associated with irrigation of a particular vegetable enterprise was collected from in respondents and was included in the cost of production of the vegetable crop.

### **Depreciation**

The sample vegetables growers of the study area possessed some temporary and semi-permanent assets relevant to their vegetable production process. A shed for various farm implements or machines, a cattle shed along with a temporary or semi-permanent store for keeping the vegetable products and also the tools and implements whatever were available faced depreciation. A depreciation cost on these sheds and implements was assured at the rate of 10.00 per cent of the present value of these assets and was included in the cost of production of the vegetables enterprises of the investigation.

### **Interest of Capital**

For calculation of the cost of production of the selected vegetables enterprises a rate of interest of 10.00 per cent per annum on the working and fixed capital was charged and was calculated for the growth period of the vegetable. This was also considered as component of production cost for vegetables.

## **Marketing Agents**

The marketing agents associated with the channelizing of the vegetables products from the producers to the consumers in this study are discussed in brief.

### **Producers**

Producers were the actual growers of the vegetables processing farm unit for production of various farm activities in the rural areas. Producers were the ultimate units of sampling for collection of cross section data. They were the first of the agents of marketing of their vegetables handing over the producers to the consumer in the farm and in the local markets or to the village bepari or to the wholesaler or to the retailers according to the types of marketing channels.

### **Bepari**

Bepari was the local word used for one of the intermediaries in the marketing channel of the various commodity marketed. He was the first to handle the marketed surplus of different commodities from the producers in some of the marketing channels. The bepari used to hand over the marketed surplus of the commodity he handled to the any wholesaler , any other bepari or the retailers of the commodity at a price higher than the purchased price.

### **Middleman**

The middleman was an intermediary in the marketing channel of any commodity. In this study middleman was an agent who used to purchase commodity for sale with profit from the bepari. He generally used to sale the commodity to the wholesaler and to the retailer at a price higher than his purchase price.

**Wholesaler**

The wholesaler for the vegetables marketing was an agent who used to purchase commodity from the bepari, middleman and producer and sold it to the retailer and bepari in lot at a price higher than the purchased price.

**Retailer**

The retailer was another marketing agent in the marketing channel and used to collect marketed surplus from the producer, bepari, middleman and wholesaler and to sale the commodity directly to the consumer with a profit.

**Consumers**

Consumer was the last agent of the marketing channel for any commodity. In this study he was the consumer of the selected vegetables.

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## CHAPTER IV

### RESOURCE UTILIZATION PATTERN

The first objective of this investigation was to examine the utilization pattern of various farm resources of the commercial vegetables growers of the study area. It is very important in view of the exploration for possibilities of adjustment of the resources towards enhancement of the existing farm incomes. In this chapter therefore, the present use pattern of different important resources are analysed for various groups of vegetables growers – marginal, small and large farm along with all farms situation (average farm situation of the study area). These are discussed below resource wise.

#### **Operational Holdings**

The average operational areas per farm for marginal, small, large and all farms situation under total operational area, area under field crops and under vegetables crops were worked out separately and is depicted in Table 1.

Table 1 Average size of operational holdings

Particular	Marginal Farm	Small Farm	Large Farm	All Farms
Total operational area	1.21 (100.00)	2.30 (100.00)	2.78 (100.00)	2.07 (100.00)
Area under field crops	0.96 (79.33)	1.85 (80.43)	1.98 (11.22)	1.56 (75.36)
Area under vegetables	0.25 (20.66)	0.55 (23.91)	0.80 (28.78)	0.51 (24.64)

It is clear from the table that the average operational area for the study region as a whole (all farms situation), was found to be 2.07 hectare per farm. Out of this, the area earmarked for field crops was 1.56 hectare which was 75.36 per cent of the total area and the area for vegetables production was 0.51 hectare (24.64 per cent of the total operational area).

The farm group wise distribution of the operational area per farm indicated that the area under each of the total operational area, area under field crops and that under vegetables increased with the increase in firm sizes. The total operational area increased from 1.21 hectare in marginal to 2.78 hectare in the large farm. This under the field crops increased from 0.96 hectare (79.33 per cent of the total area) in marginal to 1.98 hectare (71.22 per cent) in large farm. The average area under the vegetables increased from 0.25 ha (20.66 per cent) in marginal farm to 0.80 hectare (28.78 per cent of total operational holding) in large farm organization.

The above analysis brought out that the commercial vegetables growers of the study area utilized only about 25.00 per cent of their total farm holdings and the remaining major areas were under the field crops. This might be dependent on the land situated quality and topography of the farm holdings along with production marketing management framework of the growers.

### **Land Utilization Pattern**

Analysis of the land use pattern of the commercial vegetables farmers is of utmost importance as land has been the most scarce and limited resource. This analysis was performed seasonwise and the results are presented in Table 2.

Table 2 Land utilization pattern and proportionate area under different crops

Area in Hectare

Particulars		Marginal Farm		Small Farm		Large Farm		All Farms	
		Hectare	Percent	Hectare	Percent	Hectare	Percent	Hectare	Percent
Kharif Season	HYV sali rice	0.79	32.78	1.07	22.38	1.13	17.04	1.10	23.81
	Local sali rice	0.19	7.05	0.68	14.22	0.85	12.82	0.46	9.96
	Lady's Finger	0.09	3.73	0.12	2.51	0.25	3.77	0.15	3.25
Summer Season	Brinjal	0.09	3.73	0.38	6.69	0.40	6.03	0.26	5.63
	Sweet gourd	0.06	2.49	0.11	2.30	0.20	3.01	0.12	2.60
	Cucumber	0.05	2.07	0.10	2.09	0.25	3.77	0.13	2.81
	Ash gourd	0.02	0.83	0.08	1.67	0.15	2.26	0.09	1.95
	Ridge gourd	0.02	0.83	0.07	1.46	0.17	2.56	0.10	2.16
	Lady's finger	0.10	4.15	0.25	2.53	0.62	9.35	0.31	6.71
Early Rabi Season	Mustard	0.05	2.07	0.12	2.51	-	-	0.06	1.30
	Coriander	0.05	2.07	0.12	2.51	0.13	1.96	0.11	2.38
	Raddish	0.05	2.07	0.11	2.30	0.13	1.96	0.10	2.16
	Potato	0.12	4.98	0.17	3.55	0.22	3.32	0.17	3.68
	Cauliflower	0.09	3.73	0.20	4.18	0.40	6.03	0.24	5.19
	Cabbage	0.07	2.90	0.28	5.86	0.48	7.24	0.29	6.28
	Tomato	0.09	3.73	0.35	7.32	0.55	8.29	0.32	6.92
Late Rabi Season	Cauliflower	0.08	3.32	-	-	-	-	0.03	0.65
	Cabbage	0.09	3.73	0.13	2.72	-	-	0.07	1.51
	Drumstick	0.11	4.56	0.13	2.72	0.25	3.77	0.16	3.46
	Cucumber	0.07	2.90	0.15	3.14	-	-	0.07	1.51
	Chilli	0.05	2.07	0.15	2.51	0.26	3.92	0.14	3.03
	Coriandar	0.05	2.07	0.10	2.09	0.19	2.86	0.12	2.60
	Spinach	0.05	2.07	-	-	-	-	0.02	0.43
Gross Cropped Area		2.41	100.00	4.78	100.00	6.63	100.00	4.62	100.00
Net Cropped Area		1.21	-	2.30	-	2.78	-	20.7	-
Cropping Intensity		-	199.17	-	207.78	-	238.49	-	223.19

The figures in the table showed that for all farm situation HYV sali rice was the most dominant crop covering 23.81 per cent cropped area followed by local sali rice with 9.96 per cent cropped area. The remaining crops were almost vegetables crops being lady's finger in Kharif season; brinjal, sweet guard, cucumber, ashgaurd, radge guard an lady's finger in summer season; mustard (as leafy vegetables), coriander, reddish, potato, cauliflower, cabbage and tomato in early rabi season; cauliflower, cabbage, drumstick, cucumber, chili, coriander and spinach in late rabi season. The area under each of these crops was less than 7.00 per cent of the total cropped one. Among the vegetables crops the most important vegetable crop was tomato covering 6.92 per cent cropped area. This was followed by lady's finger with 6.71 per cent and cabbage occupying 6.28 per cent cropped area. The next dominant vegetable was brinjal possessing 5.63 per cent followed by cauliflower with 5.19 per cent cropped area. The least important vegetables was found to be spinach covering only 0.43 per cent cropped area.

The farm sizewise distribution of cropped area under various crop enterprises showed that HYV sali rice was the most important crop in each farm size with inverse relationship to the farm sizes covering from 32.78 per cent in marginal and 17.04 per cent cropped area in large holdings. The next important crop was local sali rice in each of the farm sizes with the highest (14.22 per cent) cropped area in small farm and the lowest (7.05 per cent) in the marginal holding. The remaining all the activities were vegetables occupying less than 10.00 per cent cropped area each. Among these vegetables the most important enterprise was lady's finger (9.35 per cent cropped area) in large holding, tomato (7.32 per cent) in small and potato (4.98 per cent cropped area) in marginal farm. This was followed by tomato (8.29 per

cent) in large farm, brinjal (6.69 per cent) in small and drumstick (4.56 per cent) in medium holding. The next dominating vegetable enterprise was worked out to be cabbage (7.24 per cent cropped area) in large farm and cabbage (5.86 per cent) in small holding. This position was shared by cabbage, tomato, cauliflower, brinjal, and lady's finger in marginal size group covering 3.73 per cent cropped area each. The least important place was shared by coriandar and raddish with 1.96 per cent cropped area each in marginal and ridge guard (1.46 per cent) in small holding. This place was occupied by ash guard and ridge guard with 0.83 per cent cropped area each.

The intensity of cropping indicated that it increased with the increase with farm sizes ranging from 199.17 per cent in marginal holding to 238.49 per cent in the large holding with the average of 223.19 per cent found in all farm situation. These high cropping intensities showed intensive use of land for growing vegetable crops in each of the farm groups of the study area.

### **Human labour Utilization pattern**

The human labour use patterns per farm and per ha under various farm sizes were worked out per annum for the study area and the results are presented in Table 3.

It would be clear from the table that for the average farm situation (all farms situation), the total magnitude of human labour resource utilized per farm was 718.95 mandays. Out of this vegetable crops utilized as large as 69.03 per cent per farm being 496.26 mandays. The remaining human labour utilization was only 30.97 per cent (222.69 mandays) and was utilized on the production field crops. These indicated that vegetables production in the study area engaged more than double of the human labour used in production of field crops

Table 3 Annual utilization of human labour

In Mandays

Particulars		Marginal Farm		Small Farm		Large Farm		All Farms	
		Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
Total	Per Farm	381.54	100.00	797.71	100.00	1061.24	100.00	718.95	100.00
	Per Hectare	158.31	-	166.88	-	160.06	-	155.62	-
Field Crops	Per Farm	139.81	36.64	260.52	32.66	276.01	26.01	222.69	30.97
	Per Hectare	145.64	-	140.82	-	138.40	-	142.75	-
Vegetables	Per Farm	241.73	63.55	537.19	67.34	785.23	73.99	496.26	69.03
	Per Hectare	166.71	-	183.34	-	168.81	-	162.17	-

per farm. The per hectare use of this resource was considerably larger (162.17 mandays) in vegetables production than that in field crops (142.75 mandays).

The utilization patterns of human labour under marginal, small and large holding brought out that each of the total utilization, use in the field crops and use in vegetables production per farm increase in with the increased size of the farm. The total use of human labour per farm increased from 381.54 mandays in marginal farm to 1061.24 mandays in large holding. The per hectare utilization was the highest in small farm employing 166.88 mandays and it was the lowest in marginal farm with 158.31 mandays, annually. For the field crops production, human labour employment per farm increased from 139.81 mandays in marginal farm to 276.01 mandays in the large holding. This utilization per hectare however, decreased with the increase in the farm size reducing from 145.64 mandays in marginal to 138.40 mandays in large farm. The utilization of human labour for vegetable production increased from 241.73 mandays per farm in marginal to 785.23 mandays in large holding. The per hectare use of this resource for vegetable production was the largest (183.34 mandays) in small farm and the lowest (166.71 mandays) was in marginal holding.

The per farm use of human labour in vegetables production (67.34 per cent) was more than double of that used in crop production (32.66 per cent of the total use). This gap in use of this resource was further increased in large farm being 73.99 per cent in vegetables and 26.01 per cent of the total use per farm in field crops production. In the case of marginal farm, the utilization by human labour was slightly less than double for vegetables production (63.35 per cent) compared to that for field crop production.

The above analysis of the utilization of human labour resource in vegetables production as compared to that in field crops production in various farm groups revealed that vegetables production in the farms utilized human labour very intensively being on an average more than double of that used in crop production per farm. Per hectare of cropped area utilization of this in vegetable production was also considerably larger than that in field crops. The per farm use of human labour was found to be increased with the increase in farm size. The per hectare of cropped area use of this resource showed this relationship only in field crop production.

### **Animal Labour Utilization**

The annual utilization of animal labour in vegetables and field crop production per farm and per hectare of cropped area was explored under different farm categories of the study area. The results are depicted in Table 4 and discussed below.

The figures in the table made it clear that for the average farm situation (all farm situation), the total animal labour utilization was worked out to be 31.89 oxendays per farm and it was 6.90 oxendays per hectare of cropped area. The use of this resource in vegetable production was 23.26 oxendays per farm being 72.94 per cent of total use per farm. This in field crop production was only 8.63 oxendays being 27.06 per cent of the total utilization per farm. It indicated the intensity of the use of animal labour in vegetables production being about 3 items larger than that in field crops per farm. The per hectare use was also considerably larger being 7.60 oxendays in vegetables than that (5.53 oxendays) in field crops.

The farm size group wise analysis of the utilization of animal labour indicated that utilization of animal labour per farm under each

Table 4 Annual utilization of animal labour

In Oxendays

Particulars		Marginal Farm		Small Farm		Large Farm		All Farms	
		Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
Total	Per farm	16.66	100.00	32.54	100.00	45.62	100.00	31.89	100.00
	Per hectare	6.91	-	6.81	-	6.88	-	6.90	-
Field Crops	Per farm	5.45	32.71	10.21	31.38	10.79	23.65	8.63	27.06
	Per hectare	5.68	-	5.52	-	5.45	-	5.53	-
Vege- tables	Per farm	11.21	67.29	22.33	68.62	34.83	76.35	23.26	72.94
	Per hectare	7.73	-	7.62	-	7.49	-	7.60	-

of the total crops, field crops and vegetables production increased with the increase in farm sizes. On the contrary, opposite relationship was carried out in the case of per hectare of cropped area utilization under the field crops and vegetables production. The per farm utilization under total crope production increased from 16.66 oxendays in marginal to 45.62 oxendays in large holding. This under field crops production was from 5.45 oxendays in marginal to 10.79 oxendays in large holding. Under the vegetables production it was from 11.21 oxendays in marginal to 34.83 oxendays in large holding. For this crop, the animal labour use decreased from 7.73 oxendays in marginal to 7.49 oxendays in large holding. This for field crops reduced from 5.68 oxendays in marginal to 5.45 oxendays in large farm.

The over all analysis of animal labour utilization brought out that total utilization of animal labour in vegetables production was around 3 times larger than that in field crop production, on an average. The per farm utilization of this resource under each of the total farm production, field crops introduction and vegetables production related positively with the farm size. The per hectare use of this resource for field crops and vegetable production showed inverse relationship with the farm sizes. The per hectare cropped area use of animal labour in vegetables production was much higher than that in field crop production of the study area.

### **Machine Power Utilization**

It has been observed that the necessary volume of animal power in farming sector Assam has been gradually replaced by machinery power due to involvement of high risk of mortality of the animals and also the high maintenance cost irrespective of production purposes. As such, use of machine power has been getting momentum in the recent

time. For this, analysis of the use of machine power in various farm sizes of the study area was worked out and the results are placed in Table 5. According to the figure of the table, the total use of machine power in the average farm (all farm situation) was estimated to 14.30 hours per farm. Out of this amount, field crop production consumed 4.23 hours being 29.58 per cent of the total and the large portion covering 70.42 per cent of the total (10.07 hours per farm) was utilized in vegetables production. The per hectare cropped area use was also very large in vegetables (3.29 hours) in comparison to that in field crop production (2.65 hours of machine).

The farm size groupwise utilization of machine power showed that use of machine hours in each of the total farm production, field crop production and vegetables production per farm increased with the increase in farm size. Contrary to this per hectare of gross crop area, the utilization of machine hours decreased under each of these items. For the total farm, the utilization of machine power increased from 7.89 in marginal to 19.63 in large holding. This for field production was from 2.77 hours to 5.03 hours and for vegetable production it increased from 5.12 hours in marginal to 14.63 hours in large holding. The per hectare of cropped area use for total farm production decreased from 3.37 hours in marginal to 3.08 hours in large, for field crop production it decreased from 2.88 hours to 2.54 hours and for vegetables production it reduced from 3.53 hours in marginal farm to 3.14 hours in large holding. Under each farm groups comparatively, vegetables production utilized very large portion of machine power per farm as well as per hectare of cropped area.

The above analysis of machine power utilization under various groups farms brought out that the volume of machine hours utilized per

Table 5 Annual use of machine power

In Hours

Particulars		Marginal Farm		Small Farm		Large Farm		All Farms	
		Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
Total	Per farm	7.89	100.00	14.52	100.00	19.63	100.00	14.30	100.00
	Per hectare	3.37	-	3.21	-	3.08	-	3.25	-
Field Crops	Per farm	2.77	35.11	4.94	34.02	5.03	25.62	4.23	29.58
	Per hectare	2.88	-	2.65	-	2.54	-	2.65	-
Vegetables	Per farm	5.12	64.89	9.58	65.98	14.60	74.38	10.07	70.42
	Per hectare	3.53	-	3.29	-	3.14	-	3.29	-

farm under each of the total farm production, field crop production and vegetable production related positively to the sizes of farm. Contrary to this, utilization of this resource per hectare of cropped area related inversely to the size of farm under each of the items. For the average farm situation (all farms situation) vegetables production utilized more than 3 times of machine power per farm in comparison to field crop production.

### **Working Capital Utilization**

Working or operational capital has also been one of the important resource in any type of production. In farm production purchasing of seeds manure, fertilizer, pesticides along with payment of wages of labour have to be done from time to time through cash. These cash expenditures during the growth period of the crops is working capital of the farms. The analysis of the utilization pattern of operational capital was furnished for different farm sizes of the study area. The results are presented in Table 6 and are discussed below.

It is clear from the table that for the average farm situation, the total magnitude of operational capital utilized per farm was Rs. 151460.00 per annum. Out of this Rs. 10460.00 (6.91 per cent of the total use per farm) was utilize in field crops and the remaining large portion of Rs. 141000.00 (93.09 per cent of total use) was spent for vegetables production per farm. In addition to this, the per hectare utilization of working capital for field crop production was only Rs. 6705.13 against the large amount of Rs. 46078.43 utilized for vegetables production indicating very intensive use of operational capital in vegetables production.

The farm group wise analysis of operational capital showed that use of this resource per farm increased with the increase in farm sizes

Table 6 Annual utilization of working capital

In Rupees

Particulars		Marginal Farm		Small Farm		Large Farm		All Farms	
		Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
Total	Per farm	75224.00	100.00	130370.00	100.00	248870.00	100.00	151460.00	100.00
	Per hectare	31213.28	-	27274.06	-	37536.95	-	32783.55	-
Field Crops	Per farm	6550.00	8.71	11570.00	8.87	13010.00	5.23	10460.00	6.91
	Per hectare	6822.92	-	6254.05	-	6570.71	-	6705.13	-
Vegetables	Per farm	68674.00	91.29	118800.00	91.12	235860.00	94.77	141000.00	93.09
	Per hectare	47361.38	-	40546.07	-	50722.58	-	46078.43	-

for each of the total farm production, field crop production and vegetable production. The total farm consumption of this resource increased from Rs. 75224.00 in marginal to Rs. 248870.00 in large farm. This for field crop production was from Rs. 6550.00 in marginal to Rs. 13010.00 in large holding and for vegetables growing, it ranged from Rs. 68674.00 in marginal to Rs. 2359860.00 in large holding. On the contrary, per hectare of cropped area utilization of this resource did not follow any trend. For vegetables, the largest amount if Rs. 50922.58 was used in large farm and the lowest of Rs. 40546.00 was in small holding.

The analysis of working capital utilization per farm and per hectare of cropped area brought out that the use of this resource under each of the total farm production, field crops production and vegetables production increased with the increase in farm sizes. However, per hectare cropped area utilization was not in any trend with the sizes of farms. The use of operational capital in field crops was being less than 10.00 per cent of total utilization per farm comparison to that in vegetables production claiming more than 90.00 per cent of total utilization per farm. These indicated use of very large volume of working capital in vegetables production of each farm size.

### **Chemical Fertilizers Utilization**

Intensive utilization of scarce land resource automatically invites the use of chemical fertilizers as the organic counterpart of this resource has been limited and gradually becoming more and more scarce. Utilization of chemical fertilizers is directly and heavily relates to the intensity of land utilization, more particularly in agricultural production. As such pattern of this resource in the present study area is felt to be very important. This analysis is therefore, carried out to

explore the use pattern of chemical fertilizers for each farm group of the area. The results are depicted in Table 7 and are discussed below.

The figures in the table clarified that for the average farm situation (all farm situation), the total magnitude of urea, SSP (single super phosphate) and MOP (muriate of potash) utilized per farm were 535.58, 576.98 and 216.59 kg. respectively. The use of this resource for growing field crops were 28.75 (5.37 per cent of the total farm utilization), 14.83 kg (2.57 per cent) and 6.61 kg (3.05 per cent), respectively. On the other hand, the utilization of chemical fertilizers for production of vegetables per farm were 506.83 kg (94.63 per cent of total fertilizers used per farm) of urea, 562.15 kg (97.43 per cent) of SSP and 209.98 kg (96.95 per cent) of MOP in the study area. These figures indicated that use of chemical fertilizers of different types for field crops (rice) were negligible in comparison to those used for vegetable production. The per hectare of gross cropped area utilization of this resource was also tremendously large under each of urea, SSP and MOP for vegetables production in comparison to that for field crops.

The farm size groupwise analysis of the use of chemical fertilizers indicated that the total amount of fertilizers of each of the urea, SSP and MOP increased with the increase in sizes of farms under each of the total farm crops and vegetables production. For field crop however, no trend was found to exist. For total farm crop production, urea was utilized per farm ranging from 272.92 kg in marginal farm to 748.24 kg in large holding, SSP from 297.69 kg to 784.54 kg and MOP from 113.47 kg to 297.15 kg. For vegetables production, the use of urea per farm increased from 252.60 kg in marginal farm to 717.26 kg in large holding, of SSP from 286.82 kg to 769.20 kg and of MOP

Table 7 Annual utilization of major chemical fertilizers per farm

In Kilogram

Particulars		Marginal Farm		Small Farm		Large Farm		All Farms	
		Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
Total	Urea	272.92 (113.24)	100.00	527.81 (110.42)	100.00	748.24 (112.86)	100.00	535.58 (115.92)	100.00
	SSP	297.69 (123.52)	100.00	569.93 (119.23)	100.00	784.54 (118.33)	100.00	576.98 (124.89)	100.00
	MOP	113.47 (47.08)	100.00	208.66 (43.65)	100.00	297.15 (44.82)	100.00	216.59 (46.88)	100.00
Field Crops	Urea	20.32 (21.17)	7.44	34.63 (18.72)	6.56	30.97 (15.64)	4.14	28.75 (18.43)	5.37
	SSP	10.87 (11.32)	3.65	17.07 (9.23)	2.99	15.34 (7.75)	1.95	14.83 (9.51)	2.57
	MOP	5.39 (5.62)	4.75	8.75 (7.73)	4.19	6.95 (3.51)	2.34	6.61 (4.24)	3.05
Vegetables	Urea	252.60 (174.21)	92.56	493.18 (168.32)	93.44	719.26 (154.25)	95.86	506.83 (165.63)	94.63
	SSP	286.82 (197.81)	96.35	552.86 (188.69)	97.01	769.20 (165.42)	98.05	562.15 (183.71)	97.43
	MOP	108.08 (74.54)	95.25	199.91 (68.23)	95.81	290.20 (62.41)	97.66	209.98 (68.62)	96.95

Figures in parentheses indicate fertilizers in Kilogram per hectare of cropped area. Fertilizers used in other forms are expressed in terms of Urea, SSP(Single super phosphate) and MOP( Muriate of Potash).

from 108.08 kg in marginal to 290.20 kg in large size group. Each of these amount of fertilizers was more than 92.00 per cent of the total farm consumption annually. In the case of field crop production, the largest amount of each of urea, SSP and MOP was used per farm of small holding with 34.63, 17.07 and 8.75 kg, respectively. The lowest amount of each of these fertilizers were utilized in marginal farm consuming 20.32, 10.87 and 5.39 kg, respectively. Each of these fertilizers under each farm size was less than 8.00 per cent of total consumption per farm.

The consumption of chemical fertilizers per hectare of cropped area of vegetables production indicated inverse relationship to the size of the farm. Utilization of urea for this crop decreased from 174.21 kg in marginal to 154.25 kg per hectare in large holding. That of SSP decreased from 197.81 kg to 165.42 kg. and that of MOP decreased from 74.54 kg in marginal to 62.41 kg in large holding. The utilization of each of the urea, SSP and MOP for field crop production per hectare cropped area also decreased with the increase in farm sizes. Consumption of urea reduced from 21.17 kg in marginal farm to 15.64 kg in large holding. SSP reduced from 11.32 kg to 7.75 kg and MOP from 5.62 kg in marginal to 3.51 kg per hectare in large holding. All these figures compared to those under vegetables production showed that chemical fertilizers utilization in field crops was negligible.

The above discussion on the utilization of the chemical fertilizers in different farm groups brought out that the amount of each of the urea, SSP and MOP consumed per farm increase with the increased in farm sizes for the total farm production and vegetables production. In the case of field crops production, the use of each of these fertilizers was the highest in small farm and was the lowest in

marginal form. The per hectare cropped area use of each of these fertilizers for the production of vegetables decreased with the increase in farm sizes. The amount of each of the chemical fertilizers used in vegetables production per farm was more than 92.00 per cent of total utilization per farm and the use of these in field crops were negligible.

### **Farm Yard Manure Utilization**

The utilization of farm yard manure (FYM) in different farm size under field crops and vegetable production in the study was analysed for per farm and per hectare of cropped area. The results are presented in Table 8 and are discussed below.

It would be clear from the table that no FYM was used for the production of field crops more particularly for rice production during kharif season. Hence whatever the amount of FYM was utilized under different farm sizes was used solely on vegetable production. For the average farm of the study area, the total amount of FYM utilization was worked out to be 19.02 quintal per farm. The per hectare of cropped area use was 37.29 quintal.

The farm groupwise analysis of FYM utilization indicated that the volume of per farm utilization of the resource increased with the increase farm sizes. It ranged from 10.33 quintals in the marginal farm organization to 28.67 quintals in large holding. The per hectare of gross cropped area utilization of FYM related negatively to the size of farms. This use was decreased from 41.32 quintal in marginal farm to 35.84 quintals per hectare of cropped area in large holding group.

### **Pesticides Utilization Pattern**

Farmers of the study area used pesticides of various types for production of the crops more particularly of vegetables crops. The use

Table 8 Annual utilization of farm yard manure(FYM)

In Quintal

Particulars		Marginal Farm		Small Farm		Large Farm		All Farms	
		Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
Total	Per farm	10.33	100.00	20.94	100.00	28.67	100.00	19.02	100.00
	Per hectare	41.32	100.00	38.07	100.00	35.84	100.00	37.29	100.00
Field Crops	Per farm	-	-	-	-	-	-	-	-
	Per hectare	-	-	-	-	-	-	-	-
Vegetables	Per farm	10.33	100.00	20.94	100.00	28.67	100.00	19.02	100.00
	Per hectare	41.32	100.00	38.07	100.00	35.84	100.00	37.29	100.00

of multiple varieties of various types of pesticides was dependent on the supply of the specific pesticides in the locality. In this study therefore, it was not possible to display the pesticides in physical form. The value in Rupees for various pesticides used for a specific crop per unit land area was considered for the analysis. The results of the analysis are depicted in Table 9 and are discussed below.

The figures in the table indicated that for the average farm situation (all farm situation), the total expenditure made on pesticides per farm was found to be Rs. 13421.35 and the per hectare of cropped area utilization was Rs. 2905.05. For field crop production this expenditure per farm was Rs. 1400.66 which was 10.43 per cent of the total expenditure per farm. This for vegetables production, was Rs.12020.69 per farm and Rs. 3928.33 per hectare of cropped area. This expenditure on vegetables production per farm covered 89.57 per cent of total expenditure on pesticides per farm.

farm size groupwise analysis of the expenditure showed that utilization of pesticides per farm under each of the total farm production, field crop production and vegetable production increased with the increase in farm sizes. For the total farm production the pesticides expenditure per farm increased from Rs.6870.40 in marginal farm to Rs.19170.02 in large holding. For field crop production it started from Rs.883.73 in marginal to Rs. 1731.27 in large holding and for vegetables production this increased from Rs. 5986.67 in marginal to Rs. 17438.75 in large farm organization.

The per hectare of cropped area utilization of pesticides related inversely with the farm sizes for field crop and vegetable production. For field crops production, it decreased from Rs. 920.55 in marginal farm to Rs. 874.38 in large holding. This for vegetables production was

Table 9: Annual utilization of pesticides

In Rupees

Particulars		Marginal Farm		Small Farm		Large Farm		All Farms	
		Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
Total	Per farm	6870.40	100.00	13113.62	100.00	19170.02	100.00	13421.35	100.00
	Per hectare	2850.79	-	2743.43	-	2891.40	-	2905.05	-
Field Crops	Per farm	883.73	12.86	1656.38	12.63	1731.27	9.03	1400.66	10.43
	Per hectare	920.55	-	895.34	-	874.38	-	897.86	-
Vegetables	Per farm	5986.67	87.14	11457.24	87.37	17438.75	90.97	12020.69	89.57
	Per hectare	4128.73	-	3910.32	-	3750.27	-	3928.33	-

from Rs. 4128.73 in marginal farm to Rs. 3750.27 in large farm organization.

The above analysis of pesticides utilization in various farm sizes per farm and per hectare of cropped area brought out that per farm use of pesticide for each of the total farm production, field crop production and vegetables production related positively to the farm sizes. On the contrary, per hectare utilization of this resource for field crops and for vegetables production showed inverse relationship to the farm sizes. The use of this resource for field crop was meagre being around 10.00 per cent of the total utilization per farm in comparison to that for the vegetable production being around 90.00 per cent of total use per farm.

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## CHAPTER V

### **COSTS OF PRODUCTION OF VEGETABLES**

Production of vegetables in Assam has been getting momentum with advance of time atleast, to supplement the heavy demand created due to ever increasing population in the state particularly, in the urban areas. As the magnitude of production of the vegetables depends largely on the input costs patterns, the analysis of costs of production has been very important. The information of costs and returns for individual vegetables enterprises is very essential to the vegetables growers for proper adjustment and readjustment of available farm resources as well as for selection of proper production activities of vegetables on commercial scale. An effort has been made in this chapter to work out the average cost per hectare of the production resources associated with vegetables cultivation on commercial line. Further, some of the various types of costs (Cost A, Cost B<sub>1</sub>, Cost B<sub>2</sub>, Cost C<sub>1</sub> and Cost C<sub>2</sub>) along with the gross return, gross marginal and output input ratios were estimated for the selected vegetables. The results of this analysis are discussed vegetables enterprisewise under each of the farm categories in the study area.

#### **Production Costs of Cauliflower**

The resourcewise costs of production of cauliflower per hectare alongwith the proportion of costs were worked out for each of the farm sizes. The results are depicted in Table 10. It is clear from the table that for the average farm of the study area (all farm situation), the total cost per hectare (ha) was estimated to be Rs. 75419.00 for cauliflower and the total operational cost was Rs. 66735.00 which was 88.48

**Table 10 Cost of production and proportion of various costs in cauliflower product**

Particulars of costs	Marginal Farm			Small Farm			Large Farm			All Farms		
	Rs.	% OC	% TC	Rs.	% OC	% TC	Rs.	% OC	% TC	Rs.	% OC	% TC
Seeds	5985.00	9.13	8.07	6029.00	9.05	8.01	6266.00	9.25	8.13	6059.00	9.08	8.03
Fertilizers	2230.00	3.40	3.01	2320.00	3.48	3.08	2380.00	3.51	3.11	2313.00	3.46	3.01
Manure	7435.00	1.34	10.03	7590.00	11.39	10.09	7625.00	11.26	9.96	7560.00	11.33	10.02
Irrigation	17892.00	27.28	24.13	18060.00	27.11	24.00	18166.00	26.83	23.73	18075.00	27.08	23.96
Plant protection	2250.00	3.43	3.03	2315.00	3.47	3.08	2368.00	3.50	3.09	2318.00	3.47	3.07
Transportation	3750.00	5.72	5.06	3820.00	5.73	5.08	3896.00	5.75	5.09	3808.00	5.70	5.05
Marketing	7479.00	11.40	10.09	7506.00	11.27	9.98	7558.00	11.16	9.87	7514.00	11.26	9.96
Machine / animal power	7487.00	11.42	10.10	7490.00	11.24	9.95	7509.00	11.09	9.81	7589.00	11.37	10.06
Casual labour	8945.00	12.64	12.06	9056.00	13.59	12.03	9220.00	13.62	12.04	9085.00	13.61	12.04
Depreciation	522.00	0.80	0.70	809.00	1.21	1.07	1058.00	1.56	1.38	786.00	1.10	1.04
Interest operational capital	1599.00	2.44	2.16	1625.00	2.44	2.16	1651.00	2.44	2.15	1628.00	2.44	2.16
Total operational cost	65574.00	100.00	88.44	66620.00	100.00	88.54	67697.00	100.00	88.42	66735.00	100.00	88.48
Farm family labour	5923.00		7.99	5970.00		7.93	6180.00		8.07	6025.00		7.99
Rental value of land	2497.00		3.37	2502.00		3.32	2529.00		3.30	2508.00		3.32
Interest on fixed capital	148.00		0.20	149.00		0.20	154.00		0.20	151.00		0.20
<b>Total cost</b>	<b>74142.00</b>		<b>100.00</b>	<b>75241.00</b>		<b>100.00</b>	<b>76560.00</b>		<b>100.00</b>	<b>75419.00</b>		<b>100.00</b>
Output-input ratio	2.10			2.04			2.00			2.05		

% OC = % of operational cost.

% TC = % of total cost.

per cent of total cost per ha. The most dominant compartment of resources was irrigation covering 23.96 per cent (Rs. 18075.00) of the total cost of production and it was 27.08 per cent of total operational cost. The most important cost item was casual labour entailing 12.04 per cent (Rs. 9035.00) of the total production cost and 13.61 per cent of total operational cost. This was followed by machine / animal power (10.06 per cent of total cost) and manure (10.02 per cent of total cost). The least important item of cost was interest on fixed capital (0.20 per cent of total cost). The output – input ratio was worked out to be 2.05.

The farm groupwise distribution of the costs of various components showed that the total cost per hectare increased with the increase in farm sizes ranging from Rs. 74142.00 in marginal farm to Rs. 76560.00 in the large farm. The operational cost was also indicated same positive trend with Rs. 65574.00 (88.44 per cent of total cost) in the marginal to Rs. 6797.00 (88.42 per cent) in the large holding. Casual labour was the next important cost component in each farm sizes indicating positive trend with farm sizes and ranging for Rs. 8945.00 (being 12.06 per cent) in marginal farm to Rs. 9220.00 (12.04 per cent of total cost) in the large farm. Among the various cost components the most dominant component was found to be irrigation under each farm sizes showing increasing trend with the farm sizes ranging from Rs. 17892.00 in marginal holdings to Rs. 18166.00 in the large farm. The per cent distribution indicated the opposite trend with farm sizes covering 24.12 per cent of total cost in marginal farm to 23.73 per cent in the large holdings. This was followed by cost of machine / animal power with Rs. 9487.00 (10.10 per cent of total cost) in marginal farm and by that of manure in each of small farm (Rs.7590.00 which was 10.09 per cent of total cost) and large farm (Rs. 7625.00 being 9.96 per cent of the total cost). The next position was

occupied by the cost of marketing in each farm group with positive trend to the farm sizes ranging from Rs. 7479.00 (10.09 per cent of total cost) in marginal farm to Rs. 7558.00 (9.87 per cent) in the large holding. The least cost was added by interest on fixed capital in each farm category with 0.20 per cent of total cost in each. The output-input ratios were marginally decreased with the increase in farm sizes ranging from 2.10 in marginal farm to 2.00 in large farm.

The overall analysis of cost of production per hectare for cauliflower brought out that each of the total cost, total operational cost and the cost under most of the components increased with the increase in farm sizes. On the other hand these costs in percentage indicated decreasing trend with the sizes of farm. The total operational cost was around 88.00 per cent of total cost under farm categories. The dominating cost component was irrigation followed by casual labour in each of the farm groups. The next important components were, manure, machine / animal power and cost of marketing in each farm category. The output- input ratio decreased marginally with the increase in farm sizes and was concentrated around 2.00. This indicated that in the production of cauliflower, farmers generally get a profit of Rs. 1.00 for every rupee of the operational cost.

### **Production Cost of Cabbage**

The cost of production of cabbage was estimated for each of the farm groups. This was done under various resources per hectare. The results are presented in Table 11.

The figure in the table indicated that for the average farm (all farms) situation, the total cost of production was Rs. 75738.00 per hectare and the total operational cost per hectare was Rs. 66413.00 which was 88.03 per cent of total cost. Among the components of

**Table 11 Cost of production and proportion of various farm input costs in cabbage production**

Particulars of costs	Marginal Farm			Small Farm			Large Farm			All Farms		
	Rs.	% OC	% TC	Rs.	% OC	% TC	Rs.	% OC	% TC	Rs.	% OC	% TC
Seeds	6042.00	9.09	7.99	6157.00	9.38	8.24	6196.00	9.15	8.08	6135.00	9.24	8.13
Fertilizers	2469.00	3.71	3.26	2325.00	3.54	3.11	2508.00	3.70	3.27	2436.00	3.67	3.23
Manure	7857.00	11.82	10.39	7132.00	10.86	9.55	7921.00	11.70	10.34	7632.00	11.49	10.12
Irrigation	16972.00	25.54	22.45	16853.00	25.67	22.57	17145.00	25.31	22.37	16888.00	25.58	22.52
Plant protection	2076.00	3.12	2.74	2153.00	3.28	2.88	2192.00	3.24	2.86	2142.00	3.22	2.84
Transportation	3988.00	6.00	5.28	4075.00	6.21	5.46	4133.00	6.10	5.39	4068.00	6.12	5.39
Marketing	7623.00	11.47	10.08	7687.00	11.71	10.29	7716.00	11.39	10.08	7672.00	11.55	10.17
Machine / animal power	7385.00	11.11	9.77	7397.00	11.27	9.90	7421.00	10.96	9.68	7403.00	11.15	9.81
Casual labour	9635.00	14.50	12.75	9745.00	14.84	13.05	9853.00	14.55	12.85	9747.00	14.67	12.92
Depreciation	783.00	1.18	1.03	837.00	1.27	1.12	986.00	1.45	1.29	570.00	0.86	0.75
Interest operational capital	1620.00	2.44	2.14	1287.00	1.96	1.72	1652.00	2.44	2.15	1620.00	2.44	2.15
Total operational cost	66444.00	100.00	87.90	65651.00	100.00	87.91	67723.00	100.00	88.38	66413.00	100.00	80.3
Farm family labour	6352.00		8.40	6287.00		8.42	6215.00		8.11	6282.00		8.3
Rental value of land	2633.00		3.48	2584.00		3.46	2536.00		3.31	2586.00		3.43
Interest on fixed capital	159.00		0.21	157.00		0.21	155.00		0.20	157.00		0.21
<b>Total cost</b>	<b>75588.00</b>		<b>100.00</b>	<b>74679.00</b>		<b>100.00</b>	<b>76629.00</b>		<b>100.00</b>	<b>75738.00</b>		<b>100.00</b>
Output-input ratio	2.53			2.50			2.35			2.46		

% OC = % of operational cost.

% TC = % of total cost.

costs, the most important was irrigation with Rs. 16988.00 per hectare being 22.52 per cent of total cost. This was followed by casual labour cost amounting Rs. 9747.00 (12.92 per cent of total cost) per hectare. The next dominant factor was marketing adding Rs. 7672.00 (10.17 per cent of total cost) to the total cost per hectare. This was followed by cost of manure with Rs. 7632.00 (10.12 per cent) added to the total cost per hectare. The least costly component was found to be the interest on fixed capital being only 0.21 per cent of total cost per hectare.

The farm category wise distribution of costs under various components showed that the total cost per hectare was the highest (Rs. 76629.00) in the large farm and the lowest was Rs. 74679.00 in the small farm. The total operational cost was also the largest (Rs. 67723.00) for the large farm and the lowest (Rs. 6551.00) was for the small farm. Each of these operational costs was more than 87.00 per cent of the total cost per hectare. Among the components of costs, irrigation covered the largest in each farm group ranging from Rs. 16853.00 (22.57 per cent of the total cost per hectare) in small farm to Rs. 17145.00 (22.37 per cent) in large holding. The next dominant factor of production was casual labour in each farm size with positive relationship to farm sizes adding Rs. 9635.00 (12.75 per cent) in marginal farm to Rs. 9853.00 (12.85 per cent of total cost) in large holding. This was followed by the cost of manure in marginal farm with Rs. 7857.00 (10.39 per cent of total cost) and in large farm adding Rs. 7921.00 (10.34 per cent). This position was covered by the cost of marketing in small farm with Rs. 7687.00 (10.29 per cent) per hectare. The least costly item was the interest in each farm group adding only around 0.20 per cent of total cost in each.

The output-input ratio indicated decreasing trend with sizes of farm reducing from 2.53 in marginal to 2.35 in large holding. For average farm it was 2.46. These figures indicated that per rupee investment in the production of cabbage, the total return would be Rs. 2.46 for the average farm Rs. 2.35 for the marginal and 2.53 for large holding.

The above analysis of the cost of production of cabbage per hectare under various cost components for each farm group brought out that the total cost and the total operational cost were not in any trend with the farm sizes. Each of these cost was the highest in large farm and the lowest was in small farm. This was same for the cost components of irrigation, casual labour and of most of the other components. However, the differences in magnitude were very small for each item of costs across the farm groups. The output-input ratios indicated that the income from cabbage production was attractive for the farmers.

### **Production Cost of Tomato**

The input wise production cost per hectare for tomato was worked out for each of the farm group based on the primary data collected from the study area. The results are depicted in Table 12.

It would be clear from the table that for the average farm (all farm groups) the total cost of production was found to be Rs. 68083.00 per hectare and the total operational cost was estimated to be Rs. 53390.00 which was 78.42 per cent of total cost. Among the input, the highest cost was added by transportation being Rs, 11629.00 (17.16 per cent of total cost per hectare). The next important item of cost was enlisted to be farm family labour adding Rs.11479.00 (16.86 per cent of the total cost per hectare) followed by casual labour with

**Table 12 Cost of production and proportion of various farm input costs in tomato production**

Particulars of costs	Marginal Farm			Small Farm			Large Farm			All Farms		
	Rs.	% OC	% TC	Rs.	% OC	% TC	Rs.	% OC	% TC	Rs.	% OC	% TC
	Seeds	2235.00	4.32	3.33	2252.00	4.23	3.32	2257.00	4.1	3.27	2245.00	4.20
Fertilizers	7862.00	15.18	14.71	7794.00	14.66	11.50	7948.00	14.49	11.51	7862.00	14.72	11.55
Manure	7038.00	13.59	10.50	7019.00	13.20	10.35	7126.00	12.99	10.32	7066.00	13.23	10.38
Irrigation	952.00	1.84	1.42	887.00	1.67	1.31	925.00	1.68	1.34	925.00	1.73	1.36
Plant protection	3315.00	6.40	4.94	3426.00	6.44	5.05	3508.00	6.39	5.08	3409.00	6.39	5.01
Transportation	10871.00	21.00	16.22	1582.00	21.79	17.09	12597.00	22.96	18.24	11679.00	21.87	17.15
Marketing	1563.00	3.02	2.33	1675.00	3.15	2.47	1723.00	3.14	2.49	1658.00	3.10	2.43
Machine / animal power	7508.00	14.50	11.20	7473.00	14.06	11.02	7445.00	13.57	10.78	7478.00	14.00	10.98
Casual labour	8645.00	16.70	12.90	8772.00	16.50	12.94	8854.00	16.14	12.82	8752.00	16.39	12.85
Depreciation	519.00	1.00	0.77	580.00	1.09	0.85	715.00	1.30	1.03	611.00	1.14	0.90
Interest	1263.00	2.44	1.88	1698.00	3.19	2.50	1752.00	3.19	2.54	1705.00	3.19	2.50
operational capital												
Total operational cost	51771.00	100.00	77.25	53158.00	100.00	78.43	54850.00	100.00	79.41	53390.00	100.00	78.42
Farm family labour	11957.00		17.84	11420.00		16.85	11072.00		16.03	11479.00		16.86
Rental value of land	2892.00		4.31	2821.00		4.16	2785.00		4.03	2835.00		4.16
Interest on fixed capital	398.00		0.59	377.00		0.55	365.00		0.53	379.00		0.56
<b>Total cost</b>	<b>67018.00</b>		<b>100.00</b>	<b>67776.00</b>		<b>100.00</b>	<b>69072.00</b>		<b>100.00</b>	<b>68083.00</b>		<b>100.00</b>
Output-input ratio	4.06			3.81			3.71			3.87		

% OC = % of operational cost.

% TC = % of total cost.

Rs. 8752.00 (12.88 per cent) per hectare. The next dominant components of costs were fertilizers, machine / animal power and manure. The least important item of cost was interest on the fixed capital being only 0.56 per cent of total cost per hectare. The output-input ratio was 3.87 indicating a gross income of Rs. 3.87 for each Rupee invested.

The distribution of various items of costs under different farm groups for tomato showed that the total cost per hectare increased with the increase in farm sizes ranging from Rs. 67018.00 in marginal to Rs. 69072.00 in large farm. The total operational cost was also related positively with the size of farms adding from Rs. 51771.00 (77.25 per cent in marginal to Rs. 54850.00 (79.41 per cent of the total cost) in large holding. Among the items of costs, the most dominant factor was transportation in each of small farm with Rs. 11582.00 (17.09 per cent of total cost) and in large holding covering Rs. 1259.00 (18.24 per cent). This position was occupied by farm family labour adding Rs. 11957.00 (17.84 per cent of total cost) in the marginal holding. The next important component of cost was found to be farm family labour in small and large found adding Rs. 11420.00 (16.85 per cent of total cost) and Rs. 11072.00 (16.03 per cent), respectively. This rank was possessed by transportation in marginal farm adding Rs. 10871.00 (16.22 per cent) per hectare. This was followed by the cost of casual labour in small farm consuming Rs. 8772.00 (12.94 per cent of total cost) and in large holding with Rs. 8854.00 (12.82 per cent of total cost). This rank was claimed by fertilizers with Rs. 7862.00 (14.71 per cent of total cost) per hectare in marginal holding. The least important component of cost was interest on fixed capital in each farm group covering 0.53 per cent of total cost in large farm 10.59 per cent in marginal farm.

The output-input ratios were found to be decreased with the increase in farm sizes decreasing from 4.06 in marginal to 3.71 in large holding. The average ratio was worked out to be 3.87. These ratios indicated that for each rupee investment in the production of tomato a gross income of more than Rs.3.70 in each farm group. Hence the return from tomato cultivation was encouraging in the study area.

The above analysis of cost of production of tomato enterprise brought out that each of the total cost and operational cost related positively with the sizes of farm. The dominant cost components were transportation, farm family labour, casual labours, fertilizers, machine/animal power and manure in each farm group. The gross income from this enterprise was considerably high for each farm category.

### **Production Cost of Brinjal**

The cost of production for the cultivation of brinjal was estimated from the primary data collected from the sample farmers for each of the farm groups farm inputwise. The results are shown in Table 13.

The table indicated that for the average farm situation (all farms) the total costs of production per hectare was worked out to be Rs. 94801.00 and the operational cost was Rs. 76667.00 which was 80.87 per cent of total cost per hectare. The most important component of cost was found to be casual labour adding Rs. 17412.00 (18.37 per cent of total cost). This was followed by cost of transportation with Rs. 14241.00 (15.02 per cent of total cost) and by farm family labours adding Rs. 13657.00 (14.41 per cent of the total cost) to the total cost per hectare. The next dominating item of cost was manure followed by marketing cost and plant protection. The least important cost component was the interest of fixed resources covering only 0.72 per cent of total cost of production of the vegetables.

Table 13 Cost of production and proportion of various farm input costs for brinjal production

Particulars of costs	Marginal Farm			Small Farm			Large Farm			All Farms		
	Rs.	% OC	% TC	Rs.	% OC	% TC	Rs.	% OC	% TC	Rs.	% OC	% TC
	Seeds	2248.00	3.02	2.34	2273.00	3.10	2.44	2291.00	2.89	2.33	2268.00	2.96
Fertilizers	4496.00	6.05	4.74	4325.00	5.90	4.64	4578.00	5.77	4.65	4468.00	5.83	4.71
Manure	7562.0	10.18	7.97	7682.00	10.48	8.25	7754.00	9.77	7.88	7659.00	9.99	8.08
Irrigation	3754.00	5.05	3.95	3788.00	5.17	4.07	3806.00	4.80	3.87	3785.00	4.94	3.99
Plant protection	7613.00	10.25	8.02	7573.00	10.33	8.13	7732.00	9.75	7.86	7635.00	9.96	8.05
Transportation	13257.00	17.85	13.97	14179.00	19.35	15.22	15301.00	19.29	15.55	14241.00	18.57	15.02
Marketing	7534.00	10.14	7.94	7687.00	10.49	8.25	7703.00	9.71	7.83	7645.00	9.97	8.06
Machine / animal power	7127.00	9.59	7.51	7043.00	9.61	7.56	7274.00	9.17	7.39	7148.00	9.32	7.54
Casual labour	16523.00	22.24	17.41	17492.00	23.87	18.78	18235.00	22.99	18.54	17412.00	22.71	18.37
Depreciation	625.00	0.84	0.66	752.00	1.02	0.81	874.00	1.10	0.89	755.00	0.94	0.79
Interest operational capital	3537.00	4.76	3.37	3489.00	4.76	3.74	3777.00	4.76	3.84	3651.00	4.76	3.85
Total operational cost	74276.00	100.00	78.28	73283.00	100.00	78.68	79325.00	100.00	80.64	76667.00	100.00	80.87
Farm family labour	14275.00		15.04	13582.00		14.58	13106.00		13.32	13657.00		14.41
Rental value of land	5619.00		5.92	5592.00		6.00	5278.00		5.37	3794.00		4.00
Interest on fixed capital	713.00		0.75	679.00		0.73	655.00		0.67	683.00		0.72
<b>Total cost</b>	<b>94883.00</b>		<b>100.00</b>	<b>93136.00</b>		<b>100.00</b>	<b>98364.00</b>		<b>100.00</b>	<b>94801.00</b>		<b>100.00</b>
Output-input ratio	3.57			3.59			3.29			3.43		

% OC = % of operational cost.

% TC = % of total cost.

The distribution of the production costs, resourcewise, under various farm groups indicated that total cost per hectare was the highest (Rs.98364.00) for the large holding and the lowest (Rs.93136.00) was for the small farm. The operational cost was also the largest (Rs.79325.00) being 80.64 per cent of total cost for the large holding and it was the smallest (Rs.73283.00) with 78.68 per cent of total cost for the small farm in production of brinjal. Among the components of cost, casual labour covered the maximum cost in each farm category in increasing trend to the farm sizes ranging from Rs. 16523.00 (17.14 per cent of total cost) in marginal farm to Rs. 18235.00 (18.54 per cent) in large holding. The next dominant component was transportation in small farm with Rs. 14179.00 (15.22 per cent of total cost) and in large holding with Rs. 15301.00 (15.55 per cent). This position was occupied by farm family labour in marginal farm adding Rs. 14275.00 (15.04 per cent of total cost) to the total cost. This was followed by farm family labour in small farm covering Rs.13106.00 (13.32 per cent). This rank was held by transportation in marginal farm adding Rs. 13257.00 (13.97 per cent) to the total cost. The least dominant component was interest on the fixed capital covering only around 0.70 per cent of total cost in each farm category.

The output-input ratio was the highest (3.59) in small holding and the lowest (3.29) was in large holding. These indicated that gross return for this enterprise (brinjal) was more than Rs.3.00 for each rupee of investment as operational capital. As such it was considerably high.

This analysis of production cost per hectare for brinjal brought out that no trend was found in distribution of total cost and total operational cost per hectare in respect to the size of farms. Among the components of costs the highest important was casual labour followed

by transportation and farm family labour in each farm category. The farm gross income was considerably high in each farm size.

### **Production Cost of Lady's Finger**

The resource wise costs per hectare associated with the production of lady's finger were estimated from the primary data collected from the sample farmers for various farm categories in the study area. The results are presented in Table 14.

The figures in the table made it clear that for the average farm situation (all farms situation) the total cost of production was found to be Rs.82366.00 and the total operational cost was Rs. 58818.00 which was 71.18 per cent of total cost per hectare. Among the component of costs, farm family labour was the most dominant adding Rs. 20564.00 (27.88 per cent of total cost) per hectare. This was followed by transportation cost covering Rs. 12507.00 (15.13 per cent of total cost) per hectare. The next important component was casual labour with Rs. 9665.00 (11.69 per cent of total cost). This was followed by the cost of seeds and manure. The least important cost was associated with the interest on fixed capital covering only 0.62 per cent of total cost per hectare.

The farm category wise distribution of costs under various cost components showed that each of the total cost and operational cost per hectare increased with the increase in farm sizes. Total cost increased from Rs.81016.00 in marginal farm to Rs. 84494.00 per hectare in large farm. The total operational cost was from Rs. 56236.00 (69.41 per cent of total cost) in marginal to Rs. 61328.00 (72.58 per cent) in large holding. Among the cost components the share added by farm family labour was the largest in each farm category decreasing from Rs. 21531.00 (26.57 per cent of total cost) in marginal holding to

**Table 14 Cost of production and proportion of various farm input costs for lady's finger production**

Particulars of costs	Marginal Farm			Small Farm			Large Farm			All Farms		
	Rs.	% OC	% TC	Rs.	% OC	% TC	Rs.	% OC	% TC	Rs.	% OC	% TC
Seeds	7813.00	13.89	9.64	7885.00	13.39	9.57	7928.00	12.93	9.38	7872.00	13.38	9.52
Fertilizers	2250.00	4.00	2.78	2379.00	4.04	2.89	2453.00	4.00	2.90	2362.00	4.01	2.86
Manure	7349.00	13.07	9.07	7765.00	13.19	9.42	7871.00	12.83	9.31	7664.00	13.03	9.27
Irrigation	3471.00	6.17	4.28	3607.00	6.12	4.19	3732.00	6.08	4.42	3608.00	6.13	4.36
Plant protection	3750.00	6.67	4.63	3534.00	6.00	4.11	3831.00	6.25	4.53	3702.00	6.29	4.48
Transportation	1892.00	21.14	14.68	12674.00	21.52	14.74	12948.00	21.11	15.32	12507.00	21.26	15.13
Marketing	3753.00	6.67	4.63	3845.00	6.53	4.47	3873.00	6.31	4.58	3825.00	6.50	4.63
Machine / animal power	5478.00	9.74	6.76	5573.00	9.46	6.48	5592.00	9.12	6.62	5544.00	9.42	6.71
Casual labour	8672.00	15.42	10.70	9537.00	16.20	11.09	10784.00	17.58	12.76	965.00	16.43	11.69
Depreciation	437.00	0.78	0.54	645.00	1.09	0.75	820.00	1.34	0.97	635.00	1.08	0.77
Interest operational capital	1371.00	2.44	1.69	1436.00	2.44	1.67	1496.00	2.44	1.77	1434.00	2.44	1.73
Total operational cost	56236.00	100.00	69.41	58880.00	100.00	68.46	61328.00	100.00	72.58	58818.00	100.00	71.18
Farm family labour	21531.00		26.57	20276.00		23.58	19877.00		23.52	20564.00		27.88
Rental value of land	2679.00		3.31	2734.00		3.18	2793.00		3.30	2737.00		3.31
Interest on fixed capital	570.00		0.70	506.00		0.59	496.00		0.59	514.00		0.62
<b>Total cost</b>	<b>81016.00</b>		<b>100.00</b>	<b>82396.00</b>		<b>100.00</b>	<b>84494.00</b>		<b>100.00</b>	<b>82633.00</b>		<b>100.00</b>
Output-input ratio	2.94			2.79			2.63			2.78		

% OC = % of operational cost.

% TC = % of total cost.

Rs. 19877.00 (23.25 per cent) in large holding showing decreasing relationship with the sizes of farms. The important cost component was transportation in each farm size indicating positive trend with farm size and ranging from Rs. 11892.00 (14.68 per cent of the total cost) in marginal farm to Rs. 12948.00 (15.32 per cent) in large holding. This was followed by casual labour in each farm showing increasing trend with farm sizes ranging from Rs. 8672.00 (10.70 per cent of total cost) in marginal holding to Rs.10784.00 (12.76 per cent) in the large holding. The least important factor was interest on fixed capital in each farm covering around 0.60 per cent of total cost per hectare.

The output-input ratio was worked out and found to be decreased with the increase in farm sizes with 2.94 the marginal farm to 2.63 in large holding. For the average farm situation it was 2.78. These ratios indicated that in production of lady's finger, the gross income per rupee of investment was more than Rs. 2.60 which was higher enough for the producers.

The above discussion regarding the cost of production of lady's finger per hectare brought out that each of the total cost and total operational cost per hectare increased with the increase in farm size indicating decreasing trend with farm sizes. This was followed by transportation, casual labour, seeds and manure in each farm category showing positive trend with farm sizes each. The farm gross income per rupee invested was considerably high in each farm and it decreased with the increase in farm sizes.

### **Production Cost for Potato**

Various inputwise costs of production for potato were worked from the primary data collected from the sample farms for different size groups of farm. The results are depicted in Table 15.

**Table 15 Cost of production and proportion of various farm input costs for potato production**

Particulars of costs	Marginal Farm			Small Farm			Large Farm			All Farms		
	Rs.	% OC	% TC	Rs.	% OC	% TC	Rs.	% OC	% TC	Rs.	% OC	% TC
Seeds	17587.00	35.04	29.63	17735.00	35.48	30.02	17982.00	35.17	29.90	17768.00	35.23	29.85
Fertilizers	5890.00	11.73	9.92	5387.00	10.78	9.12	5954.00	11.65	9.90	5741.00	11.38	9.64
Manure	7526.00	14.99	12.68	7573.00	15.15	12.82	7485.00	14.64	12.45	7526.00	14.92	12.64
Irrigation	-	-	-	-	-	-	-	-	-	-	-	-
Plant protection	3517.00	7.01	5.92	3445.00	6.39	5.83	3568.00	6.98	5.93	3512.00	6.96	5.90
Transportation	2923.00	5.82	4.92	2996.00	5.99	5.07	2972.00	5.81	4.94	2965.00	5.88	4.98
Marketing	2134.00	4.25	3.59	2256.00	4.51	3.82	2279.00	4.46	3.79	2225.00	4.41	3.74
Machine / animal power	5394.00	10.74	9.09	5108.00	10.22	8.65	5274.00	10.32	8.77	5257.00	10.42	8.83
Casual labour	3605.00	7.18	6.07	3746.00	7.49	6.34	3793.00	7.42	6.31	3717.00	7.37	6.24
Depreciation	395.00	0.79	0.6	518.00	1.03	0.88	567.00	1.11	0.94	495.00	0.98	0.83
Interest operational capital	1224.00	2.44	2.06	129.00	2.44	2.06	1247.00	2.44	2.06	1230.00	2.44	2.06
Total operational cost	50195.00	100.00	84.56	49983.00	100.00	84.62	51121.00	100.00	11.61	50436.00	100.00	84.73
Farm family labour	7108.00		11.97	7015.00		11.87	6983.00		11.61	7034.00		11.82
Rental value of land	1875.00		3.16	1895.00		3.21	1859.00		3.09	1875.00		3.15
Interest on fixed capital	178.00		0.30	175.00		0.29	174.00		0.29	176.00		0.30
<b>Total cost</b>	<b>59356.00</b>		<b>100.00</b>	<b>59068.00</b>		<b>100.00</b>	<b>60137.00</b>		<b>100.00</b>	<b>59521.00</b>		<b>100.00</b>
Output-input ratio	2.94			2.79			2.63			2.78		

% OC = % of operational cost.

% TC = % of total cost.

It is clear from the table that for the average farm organization (all farm situation), the total cost of production per hectare was found to be Rs.59521.00 and the total operational cost was Rs. 50436.00 (84.73 per cent of the total cost). Among the components the highest cost was added by seeds with Rs. 17768.00 (29.85 per cent of total cost). This was followed by manure amounting Rs. 7526.00 (12.64 per cent of total cost) and by farm family labour covering Rs. 7034.00 (11.82 per cent of the total cost) per hectare. The next important item of cost was fertilizers adding Rs.5741.00 (9.64 per cent of total cost) per hectare.

The farm categorywise distribution of various cost components indicated that the most important component was seeds in each of the farm sizes showing positive relationship with the sizes of farms and ranging from Rs.1758.00 (29.63 per cent of total cost) in marginal holding to Rs. 17982.00 (29.90 per cent in large farm. The next dominant item of costs was manure in each farm group covering cost ranging from Rs. 7485.00 (12.45 per cent of the total cost) in marginal farm to Rs. 7573.00 (12.82 per cent) in small farm. This was followed by farm family labour in each farm category showing inverse relationship with the size of farm decreasing from Rs. 7108.00 (11.97 per cent of total cost) in marginal farm to Rs. 6983.00 (11.61 per cent) per hectare in large holding. The next item of cost was fertilizers in each of the farm sizes. The least important factor was found to be the interest on fixed farm capital in each farm category adding around 0.30 per cent of the total cost per hectare.

The analysis of output-input ratio indicated that the ratios related inversely to the sizes of farms decreasing from 1.57 in marginal farm to 1.48 in the large holding. It was 1.52 for the average farm organization. These indicated that for investment of each rupee, the

gross farm income was slightly higher than Rs. 1.50 in each farm category showing that the potato enterprise was not attractive for the farmers of the study area.

The above analysis of cost of production of potato per hectare for various farm groups brought out that total cost and operational cost were not in any trend with the sizes of farms. The most important cost component was seeds followed by manure, farm family labour and fertilizers. The output-input ratios were very low indicating that production of potato was not attractive in the study area.

The overall results and discussion on the costs of production of the selected vegetable under various farm groups in the study area brought out that based on the total costs of production, the highest costly enterprise was brinjal followed by lady's finger, cabbage, cauliflower and tomato. Potato needed the least cost. According to profitability, the most income-bright vegetable crop was tomato followed by brinjal, lady's finger, cabbage and cauliflower. Production of potato was not economically viable in the study area. Among various cost components, in order of dominancy, were irrigation (where needed), human labour, transportation, manures and fertilizers for each of the selected vegetables crops in each of the farm categories in the study area.

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## CHAPTER- VI

### MARKETING CHANNEL AND MARKETING COST

The incentives of the producers of the vegetables have been directly related and been greatly influenced by the marketing infrastructure of the region along with the marketing structure and system prevailed in the area. Existence of various types of marketing channels desirable or undesirable to the vegetables producers has been the resultant of the marketing system of the region. Hence examination of the marketing channels and marketing surplus along with the marketing costs of the selected vegetables in the district is another important objective of this investigation. The results are discussed below.

#### Marketing Channels

The information in connection with the prices and amount of vegetables products supplied and received by various market agencies in the study area were collected from different primary and secondary sources in order to examine the vegetables marketing channels. These data were used to develop the various marketing channels of the selected vegetables in the study area. Analysis of these information brought out that a minor deviation of the distribution of marketed surplus existed over the farm groups. In this study various marketing channels of vegetables were considered an indifferent in respect of the categories of farms of the study area. However, an almost marginal disparities was observed in distribution of various quantities which were the average amount of each vegetable under various farm categories for each of the selected vegetables getting through different

marketing channels was found to be estimated for the marketed surplus of each selected vegetables. These variations in the marketed surplus estimated for the all farm situation which was the average farm over the whole of the study area irrespective of the farm sizes channelizing through different marketing channels were taken as the representative magnitude of marketed surplus of vegetables considered for the investigation. As a result of the examination of different marketing channels prevailed in the district, five channels were found to be important. These channels are given below.

I. Producer – wholesaler – retailer – consumer.

It dealt with 26.37 per cent of the marketed surplus.

II. Producer – bepari – wholesaler – retailer – consumer.

It handed 34.52 per cent of total marketed surplus of the selected vegetable per farm of the study area.

III. Producer bepari-middleman-wholesaler-retailer-consumer.

It associated with dealing 5.23 per cent of total marketed surplus.

IV. Producer-retailer-consumer.

It involved with 20.61 per cent of total marketed surplus.

V. Producer-consumer.

It covered 13.27 per cent of total marketed surplus of the selected vegetables of the investigation.

Considering the magnitude of marketed surplus of vegetables handled in the above marketing channels, all of the five channels were found to be important carrying 5.23 to 34.52 per cent of total marketed surplus per farm in the area. The figures in the channels above made it clear that Channel-II (Producer-bepari-wholesaler-retailer-consumer) was the most dominating as it covered the largest volume (34.52 per cent of total marketed surplus) of the selected vegetables in the study

area. The next important marketing way was the Channel-I (Producer-wholesaler-retailer-consumer) dealing with 26.37 per cent of total marketed surplus of the vegetables followed by Channel-IV entailing 20.61 per cent of total marketed surplus of vegetables in the area. The least dominant marketing way was Channel-III associating with 5.23 per cent of total marketed surplus of vegetables per farm in the study region.

### **Vegetables Activitywise Total Marketed Surplus**

The information on farm sizewise distribution of the volume of marketed surplus of different vegetables has been important part of any study on the marketing of the commodities. For this an attempt has been made to analyse the average distribution pattern of the marketed surplus of each of the vegetables enterprises through various farm sizes. The results are presented in Table 16 and are discussed below.

It is clear from the table that for the average farm (all farm situations) of the study area as a whole, the total marketable surplus was 725.63 quintals per farm. The largest magnitude of the surplus was generated by lady's finger contributing 25.92 per cent (188.12 quintal per farm) to the total. This was followed by tomato covering 22.81 per cent (165.53 quintal per farm) and by cabbage with 20.29 per cent (147.27 quintal of the total marketed surplus per farm. The least important vegetable enterprise was found to be potato adding 3.61 per cent (26.17 quintal per farm). The farm group wise distribution of marketed surplus indicated that lady's finger was the most dominant vegetables enterprise in each marginal farm contributing 26.29 per cent (78.53 quintal per farm) and in large farm adding 30.40 per cent (351.05 quintal per farm) of total marketed surplus. This position was occupied by tomato in small farm covering 24.31 per cent

**Table 16 Vegetables activitywise total marketed surplus**

Vegetables Enterprises	Marginal Farm		Small Farm		Large Farm		All farm	
	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
Cauliflower	39.00	13.05	45.42	6.14	90.23	7.81	61.69	8.50
Cabbage	67.25	22.51	168.19	22.73	191.34	16.57	147.27	20.29
Tomato	47.26	15.82	179.86	24.31	279.59	24.21	165.53	22.81
Brinjal	47.71	15.97	168.25	22.74	209.13	18.11	136.85	18.86
Potato	18.98	6.35	26.23	3.54	33.37	2.89	26.17	3.61
Lady's finger	78.53	26.29	151.88	20.53	351.05	30.40	188.12	25.92
<b>Total</b>	<b>298.73</b>	<b>100.00</b>	<b>739.83</b>	<b>100.00</b>	<b>1154.71</b>	<b>100.00</b>	<b>725.63</b>	<b>100.00</b>

(179.86 quintal per farm) of total marketed surplus of vegetables. The next important vegetable was cabbage in the marginal farms with 22.51 per cent (67.25 quintal) and was brinjal in small farm covering 22.74 per cent (168.19 quintal of marketed surplus per farm) of total marketed surplus of vegetables. This rank was possessed by tomato in large in large holding covering 24.21 per cent (279.59 quintal per farm) of total marketed surplus. Potato was found to be the least important vegetables activity in each of the holding categories contributing marketed surplus decreasing from 6.35 (18.98 quintal) to 2.89 per cent (33.37 quintal per farm) of the total marketed surplus of the vegetables per farm. The magnitude of the quantity of marketable surplus of each vegetables activity per farm increased with the increase in farm sizes.

The above discussion of the farm sizewise distribution of the marketed surplus for each of the selected vegetables brought out that total amount of marketed surplus per farm and this under each of the vegetables enterprises increased with the increase in farm sizes. Lady's finger was the most dominant contributor to the total marketed surplus in each of the marginal and large farm. This place was claimed by tomato in small farm. The next important vegetable was cabbage in marginal, brinjal in small and tomato in large farm. For the average farm lady's finger was the most important vegetables followed by tomato and cabbage in contributing to the total volume of marketed surplus of vegetables in the area.

### **Marketing Channelwise Total Marketed Surplus**

The analysis of the distribution of marketed surplus of total vegetables was furnished for the average farm (all farm situations) and also for each of the farm categories of the study area. The results are depicted in Table 17 and are discussed below.

**Table 17 Marketing channelwise total marketed surplus**

((In Quintal/Farm))

Marketing Channels	Marginal farm		Small farm		Large Farm		All farm	
	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
I. Producer- wholesaler- retailer-consumer	82.77	27.71	189.12	25.56	302.50	26.20	191.35	26.37
II. Producer-bepari- wholesaler-retailer-consumer	103.12	34.52	245.39	33.17	400.60	34.69	250.49	34.52
III. Producer-bepari- middleman- wholesaler- retailer-consumer	13.63	4.56	40.65	5.49	57.39	4.97	37.95	5.23
IV. Producer-retailer- consumer	58.57	19.60	155.46	21.01	239.99	20.78	149.55	20.61
V. Producer-consumer	40.64	13.60	109.18	14.76	154.23	13.36	96.29	13.27
<b>Total</b>	<b>298.73</b>	<b>100.00</b>	<b>739.83</b>	<b>100.00</b>	<b>1154.71</b>	<b>100.00</b>	<b>725.63</b>	<b>100.00</b>

The figures in the table showed that for the farm situation, the total marketed surplus of all the selected vegetables as a whole was calculated to be 725.63 quintal channelized per farm through various marketing channels. The most important marketing channel was the producer-bepari-wholesaler-retailer-consumer (Marketing Channel-II) dealing with the marketing of 34.52 per cent (250.49 quintal per farm) of the total marketed surplus of vegetables per farm. This was followed by Marketing Channel-I (Producer-wholesaler-retailer-consumer) handling 26.37 per cent (191.35 quintal per farm) and by Marketing Channel-IV (producer-retailer-consumer) covering 20.61 per cent (149.55 quintal per farm) of marketed surplus of vegetables per farm. The least important channel was Marketing Channel-III (producer-bepari-middleman-wholesaler-retailer-consumer) disposing 5.23 per cent (37.95 quintal per farm) of total marketed surplus of all the vegetables per farm.

The holding categorywise distribution of the marketed surplus of the vegetables carrying by different marketing channels indicated that the total marketed surplus increased with the increase in farm size ranging for 298.73 quintals in marginal farm to 1154.71 quintal in large holding. The total marketed surplus under each of the marketing channels showed positive relationship with farm sizes. The largest magnitude of marketed surplus per farm was handled by the Marketing Channel-II covering 103.12 quintal (34.52 per cent) in marginal farm to 34.69 per cent 400.60 quintal per farm (34.69 per cent) in the large holding. This was followed by Marketing Channel-I in each farm group dealing with marketed surplus of vegetables ranging for 82.77 quintals in marginal to 302.00 quintal in the large holding. Marketing Channel-IV occupied the next position in each farm category covering 58.57 quintal in marginal farm to 239.99 quintal of marketed surplus of

vegetables in the large farm. The least important channel was the Marketing Channel-III in each farm group with 13.63 quintal in marginal to 57.39 quintal of marketed surplus of vegetables in large holding.

The overall analysis of distribution of marketed surplus of vegetables under various marketing channel for each of the farm sizes brought out that the total magnitude of marketed surplus under each marketing channel related directly to the sizes of farm. Marketing Channel-II (producer-behari-wholesaler-retailer-consumer) handled the largest volume of marketed surplus in each farm size. This was followed by Marketing Channel-I (producer-wholesaler-retailer-consumer) and Marketing Channel-IV (producer-retailer-consumer).

### **Marketing Channel and Vegetableswise Distribution of Marketed Surplus**

Analysis of the marketed surplus of each of the selected vegetables channelized through various marketing channels was done for each of the farm categories and also for the all farm situation. The results are discussed below under each farm size separately.

#### **Marginal farm**

The results of the marketing channelwise magnitude of marketed surplus for marginal holding under each of the vegetables enterprises are presented in Table 18 and are discussed below.

It is clear from the figures in the table that the largest amount of total marketed surplus was worked out for lady's finger generating 78.53 quintal per farm of the marginal group. This was followed by cabbage with 67.25 quintal and by brinjal producing 47.71 quintal of

**Table 18 Marketing channelwise distribution of marketed surplus of vegetables for marginal farm**

Marketing Channel	(In quintal/farm)											
	Cauliflower		Cabbage		Tomato		Brinjal		Potato		Lady's Finger	
	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
I. Producer-wholesaler-retailer-consumer	11.88	30.46	18.13	26.96	14.46	30.60	11.58	24.27	5.01	26.40	21.71	27.64
II. Producer-bepari-wholesaler-retailer-consumer	1.46	29.38	25.21	37.49	14.31	30.28	18.47	38.71	5.55	29.24	28.11	35.79
III. Producer-bepari-middleman- wholesaler-retailer-consumer	2.05	5.26	3.12	7.64	1.48	3.13	1.99	4.17	1.89	9.96	3.10	3.95
IV. Producer-retailer-consumer	8.44	20.79	11.86	17.63	9.74	20.31	7.34	15.38	4.81	25.34	16.19	20.61
V. Producer-consumer	5.17	13.26	8.93	13.28	7.27	15.38	8.33	17.46	1.52	8.01	9.42	11.99
<b>Total</b>	<b>39.00</b>	<b>100.00</b>	<b>67.25</b>	<b>100.00</b>	<b>47.26</b>	<b>100.00</b>	<b>47.71</b>	<b>100.00</b>	<b>18.98</b>	<b>100.00</b>	<b>78.53</b>	<b>100.00</b>

marketed surplus handling through various marketing channels. The least important vegetables enterprise was found to be potato adding a total marketed surplus of 18.99 quintal per farm in the marginal holding.

The marketing channelwise analyzing of the total supply of the marketed surplus under each of the vegetables indicated that the largest amount of each of the vegetables was channelized through the Marketing Channel-II with amount ranging from 5.55 quintal (29.24 per cent of the total marketed surplus under potato) of potato to 28.11 quintal (35.79 per cent) of lady's finger per farm of the marginal holding. The next important channel was Marketing Channel-I for each of the vegetables. The highest volume of marketed surplus in this channel was contributed by lady's finger with 21.71 quintal (27.64 per cent of the total) per farm and the lowest amount was added by potato with 5.01 quintal (26.40 per cent of total marketed surplus of potato) per farm. The least amount of marketed surplus under each of the vegetables enterprise was marketed through the Marketing Channel-III with the magnitude of marketed surplus ranging from 1.48 quintal (3.13 per cent of total) for tomato to 3.12 quintal (7.64 per cent of total market surplus under cabbage) of cabbage per farm in the marginal holding.

The above analysis of the marketed surplus generated by each of the vegetable activities in the marginal farm dealing with various marketing channels brought out that the highest magnitude of total marketed surplus in marginal farm was derived from lady's finger and the lowest was farm tomato. Marketing Channel-II was found to be dominating channel of marketing for each vegetables activity dealing with the highest marketed surplus added by lady's finger and the

lowest contributed by potato. The next important way of marketing vegetables was Marketing Channel – I for each vegetable (except tomato) handling the largest amount of marketed surplus under the channel added by lady's finger and the lowest contributed by potato. Marketing Channel – III was the least dominant channel for each vegetable per farm under the marginal holding.

### **Small farm**

The results of the marketed surplus generated by different vegetables handled under each of the marketing channels for the small farm category are depicted in Table 19. These are discussed below.

The results given in the table showed that the total marketed surplus created by each of the vegetables was the largest for lady's finger contributing 151.88 quintals per farm and the lowest was from potato with 26.23 quintal per farm of small holding.

The highest magnitude of marketed surplus produced by each of the vegetables was transported from the producer to the consumer through the Marketing Channel – II dealing with the marketed surplus ranging from 9.05 quintal (34.50 per cent of total marketed surplus of potato) of potato to 62.09 quintal (34.52 per cent of the total) of tomato per farm in the small holding. The next largest amount of marketed surplus generated by each vegetable enterprise flew through the Marketing Channel – I comprising total volume ranging from 7.939 quintal (30.23 per cent of total marketed surplus of potato) of potato to 46.43 quintal (25.81 per cent) of tomato per farm. The third largest amount of marketed surplus generated by each vegetable was carried through the Marketing Channel – IV. The highest quantity of the total surplus was supplied by brinjal with 35.37 quintal (21.20 per cent of total brinjal) followed by cabbage adding 35.66 quintal (21.20 per cent

Table 19 Marketing channelwise distribution of marketed surplus of vegetables for small farm

Marketing Channel	(In Quintal/Farm)											
	Cauliflower		Cabbage		Tomato		Brinjal		Potato		Lady's Finger	
	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
I. Producer-wholesaler-retailer-consumer	12.98	28.58	45.36	26.97	46.43	25.81	44.37	26.37	7.93	30.23	32.05	21.10
II. Producer-bepari-wholesaler-retailer-consumer	16.68	36.72	57.06	3.93	62.09	34.52	56.08	3.3	9.05	34.50	44.43	29.25
III. Producer-bepari-middleman-wholesaler-retailer-consumer	1.37	3.01	9.79	5.82	9.40	5.23	7.80	4.63	2.37	9.03	9.95	6.55
IV. Producer-retailer-consumer	9.36	20.61	56.66	21.20	37.07	20.61	35.67	21.20	4.40	16.77	33.30	21.92
V. Producer-consumer	5.03	11.07	20.32	12.08	24.87	13.83	24.33	14.46	2.48	9.45	32.15	21.17
<b>Total</b>	<b>45.42</b>	<b>100.00</b>	<b>168.19</b>	<b>100.00</b>	<b>179.86</b>	<b>100.00</b>	<b>168.25</b>	<b>100.00</b>	<b>26.63</b>	<b>100.00</b>	<b>151.88</b>	<b>100.00</b>

of total cabbage). The least amount was added by potato with 4.40 quintal (16.77 per cent of total potato). The smallest magnitude of marketed surplus from each of the vegetable was marketed through Channel-III. The amount in this channel was contributed by all the vegetables with the amount ranging from 1.37 quintal of cauliflower to 9.95 quintal of lady's finger.

The results of the vegetablewise marketed surplus in the small category of farm brought out that tomato was the most dominant vegetables generating the largest amount of marketed surplus handled through each of the Marketing Channel-I, II and III. This position was possessed by lady's finger in the remaining marketing channels. The next important vegetable was cabbage in Marketing Channels-I and II, brinjal in Channel-IV and lady's finger in Channel-V. The largest total amount of marketed surplus for all the marketing channels was produced by tomato followed by brinjal and cabbage in the small farm.

### **Large farm**

The magnitude of total marketed surplus generated by each of the vegetables and placed under various marketing channels in connection with the large farm are presented in Table 20. These are discussed below.

It is clear from the table that among the various vegetables enterprises, the highest volume of total marketed surplus handled under all the marketing channels was contributed by lady's finger with 350.85 quintal per farm of the large holdings. This was followed by tomato supplying 279.59 quintal of marketed surplus through different channels and by brinjal adding 209.13 quintal of marketed surplus. The least amount of marketed surplus was covered by potato with 33.37 quintal to the total marketed surplus per farm of large holding.

Table 20 Marketing channelwise distribution of marketed surplus of vegetables for large farm

Marketing Channel	(In Quintal/Farm)											
	Cauliflower		Cabbage		Tomato		Brinjal		Potato		Lady's Finger	
	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
I. Producer-wholesaler-retailer-consumer	24.79	27.47	49.46	25.85	73.73	26.37	54.15	25.89	8.80	26.31	91.57	26.10
II. Producer-bepari-wholesaler-retailer-consumer	29.15	32.31	68.06	35.56	94.51	33.80	74.19	35.47	10.52	31.52	123.92	35.32
III. Producer-bepari-middleman- wholesaler-retailer-consumer	4.72	5.23	10.01	5.23	15.62	5.59	9.94	4.75	2.74	8.21	14.36	4.09
IV. Producer-retailer-consumer	19.59	21.71	38.43	20.08	57.63	20.61	42.10	20.13	7.88	23.61	74.36	21.19
V. Producer-consumer	11.98	13.28	25.39	13.27	38.10	13.63	28.75	13.75	3.43	10.28	46.64	13.29
<b>Total</b>	<b>90.23</b>	<b>100.00</b>	<b>191.34</b>	<b>100.00</b>	<b>279.59</b>	<b>100.00</b>	<b>209.13</b>	<b>100.00</b>	<b>33.37</b>	<b>100.00</b>	<b>350.85</b>	<b>100.00</b>

The distribution of total amount of each of the vegetables under various marketing channels indicated that in the most important marketing channel (Marketing Channel-II), the largest volume of marketed surplus was contributed by lady's finger with 123.92 quintal (35.32 per cent of total marketed surplus farm lady's finger). This was followed by the amount supplied by tomato with 94.51 quintal (33.80 per cent of total of birnjal) and by brinjal contributing 74.19 quintal (35.47 per cent). The least important vegetable was potato adding 10.52 quintal (31.52 per cent of total under potato) to the marketed surplus following through the Marketing Channel-II. In the next important channel of marketing (Marketing Channel-I), the most dominant producer of marketed surplus was to be lady's finger contributing 91.57 quintal (26.10 per cent of total marketed surplus from lady's finger) per farm to the total surplus. The next important vegetables was tomato adding 73.73 quintal (26.37 per cent of total of tomato) to the total marketed surplus under the channel. This was followed by cabbage with 49.73 quintals (25.85 per cent of total) per farm to the marketed surplus under the channel. The least important vegetables enterprise was potato producing 8.80 quintal of marketed surplus under the channel. In the subsequent important marketing channel (Marketing Channel-IV) also lady's finger contributed the largest amount of 74.36 quintal (21.19 per cent of total lady's finger) followed by tomato adding 57.63 quintal (20.61 per cent) and by brinjal producing 42.10 quintal (20.13 per cent) to the total marketed surplus of vegetables in the channel per farm. The next important vegetables were cabbage followed by cauliflower and potato in the channel. The least amount of marketed surplus was added by potato to the total marketed surplus of all he vegetables under each marketing channels per farm of the study area.

The above discussion on the magnitude of marketed surplus of each of the vegetables under various marketing channels for the large vegetables growers indicated that the total marketed surplus produced by lady's finger per farm was the largest followed by potato, brinjal, cabbage and cauliflower. The lowest amount of this was generated by potato. The share of marketed surplus added by various vegetables to the total marketed surplus handed in each of the marketing channels showed that lady's finger contributed the largest quantity of surplus in each of the channels per farm followed by tomato, brinjal and cabbage and cauliflower. Potato was the least important in contribution to the total marketed surplus of vegetables per farm of the large holding under each of the marketing channels of the study area.

#### **All farms situation**

The analysis of the shares of the marketed surplus generated from each of the vegetables distributed over various marketing channel was carried out for the average farm of the study area as a whole. The results are presented in Table 21 and are discussed below.

The figures in the table indicated that the total quantity of marketed surplus derived from each of the vegetables was the largest for lady's finger producing 188.12 quintal per farm. This was followed by tomato contributing 165.53 quintal to the total marketed surplus handled under different marketing channels and by cabbage adding 147.27 quintals to the total marketed surplus. The least amount of marketed surplus was made by potato adding 26.17 quintals per farm to the total marketed surplus.

The marketing channelwise distribution of the total marketed surplus produced by each of the vegetables showed that each of the vegetables contribution to each of the marketing channels was in same

Table 21 Marketing channelwise distribution of marketed surplus of vegetables for all farm

Marketing Channel	(In Quintal/Farm)											
	Cauliflower		Cabbage		Tomato		Brinjal		Potato		Lady's Finger	
	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
I. Producer-wholesaler-retailer-consumer	16.28	26.37	38.83	26.39	43.65	26.37	36.09	26.37	6.90	26.37	49.61	26.37
II. Producer-bepari-wholesaler-retailer-consumer	21.29	34.52	50.84	34.52	57.14	34.52	47.26	34.52	9.03	34.52	64.94	34.52
III. Producer-bepari-middleman-wholesaler-retailer-consumer	3.22	5.23	7.70	5.23	8.6	5.23	7.14	5.23	1.37	5.23	9.84	5.23
IV. Producer-retailer-consumer	12.71	20.61	30.35	20.61	34.12	20.61	28.21	20.61	5.39	20.61	38.77	20.61
V. Producer-consumer	8.19	13.27	19.55	13.27	21.96	13.27	18.16	13.27	3.48	13.27	24.96	13.27
<b>Total</b>	<b>61.69</b>	<b>100.00</b>	<b>147.27</b>	<b>100.00</b>	<b>165.53</b>	<b>100.00</b>	<b>136.85</b>	<b>100.00</b>	<b>26.17</b>	<b>100.00</b>	<b>188.12</b>	<b>100.00</b>

proportion of the total marketed surplus under the respective vegetables enterprises. The largest marketed surplus in each of the marketing channels was contributed by lady's finger with the surplus ranging from 9.95 quintal (6.55 per cent of the total marketed surplus under lady's finger) in the Marketing Channel-III to 44.43 quintal (29.25 per cent) in the Marketing Channel-II. The next important vegetables enterprise was tomato in each of the marketing channels adding marketed surplus covering from 8.66 quintal (5.23 per cent of total marketed surplus under tomato) in the Marketing Channel-III to 57.14 quintal (34.52 per cent of the total) in the Marketing Channel-II. This was followed by cabbage in all the marketing channels producing marketing surplus starting from 7.70 quintal (5.23 per cent) in the Marketing Channel-III to 50.84 quintal (34.52 per cent of total marketed surplus created by cabbage) in the Marketing Channel-II. The next in order of importance in each of the marketing channels was brinjal and cauliflower. The least dominant vegetable was potato in each marketing channel adding marketed surplus ranging from 1.37 quintal (5.23 per cent of the total marketed surplus under potato) in Marketing Channel-III to 9.03 quintal (34.52 per cent) per farm in the Marketing Channel-II.

The above discussion on the marketed surplus produce by each of the vegetables enterprises channelized through different marketing channel for the all farm situation (average farm of the study area) revealed that the distribution of the marketed surplus of each of the vegetables over different marketing channels was found to be in same proportion. In order of the magnitude of marketed surplus contributed to the total marketed surplus under each marketing channel, the most dominant vegetables enterprise was lady's finger followed by tomato,

cabbage, brinjal and cauliflower. The least important vegetables activity was potato in the study area as a whole.

The overall discussion on the marketing channels and on marketed surplus of various vegetables enterprises in the study area brought out that five important marketing channels were traced out for the marketing of the vegetables in the district. The most important channel handled 34.52 per cent and the least important channel covered 5.23 per cent of the total marketed surplus of vegetables per farm. The magnitude of marketed surplus produced by each vegetable enterprise increased with the increase in farm sizes. The highest amount of marketed surplus was contributed by lady's finger followed by tomato cabbage, brinjal and cauliflower. Potato was the least important vegetables activity. This order of importance of the vegetables was same for the proportion of distribution of the marketed surplus of each vegetables activity handled by each of the marketing channels in the study area.

### **Marketing Cost**

A number of cost item involved with the activities of handling the commodities from one agency to another for marketing of the selected vegetables. In this study various costs incurred by the producer, middleman, wholesaler and retailer in channelizing the commodity to the consumers were estimated for the marketing of each of the vegetables. These were calculated considering the averages over the farm categories to represent the marketing costs for the study area. The results are discussed vegetablewise as given below.

## Cauliflower

The marketing costs per quintal incurred by various marketing agencies in shifting cauliflower from producers to the consumers through different marketing channels were estimated cost sources wise. These are depicted in Table 22.

It would be clear from the table that the Marketing Channel-I was associated with the producer, wholesaler, retailer and consumer. The highest marketing cost of Rs. 70.00 was incurred by the producers. Out of different sources of cost, transport cost was the largest being 42.86 per cent of total producer costs. The remaining cost was shared by labour and packing materials covering 28.57 per cent of total cost each. In this channel, the least marketing cost of Rs. 50.00 was spent by the wholesaler. Among various sources of costs the largest amount of 40.00 per cent of wholesaler cost was involved with marketing fees. This was followed by the cost with labour being 36.00 per cent of the total. The lowest costly source was spoilage of vegetables covering 12.00 per cent of total wholesaler cost.

The Marketing Channel – II was entangled with the producer, bepari, wholesaler retailer and consumer. The largest amount of cost was associated with the bepari being Rs. 100.00 quintal of cauliflower. Among the various sources of costs the most dominant item was found to the labour with 40.00 per cent of total bepari cost. This was followed by the cost component of transport covering 30.00 per cent and the least costly component was market fee with 10.00 per cent of beparis cost. In this marketing channel, the next important market cost was Rs. 80.00 incurred by the producer. In this, the most important component of cost was transport covering 35.00 per cent of producer total marketing cost followed by labour with 31.25 per cent of total cost.

Table 22 Marketing costs incurred by various agencies in different channels for cauliflower per quintal

Cost Item	Channel-I		Channel-II		Channel-III		Channel-IV		Channel-V	
	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent
<b>Producer marketing costs</b>										
a) Labour	70.00	100.00	80.00	100.00	20.00	100.00	30.00	100.00	70.00	100.00
b) Packing	20.00	28.57	25.00	31.25	20.00	100.00	20.00	66.67	25.00	35.71
c) Transport	20.00	28.57	17.00	21.25	-	-	10.00	33.33	15.00	21.43
d) Market fees	30.00	42.86	28.00	35.00	-	-	-	-	20.00	28.57
	-	-	10.00	12.50	-	-	-	-	10.00	14.28
<b>Bepari marketing costs</b>										
a) Labour			100.00	100.00	70.00	100.00				
b) Packing			40.00	40.00	25.00	35.71				
c) Transport			20.00	20.00	15.00	21.43				
d) Market fees			30.00	30.00	20.00	28.57				
			10.00	10.00	10.00	14.28				
<b>Middleman's marketing costs</b>										
a) Labour					130.00	100.00				
b) Packing					42.00	32.31				
c) Transport					38.00	29.23				
d) Market fees					30.00	23.08				
					20.00	15.38				
<b>Wholesaler marketing costs</b>										
a) Labour	50.00	100.00	45.00	100.00	40.00	100.00				
b) Packing	18.00	36.00	15.00	33.33	12.00	30.00				
c) Transport	-	-	-	-	-	-				
d) Market fees	20	40.00	20.00	44.44	20.00	50.00				
e) Spoilage	12.00	24.00	10.00	22.22	8.00	20.00				
<b>Retailer marketing costs</b>										
a) Labour	60.00	100.00	63.00	100.00	60.00	100.00	95.00	100.00		
b) Packing	25.00	41.66	18.00	28.57	20.00	33.33	60.00	63.16		
c) Transport	-	-	5.00	7.93	5.00	8.33	-	-		
d) Market fees	14.00	23.33	20.00	31.74	15.00	25.00	20.00	21.05		
e) Spoilage	12.00	20.00	10.00	15.87	10.00	16.67	10.10	10.52		
	9.00	15.00	10.00	15.87	10.00	16.67	5.00	5.26		

The next costly source was market fees covering 12.50 per cent of total producer marketing cost. The wholesaler marketing cost was the minimum of Rs.45.00 per quintal in this Channel. The highest costly component of wholesaler marketing cost was market fees covering 44.44 per cent of total wholesaler cost. This was followed by the cost of labour covering 33.33 per cent of total.

In the Marketing Channel-III, the marketing agents involved were producer, bepari, middleman, wholesaler, retailer and consumer. The highest marketing cost was incurred by middleman expending Rs. 130.00 per quintal of cauliflower. Among the various sources of costs, labour was the most important covering 32.31 per cent of middleman's total marketing cost followed by packing materials with 29.23 per cent of total cost. The least cost was involved with the marketing fees entailing 15.38 per cent of middleman's total marketing cost. The next dominant marketing agent was bepari spending Rs. 70.00 per quintal. In this agent, the most important cost source was labour covering 35.71 per cent of bepari total marketing cost. The least costly component was market fees with 14.28 per cent of total cost. The minimum marketing cost was associated with the producer spending Rs.20.00 per quintal and this amount of cost was from the source of labour only.

The Marketing Channel-IV was involved with producer, retailer and consumer. The marketing cost was the largest for the retailer Rs. 95.00 per quintal of cauliflower. Among the cost components, labour was the most dominant source covering 63.16 per cent of total retailer marketing cost. The least cost was added by the source of spoiling covering 5.26 per cent of total cost of the retailer. The marketing cost of the producer in this channel was Rs.30.00 and major share was

garneted by the cost component of labour with 66.67 per cent of total cost.

In Marketing Channel-V, producer and consumer associated for cauliflower marketing. The items of producers marketing cost included labour, packing materials, transport and market fees. Labour added the highest cost covering 35.71 per cent followed by transport with 28.57 per cent of total producers cost. Marketing fees was the lowest adding 14.28 per cent to the total producer's marketing cost.

### **Cabbage**

The various marketing agents associated with each of the marketing through which cabbage was channelized from the producer to the consumer and the source marketing cost under each marketing agent are presented in Table 23.

It is clear from the figures of the table that the Marketing Channel-I included producer, wholesaler, retailer and consumer. The marketing cost estimated under the producer was the highest being Rs. 70.00 per quintal of marketed cabbage. Among the various sources marketing costs under the producer, transport was the most dominant covering 42.86 per cent of producers marketing cost. This was followed by labour with 35.71 and by packing materials with 21.43 per cent of total marketing cost of producer. The minimum marketing cost was associated with the wholesaler's marketing spending Rs. 30.00 per quintal. Among the cost components under the wholesaler, labour was the most important adding 50.00 per cent of total cost of wholesaler. This was followed by market fees (33.33 per cent) and spoilage (16.67 per cent of total wholesalers marketing cost).

Table 23 Marketing costs incurred by various agencies in different channels for cabbage per quintal

Cost Item	Channel-I		Channel-II		Channel-III		Channel-IV		Channel-V	
	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent
<b>Producer marketing costs</b>										
e) Labour	70.00	100.00	80.00	100.00	45.00	100.00	60.00	100.00	85.00	100.00
f) Packing	25.00	35.71	25.00	31.25	25.00	55.56	30.00	50.00	25.00	29.41
g) Transport	15.00	21.43	20.00	25.00	20.00	44.44	20.00	33.33	20.00	23.23
h) Market fees	30.00	42.86	30.00	37.50	-	-	10.00	16.66	30.00	35.29
	-	-	10.00	12.50	-	-	-	-	10.00	11.76
<b>Bepari marketing costs</b>										
e) Labour			100.00	100.00	55.00	100.00				
f) Packing			35.00	35.00	25.00	45.45				
g) Transport			25.00	25.00	20.00	36.36				
h) Market fees			30.00	30.00	10.00	18.18				
			10.00	10.00	-	-				
<b>Middleman's marketing costs</b>										
e) Labour					95.00	100.00				
f) Packing					20.00	21.05				
g) Transport					30.00	31.58				
h) Market fees					25.00	26.31				
					20.00	21.05				
<b>Wholesaler marketing costs</b>										
f) Labour	30.00	100.00	35.00	100.00	33.00	100.00				
g) Packing	15.00	50.00	15.00	42.86	15.00	45.45				
h) Transport	-	-	-	-	-	-				
i) Market fees	10.00	33.33	10.00	28.57	10.00	30.30				
j) Spoilage	5.00	16.67	10.00	28.57	8.00	24.24				
<b>Retailer marketing costs</b>										
f) Labour	68.00	100.00	65.00	100.00	62.00	100.00	55.00	100.00	85.00	100.00
g) Packing	25.00	36.76	18.00	27.69	20.00	32.26	10.00	18.18		
h) Transport	5.00	7.35	5.00	7.69	5.00	8.06	5.00	9.09		
i) Market fees	20.00	29.41	20.00	30.77	18.00	29.03	20.00	36.36		
j) Spoilage	10.00	14.71	10.00	15.38	10.00	16.13	15.00	27.27		
	8.00	11.76	12.00	18.46	9.00	14.51	5.00	9.09		

The Marketing Channel – II involved with the producer, bepari, wholesaler, retailer and consumer. The largest marketing of Rs. 100.00 was incurred by the bepari in the channel. Among the cost components under bepari, the highest share was made by labour adding 35.00 per cent of bepari marketing cost. This was followed by the source of transport covering 30.00 per cent and by packing materials with 25.00 per cent of total cost. The next important marketing cost in this channel was producer marketing cost spending Rs. 80.00 per quintal of cabbage. The least important marketing agent in this channel was wholesaler incurring a cost of Rs.35.00 per quintal. The most important source of cost under this agent was labour adding 42.86 per cent of wholesaler total marketing cost. The next position was shared by market fees and by spoilage covering 28.57 per cent of wholesalers marketing cost each.

In Marketing Channel-III, the marketing agents were producer, bepari, middleman, wholesaler, retailer and consumer. The largest amount marketing cost was incurred by the middleman in this channel with Rs. 95.00 per quintal of cabbage. Among the various cost items under this agent, packing materials was the most important covering 31.53 per cent of middleman's total marketing cost. This was followed by transport adding 26.31 per cent of total cost. The next dominant agent was retailer spending Rs. 62.00 per quintal of cabbage. The largest marketing cost was generated by labour under this agent adding 32.26 per cent of total retailers marketing cost. This was followed by transport covering 29.03 per cent and by market fees adding 16.13 per cent of total marketing cost of the retailer. The least important marketing agent in the channel was wholesaler incurring Rs. 33.00 per quintal of cabbage. The highest marketing cost under wholesalers was

generated by labour with 45.45 per cent of wholesaler marketing cost. This was followed by market fees adding 30.30 per cent of total cost.

The Marketing Channel-IV included the producer, retailer and the consumer in marketing cabbage in the study area. The most important agent was found to be producer in this channel spending Rs. 60.00 per quintal of the commodity. The largest share of cost added to this cost was by labour with 50.00 per cent of total cost. This was followed by packing material adding 33.33 per cent and by transport with 16.6 per cent of total producer marketing cost. The retailer, the next marketing agent, spent Rs.55.00 per quintal. The dominant source of cost was transport adding 36.36 per cent followed by market fees with 27.27 per cent of retailers total marketing cost.

In the Marketing Channel - V, producer and consumer were associated in channelizing the cabbage. In this channel producer's total marketing cost was Rs.85.00. The largest share to this cost was added by transport with 35.29 per cent of total cost. The lowest cost was associated with market fees adding 11.76 per cent to the producer marketing cost.

### **Tomato**

For the marketing of tomato, the source wise involved cost under each of the market agents associated in each of the marketing channels in following the market surplus from the producer to the consumer was estimated and the results are revealed in Table 24.

The figures in the table showed that in the Marketing Channel-I the largest cost was incurred by the producer with Rs. 75.00 per quintal of tomato. The most important component under the produce was transport covering 40.00 per cent of producers total marketing cost.

Table 24 Marketing costs incurred by various agencies in different channels for tomato per quintal

Cost Item	Channel-I		Channel-II		Channel-III		Channel-IV		Channel-V	
	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent
<b>Producer marketing costs</b>										
a) Labour	75.00	100.00	93.00	100.00	55.00	100.00	80.00	100.00	85.00	100.00
b) Packing	25.00	33.33	25.00	26.88	25.00	45.45	30.00	37.50	30.00	35.29
c) Transport	20.00	26.66	28.00	30.11	30.00	54.54	20.00	25.00	20.00	23.23
d) Market fees	30.00	40.00	30.00	32.26	-	-	10.00	12.50	25.00	29.41
	-	-	10.00	10.75	-	-	-	-	10.00	11.76
<b>Bepari marketing costs</b>										
a) Labour			85.00	100.00	72.00	100.00				
b) Packing			25.00	29.41	30.00	41.67				
c) Transport			30.00	35.29	22.00	30.55				
d) Market fees			20.00	23.53	20.00	27.78				
			10.00	11.76	-	-				
<b>Middleman's marketing costs</b>										
a) Labour					71.00	100.00				
b) Packing					23.00	32.40				
c) Transport					18.00	25.35				
d) Market fees					20.00	28.17				
					10.00	14.08				
<b>Wholesaler marketing costs</b>										
a) Labour	45.00	100.00	45.00	100.00	40.00	100.00				
b) Packing	15.00	33.33	17.00	37.78	10.00	25.00				
c) Transport	-	-	-	-	-	-				
d) Market fees	20.00	44.44	20.00	44.44	20.00	50.00				
e) Spoilage	10.00	22.22	18.00	17.78	10.00	25.00				
<b>Retailer marketing costs</b>										
a) Labour	63.00	100.00	58.00	100.00	55.00	100.00	62.00	100.00	85.00	100.00
b) Packing	18.00	28.57	15.00	25.86	75.00	27.27	22.00	35.48		
c) Transport	7.00	11.11	5.00	8.62	5.00	9.09	5.00	8.06		
d) Market fees	20.00	31.74	20.00	34.48	20.00	36.36	18.00	29.03		
e) Spoilage	10.00	15.87	10.00	17.24	10.00	18.18	10.00	16.13		
	8.00	12.70	8.00	13.79	5.00	9.09	7.00	11.29		

This was followed by labour adding 33.33 per cent to the total cost. The least cost associated agent in this channel was the wholesaler with Rs. 45.00 per quintal of the commodity marketed. Under this, the most important cost component was market fees adding 44.44 per cent of wholesaler total marketing cost. The least important component was spoilage of the commodity adding 22.22 per cent of the total marketing cost of wholesaler.

The Marketing Channel-II included the producer, bepari, wholesaler, retailer and consumer in channelizing tomato from the producer to the consumer. In this channel highest cost was committed by the producer spending Rs. 93.00 per quintal. Among various cost components, the transport added the largest magnitude of cost adding 32.26 per cent of total producer's marketing cost. This was followed by packing materials consuming 30.11 per cent of total. The least cost was added by market fees with 10.75 per cent of producers total marketing cost. The minimum cost in this marketing channel was incurred by wholesaler with Rs. 45.00 per quintal of the commodity marketed. Under this agent, the largest cost was incurred by market fees covering 44.44 per cent of total marketing cost of the wholesaler. The next important component of cost was labour adding 37.78 per cent of total cost.

The Marketing Channel-III entangled with the producer, bepari, middleman, wholesaler, retailer and consumer in channelizing tomato from the producer to the consumer. The cost involved with the marketing of the commodity was the highest for the bepari with Rs. 72.00 per quintal. Among the cost components, the largest of cost was added by labour covering 41.67 per cent of bepari's marketing cost. This component was followed by packing materials adding 30.55 per

cent of total cost. The next important cost item was transport with 27.78 per cent of total cost of bepari. The least important marketing agent was wholesaler spending Rs. 40.00 per quintal. The largest amount of cost was with the component of market fees covering 50.00 per cent of total wholesaler's marketing cost. The next important position was shared by labour and spoilage covering 25.00 per cent of total cost each.

In the Marketing Channel-IV, the marketing agents were the producer, retailer and the consumer. The largest marketing cost was incurred by the producer spending Rs.80.00 per quintal of the commodity marketed. The largest amount of cost was with labour adding 37.50 per cent of producers cost. This was followed by the component packing materials covering 25.00 per cent of total cost. The retailer's total marketing cost in this channel was Rs.62.00. The largest magnitude of cost was added by labour with 35.48 per cent of total retailer's marketing cost.

The Marketing Channel-V was associated with the producer and the consumer of tomato. The total marketing cost incurred by the producer's was Rs.85.00. The largest share of the total cost was added by labour covering 35.29 per cent of total producer cost. This was followed by transport adding 29.41 per cent of producers total marketing cost. The least important cost component was spoilage with 11.76 per cent of total marketing cost of the producer.

### **Brinjal**

The componentwise marketing costs of various marketing agents under each marketing channel were worked for brinjal per quintal in the study area. The results are presented in Table 25.

Table 25 Marketing costs incurred by various agencies in different channels for brinjal per quintal

Cost Item	Channel-I		Channel-II		Channel-III		Channel-IV		Channel-V	
	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent
<b>Producer marketing costs</b>										
a) Labour	70.00	100.00	80.00	100.00	50.00	100.00	53.00	100.00	82.00	100.00
b) Packing	20.00	28.57	20.00	25.00	20.00	40.00	20.00	37.73	27.00	32.93
c) Transport	20.00	28.57	20.00	25.00	30.00	60.00	23.00	43.39	20.00	24.39
d) Market fees	30.00	42.86	30.00	37.50	-	-	10.00	18.87	30.00	36.58
	-	-	10.00	12.50	-	-	-	-	5.00	6.10
<b>Bepari marketing costs</b>										
a) Labour			120.00	100.00	70.00	100.00				
b) Packing			40.00	33.33	15.00	21.43				
c) Transport			40.00	33.33	25.00	35.71				
d) Market fees			30.00	25.00	20.00	28.57				
			10.00	8.33	10.00	14.28				
<b>Middleman's marketing costs</b>										
a) Labour					98.00	100.00				
b) Packing					25.00	25.51				
c) Transport					38.00	38.77				
d) Market fees					15.00	15.30				
					20.00	20.14				
<b>Wholesaler marketing costs</b>										
a) Labour	50.00	100.00	45.00	100.00	40.00	100.00				
b) Packing	15.00	30.00	15.00	33.33	15.00	37.50				
c) Transport	-	-	-	-	-	-				
d) Market fees	25.00	50.00	20.00	44.44	20.00	50.00				
e) Spoilage	10.00	20.00	10.10	22.22	5.00	12.50				
<b>Retailer marketing costs</b>										
a) Labour	65.00	100.00	55.00	100.00	58.00	100.00	75.00	100.00	82.00	100.00
b) Packing	20.00	30.77	15.00	27.27	15.00	25.86	30.00	40.00		
c) Transport	5.00	7.69	5.00	9.09	8.00	13.79	10.00	13.33		
d) Market fees	20.00	30.77	20.00	36.36	20.00	34.48	20.00	26.66		
e) Spoilage	15.00	23.08	10.00	18.18	10.00	17.24	10.00	13.33		
	5.00	7.69	5.00	9.09	5.00	8.62	5.00	6.67		

It is clear from the table that the Marketing Channel-I was associated with producer, wholesaler, retailer and consumer in mobilizing brinjal product from the producer to the consumer. The largest marketing cost, in this channel was committed by producer spending Rs.70.00 per quintal of the commodity. Among the various components of cost, the dominant component was transport covering 42.86 per cent of producers marketing cost. The next position was shared by the cost items packing material and labour covering each 28.57 per cent of total producer's cost. The least marketing cost associated agent in this channel was wholesaler incurring the marketing cost of Rs.50.00 per quintal of brinjal. The most important cost component under this agent was the market fees covering 50.00 per cent of wholesaler marketing cost. This was followed by the cost item labour adding 30.00 per cent of total marketing cost under the wholesaler.

The Marketing Channel-II included producer, bepari, wholesaler, retailer and consumer in pushing the commodity from the producer to the consumer. The largest amount of cost was spent, in this channel by the bepari with Rs.120.00 per quintal. Among the various cost items under this marketing agent, the most dominating position was shared by labour and packing materials covering each 33.33 per cent of total marketing cost of bepari. The next important cost component was transport adding 25.00 per cent of bepari's total marketing cost. The marketing agent with the lowest marketing cost for brinjal per quintal was the wholesaler committing a total cost of Rs.45.00 per quintal. The most important cost item under wholesaler was the market fees with 44.44 per cent of wholesalers total marketing cost. This was followed by labour covering 33.33 per cent of total cost.

The Marketing Channel-III included the producer, bepari, middleman, wholesaler, retailer and consumer in channelizing brinjal from the producer to the consumer. In Channel-I, the highest magnitude of cost was associated with the middleman to the extent of Rs. 98.00 per quintal of brinjal. Under this agent, the most dominant source was packing materials 38.77 per cent of total marketing cost of the middleman. This was followed by labour with 25.51 per cent and by market fees with 20.41 per cent of middleman total marketing cost. The least importing marketing agent in this channel was wholesaler spending Rs.40.00 per quintal. Among the cost components under this agent, the largest cost was associated with the market fees covering 50.00 per cent of wholesaler's marketing cost. The next important source of cost was labour with 37.50 per cent followed by spoilage of the commodity adding 12.50 per cent of wholesalers cost.

For the Marketing Channel-IV, the involved market agents were the producer, retailer and the consumer in marketing brinjal. Among the market agents, the largest amount of cost was incurred by the retailer with a total of Rs.75.00 per quintal of brinjal. Labour was the most dominating cost item covering 40.00 per cent of retailers marketing cost under this agent. This was followed by transport adding 26.66 per cent to the total cost and the minimum marketing cost was created by spoilage with 6.67 per cent of retailers total marketing cost. For the producer, the total marketing cost was 53.00 per quintal and 37.73 per cent of producers cost was associated with labour followed by 43.39 per cent with packing materials.

In the Marketing Channel – V, producer and consumer were the sole agents in marketing brinjal. The marketing cost of the consumer in this channel was found to be Rs.82.00 per quintal the producer. The

highest portion of cost was generated by transport covering 36.58 per cent of producing total marketing cost. This was followed by the cost item, labour adding 32.93 per cent and the minimum cost was added by market fees with 6.10 per cent of producers total marketing cost.

### **Lady's finger**

The marketing cost derived from each of the various sources involved with the agents of marketing under each of the marketing channels associated with the marketing of lady's finger in channelizing the product from the producer to the consumer were worked out for the study area. The results are presented in Table 26.

It would be clear from the table that the Marketing Channel-I comprised the producer wholesaler, retailer and the consumer in flowing the lady's finger from the producer to the consumer. The marketing cost was found to be the highest of Rs. 75.00 per quintal of lady's finger incurred by the producer. Among the sources of cost under the producers marketing cost, transport was the most dominant covering 40.00 per cent of producer's marketing cost. This was followed by the cost on labour adding 33.33 per cent of total cost and the lowest was with packing materials adding 26.66 per cent of producer marketing cost. The lowest cost of the agents was existed in wholesaler with the amount of Rs. 45.00 per quintal of lady's finger. Under this, the most important component of cost was market fees covering 44.44 per cent of the wholesaler's total marketing cost. The next important source of cost was labour 33.33 per cent and the spoilage with 22.22 per cent of the marketing cost of the wholesaler.

For Marketing Channel-II, the marketing agents entangled were consumer, bepari, wholesaler, retailer and consumer in pushing the lady's finger produce from the producer to the consumer. The largest

Table 26 Marketing costs incurred by various agencies in different channels for lady's finger per quintal

Cost Item	Channel-I		Channel-II		Channel-III		Channel-IV		Channel-V	
	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent
<b>Producer marketing costs</b>										
a) Labour	75.00	100.00	85.00	100.00	55.00	100.00	60.00	100.00	83.00	100.00
b) Packing	25.00	33.33	25.00	29.41	25.00	45.45	30.00	50.00	23.00	27.71
c) Transport	20.10	26.66	20.00	23.53	30.00	54.54	20.00	33.33	20.00	24.09
d) Market fees	30.00	40.00	30.00	35.29	-	-	10.00	16.66	30.00	36.14
	-	-	10.00	11.76	-	-	-	-	10.00	12.06
<b>Bepari marketing costs</b>										
a) Labour			75.00	100.00	68.00	100.00				
b) Packing			20.00	26.66	18.00	26.47				
c) Transport			20.00	26.66	30.00	44.12				
d) Market fees			30.00	40.00	20.00	29.41				
			5.00	6.66		-				
<b>Middleman's marketing costs</b>										
a) Labour					87.00	100.00				
b) Packing					15.00	17.24				
c) Transport					22.00	25.29				
d) Market fees					30.00	34.48				
e) Spoilage					20.00	22.99				
					-	-				
<b>Wholesaler marketing costs</b>										
a) Labour	45.00	100.00	43.00	100.00	33.00	100.00				
b) Packing	15.00	33.33	15.00	34.88	15.00	45.45				
c) Transport	-	-	-	-	-	-				
d) Market fees	20.00	44.44	20.00	46.51	10.00	30.00				
e) Spoilage	10.00	22.22	8.00	18.60	8.00	24.24				
<b>Retailer marketing costs</b>										
a) Labour	65.00	100.00	61.00	100.00	55.00	100.00	58.00	100.00	83.00	100.00
b) Packing	25.00	38.46	18.00	13.11	15.00	27.27	15.00	25.86		
c) Transport	5.00	7.69	5.00	8.20	5.00	9.09	5.00	8.62		
d) Market fees	20.10	30.77	20.00	32.79	20.00	36.36	20.00	34.48		
e) Spoilage	10.10	15.38	10.00	16.39	10.00	18.18	10.00	17.24		
	5.00	7.69	8.00	13.11	5.00	9.09	8.00	13.79		

magnitude of marketing cost of Rs.85.00 was spent by the producer. Among the cost items under this agent, transport was the most dominant source covering 35.29 per cent of producers total marketing cost. This was followed by labour adding 29.41 per cent and the lowest was faced by market fees with 11.76 per cent of total cost. The minimum cost involved agent in this channel was wholesaler spending Rs.43.00 per quintal of lady's finger. Under this agent, the most important component of cost was market fees covering 46.51 per cent of wholesaler total marketing cost. The next important source of cost was labour adding 34.88 per cent to the total cost.

The Marketing Channel - III included producer, bepari, middleman, wholesaler, retailer and consumer in channelizing the product of lady's finger from the producer to the consumer. The largest magnitude of marketing cost was incurred by middleman spending Rs. 87.00 per quintal of lady's finger. Among the sources of cost under this agent, the most dominant source was transport covering 34.48 per cent of middleman for marketing cost. This was followed by packing materials adding 25.29 per cent of total cost of the middleman. The lowest marketing cost was derived from the wholesaler under this channel with Rs.33.00. Under this, the most dominant source of cost was labour covering 45.45 per cent of wholesalers total marketing cost. This was followed by market fees adding 30.30 per cent to the total marketing cost of the wholesaler.

In the Marketing Channel - IV the marketing agents associated in channelizing in lady's finger from the producer to the consumer were the producer, retailer and the consumer for the study area. The largest amount of marketing cost was incurred in this marketing channel was the producer with Rs. 60.00 per quintal of lady's finger

marketed. Among the cost components, the most dominant source was labour covering 50.00 per cent of producer total marketing cost. This was followed by packing materials adding 33.33 per cent and by transport with 16.66 per cent of total marketing cost of the producer. The total marketing cost faced by the retailer was Rs.58.00 per quintal of the product. The largest amount of cost was added by transportation covering 34.48 per cent of retailers total marketing cost. The least important item of cost under the retailer was packing materials adding 8.62 per cent of the total cost of the retailer.

For the Marketing Channel-V, the agents for marketing lady's finger for the producer to the consumer were the producer and the consumer. The total marketing cost of the producer in the marketing channel was estimated to be Rs.83.00 per quintal of lady's finger. The largest amount of cost was generated by transport covering 36.14 per cent of total cost of the producer. This was followed by labour adding 27.17 per cent to the total cost. The lowest cost was added by market fees with 12.06 per cent of producer's total marketing cost in the channel.

### **Potato**

The source wise marketing cost under each of the marketing agencies associated with each marketing Channel involved in pushing through the potato from the producer to the consumer was calculated for the study area. The results are depicted in Table 27.

The figure in the table indicated that the Marketing Channel-I included producer, wholesaler, retailer and consumer in channelizing potato from the producer to the consumer. The highest amount of cost was incurred by the producer with Rs. 55.00 per quintal of potato in this channel. Among various components of to marketing cost of the

Table 27 Marketing costs incurred by various agencies in different channels for potato per quintal

Cost Item	Channel-I		Channel-II		Channel-III		Channel-IV		Channel-V	
	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent
<b>Producer marketing costs</b>										
a) Labour	55.00	100.00	60.00	100.00	30.00	100.00	45.00	100.00	58.00	100.00
b) Packing	15.00	27.27	10.00	16.67	10.00	33.33	15.00	33.33	20.00	34.48
c) Transport	10.00	18.18	20.00	33.33	20.00	66.67	10.00	22.22	15.00	25.86
d) Market fees	30.00	54.54	30.00	50.00	-	-	20.00	44.44	13.00	22.41
	-	-	-	-	-	-	-	-	10.00	17.24
<b>Bepari marketing costs</b>										
a) Labour			58.00	100.00	50.00	100.00				
b) Packing			20.00	34.48	20.00	40.00				
c) Transport			15.00	25.86	20.00	40.00				
d) Market fees			18.00	31.03	10.00	20.00				
			5.00	8.62	-	-				
<b>Middleman's marketing costs</b>										
a) Labour					63.00	100.00				
b) Packing					18.00	28.57				
c) Transport					15.00	23.81				
d) Market fees					20.00	31.74				
					10.00	15.87				
<b>Wholesaler marketing costs</b>										
a) Labour	32.00	100.00	27.00	100.00	35.00	100.00				
b) Packing	15.00	46.87	12.00	44.44	12.00	34.28				
c) Transport	-	-	-	-	5.00	14.28				
d) Market fees	10.00	31.25	-	-	-	-				
e) Spoilage	7.00	21.87	10.00	37.04	10.00	28.57				
	-	-	5.00	18.52	8.00	22.86				
<b>Retailer marketing costs</b>										
a) Labour	43.00	100.00	40.00	100.00	35.00	100.00	37.00	100.00	58.00	100.00
b) Packing	15.00	34.88	12.00	30.00	7.00	20.00	9.00	24.32		
c) Transport	5.00	11.63	5.10	12.50	5.00	14.28	5.00	13.51		
d) Market fees	10.00	23.25	10.00	25.00	10.00	28.57	10.00	27.03		
e) Spoilage	8.000	18.60	8.00	20.00	8.00	22.86	8.00	21.62		
	5.00	11.63	5.00	12.50	5.00	14.28	5.00	13.51		

producer, the most important source was transport covering 54.54 per cent of producer marketing cost. This was followed by labour adding 27.27 per cent and by packing materials with 18.18 per cent of producer marketing cost. The least cost of the agents was entangled with the wholesalers under this channel spending Rs. 32.00 per quintal of the product. From the source of cost indicated that labour added the largest amount being 46.87 per cent of wholesaler total marketing cost. The next important source of cost was transport adding 31.25 per cent of total cost.

The Marketing Channel-II included producer bepari, wholesaler, retailer and the consumer in channelizing potato produce from the growers to the consumer. Among the marketing agents, the highest volume of marketing cost was created by the producer in this channel with Rs.60.00 per quintal of potato. Under this, the most dominant source was transport covering 50.00 per cent of producer's total marketing cost. This was followed by packing materials adding 33.33 per cent of total cost. The least marketing cost under this channel was associated with the wholesaler with a total of Rs.27.00 per quintal. Out of the components of cost, the most important was the labour covering 44.44 per cent of wholesaler's total marketing cost. This was followed by market fees adding 37.04 per cent and the lowest was spoilage with 18.52 per cent of total cost.

For the Marketing Channel-III, the marketing agents associated were producer, bepari, middleman, wholesaler, retailer and consumer in the process of marketing potato from the producer to the consumer. The maximum amount of marketing cost was faced by the middleman spending Rs.63.00 per quintal of potato in this channel. Among various cost items the most dominated source was transport covering 31.74 per

cent middleman's total marketing cost. The next important cost item was labour adding 28.57 per cent of total cost and the lowest cost was with spoilage (15.87 per cent of the total middleman's marketing cost). The least marketing cost entangled agent in this channel was found to be the producer spending Rs.30.00 per quintal of potato. Under this agent, the most important source was packing materials covering 66.67 per cent followed by labour adding 33.33 per cent of producer's total marketing cost.

In the Marketing Channel-IV, the agent involved with the marketing of potato was producer, retailer and the consumer. The largest magnitude of marketing cost was incurred by the producer facing a total of Rs.45.00 per quintal of potato in this channel. Among various cost components under this agent the most dominant source was transport covering 44.44 per cent of producers total marketing cost. This was followed by labour adding 33.33 per cent of total cost. The total cost faced by the retailer was found to be Rs.37.00 per quintal of potato. Among the cost item under this agent, the most important source was transport covering 27.03 per cent of retailers total marketing cost. This was followed by labour adding 24.32 per cent of total retailers cost.

The Marketing Channel-V included producer and the consumer in channelizing potato from the producer to the consumer. The total marketing cost of the producer was estimated to be Rs.58.00. The most dominant cost component under this agent was found to be labour covering 34.48 per cent of producers total marketing cost. This was followed by the cost of packing materials adding 25.86 per cent of total cost. The lowest cost was generated by market fees with 17.24 per cent of producers total marketing cost.

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## CHAPTER VII

### PRICE SPREAD IN VARIOUS VEGETABLES MARKETING

The last and one of the most important objectives of this investigation was to explore the producers share in consumer's rupee associated with each of the marketing channel ascertained for the study area. Further examination of the marketing efficiency in the existing vegetables marketing system had to be carried out in this chapter. Enhancement in the production of vegetables deserved market for the products and a price high enough to repay the farmer for the cost of production of the vegetables and efforts in producing them. There was no two opinions that few farmers could dispose their own products in big city markets. They did not have the basic information or the required facilities for all the handling, packing, storing, processing and other operation involved with the safe marketing of the vegetables produced in their farms. Hence, most of the farmers used to sell their products at the farm or in the local markets. The incentives and encouragement for producing vegetables on commercial basis depended on price of the products they could deserve in the local market. These prices influenced the efficiency of the going on marketing system linking local markets to those markets in the cities.

The producers share in consumer's rupee for the vegetables was expressed in terms of price as it was one of the important measures of market efficiency which indicated the share of the producer in the consumer's rupee. Also, it showed the shares of various market intermediaries in the consumer's rupee for the services rendered by

them in channelizing the commodities from the growers to the consumers. The results are discussed vegetables wise below.

### **Cauliflower**

The price spread in respect to cauliflower under each of the various marketing channels was estimated considering the average information over the farm categories in the district. The results are presented in Table 28.

The information given in the table indicated that in the Marketing Channel-I, producer received a net price of Rs. 530.00 per quintal of cauliflower covering 57.92 per cent of the consumers price. The marketing cost of the producer was estimated to be Rs. 70.00 being 7.65 per cent of the consumer's price. The wholesaler's margin in this channel was Rs.100.00 (10.93 per cent of consumer's price) and the marketing charge was Rs. 50.00 (5.46 per cent of the consumer's price). The retailer in the channel received a margin of Rs. 105.00 (11.47 per cent of the consumer's price) with the marketing charge of Rs. 60.00 (5.56 per cent of consumer's price) per quintal of cauliflower marketed.

For the Marketing Channel – II, the producer's net price was Rs.520.00 per quintal being 48.24 per cent of the consumer's price. The marketing charge of the producer was Rs.80.00 (7.42 per cent of the consumer's price) per quintal of cauliflower. The bepari (one of the intermediaries) earned a margin of Rs. 90.00 (8.35 per cent of the consumer's price) per quintal and his marketing cost was Rs. 100.00 (9.27 per cent). The wholesaler's margin was Rs.80.00 (7.42 per cent of consumer's price) per quintal with the marketing charge of Rs.45.00 (4.17 per cent) per quintal. The retailer was Rs. 100.00 (9.27 per cent)

Table 28 Price spread of cauliflower in different marketing channels

Particulars	Channel-I		Channel-II		Channel-III		Channel-IV		Channel-V	
	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent
Producer selling price	600.00		600.00		600.00		600.00		600.00	
Producer marketing charges	90.00	7.65	80.00	7.42	20.00	1.60	30.00	3.72	70.00	11.66
Net price received by producer	530.00	57.92	520.00	48.24	580.00	46.58	570.00	70.81	530.00	88.33
Beparis marketing charge			100.00	9.27	70.00	5.62				
Beparis margin			90.00	8.35	80.00	6.42				
Beparis selling price			790.00	73.28	750.00	60.24				
Middleman marketing charge					130.00	10.44				
Middleman margin					70.00	5.62				
Middleman selling price					950.00	76.30				
Wholesalers marketing margin	100.00	10.93	80.00	7.42	90.00	7.23				
Wholesalers margin	750.00	81.97	915.00	84.88	1080.00	86.75				
Wholesalers selling price	60.00	5.56	63.00	5.84	60.00	4.82	95.00	11.80		
Retailers marketing charge	105.00	11.47	100.00	9.27	105.00	8.43	110.00	13.66		
Retailers selling price/ consumer's price	915.00	100.00	1078.00	100.00	1245.00	100.00	805.00	100.00	600.00	100.00
Price spread	385.00	42.07	558.00	51.76	65.00	53.41	235.00	29.19	70.00	11.66

and his marketing cost was Rs.63.00 (5.84 per cent of consumer's price) per quintal of cauliflower marketed.

In Marketing Channel-III, the producer's net share per quintal of cauliflower in consumer's price was Rs. 580.00 (46.58 per cent of the consumer's price) per quintal. The marketing cost of the producer per quintal was Rs. 20.00 (1.60 per cent of consumer's price). The net margin of the bepari per quintal of cauliflower was Rs. 80.00 (6.42 per cent of the consumer's price) and his marketing cost was Rs.70.00 (5.62 per cent of the consumer's price). The middleman received a margin of Rs. 70.00 (5.62 per cent of the consumer's price) spending a market charge of Rs. 130.00 (10.44 per cent of consumer's price) per quintal. The wholesaler's margin was Rs. 90.00 (7.23 per cent of consumer's price) per quintal with marketing charge of Rs. 40.00 (3.21 per cent of consumer's price). The retailer in this channel pocketed a margin of Rs. 105.00 (8.43 per cent of consumer's price) per quintal and his marketing cost was found to be Rs. 60.00 (4.82 per cent of consumer's price) per quintal.

In the Marketing Channel-IV, the net price received by the producer was 570.00 (70.81 per cent of the consumer's price) and his marketing charge was 30.00 (3.72 per cent of the consumer's price) per quintal of cauliflower marketed. The retailer obtained a margin of Rs. 110.00 (13.6 per cent of the consumer's price) per quintal and he had a marketing cost of Rs. 95.00 (11.80 per cent of the consumer's price) per quintal of the commodity.

For the Marketing Channel-V, the producer's net receipt was Rs.530.00 (88.33 per cent of the consumer's price) per quintal. His marketing cost was Rs.70.00 (11.66 per cent of consumer's price) per quintal.

The analysis of price spread for cauliflower showed that the Marketing Channel-III was found to be the best channel as the vegetables producer generated the largest price per quintal of cauliflower. The next efficient channel was the Marketing Channel-IV and the least efficient channel was the Marketing Channel-II in respect of cauliflower marketing in the study area.

### **Cabbage**

The price spread in relation to the marketing of cabbage was estimated for different marketing channel in the study area. The results are given in Table 29.

The figures in the table brought out that in the Marketing Channel-I, the producer received a net price of Rs. 330.00 being 42.41 per cent of consumer's price per quintal of cabbage and the associated marketing charge was Rs.70.00 (9.00 per cent of the consumer's price) per quintal. The wholesaler's net margin was estimated to be Rs. 100.00 (12.85 per cent) and his marketing cost was Rs.30.00 (3.85 per cent of consumer's price) per quintal of cabbage. The margin received by the retailer in this channel was Rs. 180.00 being 23.12 per cent of the consumer's price. The marketing charge for this was Rs.68.00 (8.74 per cent of the consumer's price) per quintal of cabbage marketed.

The Marketing Channel-II generated a net price of Rs. 320.00 (32.00 per cent of consumer's price) per quintal for the cabbage grower and his marketing cost was Rs. 80.00 (8.00 per cent of consumer's price) per quintal. The bepari gained a margin of Rs. 100.00 (10.00 per cent of consumer's price) spending Rs. 120.00 (12.00 per cent of consumer's price) as market charge per quintal of the commodity. The wholesaler net price was Rs. 120.00 (12.00 per cent) per quintal and

Table 29 Price spread of cabbage in different marketing channels

Particulars	Channel-I		Channel-II		Channel-III		Channel-IV		Channel-V	
	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent
Producer selling price	400.00		400.00		400.00		60.00	9.16	85.00	21.25
Producer marketing charges	70.00	9.00	80.00	8.00	45.00	3.96	340.00	51.91	315.00	78.75
Net price received by producer	330.00	42.41	320.00	32.00	355.00	31.28				
Beparis marketing charge			100.00	10.00	55.00	4.84				
Beparis margin			120.00	12.00	130.00	11.45				
Beparis selling price			640.00	6.40	585.00	51.54				
Middleman marketing charge					95.00	8.37				
Middleman margin					90.00	7.93				
Middleman selling price					770.00	67.84				
Wholesalers marketing charges	30.00	3.85	35.00	3.50	33.00	2.91				
Wholesalers margin	100.00	12.85	120.00	12.00	120.00	10.57				
Wholesalers selling price	530.00	68.12	795.00	79.50	923.00	81.32				
Retailers marketing charge	68.00	8.74	65.00	6.50	62.00	5.46	55.00	8.40		
Retailers margin	180.00	23.12	140.00	14.00	150.00	13.21	200.00	30.53		
Retailers selling price/ consumer's price	778.00	100.00	1000.00	100.00	1135.00	100.00	655.00	100.00	400.00	100.00
Price spread	448.00	57.58	680.00	68.00	780.00	68.72	315.00	48.09	85.00	21.25

his total marketing cost was Rs. 35.00 (3.50 per cent of consumer's price). A margin of Rs. 140.00 (14.00 per cent) was received by the retailer in this channel with the marketing charge of Rs. 65.00 (6.50 per cent of consumer's price) per quintal of cabbage marketed.

In Marketing Channel-III, the producer's net price was Rs. 355.00 (31.28 per cent of total consumer's price) per quintal. His marketing charge was Rs. 45.00 (3.96 per cent of consumer's price) per quintal. The amount of margin received by the bepari was Rs. 130.00 (11.45 per cent of consumer's price) and marketing cost was Rs. 55.00 (4.84 per cent of consumer's price) per quintal. The middleman's margin in the channel was Rs. 90.00 (7.93 per cent) per quintal and his market expense was Rs. 95.00 (8.37 per cent of consumer's price) per quintal. The margin received by the wholesaler in this channel was Rs.120.00 (10.57 per cent) and the associated marketing cost was Rs.33.00 (2.91 per cent of consumer's price) per quintal. The retailer gained a margin of Rs. 150.00 (13.21 per cent) spending Rs. 62.00 per cent of consumer's price) as marketing charge per quintal of cabbage marketed in the channel.

Under the Marketing Channel-IV, the producer's net price was Rs.340.00 (51.92 per cent) and his marketing charge was Rs.60.00 (9.16 per cent of consumer's price) per quintal of cabbage. The margin gained by the retailer in this channel was Rs. 200.00 (30.53 per cent of consumer's price) per quintal. The relevant marketing cost was Rs. 55.00 (8.40 per cent of consumer's price) per quintal of the commodity.

The Marketing Channel-V offered a net price Rs. 315.00 (78.75 per cent of consumer's price) to the producer per quintal of cabbage and his marketing cost was Rs. 85.00 (21.25 per cent of consumer's

price) per quintal in this channel. The price spread figures under various marketing channels for cabbage brought out that the most efficient marketing channel was the Marketing Channel -III generating the largest net price Rs. 355.00 per quintal of cabbage. The next efficient one was the Marketing Channel-IV and the least efficient channel was the Marketing Channel-V for cabbage marketing in the study area.

### **Tomato**

For the marketing of tomato produce, the price spread was calculated for different marketing channels in the study area. The results are presented in Table 30.

It would be clear from the table that in Marketing Channel-I the producer's net price was Rs. 325.00 (45.77 per cent of consumer's price) per quintal and his marketing charge was Rs. 75.00 being 10.56 per cent of consumer's price per quintal. The wholesaler's margin was Rs. 95.00 (13.38 per cent of consumer's price) per quintal and his marketing cost was Rs. 45.00 (6.34 per cent of consumer's price) per quintal. The margin gained by the retailer was Rs. 105.00 (14.79 per cent of consumer's price). His marketing charge was Rs. 65.00 (9.15 per cent of consumer's price) per quintal of tomato marketed.

The Marketing Channel – II generated a net price of Rs. 307.00 (33.01 per cent of consumer's price) per quintal and associated marketing cost was Rs.93.00 (10.00 per cent of consumer's price) per quintal of tomato. The margin received by the bepari was Rs. 100.00 (10.75 per cent of consumer's price) per quintal. The marketing cost was found to be Rs. 100.00 (10.75 per cent of consumer's price) per quintal. The wholesaler's margin was Rs. 105.00 (11.29 per cent) and

Table 30 Price spread of tomato in different marketing channels

Particulars	Channel-I		Channel-II		Channel-III		Channel-IV		Channel-V	
	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent
Producer selling price	400.00		400.00		400.00		400.00		400.00	
Producer marketing charges	75.00	10.56	93.00	10.00	55.00	5.00	80.00	13.79	85.00	21.25
Net price received by producer	325.00	45.77	307.00	33.01	345.00	31.36	320.00	55.17	315.00	78.75
Beparis marketing charge			100.00	10.75	80.00	7.27				
Beparis margin			100.00	10.75	110.00	10.00				
Beparis selling price			600.00	64.51	590.00	53.63				
Middleman marketing charge					110.00	10.00				
Middleman margin					110.00	10.00				
Middleman selling price					810.00	73.63				
Wholesalers marketing charges	45.00	6.34	45.00	4.84	40.00	3.63				
Wholesalers margin	95.00	13.38	105.00	11.29	90.00	8.18				
Wholesalers selling price	540.00	76.05	750.00	80.64	940.00	85.45				
Retailers marketing charge	65.00	9.15	65.00	6.99	65.00	5.91	65.00	11.21		
Retailers margin	105.00	14.79	115.00	12.36	95.00	8.63	115.00	19.83		
Retailers selling price/ consumer's price	710.00	100.00	930.00	100.00	1100.00	100.00	580.00	100.00	400.00	100.00
Price spread	385.00	54.22	623.00	66.99	755.00	68.63	260.00	44.83	85.00	21.25

the associated marketing charge was Rs. 45.00 (4.84 per cent of consumer's price) per quintal. The margin received by the retailer was Rs.115.00 (12.36 per cent) and the marketing charge was 65.00 (6.99 per cent of consumer's price) per quintal of tomato marketed.

In the Marketing Channel-III, the net price of the producer was Rs.345.00 (31.36 per cent) and the marketing cost was Rs. 55.00 (5.00 per cent of total consumer's price) per quintal of the product. The bepari received a margin of Rs.110.00 (10.00 per cent) spending Rs.80.00 (7.27 per cent of consumer's price) per quintal. The middleman's share of margin was Rs. 110.00 (10.00 per cent) and his marketing cost was Rs. 110.00 (10.00 per cent of consumer's price) per quintal. The wholesaler gained Rs. 90.00 (8.18 per cent) as net price paying a marketing charge of Rs.40.00 (3.63 per cent of consumer's price) per quintal. The margin received by the retailer was Rs. 95.00 (8.63 per cent) per quintal and the marketing cost was Rs. 65.00 (5.91 per cent of consumer's) per quintal of tomato in the channel.

Under the Marketing Channel-IV, the producer earned a net price of Rs.320.00 (55.17 per cent of consumer's price) per quintal with a marketing expenditure of Rs. 80.00 (13.79 per cent of consumer's price) per quintal of tomato. The retailer's net margin was Rs.115.00 (19.83 per cent of consumer's price) and his marketing cost was Rs. 65.00 (11.21 per cent of consumer's price) per quintal of tomato.

The Marketing Channel – V derived a net price of Rs. 315.00 (78.75 per cent of consumer's price) per quintal and the marketing charge of Rs.85.00 (21.25 per cent of consumer's price).

The price spread analysis of tomato indicated that the Marketing Channel-III was the most efficient channel as it provided the producer

the largest net price of Rs. 345.00 per quintal of tomato marketed. This was followed by the Marketing Channel-IV with a net price of Rs. 320.00 per quintal for the producer. The least efficient channel was the Marketing Channel-II for tomato marketing in the study area.

### **Brinjal**

The price spread in marketing of brinjal under each of the marketing channels was estimated for the study area. The results are depicted in Table 31.

It is obvious from the table that in Marketing Channel-I, the producer of brinjal received a net price of Rs. 430.00 per quintal being 51.50 per cent of the consumer's price. The marketing charge was Rs.70.00 (8.38 per cent of the consumer's price). The wholesaler's margin in the channel was Rs.100.00 (11.91 per cent) per quintal and his marketing cost was Rs. 50.00 (5.99 per cent of the consumer's price) per quintal. The margin gained by the retailer in the channel was Rs. 120.00 (14.37 per cent) per quintal and the marketing charge associated was Rs. 65.00 (7.78 per cent of consumer's price) per quintal.

The Marketing Channel-II released a net price of Rs. 420.00 (39.07 per cent) per quintal to the brinjal grower with the marketing cost of Rs. 80.00 (7.44 per cent of consumer's price) per quintal of the commodity. The bepari's margin was found to be Rs. 100.00 (9.30 per cent) per quintal and his marketing cost was Rs. 120.00 (11.10 per cent of consumer's price) per quintal. The wholesaler gained a margin of Rs. 120.00 (11.16 per cent of consumer's price) per quintal spending marketing charge of Rs. 45.00 (4.18 per cent of consumer's price) per quintal. The margin received by the retailer in the channel was Rs. 125.00 (11.63 per cent of the consumer's price). This marketing cost

Table 31 Price spread of brinjal in different marketing channels

Particulars	Channel-I		Channel-II		Channel-III		Channel-IV		Channel-V	
	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent
Producer selling price	500.00		500.00		500.00		500.00		500	
Producer marketing charges	70.00	8.38	80.00	7.44	50.00	4.21	53.00	7.62	82.00	16.40
Net price received by producer	430.00	51.50	420.00	39.07	450.00	37.88	447.00	64.31	418.00	83.00
Beparis marketing charge			120.00	11.16	70.00	5.89				
Beparis margin			100.00	9.30	110.00	9.26				
Beparis selling price			720.00	66.98	680.00	57.24				
Middleman marketing charge					98.00	8.25				
Middleman margin					90.00	7.57				
Middleman selling price					868.00	73.06				
Wholesalers marketing charges	50.00	5.99	45.00	4.18	40.00	3.37				
Wholesalers margin	100.00	11.91	120.00	11.16	110.00	9.26				
Wholesalers selling price	650.00	77.86	885.00	82.32	1018.00	85.69				
Retailers marketing charge	65.00	7.78	65.00	6.04	60.00	5.05	75.00	10.79		
Retailers margin	120.00	14.37	125.00	11.63	110.00	9.26	120.00	17.26		
Retailers selling price/ consumer's price	835.00	100.00	1075.00	100.00	1188.00	100.00	695.00	100.00	500.00	100.00
Price spread	405.00	48.50	655.00	60.93	738.00	62.12	248.00	33.81	80.00	16.00

was Rs. 65.00 (6.04 per cent of consumer's price) per quintal of brinjal in the channel.

In the Marketing Channel-III, the producer of brinjal generated a net price of Rs.450.00 (37.88 per cent of consumer's price) and his marketing cost was Rs.50.00 (4.21 per cent of consumer's price) per quintal. The margin gained by the bepari was Rs. 110.00 (9.26 per cent of consumer's price) per quintal. The marketing charge was Rs.70.00 (5.89 per cent of consumer's price) per quintal.

The middleman's margin in the channel was Rs. 90.00 (7.57 per cent of consumer's price) per quintal and his marketing cost was Rs. 98.00 (8.25 per cent of consumer's price) per quintal. The margin gained by the wholesaler was Rs. 110.00 (9.26 per cent of consumer's price) per quintal and the marketing charge was Rs. 40.00 (3.37 per cent of consumer's price) per quintal of the commodity. The retailers received a margin of Rs.110.00 (9.26 per cent of consumer's price) per quintal with the expenditure of Rs.60.00 (5.05 per cent of consumer's price) per quintal of brinjal in the channel.

The Marketing Channel-IV created a net price of Rs. 447.00 (64.31 per cent of consumer's price) per quintal for the brinjal grower. His marketing cost was Rs. 40.00 (5.75 per cent of consumer price) per quintal. The margin received by the retailer was Rs. 120.00 (17.26 per cent of consumer's price) and the marketing cost was Rs. 75.00 (10.79 per cent of the consumer's price) per quintal of brinjal in this channel.

In the Marketing Channel-V, the producer derived a net price of Rs.418.00 (83.60 per cent of the consumer's price) per quintal. His marketing cost was Rs. 82.00 (16.40 per cent of consumer's price) per quintal of brinjal in the channel.

The analysis of price spread in each of the marketing channels for bringjal brought out that the most efficient channel was found to be the Marketing Channel-III as it generated the largest net price (Rs. 450.00) for the brinjal producer. The next most efficient channel was the Marketing Channel-IV. The least efficient channel in marketing of brinjal was found to be the Marketing Channel – V in the study area.

### **Lady's Finger**

The price spread of lady's finger in each of the various marketing channels was worked out for the study area. The results are presented in Table 32.

It is clear from the results in the table that in Marketing Channel-I, the lady's finger grower earned a net price of Rs.425.00 which was 44.74 per cent of consumer's price per quintal. The associated marketing charge for this was Rs.75.00 (7.89 per cent of consumer's price) per quintal. The margin received by the wholesaler was Rs. 170.00 (17.89 per cent of consumer's price) with a marketing cost of Rs. 45.00 (4.74 per cent of consumer's price) per quintal of lady's finger. The retailer gained a margin of Rs. 170.00 (17.89 per cent of consumer's price) with a marketing charge of Rs. 65.00 (6.84 per cent of consumer's price) per quintal of lady's finger in this channel.

In Marketing Channel – II, the producer's net price was Rs. 415.00 (34.90 per cent of consumer's price) per quintal and his marketing charge was Rs.85.00 (7.15 per cent of consumer's price) per quintal. He gained a margin of Rs.150.00 (12.61 per cent) per quintal and the marketing charge was Rs.75.00 (6.31 per cent of consumer's price) per quintal. The wholesaler's margin was found to be Rs. 180.00 (15.14 per cent of consumer's price) per quintal spending Rs. 43.00 (3.61 per cent) as marketing cost per quintal. The margin gained by the

Table 32 Price spread of lady's finger in different marketing channels

Particulars	Channel-I		Channel-II		Channel-III		Channel-IV		Channel-V	
	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent
Producer selling price	500.00		500.00		500.00		500.00		500.00	
Producer marketing charges	75.00	7.89	85.00	7.15	55.00	4.50	60.00	7.91	83.00	16.60
Net price received by producer	425.00	44.74	415.00	34.90	445.00	36.98	440.00	58.05	417.00	83.40
Beparis marketing charge			75.00	6.31	68.00	5.56				
Beparis margin			150.00	12.61	140.00	11.45				
Beparis selling price			725.00	60.97	708.00	57.89				
Middleman marketing charge					87.00	7.11				
Middleman margin					120.00	9.81				
Middleman selling price					915.00	74.81				
Wholesalers marketing charges	45.00	4.74	43.00	3.61	33.00	2.70				
Wholesalers margin	170.00	17.89	180.00	15.14	110.00	8.99				
Wholesalers selling price	715.00	75.26	948.00	79.73	1058.00	86.51				
Retailers marketing charge	65.00	6.84	61.00	5.13	55.00	4.50	58.00	7.65		
Retailers margin	170.00	17.89	180.00	15.14	110.00	8.99	200.00	26.38		
Retailers selling price/ consumer's price	950.00	100.00	1189.00	100.00	1223.00	100.00	758.00	100.00	500.00	100.00
Price spread	525.00	55.26	774.00	65.10	778.00	63.61	318.00	41.95	85.00	17.00

retailer in this channel was Rs. 180.00 (15.14 per cent consumer's price). His marketing cost was Rs. 61.00 (5.13 per cent of consumer's price) per quintal of the commodity.

The Marketing Channel-III derived a net price of Rs. 445.00 (36.38 per cent of consumer's price) per quintal for the producer of the lady's finger. His marketing charge was Rs. 55.00 (4.50 per cent of consumer's price) per quintal. The bepari's margin was Rs. 140.00 (11.45 per cent of consumer's price) with the marketing cost of Rs. 68.00 (5.56 per cent of consumer's price) per quintal. The middleman received a margin of Rs. 120.00 (9.81 per cent of consumer's price) per quintal and his marketing cost was Rs. 87.00 (7.11 per cent) per quintal. The margin received by the wholesaler in this channel was Rs. 110.00 (8.99 per cent) and the marketing charge was Rs.33.00 (2.70 per cent of consumer's price) per quintal of the commodity. The retailer earned a margin of Rs. 110.00 (8.99 per cent of consumer's price) per quintal. His marketing charge was Rs.55.00 (4.50 per cent of consumer's price) per quintal of lady's finger marketed in the channel.

In Marketing Channel-IV, the producer's net price was Rs.440.00 (58.05 per cent of consumer's price) per quintal and his marketing cost was Rs.60.00 (7.91 per cent) per quintal. The retailer received a margin of Rs. 200.00 (26.38 per cent of consumer's price) per quintal and his marketing cost was Rs.58.00 (7.65 per cent of consumer's price) per quintal of lady's finger in the channel.

Under the Marketing Channel-V, the producer of lady's finger generated a net price of Rs. 417.00 (83.40 per cent of consumer's price) per quintal. He spent a marketing charge of Rs. 83.00 (16.60 per cent of consumer's price) per quintal of the commodity in the channel.

The analysis of price spread in marketing of lady's finger in each of the marketing channel brought out that the most efficient channel was the Marketing Channel-III as it generated the largest amount of net price (Rs.445.00 per quintal) per quintal for the producer of the commodity. This was followed by the Marketing Channel-IV and the least efficient channel was the Marketing Channel -II.

### **Potato**

In marketing of potato, the price spread was estimated for various marketing channels in the study area. The results are depicted in Table 33.

The figures in the table showed that the Marketing Channel-I generated a net price of Rs. 345.00 (55.20 per cent of consumer's price) per quintal of potato for the producer. His cost of marketing for the product was Rs.55.00 (8.80 per cent of consumer's price) per quintal. The wholesaler margin for this product was Rs. 80.00 being 12.80 per cent of consumer's price per quintal. The marketing charge was Rs. 32.00 (5.12 per cent of total consumer's price) per quintal. The retailer gained a net price of Rs. 70 (11.2 per cent of consumer's price) per quintal spending a marketing charge of Rs.43.00 (6.88 per cent of consumer's price) per quintal of potato marketed.

In the marketing Channel-II, the producer earned a net price of Rs.340.00 (44.16 per cent of consumer's price) per quintal of potato. His marketing cost was Rs. 60.00 (7.79 per cent of consumer's price) per quintal. The margin received by the bepari was Rs. 80.00 (10.39 per cent of consumer's price) per quintal with a marketing cost of Rs. 58.00 (7.53 per cent of consumer's price) per quintal of potato. The wholesaler derived a margin of Rs.90.00 (11.69 per cent of consumer's price) spending a marketing charge of Rs.27.00 (3.50 per cent of

Table 33 Price spread of potato in different marketing channels

Particulars	Channel-I		Channel-II		Channel-III		Channel-IV		Channel-V	
	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent	Rs.	Per cent
Producer selling price	400.00		400.00		400.00		400.00		400.00	
Producer marketing charges	55.00	8.80	60.00	7.79	30.00	3.42	45.00	8.70	58.00	14.50
Net price received by producer	345.00	55.20	340.00	44.16	370.00	42.14	355.00	68.66	342.00	85.50
Beparis marketing charge			58.00	7.53	50.00	5.69				
Beparis margin			80.00	10.39	85.00	9.68				
Beparis selling price			538.00	69.87	535.00	60.93				
Middleman marketing charge					63.00	7.17				
Middleman margin					75.00	8.54				
Middleman selling price					673.00	76.65				
Wholesalers marketing charges	32.00	5.12	27.00	3.50	35.00	3.98				
Wholesalers margin	80.00	12.80	90.00	11.69	75.00	8.45				
Wholesalers selling price	512.00	81.92	655.00	85.06	783.00	89.18				
Retailers marketing charge	43.00	6.88	40.00	5.19	35.00	3.98	37.00	7.16		
Retailers margin	70.00	11.20	75.00	9.74	60.00	6.83	80.00	15.47		
Retailers selling price/ consumer's price	625.00	100.00	770.00	100.00	878.00	100.00	517.00	100.00	400.00	100.00
Price spread	280.00	44.80	430.00	55.84	508.00	57.86	162.00	31.33	58.00	14.50

consumer's price) per quintal. The margin of the retailer in this channel was Rs. 75.00 (9.74 per cent of consumer's price) per quintal and the marketing cost was Rs.40.00 being 5.19 per cent of consumer's price per quintal of potato marketed.

For the Marketing Channel-III, the net price derived by the producer was Rs. 370.00 (42.14 per cent of consumer's price) per quintal and the marketing cost for this was Rs. 30.00 (3.42 per cent of the consumer's price) per quintal of potato. The bepari gained a margin of Rs. 85.00 (9.68 per cent of consumer's price) per quintal and his marketing charge was Rs. 50.00 (5.69 per cent of consumer's price) per quintal. The share of the margin got by the middleman was Rs. 75.00 (8.54 per cent of consumer's price) per quintal and the marketing charge was Rs. 63.00 (7.17 per cent of consumer's price) per quintal. The wholesalers margin in the channel was Rs.75.00 (8.54 per cent) spending an amount of marketing cost of Rs. 35.00 (3.98 per cent of consumer's price) per quintal of the commodity. The margin received by the retailer in this marketing was Rs. 60.00 (6.83 per cent of consumer's price) and his cost of marketing was Rs.35.00 (3.98 per cent of consumer's price) per quintal of the product.

The Marketing Channel-IV generated a net price of Rs. 355.00 (68.66 per cent of consumer's price) per quintal and the associated marketing cost was Rs. 45.00 (8.70 per cent of consumer's price) per quintal. The retailer's margin was Rs. 80.00 (15.47 per cent of consumer's price) per quintal. His marketing cost was Rs. 37.00 (7.16 per cent of consumer's price) per quintal of potato marketed.

In Marketing Channel-V, the producer harvested a net price of Rs.342.00 (85.50 per cent of consumer's price) per quintal. The

marketing charge was calculated to be Rs.58.00 (14.50 per cent of consumer's price) per quintal of potato marketed in the study area.

The estimated price spreads in each of the marketing channels for potato marketing in the study area brought out that the most efficient channel was the Marketing Channel-III for the potato as it generated the largest net price (Rs.370.00 per quintal) per quintal to the potato producers. This was followed by Marketing Channel-IV. The least efficient channel for potato marketing was the Marketing Channel-II in the study area.

The overall analysis of the producer's price in consumer's rupee and the price spread along with the share of each of the various intermediaries in connection with all the vegetables brought out that the Marketing Channel-III (Producer-bepari-middleman-wholesaler-retailer-consumer) was found to be the most efficient channel in the sphere of vegetables marketing in the study area. This was based on the view point of net price received by the producers of the vegetables. The next in efficiency was the Marketing Channel-IV for each of the vegetables. The least efficient channel was the Marketing Channel-II for each of the vegetable enterprises of cauliflower, tomato, lady's finger and potato. It was the Marketing Channel-V for each of cabbage and brinjal in the investigation.

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