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Themes

Market Oriented Agri-Business Management and Agricultural Production Technology

A] Agri. Business Management
- 1] The agricultural input sector
- 2] The production sector
- 3] The processing - manufacturing sector
- 4] The distribution-marketing sector

B] Agricultural Marketing in the Context of Globalization in Agriculture
- 1] Role of Indian Institutions Management and Scope for Export Markets
- 2] Economics of Agriculture Commodities in Export Market
- 3] Advances in Agricultural Marketing

C] Pricing of Agriculture Commodities

D] Market Intelligence and price volatility

E] Agricultural Production Technology

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Special Issue of Maharashtra Society of Agricultural Economics

In the general body meeting of Maharashtra Society of Agricultural Economics held on 12th March 2005 at College of Agriculture, Latur (MAU, Parbhani), it has been decided to hold XVIth Annual Convention of Maharashtra Society of Agricultural Economics at Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli. Dist. Ratnagiri or other suitable centre. The subject selected for the discussion is "Market Oriented Agril-business Management"., "Pricing of Agriculture Commodities" & "Market Intelligence and price volatility"

Agribusinesses have a great importance for developed as well as developing countries. Agribusiness professionals play a crucial role in development of agriculture sector. Orientation of agriculture towards business plays a significant role in generating income and employment throughout the development process. Agribusiness provides a assured market for raw materials and value added products, thus helps the farming community.

The Agribusiness system includes all the firms involved in manufacturing and supplying inputs and / or services to agriculture produce or that handles or process farm output until they reach the final consumer.

The basic aim of agricultural price policy is the intervention in the agricultural produce markets to influence the price levels and their fluctuations, particularly from farm gate to retail level. Price policy is directed to bring about growth and equity in the country; therefore it is occupying a prime place in economic and political debate.

Prices are largely determined by supply and demand. The prices of agriculture goods fluctuate significantly, even during one single day. Pricing of agriculture commodities are important from farmer's point of view. To control the supply in the market, it needs to regularize the production, availability of storage facility are one side problems and another to increase the productivity. Market Intelligence has become vital for taking production and marketing decisions. Unequal access to this type market related intelligence inputs lead to unequal playing grounds for farmers and traders. In the past the farmer's ignorance was the traders gain.

It gives me a great pleasure to acknowledge all the research contributors and President, Secretary of Maharashtra Society of Agriculture Economics giving opportunity of publishing the special issue of the journal.

R.G. Deshmukh
Organizing Secretary & Head

1. Market Oriented Agri Business Management

A] Agri business Management

The concept of agribusiness have a great importance for developed as well as developing countries. Agribusiness professionals play a crucial role in development of agriculture sector. Orientation of agriculture towards business plays a significant role in generating income and employment throughout the development process. Agribusiness provides a assured market for raw materials and value added products, thus helps the farming community.

Today, Agribusiness professionals need a dynamic vision which stirs imagination and incubates a spirit of constant innovation for their survival in the competitive world. It is an essential step in building exemplary careers in agribusiness management. The Agribusiness professionals must identify the potential risks and bottlenecks and bring about possible remedies in order to mobilize their efforts in focused manner.

Within the agriculture industry, agribusiness is widely used simply as a convenient portmanteau of agriculture and business, referring to the range of activities and disciplines encompassed by modern food production.

Recent trends in globalization and integration of international consumer market offer further opportunities for development of agribusiness and food industry across the world which would also benefit developing countries, provided they could suitably manage their resources to tap the emerging opportunities. However, the prospective opportunities are also likely to be accompanied by several challenges, which need to be addressed.

The Agribusiness system includes all the firms involved in manufacturing and supplying inputs and / or services to agriculture produce or that handles or process farm output until they reach the final consumer. The agribusiness production system consists of (I) The agricultural input sector (II) The agricultural production sector (III)The processing - manufacturing or agro-processing sector and (IV) The marketing - distribution sector.

1] The agricultural input sector

This sector produces and supply farm inputs such as seeds, feeds, FYM fertilizers, plant protection chemicals, electricity, farm machinery, farm credit etc. used by production sector of agribusiness.

2] The production sector

The production sector has been at the center of changing scenario of agribusiness. The farmers are increasingly buying yield increasing farm inputs from the market, agriculture is fast getting commercialized and farm production is getting increasingly transferred to manufacturing - processing sector, domestic consumers as also to growing global market. Several organizations provide facilities for the storage and warehousing of the agriculture commodities including cold storage etc. An entire industry survives just on the transportation of agriculture commodities from one place to another.

3] The processing - manufacturing sector

The processing involves value addition to the agricultural or horticultural produce and also includes processes such as grading, sorting, packaging etc. The processing or manufacturing sector includes all the individuals and firms that process raw agricultural commodities and manufacture food products for making these available to the final consumer.

4] The distribution-marketing sector

The distribution-marketing sector contributes at each level of agribusinesses development i.e. from input supply to production to processing and to consumption. Packaging industry, transport companies, warehouses, advertising companies, insurance companies, wholesale firms, retail outlets etc. are all parts of this sector.

The studies related to the agribusinesses system (input, production, processing and distribution) may be included under this theme. Research papers on various aspects of these themes are invited.

B] Agricultural Marketing in the context of Globalization in agriculture

The success of hi-tech agriculture depend on efficiency of marketing system in selling products (the products should include agricultural, horticultural and animal products) both in domestic and foreign markets for higher prices. In order to

examine the present marketing systems and suggest remedial measures to overcome its weakness, the theme is selected.

The Research Papers on following aspects are invited.

I] Role of Indian Institutions Management and Scope for Export Markets

1) India's existing and future growth of agricultural commodities in export market.
2) India's share in international trade under changed scenario.
3) Identification of export oriented products and marketing.
4) Exploring possibilities of promoting new product for export.
5) Estimation of export potential of agricultural products.
6) Role of financial institutes in exporting agricultural Commodities.

II] Economics of Agriculture Commodities in Export Market

1) Relative economics and marketing of agriculture products in international markets.
2) Comparative economics of agriculture products among competing countries.
3) Estimation of economics benefits from export trade.
4) Infrastructure facilities requirements and its economics for export of agriculture Products.
5) Constraints in the export of major agriculture commodities.

III] Advances in Agricultural Marketing

1) Market Intelligence
2) E-Marketing or Digital Marketing
3) E-Commerce E-Business
4) Market
5) Agmarket

2. Pricing of Agriculture Commodities

The basic aim of agricultural price policy is the intervention in the agricultural produce markets to influence the price levels and their fluctuations, particularly from farm gate to retail level. Price policy is directed to bring about growth and equity in the country; therefore it is occupying a prime place in economic and political debate. It involves conflicting objectives. The price policy and its instruments are constantly being reviewed because; the majority of the population is affected by the price policy. The GDP is calculated on monetary value of a commodity and it indicates the low value of Agriculture production and its share in GDP

The Central Government announcing Minimum Support Prices every year at the beginning of the sowing season for certain crops on the basis of the recommendations of the Commission for Agricultural Costs and Prices (CACP).The MSP is the price fixed by Government of India to protect the producer-farmers-against excessive fall in price during bumper production years. In case the market prices for the commodity falls below the announced minimum price due to bumper production and glut in the market, Government agencies purchase the entire quantity offered by the farmers at the announced minimum price. But there is variation in productivity between state to state, region to region and also within the region. Therefore, cost of cultivation is also different. Those state having less productivity do not get much benefit of the Minimum Support Price, there is gap between the cost of cultivation and Minimum Support Prices (MSP) declared by Central Government. Maharashtra state is also one of the state suffering from this type of problem for majority of the crops.

Prices are largely determined by supply and demand. The prices of agriculture goods fluctuate significantly, even during one single day. If large quantities of certain product suddenly arrive on the market, a typical situation during the harvesting period, prices will fall. When there is a shortage of supplies in the market, prices will rise. Also climatic condition affects the prices. Favourable weather conditions, results into a good harvest and therefore have a positive impact on supply, while drought or floods will have the opposite effect. An increase in the production cost of a certain commodity may lead farmers to shift to other commodities with better returns. The variation in area and productivity and perishable in nature, etc affect the prices.

Pricing of agriculture commodities are important from farmer's point of view. To control the supply in the market, it needs to regularize the production, availability of storage facility are one side problems and another to increase the productivity within the available 17 per cent irrigated land in case of Maharashtra. In view of this, **pricing of agriculture commodities** theme is selected.

The theme can be further explored to point out the –

Cost of production and pricing of cereals, pulses, oilseeds and cash crops over period of time.

3. Market Intelligence and price volatility

The changing market environment in agriculture emerging on account of globalization, liberalization and the post WTO regime makes it imperative that the stake holders in agriculture should have through market awareness and a grasp of the intricacies of market oriented production techniques to be able to handle the new challenges. Market Intelligence has become vital for taking production and marketing decisions. Unequal access to this type market related intelligence inputs lead to unequal playing grounds for farmers and traders. In the past the farmer's ignorance was the traders gain.

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CONTENTS

Marketing Analysis of Vegetables

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ABSTRACT

The Study was based on primary as well as secondary data. The primary data was collected from producers of vegetables, commission agents, wholesalers and retailers during the year 2011-2012 .The data were collected by survey method with the help of well specific pre-tested questionnaire designed. For collection of sample data, 10 from producers and 20 each from retailers and commission agent for each commodity were collected. The data were analyzed and estimates of regression between wholesale arrivals and prices of wholesale and retail were made.

Based on the results, Akola Vegetable Market receives 7,60,505 quintals of vegetables every year. Total value of these vegetables work out to Rs.97.20 crores. There are 96 commission agents in Akola Vegetables Market. It is observed from the results that, mainly there were two channels of distribution in Akola Vegetable Market i.e. Channel-I was producer-→ Consumers and Channel – II comprised of Producer--→ Commission agents ----→ Retailers --→ Consumer. Among different methods of selling: Open Auction" and "Hatta" methods of sale are practiced in Akola Vegetable Market. Average marketing cost incurred by producers worked out to Rs.105.35 per quintal in channels-II. Data on commodity -wise marketing cost indicated that tomato required highest marketing cost i.e. 168.30 per quintal and this was followed by lemon and palak. In channel-I average share received by producer in consumers rupee worked out to 94.72 per cent. The average cost incurred by such producers worked out to Rs. 85.41per quintal of vegetable which was 5.28 per cent in their selling price. The producer's share in consumer's rupee was observed to be reduced to 68.89 per cent in channel-II. Producer's share in consumer's rupee was found to be highest in lemon (76.77per cent) and lowest in tomato (58.47 per cent). Mark- up for cabbage and cauliflower was 47 per cent whereas it was lowest 22.64 per cent in lemon. The percentages and marketing margin ranged between 41.38 per cent and 34.48 for tomato and brinjal, respectively. Highest seasonality was

observed in cabbage, cauliflower, palak and lemon arrivals. Lowest intro- year seasonality in arrivals was noted in brinjal, tomato and green chilli which are semi-perishable goods. Highest co-efficient of variation in monthly wholesale arrivals was found in cauliflower and cabbage. Monthly arrivals of these vegetables varied by 75.19 per cent and 72.82 per cent, respectively. In respect of monthly wholesale prices highest co-efficient variation was observed in brinjal (17.62 per cent) and the same was lowest in tomato (8.90 per cent). In majority of the commodities that is cabbage, cauliflower, palak, green chilli, tomato and lemon monthly arrivals and wholesale prices moved in opposite directions. These movements were more apparent in lemon, and green chilli.

Introduction :

Marketing of vegetables assumes great significance from producer as well as consumer's point of view. It is hoped that the study would be useful to the producers in many ways. In this regards, the study covers seven major vegetables in Akola Vegetables Market. Because producers can have idea regarding channel of distribution which is more beneficial to them. The purpose of present study is to examine the marketing pattern of major vegetables in Akola Vegetable Market. Akola Vegetable Market is one of the big vegetable markets in Maharashtra. It is intended to know what are the shares of different vegetables sold in Akola Vegetable Market. What are different kinds of intermediaries intervening between initial producer and final consumer of vegetables? What types of marketing functions are performed in vegetable marketing? What are the costs incurred in marketing of vegetables by various market functionaries and how it compares with the services rendered by them to producers and consumers?. How prices and arrivals fluctuates over a period of time? and what is the extent of impact of change in arrivals on prices? and so forth. Hence, it is essential to critically analyze present marketing system and identify the most suitable channel of marketing, which will be beneficial to both the producers and consumers with following specific objectives.

1) To identify the various channels of distribution in vegetable marketing.
2) To workout the price spread of vegetable in Akola Vegetable Market.
3) To study the seasonal fluctuations in arrivals and prices of vegetables
4) To examine the relationship in arrivals and prices of selected vegetable.

Methodology :

Akola Vegetable Market was purposively selected for the present study particularly from the point of view of convenience in access and data collection. The name of selected market was Mahatma Phule Joytibba Vegetable Market located centre place of the city.

In Akola Vegetable Market, variety of vegetables are arrived from the distant areas (out side as well as within district) and the growing areas around the city (Akola). These vegetables are received in different quantities. Important vegetables which were more commonly consumed by the consumers in Akola Vegetable Market and hence received in larger quantities during the period of study were selected for the present study. These vegetable were cabbage, cauliflower, brinjal, onion, potato, tomato, green-chilli, Palak and lemon. Out of which, only 7 commodities (cabbage, cauliflower, brinjal, tomato, green-chilli, Palak and lemon) were selected purposively which were not brought from the outside the state.

Considering the method of marketing adopted in Akola Vegetable Market, all the following major agencies involved in marketing were randomly selected. These agencies mainly include producers, commission agents/ wholesaler and retailers. Method adopted for selection of these agencies is given below.

1. Producer

The main object of selecting producer, sellers was primarily to know item-wise marketing cost incurred by these producers for different vegetables and secondly to know the channels of distribution through which producers sell this produce. Ten producers for each commodity were selected randomly and necessary data were obtained from them in the questionnaire specially developed for this purpose. Seventy such respondents were studied. In order to get correct idea about price spread, retail prices of different commodities were also collected for the same period i.e. consumer's prices existed on the same day.

2. Wholesaler /Commission agents

In Akola Vegetable Market there are 27 wholesaler and 96 commission agents who pay license fees to the Akola Municipal Corporation. Out of these, 20

wholesaler/commission agents were selected randomly. Most of the time, commission agents are also playing the role of wholesaler in the study area.

3. Retailers

The retailers in Akola Vegetable Market were scattered all over the market region. These retailers are classified into small, medium and large. Some producers also sell their produce as retailer. The total number of retailers in Akola vegetable market were approximately 355. Out of these 20 retailers were selected randomly for the present study. Data in respect of their price received, price paid, quantity purchased, cost incurred, etc., were collected from these retailers by personal interview method.

Primary as well as secondary data were collected randomly from selected market. The primary data were collected from marketing agency for the purpose of marketing channels i.e. producers, wholesaler, and retailer. Similarly, the secondary data were collected from wholesaler / commission agent and retailer of selected market to work out the relationship between arrivals and price.

For collecting the data on marketing of selected vegetables, survey method of data collection was used. For this purpose, a schedule of questionnaire containing details about arrivals of produce, producers information regarding wholesale prices, retail prices, market functionaries, their expenditure, producer's marketing cost and price received by producers, etc, were included in the schedule. These schedules were pretested and finalized for collecting information. Data in respect of arrivals and prices were collected personally by paying frequent visits a week throughout the year. Data on arrivals of vegetable were assessed by visiting vegetable market and attending actual auctions during morning time. Data on wholesale prices were obtained by attending auctions and that on retail prices by actual enquiry with different retailers. The data in respect of producers were collected by paying visits in early morning to the producers who bring their produce in Akola Vegetable Market. The data pertains to the period of January 2011 to December, 2012 i.e. only for 12 months.

Seasonal fluctuations in prices as well as arrivals were studied. For this mean, standard deviation and co-efficient of variation in wholesale price, retail price and

arrivals were worked out. Trends in arrivals and prices were estimated through linear regression analysis. Index number of monthly average prices and arrivals of the vegetable were also worked out.

For working out the index numbers of wholesale prices, retail prices and the arrivals of vegetables, 12 months average were taken as base. The Index number were worked out, for each commodity. Following formula was used for estimating index numbers:

$$IPt = (Pt \div \bar{P}t) x\ 100$$

Where,

IP_t = Index number of price for " $_t$ th" month

P_t = Price during " $_t$ th" month

$\bar{P}$ = Twelve months average price

On the same lines indices for arrivals were worked out.

In order to know the impact of arrivals on prices, linear regression analysis was carried out. The linear regression analysis was worked out for retail prices of vegetables as well as wholesale prices. This analysis was carried out by four ways. These types are :

a) $P_t = a + b\ A_t$

b) $P_t = a + b \log (A_t)$

c) $\log (P_t) = a + b \log (A_t)$

d) $\log (P_t) = a + b\ A_t$

Where

P_t = Price of vegetable during $_t$ th month (t = 1, 2, - - - - - , 12)

A_t = Arrival of vegetable during $_t$ th month (t = 1, 2, - - - - , 12)

"a" and "b" were the coefficients estimated.

For each of the regression mentioned above R^2 (Co-efficient of determination) were worked out for final selection of form. The regression with the highest R^2 value i.e. regression showing best fit to the data was ultimately chosen and presented.

The co-efficient of variation (CV) was computed to find out the extent of fluctuations in market arrivals and prices of vegetables in the study area with following formula.

$$C.V. = \frac{\text{Standard Deviation}(\sigma)}{\text{Mean}}$$

In carrying out the each of the four types of major functions of marketing as outlined **"Marketing functions",** certain other functions which may be conveniently designed as subsidiary services are needed. In vegetable commodities, it was intended to study various types of marketing functions.

Various numbers of intermediaries have been working in the Akola Vegetable Market and it has been given in Table.

Table Position of Intermediaries in Akola Vegetable Market

Sr. No.	Particulars	Number
1.	Wholesalers	27
2.	Commission agents (License holder)	96
3	Retailers	355
4	Hamals	78

Results and Discussion :

Commodity-wise Arrivals in Akola Vegetable Market

Vegetables like cabbage, cauliflower , brinjal, green chilli, Palak and Lemon are grown in Akola district and are assembled in the Akola Vegetable Market. The vegetables like Onion, Tomato, Cucumber, etc. are mainly received from other districts. Whereas, potato is brought from outside the State. Total vegetables assembled in Akola Vegetable Market are presented in Table 1.

It is observed from the Table -1 that, Akola Vegetable Market receives 7,60,505 quintals of major vegetables every year. Total values of these vegetables worked out to Rs. 97.20 crores.

Table. 1 Commodity-wise Arrivals in Akola Vegetable Market.

Sr. No.	Commodity	Quantity(in quintal)	Value(Rs.)
1	Cabbage	45635 (6.00)	37684405 (3.88)
2	Cauliflower	35817 (4.71)	79954375 (8.23)
3	Brinjal	11283 (1.48)	11821925 (1.22)
4	Onion	274602 (36.11)	253743995 (26.11)
5	Potato	249319 (32.78)	270087470 (27.79)
6	Tomato	16116 (2.12)	15227510 (1.57)
7	Green Chilli	13940 (1.83)	29099545 (2.99)
8	Lemon	50727 (6.67)	168055680 (17.29)
9	Palak (Spinach)	9538 (1.25)	10054105 (1.03)
10	Kohala (Pumpkin)	14284 (1.88)	16539475 (1.70)
11	Bhendi (Okra)	15227 (2.00)	31395195 (3.23)
12	Guar	12715 (1.67)	21308990 (2.19)
13	Dhemsa (Round guard)	11302 (1.49)	27008490 (2.78)
	Total	760505 (100.00)	971981160 (100.00)

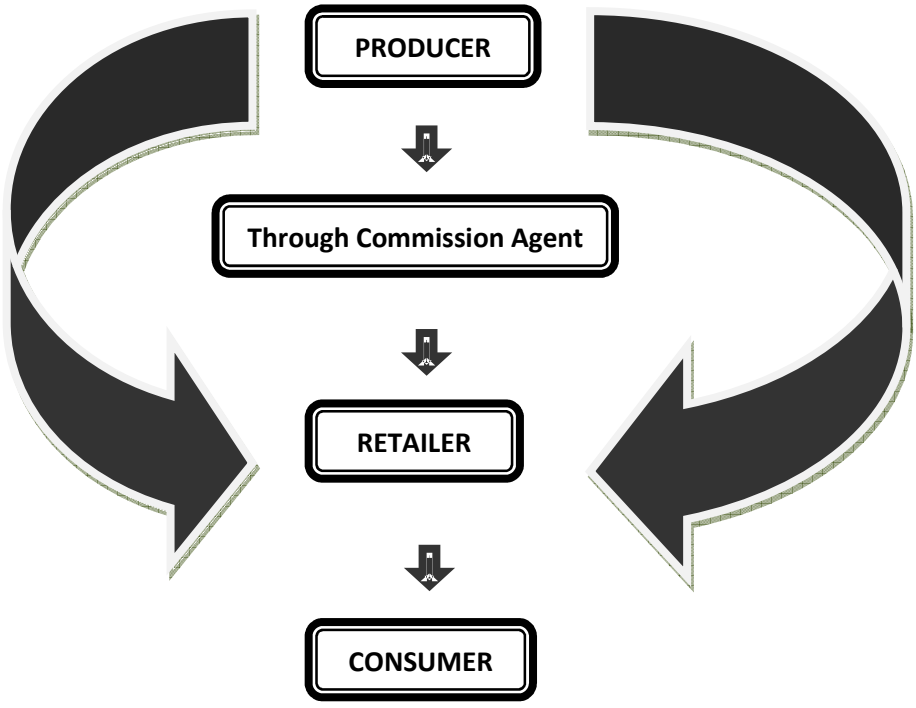
(Figures in Parentheses indicates percentages to total)

The assembling of vegetables takes place in different ways. The producers from the neighbouring villages bring their produce by bullock cart. The producers which are at a far distance bring their produce by tractor, matador or truck. Small quantity of produce is also carried by the Bus of State transport.

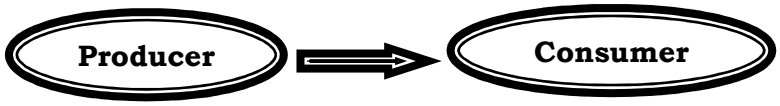
The percentage share under arrivals of onion was reported maximum(36 per cent) followed by potato (33 per cent) in Akola Vegetable Market. Whereas, arrivals of lemon, cabbage and cauliflower was reported ranged from 5 to 8 per cent. Similarly in case of brinjal, tomato, green chilli, palk, pumpkin, behndi, guar, dhemasa, it was reported only ranged from 1 to 2 per cent in Akola Vegetable Market.

Channels of Distribution

Marketing channels is a chain of middlemen involved in the process of selling of different vegetable at different stages. Thus, the channels of distribution indicate the route through which commodity moves from initial producer to final consumer. It is observed that there were mainly two channels of distribution prevalent in Akola Vegetable Market.



Channel-I



This was the shortest possible channel in which no intermediaries were existing between producer and consumer. This channel was observed for the commodities like brinjal, cabbage, cauliflower, palak and lemon, which where locally produced and sold by the producer from Akola or nearby villages. Approximately 10 per cent quantity of these commodities was sold through this channel.

Channel-II

This was found to be the most important channel of marketing of vegetables through which maximum about 90 per cent share of above mentioned commodities moved. Farmers bringing their commodities in bulk normally adopt this channel in order to sell within shortest possible period.

Efficient marketing system depends much on the channel through which the produce reaches from the hands of the producer to the hands of the consumer. The efficient systems of marketing help the producer to get reasonable share in consumer's rupee and consumer to get commodities at reasonable price.

Cost of Marketing

Various costs that are incurred in the marketing of vegetables are transport, loading/ unloading, market fee and commission**.** Table 2 to Table 4 provides the breakup of various items of costs in the total marketing costs of the selected vegetables. These cost shares are based on the current prices recorded in the survey.

Marketing cost incurred by producer

Farmers selling their vegetable in Akola Vegetable Market were ground into two classes on the basis of systems of sale adopted by them. As mentioned earlier, some farmers sold their produce to retailers in wholesale, while others sold directly to consumers. In other words, second group acted as producer- cum- retailer. Vegetable-wise average cost incurred by first group of farmers has been presented in Table –2.

Table-2 depicts that, transportation and commission charges paid to commission agents were the major items of marketing cost incurred by producer. Average marketing cost worked out to Rs.105.35/- per quintal. Data on commoditywise total marketing cost indicated that tomato required highest marketing cost i.e.Rs.168.34/- per quintal and this was followed by lemon and palak where per quintal total cost was estimated as Rs.154.82/- and Rs105. 45/-, respectively. More or less same average cost was required for brinjal, cabbage, cauliflower and green chilli. This was ranged from Rs. 69 to Rs. 87 per quintal. Lowest marketing cost was noted in the case of green chilli of Rs.68.94/- and highest cost of tomato was mainly due to high transportation cost. In Akola market tomato normally comes from Ahmadnager district which is more than 300 km away from and hence the expenditure on transportation of this commodity was high. In the case of lemon share of commission paid to commission agent alone was nearly 82 per cent of total cost.

Table 4.2 Marketing Costs incurred by Producer.

(Rs. Per quintal)

Sr. No.	Particulars	Selected Vegetables							Average
		Cabbage	Cauliflower	Brinjal	Tomato	Green Chilli	Palak (Spinach)	Lemon	
1	Transpor-tation	32.04 (40.12)	30.22 (41.58)	26.00 (29.76)	101.80 (60.47)	18.83 (27.32)	42.73 (40.52)	6.67 (4.31)	36.90 (34.87)
2	Labour charges	10.63 (13.31)	8.27 (11.38)	6.04 (6.91)	4.83 (2.87)	5.83 (8.45)	8.27 (7.84)	3.95 (2.55)	6.83 (7.62)
3	Octroi	2.81 (3.52)	2.65 (3.64)	2.66 (3.04)	2.73 (1.62)	2.49 (3.61)	5.70 (5.41)	2.51 (1.62)	3.08 (3.21)
4	Hamali	5.73 (7.18)	3.72 (5.12)	4.66 (5.34)	7.37 (4.38)	1.98 (2.87)	6.88 (6.52)	9.15 (5.91)	5.64 (5.33)
5	Commission paid to commission agent	23.83 (29.84)	19.81 (27.26)	38.54 (44.12)	44.68 (26.54)	35.74 (51.84)	17.19 (16.30)	126.86 (81.94)	43.81 (39.69)
6	Wastages and other expenses	4.81 (6.03)	8.01 (11.02)	9.46 (10.83)	6.94 (4.12)	4.07 (5.91)	24.69 (23.41)	5.68 (3.67)	9.09 (9.28)
	Total Cost	79.85 (100)	72.68 (100)	87.35 (100)	168.34 (100)	68.94 (100)	105.45 (100)	154.82 (100)	105.35 (100)

(Figures in Parentheses indicates percentages to total cost)

Marketing Cost incurred by producer – cum retailer

Marketing cost incurred by the producers who have sold their produce directly to the consumers has been worked out and presented in Table-3.

Table 3 Marketing Costs incurred by Producer - cum retailer.

(Rs. Per quintal)

Sr. No.	Particu-lars	Selected Vegetables							Aver-age
		Cabb-age	Cauli-flower	Brinjal	Tomato	Green Chilli	Palak	Lemon	
1	Transport ation	22.04 (30.68)	17.68 (25.13)	18.75 (23.58)	44.15 (32.48)	17.36 (26.33)	25.22 (25.61)	7.34 (9.68)	21.79 (24.78)
2	Labour charges	23.61 (32.87)	23.64 (33.61)	25.64 (32.24)	29.06 (21.38)	20.10 (30.48)	32.67 (33.18)	22.50 (29.68)	25.32 (30.49)
3	Octroi	2.57 (3.58)	2.17 (3.08)	3.35 (4.21)	2.92 (2.15)	1.62 (2.45)	4.44 (4.51)	3.17 (4.18)	2.89 (3.45)
4	Hamali	6.00 (8.35)	3.48 (4.95)	4.86 (6.11)	11.34 (8.34)	4.48 (6.79)	5.10 (5.18)	11.27 (14.86)	6.65 (7.80)
5	Shop rent	0.99 (1.38)	1.39 (1.98)	2.59 (3.26)	4.30 (3.16)	1.60 (2.42)	2.45 (2.49)	5.39 (7.11)	2.67 (3.11)
6	Wastage and loss in weight	9.68 (13.47)	1.71 (14.87)	1.80 (18.12)	3.30 (20.85)	1.63 (14.75)	2.07 (13.55)	1.99 (11.35)	3.17 (15.28)
7	Depreciation of weighing balance, gunny bags etc.	6.95 (9.67)	11.52 (16.38)	9.92 (12.48)	15.82 (11.64)	11.06 (16.78)	15.24 (15.48)	17.54 (23.14)	12.58 (15.08)
	Total	71.84 (100)	70.35 (100)	79.52 (100)	135.94 (100)	65.94 (100)	98.46 (100)	75.82 (100)	85.41 (100)

(Figures in Parentheses indicates percentages to total cost)

It is observed from the Table 3 that, the producer- cum – retailer could save commission charges paid to commission agents was found in first group of producers. But they were required to incur additional cost on rent of shop, depreciation of weighing balance, weights, baskets, gunny bags, etc. and labour charges. The main observation emerging from this result was that these group of farmers spent less amount on marketing cost than the earlier group of farmers. This was mainly because of their substantial saving of commission charges which they were not required to pay. Tomato and palak growers had to pay highest cost of marketing when compared with other commodities. The average total cost of marketing of these commodities was worked out to Rs.135.94/- and Rs. 98.46/- per

quintal, respectively. Labour charges was the major item of cost in this channel. Here many of the farmers used their family labour, imputed value of the same was considered as labour charges.

Marketing cost incurred by Retailer

The retailer cost included labour charges, shop rent, depreciation of weighing balance, basket, gunny bags, etc., electricity and others and same itemwise marketing cost incurred by retailer has been presented in Table- 4.

Table 4. Marketing Costs incurred by retailer.

(Rs. Per quintal)

Sr. No	Particu-lars	Selected Vegetables							Avera-ge
		Cabba-ge	Cauli-flower	Brinjal	Tomato	Green Chilli	Palak	Lemon	
1	Labour charges	26.96 (39.24)	25.69 (34.89)	31.16 (38.22)	52.89 (37.84)	29.86 (43.67)	42.59 (41.82)	28.29 (35.61)	33.92 (38.76)
2	Shop rent	3.58 (5.21)	2.66 (3.61)	3.22 (3.95)	4.18 (2.99)	3.19 (4.67)	3.99 (3.92)	7.68 (9.67)	4.07 (4.86)
3	Wastage & loss in weight	19.52 (28.41)	21.16 (28.74)	26.67 (32.72)	50.13 (35.86)	14.72 (21.53)	24.11 (23.67)	6.84 (8.61)	23.31 (25.65)
4	Depreci-ation of weighing balance, gunny bags etc.	17.85 (25.98)	23.35 (31.71)	19.46 (23.87)	31.13 (22.27)	19.79 (28.94)	30.03 (29.48)	35.09 (44.17)	25.24 (29.49)
5	Electricity and Others	0.80 (1.16)	0.77 (1.05)	1.01 (1.24)	1.45 (1.04)	0.81 (1.19)	1.13 (1.11)	1.54 (1.94)	1.07 (1.25)
	Total	68.71 (100)	73.64 (100)	81.52 (100)	139.78 (100)	68.37 (100)	101.85 (100)	79.44 (100)	87.62 (100)

(Figures in Parentheses indicates percentages to total cost)

It is seen from the Table- 4 that, retailers had to pay more or less same cost like those of producer – cum- retailer since the distribution of retailers cost between commodities was on advalorem basis. On an average per quintal total marketing cost was estimated as Rs.139.78/- in tomato followed by palak (Rs.101.85/-) and brinjal (Rs.81.52/-). As regards itemwise cost, retailers had incurred highest expenditure on human labour, Here also it may be pointed out that most of the retailers had put their own family members in his shop and hence labour cost in these cases was imputed cost of unpaid family labour. Next important item of expenditure by retailers

was found as depreciation. This mainly included cost of wear and tear of gunny bags and baskets.

Price Spread of Vegetables

Price spread indicates share of various agencies involved in marketing alognwth the cost incurred by them. The producer share in consumer's rupee, marketing costs and margins in respect of the vegetables have been studies during December 2011 and hence pertains to this month only. The price spread has been computed separately for the two channels. Table-5 represented the price spread for the channel-I (producer- consumer) and Table-6 represents the price spread for the channel-II (producer- commission agent- retailer- consumer) .

The Table- 5 represented the price spread in channel-I for cabbage, cauliflower, brinjal, tomato, greenchilli, palak and lemon. The average share received by producer in consumers rupee worked out to 94.72 per cent. This benefit was mainly taken by small farmers having small quantity of vegetable for sale in vegetable market. The average cost incurred by such producers worked out to Rs. 85.41/- per quintal of vegetable which was 5.28 per cent in their selling price.

Table 5. Price Spread of Vegetables in Channel-I.

(Rs. Per quintal)

Sr. No	Particulars	Selected Vegetables							Average
		Cabb-age	Cauli-flower	Brinjal	Tomato	Green Chilli	Palak	Lemon	
1	Net price received by producer as retailer	1178.16 (94.25)	1479.65 (95.46)	1370.48 (94.52)	1714.06 (92.65)	1384.06 (95.45)	851.54 (89.64)	3174.18 (97.67)	1593.16 (94.72)
2	Cost incurred by producer	71.84 (5.75)	70.35 (4.54)	79.52 (5.48)	135.94 (7.35)	65.94 (4.55)	98.46 (10.36)	75.82 (2.33)	85.41 (5.28)
3	Price paid by consumer	1250 (100)	1550 (100)	1450 (100)	1850 (100)	1450 (100)	950 (100)	3250 (100)	1678.57 (100)

(Figures in Parentheses indicates percentage share in consumer's rupees.)

Table 6. Price Spread of Vegetables in Channel-II.

(Rs. Per quintal)

Sr. No	Particulars	Selected Vegetables							Average
		Cabb-age	Cauli-flower	Brinjal	Tomato	Green Chilli	Palak	Lemon	
1	Net price received by producer	770.15 (61.61)	977.32 (63.05)	862.65 (59.49)	1081.66 (58.47)	981.06 (67.66)	574.55 (60.48)	2495.18 (76.77)	1106.08 (65.89)
2	Marketing charges paid by producer	79.85 (6.39)	72.68 (4.69)	87.35 (6.02)	168.34 (9.10)	68.94 (4.75)	105.45 (11.10)	154.82 (4.76)	105.35 (6.28)
3	Price paid by retailers	850 (68.00)	1050 (67.74)	950 (65.52)	1250 (67.57)	1050 (72.41)	680 (71.58)	2650 (81.54)	1211.43 (72.17)
4	Expenses of retailer	68.71 (5.50)	73.64 (4.75)	81.52 (5.62)	139.78 (7.56)	68.37 (4.72)	101.85 (10.72)	79.44 (2.44)	87.62 (5.22)
5	Profit of retailer	331.29 (26.50)	426.36 (27.51)	418.48 (28.86)	460.22 (24.88)	331.63 (22.87)	168.15 (17.70)	520.56 (16.02)	379.53 (22.61)
6	Price paid by consumer	1250 (100)	1550 (100)	1450 (100)	1850 (100)	1450 (100)	950 (100)	3250 (100)	1678.57 (100)

(Figures in Parentheses indicates percentage share in consumer's rupees.)

It may be seen from the Table 6 that, when producers sell their vegetables in wholesale market to retailers, on an average they get substantially low price. The average price for all vegetables was estimated as Rs.1106.08/- per quintal in this channel as against that of Rs.1593.16/- per quintal in channel-I. In other words producers share in consumers price was observed to be reduced to 65.89 per cent in channel -II as against 94.72 per cent in channel-I.

Data in Table -6 further indicate that, profit margin of retailers in general was as high as Rs. 379.53/- per quintal (22.61 per cent) in consumers price. Producer's share in consumer's rupee was found to be highest in lemon (76.77 per cent) and lowest in tomato (58.47 per cent). Lemon being comparatively durable and costly commodity, it may be concluded that, higher in the level of price more is the share of producer. Secondly it may be pointed out that, palak which is highly perishable and comparatively cheaper commodity margin of retailers, therefore, profit in

consumers price to retailer in palak was observed as 17.70 per cent. Hence this leads to the conclusion that more perishable is the commodity lower is the margin of profit to retailers. Because , they have to dispose off this commodity within shortest possible period. This confirms the findings of Gurutejsingh and George(1967).These researchers in their study in Ludhiana on marketing of tomato found that the producers share was 64.76 per cent and retailers share as 17.10 per cent. The range of average share received by producer in Akola Vegetable Market in different commodities was 65.89 per cent (i.e. ranged from 58.47 per cent to 76.77per cent).This results tallied with the shares noted in Kolkata and Madras markets in the studies conducted by Government of India (1965) where the share varied from 41 per cent to 62 per cent. But at the same time the results of the present study did not tally with those obtained in Nagpur Market under the same study. In Nagpur Market, these shares varied between 23.00 per cent and 46.70 per cent for different vegetables.

From the forgoing analysis of results obtained from Table-5 and Table 6, it is concluded that, as the number of involved agents increased, the producers' share in retail prices fell drastically. Therefore, it is suggested that, Farmers should sale the produce directly to consumers for received higher prices.

Marketing Efficiency in Vegetables.

The marketing efficiency measures chosen for analysis were absolute margin, mark-up, percentage margin and marketing margin. Marketing efficiency measures at retailers level for cabbage, cauliflower, brinjal, tomato, green chilli, palak and lemon were analyzed and results are presented in Table-7 .

Table 7. Marketing Efficiency in Vegetable at Retailers Stage

Sr. No.	Vegetables	Absolute Margin	Mark up	Percentage Margin	Marketing Margin
1	Cabbage	400	47.06	32.00	32.00
2	Cauliflower	500	47.62	32.26	32.26
3	Brinjal	500	52.63	34.48	34.48
4	Tomato	600	48.00	41.38	41.38
5	Green Chilli	400	38.10	21.62	21.62
6	Palak (Spinach)	270	39.71	18.62	18.62
7	Lemon	600	22.64	18.46	18.46
	Average	467	38.56	27.83	27.83

Marketing efficiency measures are normally calculated for each agency involved in selling and purchasing of commodities. In the present study retailers were the only such agency. Hence these measures have been estimated for retailer only on the basis of Table-6 with following formula and as such results are given in Table-7.

1. Absolute Margin = Price paid by consumer – Price received by retailer

Absolute margin of Cabbage= 1250-850 = **400** Similarly for Cauliflower=1550-1050=**500**, Brinjal=1450-950=**500**, Tomato=1850-250 = **600** , Green Chilli =1450-1050=**400**, Palak=950-680= **270**, Lemon=3250-2650=**600**and overall = 1678-1211= **467**

2. Mark Up = Absolute Margin / Buying Price) X 100

Mark Up of Cabbage = (400/850)=**47.06** Similarly for Cauliflower= (400/1050) = **47.62**, Brinjal=(400/950)=**52.63**,Tomato = (400/1250)=**48.00**, Green Chilli = (400/1050) =**38.10**, Palak = (400/680)=**39.71**, Lemon= (400/2650)=**22.64** and Overall =(400/1211)=**38.56**

3. Percentage Margin and Marketing Margin :

= Absolute Margin / Retailer Selling Price) X 100

For Cabbage = (400/1250)=**32.00** Similarly for Cauliflower= (400/1550) = **32.26**, Brinjal=(400/1450)=**34.48**,Tomato = (400/1850)=**41.38**, Green Chilli = (400/1450) =**21.62**, Palak = (400/950)=**18.62**,Lemon= (400/3250)=**18.46** and Overall =(400/1678)=**27.83**

Mark-up indicates percentage increase in price at a particular stage over its purchasing price. Table- 7 indicates that highest mark-up was noted in brinjal at retailer's stage i.e. 52.63 per cent. Mark-up in tomato, cabbage and cauliflower were also found on higher side i.e. 48.00 ,47.62 and 47.06 per cent ,respectively whereas it was lowest (22.64 per cent) in lemon. Percentage margin and marketing margin are the other ways of testing marketing efficiency. These two measures tally for retailers and differ in case of wholesalers and other agencies. In the present study estimates pertain to retailers alone. Hence the estimates of these two measures are the same for respective vegetables. In these measures effect of increase in price at a particular stage are deflated and gives picture in favour of

marketing agencies. The percentages and marketing margin ranged between 41.38 per cent and 34.48 for tomato and brinjal, respectively.

Marketing efficiency is judged from the level of mark-up and percentage margin. Lower are the values of these measures, higher is the efficiency and vice-versa. The estimates of the present study(i.e. very high rates of mark-up) indicate that the marketing efficiency is low in Akola Vegetable Market.

Intra - year Seasonality in Vegetable Arrivals

Agricultural commodities are well known for their seasonal nature of production. Thus seasonality is expected to be comparatively lower in vegetables basically because most of the vegetables are grown under irrigated conditions and many of them are produced throughout the year. Seasonality in arrivals is normally high for rainfed crops which purely depends upon monsoon. However, efforts have been made in this study to examine the intra year seasonally in arrivals of different vegetables. This is manly to compare the nature of seasonality between commodities and secondly to examine their impact on prices. In order to measure seasonality. Index number of the monthly arrivals of different vegetables have been worked out with 12 months average arrivals as base i.e.100. This has been presented in Table-8.

It is observed from the Table- 8 that, at an overall level of lowest and highest value of index numbers of arrivals and also change in it over months indicates that highest seasonality was observed in cabbage, cauliflower, palak and lemon arrivals. Lowest intra year seasonality was noted in brinjal, tomato and green chilli.

Table. 8 Monthly Index number of arrivals (Base= 12 months average)

Sr. No.	Months	Cabbage	**Index**	Cauli-flower	**Index**	Brinjal	**Index**	Tomato	**Index**	Green Chilli	**Index**	Palak (Spinach)	**Index**	Lemon	**Index**
1	Jan.	7851	206.45	5978	200.28	895	95.19	2215	164.93	1645	141.61	1845	232.12	1592	37.66
2	Feb.	6468	170.08	5374	180.05	954	101.46	1263	94.04	1245	107.17	895	112.60	1394	32.98
3	Mar.	5875	154.49	4587	153.68	1364	145.07	1584	117.94	986	84.88	769	96.75	1986	46.98
4	April	3857	101.42	2364	79.20	963	102.42	1853	137.97	782	67.32	541	68.06	5421	128.24
5	May	954	25.09	708	23.72	1294	137.62	964	71.78	684	58.88	452	56.87	7524	177.99
6	June	787	20.69	618	20.71	642	68.28	542	40.36	849	73.08	678	85.30	7465	176.59
7	July	712	18.72	594	19.90	689	73.28	569	42.37	964	82.98	489	61.52	7158	169.33
8	Aug.	884	23.25	685	22.95	748	79.55	978	72.82	1248	107.43	381	47.93	4795	113.43
9	Sept.	907	23.85	741	24.83	1023	108.80	1245	92.70	1362	117.25	369	46.42	3896	92.16
10	Oct.	4865	127.93	3691	123.66	1082	115.08	1364	101.56	1388	119.48	649	81.65	4075	96.40
11	Nov.	6128	161.14	4849	162.46	895	95.19	1685	125.47	1349	116.13	1175	147.83	2946	69.69
12	Dec.	6347	166.90	5628	188.56	734	78.06	1854	138.05	1438	123.79	1295	162.93	2475	58.55
	Total	45635	1200.00	35817	1200.00	11283	1200.00	16116	1200.00	13940	1200.00	9538	1200.00	50727	1200.00
Average **(Mean)**		3803	100.00	2985	100.00	940	100.00	1343	100.00	1162	100.00	795	100.00	4227	100.00

The results of Table – 4.8 depicted with the formula of **IPt = (Pt ÷ $\bar{P}$t)x 100**

Where, **IP_t =** Index number of arrivals for " $_t$ th" month i.e. Index of January month , **P_t =**Arrivals during " $_t$ th" month i.e. Arrivals of January month, $\bar{P}$ **=** Twelve months average arrivals i.e . Average of 12th Months

For Example: IPt = (7851/3803) X100 = **206.45** is the index number of January month for Cabbage. Similarly, as such index number were calculated for others vegetables.

Intra- year Seasonality in Wholesale and Retail Price

For studying intra year seasonality in wholesale and retail prices of selected vegetables were examined with the help of monthly seasonal index. These are presented in Table- 9 and 10 for wholesale and retail prices, respectively.

It is observed from the Table -9 that, the highest seasonality variation in wholesale was noted in tomato followed by lemon and palak. Monthly index number of wholesale prices of cabbage was found lowest variation (75.90) in the month of January. While it has touched of tomato of highest value of transaction compared to other vegetable with monthly indices of 130.70 in the month of July. Therefore, based on the monthly seasonal indices, variation in monthly prices from the month of April to September was the peak months in almost all selected vegetables with the seasonal indices ranged from 100 to 130 whereas in the January showed the least seasonal variation which ranged from 75 to 91 except lemon. In case of Lemon, monthly seasonal indices showed highest variation during the month of January to April which ranged from 111 to 126 due to short of arrivals of lemon in the market.

Thus, it may be concluded in selected vegetables that, seasonality variation in prices is very much influenced by the degree of perishability of vegetables. Because of higher is the extent of perishability of vegetable higher is the seasonality in prices.

The table-10 observed that, the highest seasonality variation in retail prices was noted in cabbage followed by brinjal and palak. Monthly index number of prices of cabbage was found lowest variation (75.05) in the month of February. While it has touched of cabbage of highest value of transaction compared to other vegetable with monthly indices of 137.41 in the month of April. Therefore, based on the monthly seasonal indices ,variation in monthly prices from the month of April to September were the peak months in almost all selected vegetable with the seasonal indices ranged from 100 to 137 whereas month of January to March and October to December showed the least seasonality variation of price which ranged from 75 to 97.

Table. 9 Monthly Index number of wholesale Prices (Base= 12 months average)

Sr. No.	Months	Cab-bage	Index	Cauli-flower	Index	Brinjal	Index	Tomato	Index	Green Chilli	Index	Palak	Index	Lemo n	Index
1	Jan.	10.00	75.90	20.30	83.08	12.00	91.17	10.00	80.19	22.60	88.40	11.25	80.74	42.50	117.77
2	Feb.	10.50	79.70	21.75	89.02	11.75	89.27	12.25	98.23	24.50	95.83	12.30	88.28	45.60	126.36
3	Mar.	12.00	91.08	22.50	92.09	10.45	79.39	11.75	94.22	26.35	103.06	12.80	91.87	41.50	115.00
4	April	13.25	100.57	24.75	101.30	11.50	87.37	11.50	92.22	28.50	111.47	15.00	107.66	40.25	111.53
5	May	14.25	108.16	26.80	109.69	10.85	82.43	12.75	102.24	28.90	113.04	15.75	113.04	30.80	85.35
6	June	16.00	121.44	28.60	117.05	16.30	123.84	15.80	126.70	28.25	110.50	13.40	96.17	38.60	106.96
7	July	16.30	123.72	27.80	113.78	16.00	121.56	16.30	130.70	27.60	107.95	15.30	109.81	29.80	82.58
8	Aug.	15.30	116.13	28.50	116.64	15.75	119.66	12.50	100.23	25.60	100.13	16.40	117.70	34.50	95.60
9	Sept.	15.00	113.85	25.60	104.77	11.25	85.47	12.30	98.63	23.50	91.92	17.50	125.60	36.90	102.25
10	Oct.	13.00	98.67	23.00	94.13	11.50	87.37	12.00	96.22	23.50	91.92	14.00	100.48	35.60	98.65
11	Nov.	11.50	87.29	22.10	90.45	15.00	113.96	11.50	92.22	24.10	94.26	12.00	86.12	29.60	82.02
12	Dec.	11.00	83.49	21.50	87.99	15.60	118.52	11.00	88.21	23.40	91.53	11.50	82.54	27.40	75.93
	Averag e	13.18	100.00	24.43	100.00	13.16	100.00	12.47	100.00	25.57	100.00	13.93	100.00	36.09	100.00

Results of Table- 4.9 and Table-4.10 obtained with the formula of **IPt = (Pt ÷ $\bar{P}$t)x 100**

Where, **IP_t =** Index number of Price for " $_t$ **th"** month i.e. Index of January month, **P_t =** Price during " $_t$ **th"** month i.e. Price of January month, $\bar{P}$ **=** Twelve months average price i.e . Average of 12^{th} Months

For Example : IP**t** = (10.00/13.18) X100 = **75.90**

The Results of **75.90** is the index number of January month for Cabbage. Similarly, as such index number were also calculated for others vegetables.

Table. 10 Monthly Index number of retail Prices (Base= 12 months average)

Sr. No.	Months	Cabbage	Index	Cauliflower	Index	Brinjal	Index	Toma-to	Index	Green Chilli	Index	Palak	Index	Lemon	Index
1	Jan.	14.50	83.71	29.00	91.05	16.35	85.32	20.50	97.37	33.90	93.13	17.75	85.82	39.10	85.46
2	Feb.	13.00	75.05	27.60	86.66	17.00	88.71	19.50	92.62	32.10	88.19	19.80	95.73	39.30	85.89
3	Mar.	13.50	77.94	28.80	90.42	15.95	83.24	18.50	87.87	34.00	93.41	19.30	93.31	48.10	105.13
4	April	23.80	137.41	38.10	119.62	23.80	124.20	25.80	122.54	41.40	113.74	26.00	125.71	57.10	124.80
5	May	22.75	131.34	36.30	113.97	24.25	126.55	26.30	124.92	40.00	109.89	23.90	115.55	55.00	120.21
6	June	22.30	128.75	34.30	107.69	21.50	112.20	22.00	104.49	40.75	111.95	21.25	102.74	52.00	113.65
7	July	19.50	112.58	33.10	103.92	20.50	106.98	22.25	105.68	38.10	104.67	23.50	113.62	48.75	106.55
8	Aug.	16.75	96.70	35.00	109.89	22.10	115.33	21.80	103.54	37.85	103.98	19.50	94.28	44.40	97.04
9	Sept.	18.75	108.25	32.25	101.26	17.25	90.02	20.00	94.99	37.10	101.92	19.80	95.73	45.10	98.57
10	Oct.	15.50	89.49	28.50	89.48	17.00	88.71	18.75	89.06	34.60	95.05	20.90	101.05	44.00	96.17
11	Nov.	13.50	77.94	30.00	94.19	16.75	87.41	20.00	94.99	34.00	93.41	20.50	99.11	39.30	85.89
12	Dec.	14.00	80.83	29.25	91.84	17.50	91.32	17.25	81.93	33.00	90.66	16.00	77.36	36.90	80.65
Average		17.32	100.00	31.85	100.00	19.16	100.00	21.05	100.00	36.40	100.00	20.68	100.00	45.75	100.00

For Example : IP**t** = (14.50/17.32) X100 = **83.71** is the index number of retail price of January month for Cabbage as such index number of retail price were calculated for others vegetables.

Market Arrivals and Price Variability in Selected Vegetables

Efforts were made to measure variation in monthly arrivals and prices by applying statistical tools like Standard Deviation and Co-efficient of Variation. Commodity-wise estimate of mean, S.D. and C.V. of arrivals, wholesale prices and retail prices are given in Table-11, Table-12 and Table 13, respectively.

Table 11 Variability in the wholesale market arrivals of selected vegetables

Sr. No.	Commodity	Mean(Quintals)	S.D.	C.V.(%)
1	Cabbage	3802.92	2771.03	72.87
2	Cauliflower	2984.75	2244.30	75.19
3	Brinjal	940.25	227.24	24.17
4	Tomato	1343.00	521.42	38.82
5	Green Chilli	1161.67	300.13	25.84
6	Palak (Spinach)	794.83	444.28	55.90
7	Lemon	4227.25	2266.92	53.63

Table-11 indicated that highest variation in monthly arrivals was found in cauliflower and cabbage. Co-efficient of variation in arrivals of these commodities were worked out to 75.19 and 72.87, indicating thereby that, monthly arrivals of these vegetables varied by 75.19 per cent and 72.87per cent , respectively. Next to this, arrival of palak varied by 55.90 per cent and those of lemon by 53.63 per cent. Lowest variability was noticed in brinjal, green chilli and tomato. It was worked out by 24.17 per cent , 25.84 per cent and 38.82 per cent , respectively.

The extent of monthly wholesale price variability in selected vegetables has been brought out in Table-12

Table 12 Variability in the wholesale market price of selected vegetables

Sr. No.	Commodity	Mean(Rs./Kg)	S.D.	C.V.(%)
1	Cabbage	13.18	2.19	16.65
2	Cauliflower	24.43	2.96	12.12
3	Brinjal	13.16	2.32	17.62
4	Tomato	12.47	1.83	14.67
5	Green Chilli	25.57	2.28	8.90
6	Palak (Spinach)	13.93	2.05	14.71
7	Lemon	36.09	5.82	16.14

The Table- 12 depicted that, highest variability was noted in brinjal (17.62 per cent) and it was lowest in green chilli (8.90 per cent). In case of all others vegetables there was no much difference in C.V. The estimates of C.V. in these commodities ranged between 12 to 16 per cent.

As regards retail price behavior in selected vegetable in Akola Market is presented in Table - 13

Table 13 Variability in retail price of selected vegetables

Sr. No.	Commodity	Mean(Rs./Kg)	S.D.	C.V.(%)
1	Cabbage	17.32	3.97	22.93
2	Cauliflower	31.85	3.48	10.93
3	Brinjal	19.16	3.06	15.98
4	Tomato	21.05	2.77	13.14
5	Green Chilli	36.40	3.21	8.82
6	Palak (Spinach)	20.68	2.74	13.23
7	Lemon	45.75	6.60	14.42

It is seen from the Table -13 that, highest and lowest variability was found in the same commodities (like wholesale price). Coefficient of Variability in the retail prices was negligible i.e.8.82 indicating thereby that retailers do not change their selling price even though their purchasing prices fluctuate. Moreover it is observed that the variability in wholesale prices is greater than in the retail prices. This shows that, even though wholesale prices fluctuates, retail prices do not fluctuate much. In case of brinjal, cabbage, cauliflower and tomato it was noted that retail prices less fluctuate than wholesale prices.

Regression analysis between wholesale arrival and prices

Relationship in wholesale arrivals and prices were estimated with the help of regression analysis. Four forms of regression analysis which has shown best fit was selected. Following type of linear regression had shown highest values of co-efficient of determination (R^2). Hence results obtained only from this function are presented.

$$Pt = a + b \log (At)$$

In this from arrivals were taken into log form and the arrivals were regressed upon price. The results of the regression analysis of wholesale arrivals and wholesale prices are presented in Table 14.

Table-14 Estimates of Co-efficient of regression between monthly wholesale arrivals and prices of vegetables.

Sr. No.	Commodity	Value of constant(a)	Regression co-efficient(b)	Co-efficient of determination R^2
1	Cabbage	2940.26	-475.30*	0.90
2	Cauliflower	4597.52	-651.71*	0.93
3	Brinjal	7372.22	-2044.61*	0.83
4	Tomato	4036.29	-902.11*	0.93
5	Green Chilli	8209.82	-1853.14*	0.95
6	Palak (Spinach)	3928.11	-890.56*	0.92
7	Lemon	11479.04	-2210.40*	0.97

*** indicate significant at 5 per cent level**

It is observed from the results that, the values of co-efficient of determination (R^2) were found significant at 5 per cent level in all most all selected vegetables. From this it was found that there was negative co-relation between arrivals and wholesale prices of these vegetables.

The estimated value of "b" i.e. regression co-efficient expresses magnitude of influence of arrivals on prices and its sign (+ve or –ve) shows direction of association. This clearly shows that wholesale prices were inversely affected by arrivals. These were significant at 5 per cent level of probability in cabbage, cauliflower, brinjal, tomato, green chilli, palak and lemon. From the above given results, it may be concluded that variation in supply of vegetables significantly affects wholesale prices.

Daily Fluctuation in Arrivals and Prices

Daily fluctuation in arrivals and prices are studied with view to find out lean and peak days of week. Commodity wise per day total arrival and average price is presented in Table-15.

The results from Table- 15 indicated that, there was variation in daily arrivals and the wholesale prices of the vegetables. Sunday being a weekly Bazar day and also a day of holiday to salaried people normally there is heavy demand for vegetables on this day. In response to his heavy demand there was significant

15. Daily fluctuations in arrivals and prices of selected vegetables

Sr. No.	Day	Cabbage		Cauliflower		Brinjal		Tomato		Green Chilli		Palak (Spinach)		Lemon		Average	
		Arrival	Price	Arrival	Price	Arrival	Price	Arrival	Price	Arrival	Price	Arrival	Price	Arrival	Price	Arrival	Price
1	Mon	118.30	12.50	107.50	23.65	28.70	12.80	33.50	12.10	24.80	27.30	15.60	12.14	135.80	36.50	464.20	19.57
2	Tue	124.20	13.50	97.40	26.45	30.20	11.45	31.80	12.55	28.05	23.50	22.90	12.80	118.50	34.05	453.05	19.19
3	Wed	126.80	12.85	106.50	23.58	25.40	13.00	29.60	13.50	27.40	25.75	19.50	13.40	136.70	40.56	471.90	20.38
4	Thu	123.20	12.50	98.50	24.95	32.80	11.65	39.90	13.55	34.60	24.50	24.20	14.65	140.60	36.75	493.80	19.79
5	Fri	119.60	14.30	95.60	25.95	29.30	13.55	44.70	13.45	42.10	26.25	18.60	16.50	130.10	40.45	480.00	21.49
6	Sat	152.30	14.85	105.40	23.80	34.20	15.40	67.50	11.85	56.40	26.50	33.70	15.30	161.30	35.85	610.80	20.51
7	Sun	186.35	11.75	135.30	22.60	54.50	14.30	88.70	10.30	77.15	25.20	64.20	12.70	233.80	28.50	840.00	17.91

(Daily fluctuation in wholesale arrivals and prices are worked out with view to find out lean and peak days of week.)

increase in arrival of vegetables on Sunday. This was followed by mid day of weak i.e. Thursday. It was also observed that the lowest arrivals of most of the vegetables was on Tuesday and Monday i.e. day before Bazar day. Highest price was noted on Friday and Saturday which is accompanied with lowest arrivals as compared to Bazar day (Sunday). Price on this day was higher (nearby 20 per cent) than those on Sunday.

CONCLUSIONS

Following conclusions are emerged from the present study.

1. Producers can be highly benefited and increase their share to 94.72 per cent from 65.89 per cent in consumers price by selling their vegetables directly in the market rather than selling to wholesales. Hence producers should arrange selling of their vegetables directly to the consumers wherever possible.
2. Retailers in vegetables earn very high margin of profit. Their average share of profit was to the extent of Rs.379.53/- per quintal in average selling price of Rs.1678.57./-
3. High estimates of mark-up at retailer's level indicated low marketing efficiency in Akola vegetable market.
4. Highest seasonality in arrivals was found in cauliflower and cabbage and lowest in tomato.
5. Highest intra - year price seasonality was noted in palak followed by cabbage and cauliflower with lowest in tomato. Hence it is concluded that higher is the perishability of vegetables, higher is the seasonality in wholesale price.
6. Though monthly wholesale and retail prices moved more or less in the same direction, seasonal fluctuation is more prominent in wholesale prices rather than retail prices leaving initial producer as well as final consumer at disadvantageous position.
7. Monthly arrivals and wholesale prices moved in opposite direction. These movements were similar apparent in almost all selected vegetables. Thus the regression analysis leads to the conclusion that variation in supply of vegetables significantly affects wholesale prices.
8. Impact of fluctuations in arrivals on retail prices was comparatively lower than that on wholesale price.

9. Within week variation in arrivals and prices indicated that though daily arrivals fluctuated much, price did not fluctuate to that extent. However, highest prices are noted on Friday and Saturday, a day before weekly Bazar day and lowest on Tuesday and Monday(followed day of weekly Bazar day).

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Market Infrastructures- Storage Capacity: Status Analysis of Maharashtra

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Abstract

Maharashtra is very much on the forefront in the development and making progress of the agricultural sector and especially in the co-operative sector. The setting up-of various types of co-operative institutions and running them successfully for the cause of rural farming community is an ideal example. The co-operative marketing societies are the core institutions in the state and in the field of agricultural marketing. These institutions/societies took various diversified activities. The storage is the one of the important activity in the post harvest technologies and these marketing societies have extended their help in this regard. In the post-harvest technologies and processing, the creation of scientific storage facilities at various levels now-a-days has become the prime need. It is no exaggeration to say that storing the goods /agricultural produce in good condition before reaching to the consumers is one of the market pre-requisite in the recent market strategies. And also, to save the food / agricultural produce in good condition is equal to produce the food or agricultural produce. Therefore, the co-operative marketing societies functioning in the state, their membership, capital owned, co-operative godowns and their storage capacity, etc. need to be analyzed. The exercise is based on the secondary information published in various Central and State governments reports, Annual Reports of the co-operative organizations, research papers published, etc. during various years and from time to time

The large number of co-operative societies (1115) are functioning in the state of Maharashtra with a membership of 838 thousand. The Western Maharashtra region amongst the four regions of the state is on forefront in having the maximum

number of profit making co-operative marketing societies. The state owned warehouses were 980 with a storage capacity of 548 thousand metric tonnes of which maximum were in the Western Maharashtra. The share of market godowns declined to 15.79 per cent over a period of 27 years since 1974. The state share of rural godowns also declined from 17.40 to 5.59 per cent over the period in the country's total. The state of Maharashtra though being ahead in the horticultural development and production, the potential so far created on cold storages seems to be scanty. The co-operative marketing societies need to come forward in this regard to cope with the new market situations in the country and minimizing the losses in the food/agricultural produce.

Introduction

India's New Economic Policy (NEP) launched in 1991 is most based on growth centred development version. Its one major component was to develop the basic infrastructure facilities in regard with the marketing, especially the rural agricultural marketing facilities. The realization that increased agricultural production alone would not ensure farm prosperity, had led to several institutional reforms in the country. These included land reforms, agricultural extension and education, credit facility extension and development of infrastructure like roads, godowns, markets yards and marketing institutions, agro-processing units, etc. Along with the central government, the state governments also started to take initiatives in these development activities in the country. Among the Indian states, Maharashtra is very much on the forefront in the development and making progress of the agricultural sector and especially in the co-operative sector. The setting up of various types co-operative institutions and running them successfully for the cause of rural farming community is an ideal example. The co-operative marketing societies are the core institutions in the state and in the field of agricultural marketing. These institutions / societies took various diversified activities. The storage is the one of the important activity of these marketing societies. In the post-harvest technologies and processing, the creation of scientific storage facilities at various levels now-a-days has become the prime need. It is no exaggeration to say that storing the goods/ materials/agricultural produce in good condition before reaching to the consumers is one of the market pre-requisite in the recent market strategies. And also, to save the food / agricultural produce in good condition is equal to produce the more food or

agricultural produce. Therefore, the co-operative marketing societies functioning in the state, their membership, capital owned, fco-operative godowns and their storage capacity, etc. need to be analysed. In this context, the exercise was taken up to know the present status of these societies for the state of Maharashtra alongwith its region wise analysis.

Methodology

The exercise is based on the secondary information published in various Central and State governments reports, Annual Reports of the co-operative organizations, research papers published, etc. during various years and from time to time

Results and Discussion

1. Co-operative Marketing Societies

The state of Maharashtra is well divided into four regions viz; Konkan, Western Maharashtra, Marathwada and Vidarbha. Each of the region has its own geophraphic and specially the socio-economic features. Of these, the region Western Maharashtra is on the forefront in the most of agricultural development aspects and mostly in the case of co-operative institutions and their diversified activities. The status of co-operative marketing societies has been discussed in brief (Table 1).

The total co-operative marketing societies functioning in the state are 1115. Of these, nearly, 58 per cent are in the Western Maharashtra followed by Marathwada wherein, these are 19 per cent. The number of members of the co-operative marketing societies is 8.38 lakhs. Nearly, 52 per cent members are from the Western Maharashtra followed by the region Vidarbha (30 per cent). By the end of the year 2002 the total owned capital of these marketing societies amounted to Rs. 15624 lakh. And the similar is trend in case of membership. The working capital of these co-operative marketing societies is nearly double than the owned capital, i.e. Rs. 32127 lakh and the societies from the Western Maharashtra are having a share of 66 per cent in it whereas, the societies from Vidarbha and Marathwada regions are having 16 and 10 per cent share, respectively. The total number of co-operative marketing societies that are making profits are 502 in the state, of which 53 per cent are in Western Maharashtra followed by 14 per cent each in Konkan and Marathwada regions. By the end of the year 2002, the amount of profit of these societies is Rs. 1285 lakh. The co-operative marketing societies from Western Maharashtra were

having maximum share (48.78 per cent) followed by the societies from the Vidarbha region (18.83 per cent) in the total amount of profit.

Table 1. Co-operative marketing societies in Maharashtra

Sr. No.	Particulars	Konkan	Western Maharashtra	Marathwada	Vidarbha	Maharashtra
1	No. of societies (Number)	114 (10.22)	644 (57.76)	213 (19.10)	144 (12.07)	1115 (100.00)
2	Members ('000')	47 (5.61)	434 (51.79)	102 (12.17)	255 (30.43)	838 (100.00)
3	Owned capital (Lakh Rs.)	1000 (6.40)	9237 (59.12)	904 (5.78)	4483 (28.69)	15624 (100.00)
4	Other Borrowings (Lakh Rs.)	436 (4.77)	5916 (64.73)	1649 (18.04)	1139 (12.46)	9140 (100.00)
5	Working capital (Lakh Rs.)	2014 (6.27)	21381 (66.55)	3512 (10.93)	5220 (16.25)	32127 (100.00)
6	Value of goods received (Lakh Rs.)	4041 (3.16)	76692 (59.90)	5978 (4.65)	41329 (32.28)	128040 (100.00)
7	No. of societies in Profit (Number)	71 (1414)	268 (53.40)	71 (14.14)	92 (18.34)	502 (100.00)
8	Profit (Lakh Rs.)	272 (21.27)	614 (47.78)	157 (12.22)	242 (18.83)	1285 (100.00)

(Figures in the parenthesis are percentages to Maharashtra)

Thus, the region Western Maharashtra is on the top in many aspects viz; number of societies, their membership, owned and working capital and the profit earned, etc.

2. Storage godowns- Numbers and Capacity

The region wise number of godowns / warehouses owned by the state government and their storage capacity status has been highlighted in the following paragraph (Table 2).

Table 2. Number and capacity of State owned warehouses

(Capacity: '000' MT)

Sr. No.	Particulars		Konkan	Western Maharashtra	Marathwada	Vidarbha	Maharashtra
1	Government Godowns	Number	166 (16.94)	347 (35.41)	223 (22.75)	244 (24.90)	980 (100.00)
		Capacity	91.48 (16.68)	187.88 (34.28)	133.40 (24.33)	135.50 (24.71)	548.26 (100.00)
2	Hired in Godowns	Number	14 (5.93)	32 (13.56)	144 (61.02)	46 (19.49)	236 (100.00)
		Capacity	27.34 (4.71)	5.95 (1.02)	535.28 (92.18)	12.17 (2.09)	580.74 (100.00)
3	Let out Godowns	Number	15 (29.42)	18 (35.29)	4 (7.83)	14 (27.46)	51 (100.00)
		Capacity	6.30 (26.11)	7.50 (31.08)	2.70 (11.19)	7.63 (31.62)	24.13 (100.00)
4	Total godowns/ Capacity available	Number	165 (14.16)	361 (30.99)	363 (31.16)	276 (23.69)	1165 (100.00)
		Capacity	109.52 (9.94)	189.33 (16.91)	665.98 (60.44)	140.04 (12.71)	1101.87 (100.00)

(Figures in the parenthesis are percentages to State total)

By the end of the year 2000-01, the total number of godowns/warehouses owned by the government (Maharashtra) was 980 with a storage capacity of 548 thousand metric tonnes. Of these, 347 warehouses with a storage capacity of about 188 thousand metric tonnes are in the Western Maharashtra followed by Vidarbha region wherein the number and capacity was 244 and 135 metric tonnes, in order. The total number of warehouses including hired in and let out were 1165 and the total storage capacity thus, available was nearly 1102 thousand metric tonnes. The

warehouses that were hired in were maximum in the Marathwada region (144) followed the Vidarbha region (46).

Thus, the Western Maharashtra again was on top in having maximum number of government warehouse / godowns and obviously, having maximum storage capacity.

3. Co-operative godowns

The figures of number of rural and marketing godowns in the sate and of the country with their capacities are discussed below (Table 3).

The total number of rural godowns during the year 1974 was 14944 in the country, of which 2600, i.e. 17.40 per cent were in the state. Of the total market storage godowns (4057) in the country, 719, i.e. 18 per cent were in Maharashtra. During the year 2000, the number of rural godowns though increased in the state however, the share in the country's total declined to 5.59 per cent (i.e. from 17.40 to 5.59) over the period of 27 years. Also the share of state's market storage godowns declined to 15.79 per cent in the country's total. The storage capacity of the state's godowns (rural and market together) obviously, remained more or less stagnant (i.e. 13.62 to 14.20 per cent) in the country's total over the years.

Table 3. Details about Co-operative Godowns in Maharashtra and India

Year	Rural (Number)		Marketing (Number)		Capacity('000' tonnes)	
	Maharashtra	India	Maharashtra	India	Maharashtra	India
1974	2600 (17.40)	14944	719 (17.72)	4057	440 (13.62)	323
1984	2633 (8.21)	32058	753 (12.99)	5799	544 (8.49)	6407
1994	4472 (7.39)	60529	1706 (16.36)	10430	20823 (14.04)	14830
2000	3852 (5.59)	68876	1486 (15.79)	9414	1950 (14.20)	13737

(Figures in the parentheses are the percent share of the State to the Country's total)

Thus, it was noticed that with the increased food production both of the state and country and the number of increased marketing societies, the storage capacity was seen to be increased over the years but the speed of growth is little-bit slow.

4. Co-operative Cold Storages

Cold storages are essential for extending the self life and the period of marketing of fruits and vegetables, avoiding the glut during the peak periods of production, for maintaining the quality of these produces etc. By the end of the year

1999, the total number of cold storages in the country was 3443 with a storage capacity of 104 lakh tonnes. Of these, the co-operative cold storages in the country were 255 having a storage capacity of 8.19 lakh tonnes (Table 4). By the end of the year 1999, the state was having only two co-operative storages with a storage capacity of 1000 tonnes. These figures thus, pointed out that though, the state of Maharashtra is ahead in the horticulture in particular, and agriculture in general, the potential created of the cold storages seems to be very low.

Table 4. Details about Co-operative cold storage status

(Capacity in Tonnes)

Particulars	Organized		Installed		Assistance released (Rs. Lakh)
	No.	Capacity	No.	Capacity	
Maharashtra	2 (0.78)	1000 (0.13)	2 (0.82)	1000 (0.15)	8.955 (0.096)
India	255 +25	742170 +76850	241 +19	666170 +41850	9300.95

('+' Capacity expansion and Figures in the parentheses are percent share of the State to the country's total)

Conclusions

The foregoing discussion can be concluded as, the co-operative marketing societies are playing an important role in the marketing of agricultural produce and also in the field of storage. The large number of co-operative societies (1115) is functioning in the state of Maharashtra with a membership of 838 thousand. The Western Maharashtra region amongst the four regions of the state is on forefront in having the maximum number of profit making co-operative marketing societies. The state owned warehouses were 980 with a storage capacity of 548 thousand metric tonnes of which maximum were in the Western Maharashtra region The share of market godowns declined to 15.79 per cent over a period of 27 years 1974 to 2000. The state share of rural godowns also declined from 17.40 to 5.59 per cent over the period in the country's total. The state of Maharashtra though being ahead in the horticultural development and production, the potential so far created on cold storages seems to be scanty. The co-operative marketing societies need to come forward in this regard to cope with the new market situations in the country and minimizing the losses in the food/agricultural produce in the country.

India's Agriculture Export : Status and Prospects

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ABSTRACT

The attempt has been made the agricultural exports and imports showed an increasing trend in absolute terms but had the declining trend in the percentage terms in the total exports and imports. The percentage share of agricultural exports to the total exports and percentage share of agricultural imports to the total imports had declined from 44.24 per cent to 10.47 per cent and from 25.40 per cent to 3.50 per cent, respectively during the period from 1960-61 to 2010-11. It is noted from the table that, the India's share in the total World exports has remained more or less constant/stagnant, i.e. from 0.5 to 0.6 per cent during the period 1960-61 to 2001-02, however, it reached to a record high of 1.70 per cent during the year 2010-11 .

Prospects

Agriculture plays crucial role in the process of Economic Development of the developing countries like India. The Agriculture sector of India with over 60 per cent of the country's population deriving their subsistence from it is a major concern. Most of the industries depend on the agriculture sector for their raw materials. Besides providing food to nation, agriculture sector contributes to market of industrial goods and thereby earns foreign exchange. Agricultural development is an integral part of overall economic development. In India, agriculture was the main source of national income and occupation at the time of Independence but after 66 years of independence, the share of agriculture in total national income has declined. In spite of this, it is also an important feature of agriculture that growth of other sectors and overall economy depends on the performance of agriculture to a considerable extent. Because of these reasons, agriculture continues to be the prominent and dominant sector of India's Economy. Since independence, India has made much progress in agriculture. Expansion of area was the main source of growth in the period of fifties and sixties after that the contribution of increased land

area under agricultural production has declined over time and then increase in productivity have became the main source of growth in agricultural production.

Production

India ranks first in the production of milk, pulses, jute and jute-like fibres; second in rice, wheat, sugarcane, groundnut, vegetables, fruits and cotton production and India ranks third in the production of tea, total cereals and in sheep population(Table1)

Table 1. India's position in the world Agriculture (2010-11)

Sr. No.	Particulars	India	World	India's position		
				% share	Rank	Next to
1.	Geographical area (Million ha.)	328.73	13414	2.45	VII	Russia, Canada, , USA, China, Brazil and Australia
2.	Population(Crore)	121.00	693.00	17.46	II	China
3. Production (Million tonn)						
i)	Sorghum	6.74	62.48	10.79	I	--
ii)	Wheat	85.93	704.08	12.20	II	China
iii)	Rice	95.33	722.76	13.19	II	China
iv)	Soybean	12.66	260.91	4.85	V	USA, Brazil, Argentina, China
v)	Sugarcane	339.17	1794.35	18.90	II	Brazil
vi)	Cotton(lint)	5.70	23.30	24.40	II	China
vii)	Jute	1.85	3.30	56.00	I	-
viii)	Tea	0.99	4.5	22.10	III	China,Turkey
ix)	Total cereals	226.50	2310.00	9.81	III	China,USA
x)	Total pulses	18.09	67.00	27.00	I	--
xi)	Total oilseed	31.10	455.72	6.82	VI	--
xii)	Total fruits	74.87	599.30	12.49	II	China
xiii)	Total vegetables	146.55	1012.52	14.47	II	China
xiv)	Banana	29.78	99.99	29.78	I	--
xv)	Mango and Guava	17.65	39.98	44.14	I	--
xvi)	Papaya	4.20	10.67	39.36	I	--
xvii)	Pomegranate	0.74	-	-	-	--
xviii)	Grape	1.23	67.32	1.83	VIII	China , Itlay, USA, Spain, France, China Argentina
xix)	Onion	15.12	75.97	19.90	II	China
xx)	Buffaloes (Milli.heads)	111	194	57.30	I	--
xxi)	Cattle Milli.heads)	210	1430	14.70	II	Brazil
xxii)	Goat(Milli.heads)	154	910	6.90	II	China
xxiii)	Sheep(Milli.heads)	74	1078	16.90	III	China, Australia
xxiv)	Total milk	121.80	727.60	16.74	I	--

Source: Agricultural Statistics at a Glance, 2011-12 and Economic Survey of India, 2011-12

In the case of soybean, total oilseeds and grapes production, India ranks fifth, sixth and eighth, respectively. The rapid growth of agriculture is essential not only for self-reliance but also for meeting the food and nutritional security of the people, to bring about equitable distribution of income and wealth in rural areas as well as to reduce poverty and improve the quality of life.

Maharashtra is the second and third largest state in India in terms of population and area. Maharashtra accounts for nearly 10 per cent each of the total area and total population of the Indian union. Maharashtra ranks first in the production of jowar, pigeon pea, onion, cashewnut, grapes, guava, pomegranate, citrus and ranks second in gram, cotton, soybean, sugarcane, banana, sapota and total fruit production. The state ranks third in the production of sunflower and total pulses. It is interesting to note that soybean, onion and cashewnut are largely contributed by Maharashtra. More than fifty per cent of the jowar, grape and pomegranate production of India is alone shared by Maharashtra,besides, nearly, one third production of the pigeon pea.

Sectoral contribution to GDP

The share of different sectors in State Domestic Product (SDP) and National Domestic Product (NDP) at current prices at different periods of time is presented in Table 2.

Table 2. Sectorwise share of income in Net State Domestic Product/NDP in per cent (At current prices)

Year	Maharashtra			India		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
1960-61	34.40	26.00	39.90	54.75	16.61	29.01
1970-71	28.60	34.20	37.20	48.12	19.91	32.17
1980-81	28.00	35.00	36.80	41.20	22.90	35.60
1990-91	21.40	36.60	42.00	35.00	25.00	40.00
2001-02	16.00	25.70	58.30	28.00	21.00	51.00
2010-11	13.04	28.05	58.91	18.96	26.25	54.79

Source: Economic Survey of Maharashtra and India, 2012

It can be revealed from the table that, the share of the different sectors in SDP/NDP is undergoing major changes over the years. The contribution of primary sector (Agriculture and allied services) continued to decline over the decades at the national level as well as in Maharashtra. In India, the contribution of primary sector to NDP had declined from nearly 55 per cent to nearly 19 per cent from the year 1960-61 to 2010-11. However, in Maharashtra, the contribution of primary sector during the period was much less and declined from 34.40 per cent to 13.04 per cent.

Export

Total exports of agriculture and processed food products from April 2012 to March 2013 stood at ₹. 11,633,168.41 lakhs as compared to ₹. 8,248,025.32 lakhs during the period. India recorded an increase of 22 per cent in the export of spices and spice-based products during 2012-13 to touch to 699,170 tonnes, as against 575,270 tonnes in the previous financial year.

During the Independence, the share of Agriculture export to total country's export was 44 per cent but it declined to 10 per cent. In 1960-61, the total Agricultural export was ₹.284 crores while in 2010-11, it become ₹.1,20,185 crores but the actual share of agriculture export to total export declined from 44 per cent to 10 per cent.

The share of agricultural exports in the total exports was 17.9 per cent in 1991-92, which increased to nearly 3 per cent by the year 1996-97, there after, the share continuously declined and it reduced to 9.9 per cent in 2006-07. Between the year 2006-07 and 2007-08, there was an increase of 2.3 per cent. With a fall in 2008-09 to 10.2 per cent, it showed a growth of 0.4 per cent in 2009-10.The slow rise in agricultural export calls for the change in strategic approach of Indian agriculture in a big way to achieve higher levels of production in crops, in which India has comparative advantage and can generate surplus for exports. The government's commitment towards agriculture is seen from the ambitious 4 per cent growth target set under the Eleventh Plan. In its quest for accelerated growth, India

has to increase its agricultural growth rate of 2.0 per cent to the long term trend of around 4 per cent per annum.

Table 3 Share of Agricultural and non agricultural export in total Export of India.

Sr. No.	Year	Percentage Share of Agricultural Export	Percentage Share of non Agricultural Export
1	1991-92	17.90	82.10
2	1992-93	16.90	83.10
3	1993-94	18.10	81.90
4	1994-95	16.10	83.90
5	1995-96	19.10	80.90
6	1996-97	20.50	79.50
7	1997-98	18.90	81.10
8	1998-99	18.20	81.80
9	1999-00	15.20	84.80
10	2000-01	13.40	86.60
11	2001-02	13.50	86.50
12	2002-03	12.70	87.30
13	2003-04	11.80	88.20
14	2004-05	10.10	89.90
15	2005-06	9.90	90.10
16	2006-07	10.00	90.00
17	2007-08	12.20	87.80
18	2008-09	10.20	89.80
19	2009-10	10.60	89.40

Source: APEDA

Table 4 India's export of major commodities (2011-12)

Sr.No.	Commodities	Qty. (000' tn.)	Value (lakhs `.)
1	Rice(Basmati)	3211.80	15,45,044.92
2	Wheat	741.19	1,02,380.32
3	Tea	324.80	4,13,919.33
4	Coffee	278.94	4,53,330.57
5	Tobacco	197.12	2,89,856.03
6	Spices	931.26	13,17,551.67
7	Sugar	2747.35	8,77,906.69

Source: APEDA, Government of India

India is the oldest exporter of tea, coffee and basmati rice. During the year 2011-12, from the export of basmati rice, spices, and sugar, India received ₹.1545044.92, 1317551.67 and 877906.69 lakh, respectively.

Horticultural crops provide a better alternative for diversification of Indian agriculture, in view of higher returns. Horticulture sector helps in improving productivity of land, generation of employment, improvement in economic status of the farmers and entrepreneurs, enhancing exports and getting foreign exchange earnings and above all, providing nutritional security to the population. Horticultural products have a high income elasticity of demand. As income goes up, demand rises rapidly, especially in the middle and high-income groups in developing and developed countries. In developed countries, the growing concern for health and nutrition has shifted consumer preferences from high-fat, high-cholesterol foods, such as meat and livestock products, to low-fat, low-cholesterol foods, such as fish, fruits and vegetables. Further, there is an increasing tendency in developed countries to diversify the diet by consuming a wide variety of fruits and vegetables, a change partly stimulated by the increase in international travel and communications. This, inturn, has led to and it is facilitated by increasing imports of new and non-traditional horticultural products, especially from the tropical developing countries. Conditions for increasing production of horticultural crops are very favorable in the country. This

is partly because production of horticultural crops in general is labour-intensive. India being endowed with abundant labour in relation to capital has competitive advantage in production and exports. Horticultural products not only have good potential for generating employment in cultivation but also in processing, marketing, and distribution.

Table 5 India's major fruit export (2011-12)

Sr. No.	Commodities	Qty. (tones)	Value (lakhs Rs.)
1	Banana	45,573.00	9154.00
2	Grape	108585.00	60288.00
3	Guava	1382.00	318.00
4	Mango	63441.00	20974.00
5	Papaya	18672.00	2475.00
6	Sapota	2694.00	428.00
7.	Apple	30060.00	9145.00
8.	Pineapple	3031.00	603.00

Source: National Horticulture Board Database (2012)

India exporting fresh and processed fruits and vegetables to various countries. During the year 2011-12, from the export of grapes, mango, banana and apple, India received ₹. 60288.00, 20974.00, 9154.00 and 9145.00 lakh, respectively. India is leading country in production of fruits (12.49 per cent) and vegetables (14.47 per cent), but share in world export is very minor.

India's Foreign Trade

It can be noted from the table 6 that, the total exports of the country during the year 1960-61 was to the extent of ₹. 642 crores which has been significantly increased to ₹.11, 48,170 crores during the year 2010-11. Similarly, the total imports were to the tune of ₹.1122 crores in 1960-61, which increased to ₹.16, 05,315 crores in the year 2010-11. Importantly, our imports always remained greater than the

exports and therefore, there existed a trade deficit, ₹.480 crores in 1960-61 to ₹.457145 crores in the year 2010-11.

Table 6. Foreign trade performance of Indian agriculture

(₹. crore)

Sr. No.	Item	1960-61	1970-71	1980-81	1990-91	2001-02	2010-11
1.	Total exports	642	1535	6711	32553	209018	1148170
2.	Agriculture exports	284 (44.24)	487 (31.73)	2057 (30.65)	6317 (19.40)	29312 (13.4)	120185 (10.47)
3.	Total imports	1122	1634	12549	43198	245199	1605315
4.	Agricultural imports	285 (25.40)	441 (26.99)	1294 (10.31)	1127 (2.61)	11034 (4.50)	56196 (3.50)
5.	Country's balance of trade	- 480	- 99	- 5838	-10645	-36181	- 457145
6.	India's share in World Exports (%)	0.6	0.5	0.4	0.5	0.6	1.7

(Figures in the brackets are the percentages to the respective totals)

Source: Agricultural Statistics at a Glance, 2011-12.

It can be noted from the table that agricultural exports and imports showed an increasing trend in absolute terms but had the declining trend in the percentage terms in the total exports and imports. The percentage share of agricultural exports to the total exports and percentage share of agricultural imports to the total imports had declined from 44.24 per cent to 10.47 per cent and from 25.40 per cent to 3.50 per cent, respectively during the period from 1960-61 to 2010-11. It is noted from the table that, the India's share in the total World exports has remained more or less constant/stagnant, i.e. from 0.5 to 0.6 per cent during the period 1960-61 to 2001-02, however, it reached to a record high of 1.70 per cent during the year 2010-11 .

Problems

1. Less awareness about cultivation practices to be followed for quality production.
2. The information about prices is not easily available.
3. Disease and pest attack decrease the expansion of area under fruits
4. Lack of exportable varieties.
5. Lack of post –harvest infrastructure.
6. High cost of obtaining certification for export.
7. Lack of consistency in supply and quality.
8. Indequate and inappropriate storage and distribution infrastructure.
9. Lack of technical support for the agro-industrial sector. etc.

Suggestions

To increase share in World Export, the allocation of funds for research and development in crop production and processing for quality production be increased with sufficient extension efforts. Market led extension establishes its position by helping the farmers to realize high returns for the produce, minimize the production losses, improve the product value and marketability. In order to be successful in the world market, Indian farmers have to shift focus from supply driven, to market driven so as to get high returns from farming. Besides providing information and training on production technology, the extension professionals have to provide the needful information on important aspects of marketing such as grading and standardization, storage, processing, market information and pricing of farm products.

All said and done, India stands at better position under WTO regime to compete for the agriculture trade having vast, untapped immense potential of having one of the largest biodiversity land. With due implies on all required fronts of agriculture, India will strengthen and prove its position in coming decades.

Marketing of Coconut (*Cocos nucifera* L.) in Sindhudurg District (M.S.)

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Abstract

The study was undertaken to know the present system of marketing of coconut. For this study data the random sample of 80 coconut growers from Sindhudurg district were collected pertaining to production year 2006-2007. The sample growers were classified in three groups on the basis of size of orchard *viz.* 1) Group I (small) – 0.50 ha. 2) Group II (Medium) 0.51 to 1.00 ha. and 3) Group III (Large) 1.01 ha. and above. In addition 20 market intermediaries were selected randomly from producing area as well as from distant markets of Sindhudurg district.

Out of 80 coconut growers majority of growers (47.50 per cent) were using Channel III followed by Channel II (37.50 per cent) and Channel I (15.00 per cent) whereas maximum quantity (46.50 per cent) was passed through Channel III.

Per 1000 nuts total cost of marketing incurred in Channel II was maximum i.e. Rs. 1450 followed by Channel III Rs. 1350 and Channel I Rs. 905. The producers share in consumers' price was highest (78.31 per cent) in Channel I and it was lowest 61.94 per cent and 63.52 per cent in Channel II and Channel III respectively.

The major problems faced by coconut growers in marketing of coconut were losses due to insect/pest there is severe attack of. Eriophyid mites (87.50 per cent), non-availability of credit in time (78.75per cent), price received is non-remunerative (65.00 per cent), unavailability of fertilizers in time (60.00 per cent) unavailability of labour in time (40.00 per cent) and irregular supply of electricity (47.50 per cent).

Key words: Marketing cost, Market margin and price spread

Introduction:

The coconut is mainly a tropical crop grown currently in about 90 countries spread over Asia Pacific, Africa and America. Nearly, about 84 per cent of the world

production is contributed by India, Indonesia and Philippines. Other important coconut growing countries are Sri Lanka, Mexico, Vietnam, Thailand, Brazil and Ivory Coast.

In India, coconut is being cultivated on 1.93 million hectare area with production of 12832.9 million nuts per annum and productivity of 6632 nuts per hectare (2004-05). In Maharashtra coconut is grown on an area of about 31516 hectare out of which 30870 hectare (97.95 per cent) is in Konkan region. Sindhudurg district alone contribute about 51.24 per cent (16151 ha.) of the total area under coconut cultivation in Maharashtra. As mentioned earlier, in Maharashtra the coconut is cultivated in the coastal districts of the state. Sindhudurg is one of the coastal district of Maharashtra where this crop is grown on an area of 16151 ha.

Though Sindhudurg district is well known for coconut, production in Maharashtra State, very few efforts have been made so far to study the economic aspects of marketing of coconut in this district.

Material and Methods:

A cross sectional sample of 80 coconut growers was selected from Sindhudurg district (M.S.). From study area 20 market intermediaries (10 village merchants, 5 retailers and 5 wholesalers) selected. The data collected for the agricultural year 2005-06 was analyzed by using suitable statistical tools and standard cost concepts to draw meaningful conclusions.

Result and discussion:

Size of coconut orchard

The detail information of coconut orchard grown by sample farmers in respect to size of orchard, age of orchard, number of bearing and non-bearing palms is given in Table 1.

It is observed from table 1 that, average size of coconut orchard was 0.47 ha in small group 0.77 ha in medium group and 1.11 ha. in large group. The per farm average size of orchard for sample farms was 0.80 ha

Table 1 : Size of coconut orchard.

Sr.No.	Particulars	Small	Medium	Large	Overall
1	Size of orchard (ha)	0.47	0.77	1.11	0.80
	Age (years)	49.10	48.30	48.50	48.31
2	Yield of nuts/ palm / year	63.71	66.18	63.61	64.47
3	Total production per farm (nuts)	5003.12	9710.00	12521.00	9352.06

The average yield per palm /year on sample farm varied in between 63.70 to 66.18 nuts Overall yield were 64.47 nuts/ palm/year. The total production per farm was 5003.12 nuts in small group; 9710.00 nuts in medium group and of 12521.00 nuts in large group farm at while overall level 9352.06 nuts were produced.

Disposal of coconut

The disposal pattern of coconut by the sample grower is given in Table 2.It is seen from Table 2 that, at overall level per farm yield of coconut was 9352.06 nuts out of which 464.10 nuts (4.96 per cent) were used for family consumption; 16.55 nuts (0.17 per cent) were lost in transport and storage, 110.48nuts (1.18 per cent) were given as gift to relatives, 5.88 nuts (0.06 per cent) were used for preparation of seedlings and 606.24 nuts (6.48 per cent) were used for payment of wage at overall level thus totally 13.87 per cent quantity was consumed at farm level the remaining 8148.80 nuts were sold in the market. It means maximum quantity of nuts (87.13 per cent) was sold.

Marketwise sale of coconut

The information on place of market where coconuts were sold and average quantity marketed by sample growers is presented in Table 3.

It is seen from Table 3 that, at overall level, the total quantity marketed was 8148.80 nuts, out of this 62.12 per cent (5061.70 nuts) were sold in local market and 37.88 per cent (3087.10 nuts) were sold in distant markets. The maximum sale of coconut was in local market

Table 2 : Per farm disposal of coconut.

Sr. No.	Category	Total production of nuts (Nos.)	Home consumption	Storage loss	Gift to relatives	User for preparation of seedling	Wage payment	Marketable surplus
1	Small	5003.12 (100.00)	248.33 (4.96)	7.70 (0.15)	93.75 (1.87)	2.16 (0.043)	426.45 (8.52)	4224.73 (84.44)
2	Medium	9710 (100.00)	405.76 (4.17)	8.07 (0.08)	111.10 (1.15)	4.03 (0.04)	763.65 (7.86)	8417.50 (86.68)
3	Large	12521 (100.00)	687.3 (5.48)	31.0 (0.24)	123.33 (0.98)	10.46 (0.08)	613.66 (4.90)	11055.23 (88.29)
4	Overall	9352.06 (100.00)	464.10 (4.96)	16.55 (0.17)	110.48 (1.18)	5.88 (0.06)	606.24 (6.48)	8148.80 (87.13)

(Figures in the parentheses indicate percentage to total)

Table 3: Place of sale and average quantity sold by coconut growers.

Sr. No.	Place of marketing	Small		Medium		Large		Overall	
		No. of growers	Qty. sold	No. of growers	Qty. sold	No. of growers	Qty. sold	No. of growers	Qty. sold
1.	Local Market	22	3775.12 (89.35)	16	4846.53 (57.58)	17	6277.53 (56.78)	55	5061.70 (62.12)
2.	Distant Market	2	449.79 (10.65)	10	3570.96 (42.42)	13	4777.70 (43.22)	25	3087.10s (37.88)
	Total	24	4224.91 (100.00)	26	8417.49 (100.00)	30	11055.23 (100.00)	80	8148.80 (100.00)

(Figures in the parentheses indicate percentage to total)

Table 4: Details of agency wise sale of coconut.

Sr.No.	Marketing Agency	Small		Medium		Large		Overall	
		No of growers	Qty. sold (nuts)	No of growers	Qty. sold (nuts)	No of growers	Qty. sold (nuts)	No of growers	Qty. sold (nuts)
1.	Direct Sale	4	646.25 (15.29)	5	1204.46 (14.31)	3	1151.1 (10.42)	12	1016.98 (12.48)
2.	Village Trader	6	968.95 (22.94)	8	2847.85 (33.84)	8	2817.43 (25.48)	22	2272.78 (27.89)
3.	Commission Agent / Wholesaler	14	2609.50 (61.77)	13	4365.19 (51.85)	19	7086.70 (64.10)	46	4859.04 (59.63)
	Total	24	4224.70 (100.00)	26	8417.50 (100.00)	30	11055.23 (100.00)	80	8148.80 (100.00)

(Figures in the parentheses indicate percentage to total)

Agency wise sale of coconut

The information about quantity of nuts marketed by coconut growers through different agencies is presented in Table 4.

It is seen from Table that, at overall level total quantity marketed was 8148.80 nuts, out of this 59.63 per cent (4859.04 nuts) was marketed through commission agents/wholesalers; 27.89 per- cent (2272.78 nuts) was marketed through village traders and only 12.48 per cent (1016.98 nuts) was sold directly to the consumers as direct sale. It is also observed that, maximum sale (59.63 per cent) was through commission agents/ wholesalers.

Marketing channels in coconut marketing

1 Marketing channels for coconut

It was observed that, in the process of marketing of coconuts, village traders, farmer cum village traders, commission agents/wholesalers, and retailers were important intermediaries. Further in the marketing of coconut following three different marketing channels were observed in study area.

Channel-I: Producer-Consumer (Direct sale).

Channel-II: Producer-Village merchant-Wholesaler-Retailer-Consumer

Channel-III: Producer-Wholesaler-Retailer-Consumer.

The information regarding number of coconut growers using each channel and quantity marketed by them is given in Table 5

Table 5 Channel-wise frequency distribution of coconut growers and quantity marketed through various channels.

Sr. No.	Channels of Marketing	No. of Growers	Total quantity marketed (No. of nuts)
1.	Channel I	12 (15.00)	63663 (9.72)
2.	Channel II	30 (37.50)	283996 (43.59)
3.	Channel III	38 (47.50)	304246 (46.69)
	Total	80 (100.00)	651905 (100.00)

It is observed from table 5 that, maximum number of growers (47.50 per cent) sold their nuts through Channel III. Whereas number of coconut growers operated through Channel-I and Channel-II were (15 per cent) and (37.50 per cent) respectively. Regarding quantity marketed, it was observed that maximum quantity (46.69 per cent) passed through Channel-III followed by Channel-II (43.59 per cent), and only 9.72 per cent quantity was marketed through Channel-I. The analysis revealed that, on the basis of number of growers and quantity marketed; Channel-II and channel III was most popular channel in the study area.

Marketing cost and market margin in coconut marketing

The market cost incurred and market margin received in each channel by different market intermediaries is given in Table 6.

It is seen from Table 6 that, in Channel-I the per 1000 nuts, price paid by consumer was Rs.8300 of which net price received by producer was 78.31 per cent. In Channel-II price paid by

consumer was Rs.8475 of which net price realized by producer was 61.94 per cent In this channel cost incurred by grower, commission agent/wholesaler village merchant and retailer was 3.24 per cent; 3.53 per cent; 6.78 per cent and 3.53 per cent respectively and the gross market

margin of village trader was 10.32 per cent and of commission agent, retailer was 8.61 per cent and 5.87 per cent respectively. Gross price received by grower is of 89.21 per cent; 65.19 per cent; 67.05 per cent for Channel-I, Channel-II and Channel-III, respectively.

In Channel-III per 1000 nuts price paid by consumer was Rs.8500/- of which net price received by producer was 63.52 per cent. In this channel cost incurred by grower, commission agent and retailer was 3.52 per cent; 7.05 per cent and 5.29 per cent respectively. The gross market margin of commission agent was 11.32 per cent and that of retailer was 21.17 per cent respectively. This revealed that per 1000 nuts price received by coconut grower was highest in Channel-I i.e. 78.31 per cent followed by in Channel-III (63.52 per cent) and in Channel-II (61.94 per cent).

Table 6: Marketing cost and market margin incurred by different market intermediaries (1000 nuts).

(Figures in Rs.)

Sr.No.	Particulars	Channels		
		I	II	III
1	a) Gross price received by growers	7405 (90.31)	5525 (65.19)	5700 (67.05)
	b) Cost incurred by growers	905 (10.90)	275 (3.24)	300 (3.52)
	c) Net price received by growers	6500 (78.31)	5250 (61.94)	5400 (63.52)
2	Village traders			
	a) Price paid	-	5525 (65.19)	-
	b) Cost incurred	-	575 (6.78)	-
	c) Price received	-	6400 (75.51)	-
	d) Gross margin	-	875 (10.32)	-
3	Wholesalers/Commission Agent			
	a) Price paid	-	6400 (75.51)	5700 (67.05)
	b) Cost incurred	-	300 (3.53)	600 (7.05)
	c) Price received	-	7130 (84.12)	6700 (78.82)
	d) Gross margin	-	730 (8.61)	1000 (11.76)
4	Retailers			
	a) Price paid	-	7130 (84.12)	6700 (78.82)
	b) Cost incurred	-	300 (3.53)	450 (5.29)
	c) Price received	-	8475 (100.00)	8500 (100.00)

	d) Gross margin	-	1345 (5.87)	1800 (21.17)
5	Price paid by consumer	8300 (100.00)	8475 (100.00)	8500 (100.00)

(Figures in parentheses indicate percentage with consumer's price)

Price spread in marketing of coconut

The price spread refers to the difference between the price paid by the consumer and the price received by the producer for an equivalent quantity of farm produce. This spread consists of marketing cost and market margins of the intermediaries, which ultimately determine the

Table 7: Price spread in marketing of coconut (per 1000 nuts). (Figures in Rs./1000 nuts)

Sr. No.	Particulars	Channel		
		I	II	III
1	Net price received by producer	6500 (78.31)	5250 (61.94)	5400 (63.52)
2	Net margin of village trader	-	300 (3.53)	-
3	Net margin of wholesalers/ Commission agent	-	430 (5.07)	600 (7.05)
4	Net margin of retailers	-	945 (11.15)	1175 (13.82)
5	Total cost of marketing	905 (10.90)	1450 (17.10)	1350 (15.88)
6	Total Marketing Margin	895 (10.79)	1775 (20.96)	1750 (20.60)
7	Consumers price	8300 (100.00)	8475 (100.00)	8500 (100.00)

(Figures in the parentheses indicate percentage of total)

overall effectiveness of market system. The price-spread studies can be helped in studying the efficiency of the marketing system. The channel-wise price spread in marketing of coconut was worked out and the information of the same is presented in Table 7.

It is revealed from Table 7 that, the per 1000 nuts price paid by the consumer in local markets of Sindhudurg district was more or less same, (ranged from Rs.8300 to 8500/-). But the variation was seen in price received by coconut growers in different channels. This was because of variation in market margin and cost of marketing in different channels.

I) Share of producer in consumer's price

The producer share in consumer rupees was the highest in Channel-I (78.31 per cent) followed by Channel-III (63.52 per cent) and in Channel-II (61.94 per cent). The producer's share in consumers rupees in Channel-II and Channel-III was low because producer sold their nuts to middlemen like village merchants and commission agents. This clearly showed that, selling of coconuts directly to consumer in market is advantageous but it is done rarely. Maximum producer sold their produce directly to wholesaler/commission agent in wholesale market.

II) Share of village merchant in consumer's price

The net margin of village merchant/trader estimated as Rs.300 (3.53 per cent) in Channel-II.

III) Share of commission agent/wholesaler in consumer's price

The net margin of commission agent/wholesaler was Rs.430 (5.07 per cent) in Channel-II and in Channel-III it was Rs.600 (7.05 per cent).

IV) Share of retailer in consumer's price

The net margin of retailer in consumer price was Rs.945 (11.15 per cent) in Channel-II and Rs.1175 (13.82 per cent) in Channel-III.

Spread of consumer's price in percentage term

In the analysis of price spread in different marketing channels, maximum share of consumer price was grasped by different intermediaries as market margin.

This proportion was ranged in between 10.79 to 20.96 per cent. The share of marketing cost in each marketing channel was more or less same. It ranged between 17.10 per cent in Channel-II and 15.88 per cent in Channel-III. Producers share in Channel-I is maximum i.e. 78.31 per cent due to direct sale to consumer in the market.

Marketing Efficiency

There are mainly three approaches for measuring the marketing efficiency, they are:

i) Conventional approach

ii) Shephard's methods

iii) Acharya's methods

Table 8 : Marketing efficiency of identified channels.

Sr. No.	Particulars	Channels		
		I	II	III
1	Net price Received by the farmer	6500	5250	5400
2	Total marketing cost	905	1450	1350
3	Total marketing margin	895	1775	1750
4	Marketing efficiency ratio	1:3.61	1:1.64	1:1.74

Out of these three, Acharya's method is the recent one given by Dr. S.S.Acharya. The same method was followed for measuring the marketing efficiency of each channel. The results of marketing efficiency are given in Table. 8.

It is observed from Table 8 that, the marketing efficiency was much higher in Channel-I (1:3.61) than that of Channel-III (1:1.74) and Channel-II (1.1.64). The higher marketing margins in Channel-II and Channel-III resulted into poor efficiency of these channels. Thus the analysis indicated that marketing of coconut directly by farmer without intervention of middlemen was most effective and beneficial but it was done rarely due to some constraints in marketing activity in study area. However in study area Channel-III was very much popular.

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Marketing Systems of Lemon

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ABSTRACT

Akola district is purposively selected having wide cultivation of lemon in Vidarbha region of Maharashtra state. Thus , three lemon market were purposively selected namely Akola, Akot and Wadegoan lemon Market. For this purpose, primary data were collected during the year 2010-2011 for marketing of lemon and data from 2006 to 2010 for the price behaviour of lemon. Based on the results, the variation in arrivals was higher than the prices of lemon in all the selected market. Thus the higher fluctuation in arrivals might have resulted in wide variation in prices of lemon. Inter market variations was found to be highest variation in arrivals during the period from June to December (it was ranges from 37 to 49 per cent) in Akola market and Wadegaon market, while reverse trend was observed in Akot market during the reference period and same trend was observed in the months of January to May (37 to 50 per cent).The co-efficient of determination (R^2) were found significant at 5 per cent level of probability in lemon, there was high correlation between arrivals and prices of the lemon fruit. Thus it may be concluded that variation in supply of lemon significantly affects prices. Seasonal index of arrivals in selected market of Akola district was found to be highest in the month of December and minimum during the month of April. Whereas the highest seasonal index of price was observed in the month of April and the lowest in the month of December. Thus, it's clearly indicated that, the seasonal fluctuations in arrivals of lemon were more than that of prices in selected market of Akola district. That means, there was negative behavior of prices and arrivals for lemon in selected market of lemon in Akola district. From the study area, there were four marketing channels were identified for distribution of lemon fruit i.e. (1) Producers →Commission agents cum wholesalers → Retailers → Consumers,(2) Producers → Wholesalers → Retailers → Consumers, (3) Producers → Retailers → Consumers and (4) Producers → Pre harvest contractor → Consumers. Cost of marketing in channels – I was highest as compare to other three channels, because in this channel lemon moved through wholesaler cum commission

agent and retailers till it reached to the final or ultimate consumers, herein there was additional involvement of retailer. Hence, the expenses incurred by the retailer in performance of various marketing functionaries increased the cost of marketing in channels – I. The price spread lemon was the highest in channel-III i.e. Rs.1405.08(48.53 per cent) followed by channel- II Rs. 1273.64 (48.53 per cent) due to intervention of wholesaler and retailer in between producer seller of lemon and an ultimate consumer of lemon. As against this in channel – I there was absence of marketing intermediaries and thereby saving in the cost of marketing. Marketing Efficiency of lemon was the highest in the sale of lemon through channel-III (35.38) and the lowest in channel- I (11.30) due to less of marketing intermediaries in between producer seller i.e. producer to retailer in channel –III.

Introduction

Lemons are the most commonly produced citrus species grown in India, which rank the third after mandarin and sweet oranges. They are grown more extensively throughout the length of the year in the country. These crops can also be grown in the marginal lands, hence, are favorite of the poor farmers. The business of lemon fruit crops in recent years has been highly commercialized and consequently, the business of growing lemon has an important place in supplying needed nutrition to human beings. The demand for lemon is ever increasing mainly due to the increase in population, changes in food habit of people and establishment of small and medium processing units in the country and multifarious use of the fruits. The production of lemon is concentrated within a short span of seasonal harvesting period from October to January in India. During harvesting season (November-January), there is glut in the market leading to low price as well as spoilage of fruits because of poor marketing system. At present, national demand for lemon is not met by the domestic production even in main season. Hence, a substantial quantity of lemon is being imported from India to meet the internal demand particularly during the off-season of lemon production in the country. However, the marketing of lemon has not been reported much more in India. Therefore, the present study was undertaken to assess the existing marketing system and price behaviour of lemon in Akola district of vidarbha region of Maharashtra state with following specific objectives.

1. To study the relationship in arrival and prices.
2. To study the seasonal fluctuation in arrivals and prices of lemon.
3. To examine the existing marketing channels of distribution in lemon marketing.
4. To analyze marketing cost, price spread and marketing efficiency of lemon.

Materials and Methods

Akola district is purposively selected having wide cultivation of lemon in Vidarbha region of Maharashtra state. Three markets from this district namely Akola, Akot and Wadegoan lemon Market have been selected for the study purpose. Multistage sampling technique was adopted for the selection of sample. The first state of sampling comprised selection of area i.e. district, in the second stage selection of market and third sage selection of marketing functionaries i.e. producer, wholesaler/commission agent, retailers , etc. Ninety producer were randomly selected in Akola district. Out of which, each 30 producer randomly selected in different villages from Akola, Wadegaon and Akot Market of Akola district. In Akola district, there are in all 112 wholesale / commission agents who pay license fees to the municipal cooperation. Out of these, 6 commission agents/ wholesaler and 2 wholesaler and 4 collectors from Akola and 2 commission agents / wholesaler each from Wadgaon and Akot were selected purposively who performed the marketing of lemon crop. The total number of retailers in Akola district were approximately 335. Out of these, 30 retailers were selected randomly for the present study, of which each 10 retailer were randomly selected from Akola, Wadegoan and Akot. Data in respect of their prices received, prices paid, quantities purchased, cost incurred, etc., were collected from these retailers by personal interview methods.

For collecting the data on marketing of lemons survey methods of data collections was used. For this purpose a schedule of questionnaire containing details about arrivals of produce, producers information's wholesaler prices, retailer prices, market functionaries, their expenditure, producers marketing cost and price received by producers, etc., were included in the schedule. These schedules were pretested and thereafter were finalized for collecting information. Data in respect of arrivals and prices were collected personally by paying three visits a week throughout the year. Data on wholesale prices were obtained by attending auctions and that on retailer prices by actual enquiry with different retailers. The data in respect of

producers were collected by paying visits in early morning to the producers who bring their produce in Akola lemon market. The data pertains to the period of January 2010 to December, 2011 i.e. only for 12 months., Marketing cost, price spread and producers share in consumers rupees and marketing efficiency were worked out for the present study.

Seasonal indices were calculated with the help of twelve month ratio to moving average method. For working out the index numbers of arrivals and prices of lemons, 12 months averages were taken as base with the help of formula for estimating index numbers. i.e.

$$IPt = (Pt \div \bar{P}t) x\ 100$$

Where, IPt ; Index Number of price for "t^{th}" month (t= 1,2,.....12) , Pt= Price during "t^{th}" month $\bar{P}$= Twelve month average price and on the same lines indices for arrivals were worked out. The linear regression analyses and co-efficient variation were worked out for estimated the relationship between arrivals and prices of lemon.

Results and Discussion

Production of any farm commodity ends only when it reaches to the ultimate consumer. The marketing process, therefore, has been regarded as a part and parcel of production activity. The ultimate success in marketing of any commodity largely depends upon the case and efficiency with which it is marketed. This assumes special significance in the marketing of lemon. The time factor is more important in marketing of lemon. The price potentiality depends largely on the rapidity with which vegetable can be transported and supplied in the fresh condition to the ultimate consumer. A marketing system should be such that the produce should reach the consumer in good state, without damage, with less lost cost and within a short time after the produce is harvested. The technique of a marketing of lemons thus assume great importance.

Annually Supply of Lemon in Market

Annually supply of lemon fruits in selected market of Akola district during the period of 2006 to 2010 is presented in Table -2.

Table 2 Annually supply of Lemon fruits at 3 major markets

Selected market	Year -wise supply of lemon in deferent market of Akola District											
	2006		2007		2008		2009		2010		Overall Average	
	Annually Supply (qtls)	Average price Rs/qtl	Annually Supply (qtls)	Average price Rs/qtl	Annually Supply (qtls)	Average price Rs/qtl	Annually Supply (qtls)	Average price Rs/qtl	Annually Supply (qtls)	Average price Rs/qtl	Annually Supply (qtls)	Average price Rs/qtl
Akola	10852 (34.55)	1057	5601 (37.58)	1985	16998 (37.27)	1319	15419 (36.65)	1435	14996 (36.67)	1543	12773 (36.52)	1438
Akot	10540 (33.56)	1017	4173 (28.00)	1884	12320 (27.01)	1305	11285 (26.83)	1416	11252 (27.52)	1479	9914 (28.35)	1357
Wadegaon	10017 (31.89)	964	5129 (34.42)	1879	16289 (35.72)	1218	15364 (36.52)	1366	14644 (35.81)	1493	12289 (35.13)	1334
Total	31409 (100)	1014	14903 (100)	1920	45607 (100)	1279	42068 (100)	1405	40892 (100)	1545	34976 (100)	1378

(Figures in parentheses are percentages to the total)

It is observed from the Table -2 that, at an overall level the, average supply of fresh lemon fruits in 3 major markets of the Akola district was 34976 quintals with average price per quintal of Rs. 1378/ during the period of 2006-07 to 2010-2011. Out of that, the highest share of an annual sale of fresh lemon fruits was at Akola market i.e 36.52 per cent, followed by Wadegaon market i.e. 35.13 per cent and lowest was reported in Akot market i.e. 28.35 per cent share of an annual supply of fresh fruits over the period of time.

Relationship between Arrivals and Prices of Lemon

The monthly transaction of lemon fruits with reference to arrivals and prices in selected area of Akola district during the period of 2006-07 to 2010-11 is presented in Table-3.

Table 3. Monthly Arrivals and Prices of Lemon prevailed at selected wholesale market

Months	2006-07		2007-08		2008-09		2009-10		2010-11		Overall	
	Arrivals	Price	Arrivals	Price	Arrivals	Price	Arrivals	Price	Arrivals	Price	Arrivals	Price
Jan	2513	968	1288	1030	3284	908	2598	993	3116	1109	2560	998
Feb	2276	1035	925	1409	3025	1150	2337	1390	2720	1362	2257	1248
Mar	2291	1181	948	3176	2595	1876	2525	1634	2052	2498	2082	1908
Apr	1942	1363	701	2991	2577	1707	2384	2199	1948	2716	1910	2066
May	2537	1236	1247	2612	3333	1623	2861	1962	2340	2172	2464	1823
Jun	2225	1119	991	2199	3511	1523	2932	1813	3172	1983	2566	1683
Jul	2711	1020	1514	1916	4174	1373	3758	1551	3876	1755	3207	1497
Aug	2149	1097	1260	2136	4032	1335	3773	1706	3048	1883	2852	1587
Sep	3044	956	1607	1831	4370	1123	5002	1120	4508	1170	3706	1168
Oct	2599	1041	1415	1997	3899	1499	3380	1607	3848	1687	3028	1538
Nov	3318	901	1196	1752	4660	1203	4848	1226	4704	1152	3745	1178
Dec	3804	616	1811	1099	6147	716	5670	658	5560	810	4598	738
Total	**31409**	**1014**	**14903**	**1920**	**45607**	**1279**	**42068**	**1405**	**40892**	**1543**	**34976**	**1378**

The Table -3 depicted that, at an overall level the average monthly supply of lemon varied substantially in Akola district from 1910 quintal in April to 4598 quintal in December over the period of five years . Average market sale or supply of fresh lemon was more during the season (July to December). The largest price of lemon

was received in the hot and dry summer months of March and April in these markets, due to higher demand and less supply during off-season , it was Rs,1908/- per quintal and Rs.2066/- per quintal, respectively . At an overall level, average quantum arrivals of lemon was 34976 with price of Rs.1378/- in Akola district. Whereas, the minimum price was fetched of Rs.811/- per quintal in the month of December due to glut situation of lemon was occurred in the selected market..

Estimates of co-efficient of variation of arrivals and prices of Lemon

Efforts were made to measure the variation in year - wise and monthly analysis between arrivals and prices of lemon by applying statistical tools of Co-efficient variation during the period of 2006-07 to 2010-11 are presented in Table-4 and Table- 5.

Table: 4 Year-wise analyses of mean, SD and Co-efficient of variation in arrivals and prices of lemon of selected market of Akola district.

Marketwise Mean, SD and CV of arrivals and prices of Lemon									
		Akola		Akot		Wadegoan		Overall	
Years	Parameters	Arrivals	Price	Arrivals	Price	Arrivals	Price	Arrivals	Price
	Mean	904.33	1086.92	878.33	1040.25	834.75	1003.50	2617.42	1044.33
	SD	200.67	189.53	210.19	165.10	198.91	212.03	535.97	186.75
2006	CV	22.19	17.44	23.93	15.87	23.83	21.13	20.48	17.88
	Mean	466.75	2079.67	347.75	1978.67	427.42	1968.25	1241.92	2012.15
	SD	118.83	686.69	120.31	648.30	113.77	680.94	317.39	673.73
2007	CV	25.46	33.02	34.60	32.76	33.02	34.60	25.56	33.48
	Mean	1416.50	1395.33	1026.67	1315.00	1357.42	1293.92	3800.58	1336.17
	SD	480.08	347.15	81.26	335.64	481.81	337.11	995.11	335.68
2008	CV	33.89	24.88	7.91	25.52	35.49	26.05	26.18	25.12
	Mean	1284.92	1534.42	940.42	1448.58	1280.33	1474.08	3505.67	1488.16
	SD	478.70	437.41	187.31	424.47	496.74	443.58	1129.37	591.32
2009	CV	37.26	28.51	19.92	29.30	38.80	30.09	32.22	29.15
	Mean	1249.67	1691.55	937.67	1655.67	1220.33	1610.42	3407.67	1691.55
	SD	409.39	591.32	386.56	573.68	347.77	544.75	1119.59	591.32
2010	CV	32.76	34.96	41.23	29.30	28.50	33.83	32.85	34.96
	Mean	1064.43	1557.58	826.17	1487.63	1024.05	1470.03	2914.65	1514.47
Overall	SD	383.97	367.05	272.62	353.85	389.60	359.38	1032.43	364.88
	CV	36.07	23.57	33.00	23.79	38.04	24.45	35.42	24.09

It is observed from the Table-4 that, the estimates of arrivals and prices of lemon indicates that, co-efficient of variation in arrivals and prices were worked out to vary by 20.48 per cent to 32.85 per cent whereas the price varies from 17.88 per cent to 34.89 per cent, respectively during the period from 2006 to 2010.

It is also observed that, the marketwise co-efficient of variation in arrivals of lemon was worked out to varied from 22.19 per cent to 32.96 per cent, respectively during the period of 2006-07 to 2010-11 in Akola market. Whereas in Akot market, co-efficient of variation in arrivals of lemon observed to lowest during the year 2008-09 i.e. 7.91 per cent due to less monthly fluctuation in arrivals of lemon during the reference period. 41.23 per cent during the year 2010-11. In case of Wadegaon market, co-efficient variation was observed to ranges from 23.83 per cent to 38.80 over the period of five year.

Similarly, as far as price variation concerned, at an overall level, co-efficient variation of price was ranges from 17.88 per cent to 34.96 per cent over the period of five year. Thus clearly implied that the variation in arrivals as well as prices over the year were found relatively higher except arrivals (7.91 per cent)in Akot market. It is also observed that the variation in arrivals was higher than the prices of lemon in all the selected market. Thus the higher fluctuation in arrivals might have resulted in wide variation in prices of lemon.

Table: 5 Monthly analyses of co-efficient of variation in arrivals and prices of lemon (2006-07 to 2010-11)

	Akola		Akot		Wadegoan		Overall	
Months	Arrivals	Price	Arrivals	Price	Arrivals	Price	Arrivals	Price
January	25.24	5.65	38.59	8.18	32.11	8.40	30.60	7.45
February	34.75	13.31	42.42	14.31	32.67	12.73	35.63	13.19
March	32.09	37.43	37.49	37.07	32.43	37.27	32.13	37.56
April	34.66	29.48	50.66	31.45	35.56	30.88	38.23	30.85
May	27.68	26.58	42.45	28.05	29.27	27.31	31.54	27.31
June	37.26	23.89	36.93	24.70	47.98	23.59	38.92	24.34
July	39.54	23.38	27.23	22.81	39.20	22.49	34.16	22.87
August	41.85	24.46	34.03	25.47	49.02	26.57	40.38	25.60
September	38.82	27.39	37.49	28.74	41.93	28.42	37.21	27.43
October	36.48	23.00	37.17	19.26	32.59	24.32	34.40	22.17
November	46.46	24.44	32.41	23.53	48.28	27.82	41.48	24.93
December	43.14	23.33	32.31	24.32	45.97	28.53	39.01	24.69
Average	36.07	23.57	33.00	23.79	38.04	24.45	35.42	24.09

Table-5 shows that at an overall level, the variations in the arrivals was observed to be higher in the months of November (41.48 per cent), followed by in August(40.38 per cent), December (39.01 per cent),June (38.23 per cent) and April (38.23 per cent) as compared to rest of the months over the year 2004 to 2008. Its indicates that, higher variations in arrivals during the reference months and lowest variation in rest of the months.. In case of prices, co-efficient of variation was found to be higher in the March (37.56 per cent) followed by in April (30.85 per cent), September,(27.43 per cent and May (27.31 per cent) as compared to rest of the months. It is also observed that, the co-efficient of variation in prices was found to be lowest in the months of January as compared to rest of the eleven months over the year.

It is also observed from the Tabel-5 that, variation in the arrivals that inter market variations was found to be highest variation in arrivals during the period from June to December (it was ranges from 37 to 49 per cent) in Akola market and Wadegaon market, while reverse trend was observed in Akot market during the reference period and same trend was observed in the months of January to May (37 to 50 per cent). Similarly, the variation in prices was observed to be reverse trend exactly to arrivals over a period of time. Thus the results indicates that, coefficient of variation in arrivals and price of lemon was inversely proportionate over the period of time.

Regression Analysis between arrivals and prices of lemon

Relationship in arrivals and prices were estimated with the help of regression analysis, Four forms of regression analysis were tried. Out of these one form of regression analysis which has shown best fit was selected. Following type of linear regression had shown highest values of coefficient of determination (R^2). Hence results obtained only from this function are presented.

$$\mathbf{P_t = a + b \log (A_t)}$$

In this form arrivals were taken into log form and the arrivals were regressed upon price.The results of the regression analysis of arrivals and price are presented in Table-6

Table-6: Estimates of Co-efficient of regression between monthly arrivals and prices of Lemon.

Sr. No.	Particulars	Monthly arrivals and prices of lemon
1	Value of constant (a)	3178.36
2	Regression Co-efficient (b)	-0.44(4.631)*
3	Co-efficient of determination (R^2)	0.68

* Significant at 5 per cent level

It is seen from the results of Table 5, that, the values of co-efficient of determination (R^2) were found significant at 5 per cent level of probability in lemon. From this results found that, there was high correlation between arrivals and prices of the lemon fruit. The estimation value of "b" i.e. regression co-efficient expresses magnitude of influences of arrivals on prices and its sign (+ve or – ve) shows direction of association. From the above given results it may be concluded that variation in supply of lemon significantly affects prices.

Seasonal Variation in Arrivals and Prices

In this section, the monthly arrivals and prices of lemon were examined with the help of seasonal index by expressing monthly arrivals and prices of a given month to annual average of arrivals and price expressed in percentage terms .The seasonal index of arrivals and prices are presented in Table-7.

It is observed from Table- 7 that, at an overall level seasonal index of arrivals in selected market of Akola district was found to be highest in the month of December (158.67) and minimum during the month of April (66.22) The seasonal indices of first four months of the year and last month of the year was uniform, i.e. not too much variation was found in arrivals. Similarly, the highest seasonal index of price in selected market of Akola district was observed in the month of April (144.95) and the lowest in the month of December (51.49).

Table: 7 Monthly Seasonal Indices of Arrivals and Prices of lemon in selected lemon market of Akola district.

Months	Marketwise Seasonal Indices of Arrivals and prices of lemon							
	Akola		Akot		Wadegaon		Overall	
	Arrival	Prices	Arrival	Prices	Arrival	Prices	Arrival	Prices
January,	87.26	66.45	86.91	66.51	87.99	66.15	87.41	66.14
February	76.38	84.70	78.02	83.62	76.30	84.19	76.82	83.79
March	70.42	136.45	71.80	131.78	73.23	137.11	71.80	136.87
April	63.30	144.55	71.73	144.40	64.81	146.36	66.22	144.95
May	85.74	126.00	84.27	126.87	81.13	128.61	83.70	126.83
June	78.84	113.55	99.83	114.29	86.72	115.66	87.56	114.06
July	107.63	100.82	119.64	102.67	102.90	99.92	109.37	100.55
August	96.95	107.51	104.07	110.07	95.51	107.47	98.46	107.71
September	127.02	81.32	128.96	82.41	129.50	81.45	128.44	81.87
October	108.64	102.79	101.43	103.67	98.77	100.34	103.13	103.42
November	132.75	83.71	115.47	83.07	134.36	81.90	128.42	82.33
December	165.08	52.17	137.87	50.63	168.80	50.84	158.67	51.49

The seasonal index of arrivals and prices presented in Table -7 clearly reveals that the seasonal fluctuations in arrivals of lemon was more than that of prices in selected market of Akola district. That means the seasonal index of arrivals reached its maximum during the harvest season and correspondingly decreased during post harvest period. Similarly, the average prices were found to be high during post – harvest period and the prices start decreasing during lean season and pre-harvest season. Such a wide fluctuation in prices have tendency to de-stabilize the income of lemon growers. Thus, when index of arrivals increased, the index of prices would decline, explaining the negative relationship between supply and demand and thereby there was negative behaviour of prices and arrivals for lemon in selected market of lemon in Akola district.

Based on the results obtained from the forgoing analysis of the price behaviour of lemon in selected wholesale market of Akola district, it is suggested that Lemon grower of the Akola district should be have to more concentrated to take their production on "Hastbahar" due to highest price of lemon was observed during the months of March , April and May in the selected wholesale market of Akola district.

Marketing channels of lemon

The channels of distribution indicate the route through which commodity moves from initial producer to final consumer. It is observed that, there were following four marketing channels were identified for distribution of lemon fruits in Akola district. i.e. **Channel – I :** Producers →Commission agents cum wholesalers → Retailers → Consumers, **Channel – II :** Producers →Wholesalers → Retailers →Consumers, **Channel – III :** Producers →Retailers → Consumers and **Channel – IV :** Producers → Pre harvest contractor (Consumers)

Channel wise sale of Lemon

The marketing systems for assembling and distribution of lemon consist of lemon grower, commission agent/ wholesaler, retailer, collector and consumer. The commodity passes through the five channels of trade is presented in Table-9.

It is evident from Table -9, at an overall level of 90 respondent of lemon growers 40 per cent quantity sold the produce through the marketing channel-I i.e. Producers →Commission agents cum wholesalers → Retailers → Consumers, 35 per cent quantity of lemon sold through the marketing channel-II i.e. Producers →Wholesalers → Retailers →Consumers, 15 per cent of quantity of lemon sold through the channels-III i.e. Producers →Retailers → Consumers and approximately 10 per cent sold the produce through the marketing channel-IV i.e. Producers → Pre harvest contractor (Consumers) .

It is also observed that as the sample as whole 2020.49 quintal of lemon fruits were traded during the year 2010-11. Out of the , highest quantities of lemon i.e. 55.72 per cent lemon routed at Balapur taluka followed by Akola (27.43 per cent) and 18.86 per cent from Akot tahsil. This showed that major quantities were handled by the Channels I & II (75.03 per cent). This is a prominent link, which bridges the gap between production and consumption area.

Table: 9 Channelwise sale of lemon in Akola District during the year 2010-11

Chann-els	Channels wise distribution of lemon in different market of Akola district							
	Akola (30)		**Akot (30)**		**Balapur (30)**		**Overall (90)**	
	Quantity in quintals	Average price Rs./qtls	Quantity in Quintals	Average price Rs./qtls	Quantity in Quintals	Average price Rs./qtls	Quantity in Quintals	Average price Rs./qtls
I	220.81 (39.84)	1463	136.53 (40.09)	1366	455.91 (40.50)	1431	813.25 (40.25)	1428
II	183.3 (33.07)	1347	132.92 (39.03)	1320	386.59 (34.34)	1387	702.81 (34.78)	1364
III	93.35 (16.84)	1438	47.79 (14.03)	1322	164.72 (14.63)	1399	305.86 (15.14)	1399
IV	56.74 (10.24)	1366	23.32 (6.85)	1345	118.51 (10.53)	1417	198.57 (9.83)	1394
Total	554.20 (27.43)		340.56 (18.86)		1125.73 (55.72)		2020.49 (100.00)	

(Figures in parentheses are percentages to the total)

1. Channel-I & Channels II :

This was found to be most important channels of marketing of lemon through which maximum about 75 per cent share of lemon moved in Akola district. Farmers bringing their lemon in bulk normally adopt these channels in order to sell within shortest possible period, because most of the lemons are sold to outside from this channel by wholesaler/ commission agent in Akola district. 813.25 quintal of lemon were sold by the producer with average per quintal price of Rs.1428 through the marketing Channel- I and 702.81 quintal of lemon was sold with average per quintals of Rs.1364/-through channel- II.

2. Channel-III :

It was observed from the present study that, most of the retailers were directly brought the lemon from producer at his own farm, but it was very less quantity, approximately 15 per cent (305.86) lemon was sold through this channel by the lemon growers with average per quintal of Rs.1399/- through this channels.

3. Channel-IV :

In this channel, pre harvest contractor were involved for purchase of lemon orchard before the harvesting season of lemon fruits. It was 198.57 quintal of lemon sold by the producer with average per quintal price of Rs.1394 through this channel.

Price Spread and Producers share in consumers rupee of Lemon

Price spread indicates shares of various agencies involved in marketing alongwith the cost incurred by them. The producers share in consumers rupees, marketing costs and margins in respect of lemon have been worked out and it is presented in Table-10.

Table :10. Channel-wise Price Spread and producers share in consumers rupee of Lemon

Sr. No.	Particulars	Channel wise producers in consumers rupee of lemon			
		Channel-I	Channel-II	Channel-III	Channel-IV
1	Net Price received by Producer	1279.36 (89.59)	1351.89 (99.11)	1391.67 (99.48)	1394.00 (100.00)
2	Market Charges paid by Producer	148.64 (10.41)	12.11 (0.69)	7.33 (0.27)	-
3	Price paid by Wholesaler	-	1364.00	-	-
4	Expenses of Wholesaler	-	62.99	-	-
5	Total cost of wholesaler	-	1426.99 (80.90)	-	-
6	Margin of wholesaler	-	337.01 (19.10)	-	-
7	Price paid by Retailer	1428.00	1764.00	1399.00	-
8	Expenses of retailer	67.87	75.61	68.02	-
9	Total cost of Retailer	1495.87 (56.15)	1839.61 (62.51)	1467.02 (53.52)	-
10	Margin of retailer	1168.13 43.85	1103.39 37.49	1273.98 46.48	-
11	Price paid by pre harvest contractor	-	-	-	1394.00
12	Expenses of pre harvest contractor	-	-	-	81.09
13	Total cost of pre harvest contractor	-	-	-	1475.09 (51.65)
14	Margin of pre harvest contractor	-	-	-	1380.91 (48.35)
15	Price paid by Consumer	2664	2943	2741	2856
16	Price spread	1384.64 (51.98)	1591.11 (54.06)	1349.33 (49.23)	1462.00 (51.19)
17	Producers share in consumers Rupee	48.02	45.94	50.77	48.81

(Figures in parentheses are percentages to the total)

It is observed from the Table- 10 that ,the price spread lemon was the highest in channel-II i.e. Rs.11591.11(54.06 per cent) followed by channel- IV

Rs. 1462 (51.19 per cent). In channel- II, price spread was the highest due to intervention of wholesaler and retailer in between producer seller of lemon and an ultimate consumer of lemon. The marketing functionaries operating in these channels incurred higher cost of marketing on account of creation of utilities of lemon. As against this in channel – II there was less of marketing intermediaries and thereby saving in the cost of marketing.

A producer's share in consumer's rupee was the highest in Channel- III (50.77 per cent followed by channel-IV (48.81 per cent), channel-I (48.02 per cent) and channel-II (45.94 per cent). It is implied from the consumer's price that the highest share was attained by the producer in channel- III and the lowest was in channel- II.

Marketing Efficiency of Lemon

Marketing efficiency indicates to what extent the marketing agencies are able to move the goods from producer at the minimum cost, extending maximum service from producer to final consumer. The efficiency of different marketing channels of lemon was analyzed by estimating the shepherd's formula. The marketing efficiency for the 4 channels is given in Table –11.

Table: 11 Marketing Efficiency of Different marketing channels of Lemon

Sr. No.	Particulars	Channel wise of marketing efficiency			
		Channel-I	Channel-II	Channel- III	Channel- IV
1	Value of Lemon Sold in Rs. Per quintal (consumer price) **(V)**	2664	2943	2741	2856
2	Total marketing cost Rs. Per quintal **(I)**	216.51	150.71	75.35	81.09
3	Marketing Efficiency	11.30	18.53	35.38	34.22

The Table-11 reveals that, an efficiency of marketing of lemon was the highest in the sale of lemon through channel-III (35.38) and the lowest in channel-I (11.30) due to less of marketing intermediaries in between producer seller i.e. producer to retailer in channel –III. Thus the forgoing analysis revealed that there was positive relationship between value of produce sold and efficiency of marketing channel. Further, it was revealed that, the number of marketing intermediaries

intervening between producer sellers and ultimate consumers had negative correlation with efficiency of marketing.

CONCLUSIONS

The main findings of the present study are given below.

1. Average supply of fresh lemon in three major markets of the Akola district was 34976 quintals with average price per quintal of Rs.1378/ over the year of 2006-07 to 2010-11.
2. Sample as a whole, average arrivals of lemon was reported 34976 quintals with price of Rs.1378/-,whereas, the minimum price was fetched of Rs.811/- per quintal in the month of December due to glut situation of lemon was occurred in the selected market.
3. The variation in arrivals was higher than the prices of lemon in all the selected market. Thus the higher fluctuation in arrivals might have resulted in wide variation in prices of lemon.
4. Variation in the arrivals that inter market variations was found to be highest variation in arrivals during the period from June to December (it was ranges from 37 to 49 per cent) in Akola market and Wadegaon market, while reverse trend was observed in Akot market during the reference period and same trend was observed in the months of January to May (37 to 50 per cent).
5. The co-efficient of determination (R^2) were found significant at 5 per cent level of probability in lemon, there was high correlation between arrivals and prices of the lemon fruit. Thus it may be concluded that variation in supply of lemon significantly affects prices.
6. Seasonal index of arrivals in selected market of Akola district was found to be highest in the month of December (158.67) and minimum during the month of April (66.22)
7. Seasonal index of arrivals in selected market of Akola district was found to be highest in the month of December and minimum during the month of April. Whereas the highest seasonal index of price was observed in the month of April and the lowest in the month of December. Thus, it's clearly indicated that, the seasonal fluctuations in arrivals of lemon was more than that of prices in selected market of Akola district. That means, there was negative behavior of prices and arrivals for lemon in selected market of lemon in Akola district.

8. From the study area, there were four marketing channels were identified for distribution of lemon fruit i.e. (1) Producers →Commission agents cum wholesalers → Retailers → Consumers,(2) Producers → Wholesalers → Retailers → Consumers, (3) Producers → Retailers → Consumers and (4) : Producers → Pre harvest contractor → Consumers.
9. Sample as whole 2020.49 quintal of lemon fruits were traded during the year 2010-11. Out of the, highest quantities of lemon i.e. 55.72 per cent lemon routed at Balapur taluka followed by Akola (27.43 per cent) and 18.86 per cent from Akot tahsil. This showed that major quantities were handled by the Channels I & II (75.03 per cent). This is a prominent link, which bridges the gap between production and consumption area.
10. Cost of marketing in channels – I was highest as compare to other three channels, because in this channel lemon moved through wholesaler cum commission agent and retailers till it reached to the final or ultimate consumers, herein there was additional involvement of retailer. Hence, the expenses incurred by the retailer in performance of various marketing functionaries increased the cost of marketing in channels – I.
11. The price spread lemon was the highest in channel-III i.e. Rs.1405.08(48.53 per cent) followed by channel- II Rs. 1273.64 (48.53 per cent) due to intervention of wholesaler and retailer in between producer seller of lemon and an ultimate consumer of lemon. As against this in channel – I there was absence of marketing intermediaries and thereby saving in the cost of marketing.
12. A producer's share in consumer's rupee was highest in Channel- III (50.77 per cent followed by channel-IV (48.81 per cent), channel-I (48.02 per cent) and channel-II (45.94 per cent). It is implied from the consumer's price that the highest share was attained by the producer in channel- III and the lowest was in channel- II.
13. Marketing Efficiency of lemon was the highest in the sale of lemon through channel-III (35.38) and the lowest in channel- I (11.30) due to less of marketing intermediaries in between producer seller i.e. producer to retailer in channel –III.

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Economics of marketing of raw cashewnut in Konkan region of Maharashtra

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India produced 6.13 lakh tones of cashewnut from an area of 9.23 lakh ha. (2009-10) The marketing cost are determined performance and efficiency of different marketing intermediaries in different channels. Marketing efficiency of the various channels influence the returns to the cashew growers. In Maharashtra state Ratnagiri and Sindhudurg district were purposively selected for the study of marketing of raw cashewnut. Five channels were identified and preference of cashew growers for different channels were assessed. As there are number of intermediaries operating between primary producer and the processing unit, the cost and margins was spread between the producer and the processing unit is quite significant. The cashew growers should be encouraged to sale their produce directly to the processor to get high price.

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Economics of Marketing of Leafy Vegetables in Satara District

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The present investigation was intended to depict the picture of fenugreek and coriander crop enterprise in Satara district of Maharashtra State. The study was conducted with a view to study the marketing practices and pattern of disposal, marketing cost and price spread and problems in marketing of leafy vegetables. The data were related to agriculture year 2009–10. In all, 90 farmers (45 for fenugreek and 45 for coriander) from Satara and Wai tahsils of Satara district were selected randomly.

The findings of the study showed that, in the process of marketing, the market channel viz., producer → hundekari → wholesaler or commission agent → retailer → consumer was observed to be the most important in the area under study. The per quintal marketing cost for fenugreek and coriander in general worked out to ₹ 146.68 and ₹ 124.26, respectively. It is observed that per quintal net price received by the fenugreek and coriander growers was ₹ 936.66 and ₹ 892.41, respectively. The producer's share in consumer's rupee was 61.44 per cent and 61.24 per cent in case of fenugreek and coriander. The margin of intermediaries was ranges from 4 to 6 per cent to the consumer price. High transport cost, high commission charges, faulty measures and weights were the major problems reported by the sample farmers in marketing of fenugreek and coriander. Among the two crops coriander was found more profitable than fenugreek.

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New Trends in Agricultural Marketing

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Marketing had its beginning in agriculture. About a century ago, farmers used to consume most of what they produced, but, now, most of what the farmers produce is exchanged for the other things, which they require. Now a day, the Indian farmer works hard, but is poorly rewarded. He receives only 30-50 per cent of the consumers' rupee.

For rural consumer, the share of high –value food commodities (Fruits, vegetables, animal products and beverages) in total food expenditure increased from 30.4 per cent in 1983 to 44 per cent in 2004-05.Urban consumers spend relatively more on high –value foods. In 2004-05, high value food accounted of 55.3 per cent of their food expenditure, up from 45.3 per cent in 1983.On the other hand, the share of foodgrains in rural food expenditure, during this period declined from 55.3 per cent to 38.65 and in urban food expenditure from 38.7 per cent to 29.10 per cent. Though urban consumers spend relatively more on high–value foods, their consumption in rural areas has been growing faster, indicating a tendency of convergence in the consumption pattern.

India is one of the world's biggest producers of horticultural products, it grows nearly 11 per cent of all the world's vegetables and 15 per cent of all the fruits. And India's production costs are less then half of those in other parts of the world.

Direct marketing is an innovative concept, which involves marketing of produce i.e. directly to consumer without middleman. Direct marketing enable producers to economize on transportation cost and improve price realization. It also provides incentive to large-scale marketing companies. Direct marketing by the farmers to the consumers has been experimented in the country through *Apni mandis* in Punjab and Haryana. The concept with certain improvements has been popularized in Andhra Pradesh through *Rayatu Bazars*. At present, these markets are being run at the expense of the state exchequer, as a promotional measure, to encourage marketing by the small and marginal producers without the help of the middlemen. In these markets, mainly fruits and vegetables are marketed alongwith other commodities at present.

Contract marketing is a system of marketing, where selected crop is grown for marketing by the farmers under a 'buy back' agreement with an agency (Entrepreneur or trader or processor or manufacture). In the wake of economic liberalization, it has gained momentum as the national and multinational companies enter in to contracts for marketing of agricultural produce. They also provide technical guidance, capital, input supply to contracted farmes. Contract marketing ensures continuous supply of quality produce at mutually contracted price to contracting agencies, as well as ensures timely marketing of the produce. Contract marketing is beneficial to both parties i.e. farmers and the contracting agency.

The co-operative marketing societies sale the member's produce directly in the market, which fetches the remunerative prices. Co-operarive societies market the member's produce collectively and secure advantages of economy of scale to its members.

Comparative resource use productivity of sugarcane in Western Maharashtra

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The present investigation viz., "Comparative resource use productivity of sugarcane in Western Maharashtra" is an attempt to estimate yield gap as well as production of sugarcane. The study is based on primary data which is collected from the sample sugarcane growers by cost accounting method with the help of specially designed schedules under the Maharashtra State Sponsored Cost of Cultivation Scheme.

The benefit cost ratio at cost 'C' was highest in case of ratoon sugarcane (1.50). The inputs used by the sugarcane growers for all the planting types were below than recommendation except chemical fertilizers. The application of manure was very less almost on all type of sugarcane farms. More than 25 per cent output gap was observed in all the planting types. Therefore, the study adhocate that, all the farmers should use judicious and balanced use of all the inputs for getting better output of sugarcane.

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Farm Mechanization for Sustainable Agriculture

Dr. S. S. Wadkar and Dr. P.U. Shahare

The role of agricultural mechanization is very important to bring the improvement in the present scenario of agriculture in the state. Various farm operations need to carry out using agricultural machinery, implements and tools. Availability of adequate farm power viz. mechanical, animal, human etc. is very crucial for timely operations for operating machinery, implements and tools for increasing production , productivity and handling crop produce to reduce the losses. Agricultural mechanization is essential for timeliness in agricultural operation, better quality work; reduction is human drudgery and cost of operation and healthy

agriculture. Most of the state is under rain fed agriculture and land holding per head is very less and going down drastically. Promotion to custom hiring practice of machinery, tractors, power tillers, cooperative management of machinery through social groups, better sale-service network, increase in direct subsidy to marginal and medium farmers, credit facility from banks at lower interest rate, massive awareness amongst farmers etc. are some of key points for betterment of small and marginal farmers. Production and making available the identified tools and equipments, identification of local agency for its sales promotion and also for custom hiring services will have to emphasize. The transfer of technology will take a boost if the strong linkage between researchers, extension workers and farmers is established.
Key word – Mechanization, Sustainable, Farm Power, Mechanization Status.

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Economics of marketing of *kharif* maize in Ahmednagar district of Maharashtra State

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Maize is globally a top ranking cereal crop not only in productivity but also as human food, animal feed and a source of large number of industrial products. Maize among the cereals ranks third, both in terms of area and production in the world. In India, during 2006-07 maize was grown on an area of 7.42 million ha with the production and productivity of 14.72 million tonnes and 1,983 kg/ha, respectively. In Maharashtra State, Ahmednagar district is major maize growing district. Karjat tahsil as a topper maize grower in Ahmednagar district had an area of 3549 ha with the productivity of 1866 kg/ha during 2006-07, hence Karjat tahsil was purposively selected for research.

The present investigation was attempted to study marketing channels, marketing cost, marketing margin and price spread in marketing of maize. In all, 90 farmers were selected from Karjat tahsil of Ahmednagar district. The data related to the Agricultural year 2008-09 was taken for the present study. The sample farmers were classified into three size groups of holdings i. e. small, medium and large. The Cobb-Douglas type of production function was used for functional analysis.

The findings of the study showed that in the Channel-I, the marketing cost incurred during the selling of maize was workedout to Rs. 203.28 per quintal at the overall level. The major component of marketing cost was commission charges (50.66 %) which is followed by expenditure on packaging charges (25.27 %) and transport (19.68%). In the Channel II, the marketing cost incurred during the sale of maize was workedout to Rs. 47.50. The major components of marketing cost were packing (84.63 %) and transportation charges (10.74 %). The producer's share in consumers rupee was 78.26 per cent and 73.19 per cent in Karjat and Ahmednagar market, respectively. In Channel I, the marketing efficiency of *kharif* maize in Ahmednagar market was 1.13 and in Karjat market was 1.11. In Channel II, the marketing efficiency at local market was 1.10. So, Ahmednagar market was efficient for marketing of the maize.

In short the utility of maize both for food and industrial purposes, maize production and marketing assumes an important place in the agricultural and industrial development of India. The increased production and efficient marketing food requirement, also help in rapid industrialization. Dairy enterprises and poultry are the major side business in western Maharashtra, both of these industries are depended on the maize as feed for milch animals and poultry also. There is immense scope for maize processing industries in the area.

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Contract farming for Better Reliable Income

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Contract farming helps in a better way by providing more reliable income, less price uncertainty, less production risk, encourages new skill of farming, and generates more employment. The present study, "Input and service delivering system through contract farming in Pune district" was undertaken to study relative economics of contract and non-contract poultry farms and the problems faced by the contract farmers and the sponsorer. Recently considerable numbers of broiler farms have come up in Maharashtra, particularly in and around Pune city. Contract Broiler Farming activity and Venkateshwara Hatcheries Group Ltd. (VHGL) as contracting agency, were selected purposively. Two villages from Haveli tehsil were selected.

The respondent-farmers were selected randomly (i.e. 10 contract farmers and 10 non-contract farmers) from each selected village. The data pertaining to the year 2006 has been updated to current prices.

The per kg cost of broiler production in the case of contract farmers was reported to be ₹ 46.16 as compared to ₹ 46.64 in case of non-contract farmers. The per kg average price realized by the contract farmers was observed to be higher ₹ 50.30 as compared to ₹ 47.00 in the case of non-contract farmers. In effect, the gross income per bird earned by contract-farmers was ₹ 88.27; which was higher than non-contract farmers estimated at ₹ 80.14. The net-income per bird was found to be almost double in the case of contract farmers and reported to be ₹ 13.95 as compared to ₹ 3.85 in case of non-contract farmers. The resultant output-input ratio over total cost was worked out to 1.18 in the case of contract farmers and found much higher as compared to 1.11 in case of non-contract farmers. Declaration of fair prices prior to season, prompt payment, spot-purchasing, along with efficient technical and input assistance, better coordination of field activities and sufficient and timely credit supply by sponsors are the key issues in making contract farming popular and successful. Issues like less mortality, better hygienic conditions, adequate training facilities and effective medication to overcome hyper-disease-sensitive broiler farming along with sufficient and timely supply of quality inputs and credit, backed by suitable policy and inter-institutional linkage support, promises better future for contract broiler-farming.

Problems faced by sponsorers like breach of contract by farmers, selling their produce in local market or to rival firms, etc. can be overcome with closer supervision. Further, government support in providing better infrastructural facilities, sufficient and timely credit facility for longer period with minimum interest rate and some legal forms of bindings on farmers etc. should also be strengthened. But the results obtained during the present investigation indicated that despite certain constraints, by-and-large, both the contracting parties were satisfied and willing not only to continue but also to expand the volume of business under contract-farming arrangement.

The well-being of the poultry farming community in particular could be achieved through contract farming by minimizing the problems by the member-farmers and the sponsorers with their joint efforts. Moreover, the less price risk is covered by the contract farming. It is, therefore, recommended that contract poultry farming should be made more popular.

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Custom Hiring of Farm Machineries for Agri- Business Management in Nashik district.

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The feature of agriculture transformation is growing regional disparity in development. In the process, the disadvantaged regions did not gain from development efforts. Farm mechanization helps in boosting the farm production with effective and efficient use of the resources, productive management of the labours and timely completion of the farm activities. One young farmer, Mr. Hari Aher from village Wadali Bhoi of Chandwad tahsil from Nashik district in Maharashta has established the "Farm Mechanization Centre" in his village.

Among the beneficiaries of farm mechanization, there was decrease in human and bullock labour utilization for cultivation of selected crops except gram, whereas, the machine hours were increased in maize and soybean by 5 and 28 per cent, respectively and decreased by 8 and 24 per cent in wheat and gram, respectively. In the case of maize, soybean and gram, the output levels were decreased as compared to the non-beneficiary growers, but yield of wheat was observed to be increased by 5 per cent.

The payment made for bullock labour was maximum in maize crop and higher machine labour charges were paid for wheat cultivation by the non-beneficiary growers. The Cost A and Cost B in beneficiary growers were observed to be reduced over the non-beneficiary growers excepting Cost A for soybean (1.53 per cent) and gram (8.71 per cent). All the beneficiary growers have earned by reduction

in the total cost of cultivation (Cost C). Though the farm mechanization provided on the rental basis has not boosted the farm output of the selected crops but, have identically reduced the total cost of cultivation of these crops and ultimately maximized the profits of the beneficiary growers. As such, it is imperative to establish such type of custom hiring centres for the increased farm mechanization and welfare of the farming community.

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Present Status and Future Prospects of Processing of Dry Land Fruits.

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Fruits are vital components of our daily diet. Fruits are considered as the major sources of dietary vitamins and minerals. India has diverse agro climatic conditions ranging from arid to heavy rainfall areas. Most of the areas have well distributed rainfall, sunshine and temperature conducive to the growth of a very wide range of tropical, subtropical and temperate fruits.

Despite being the world's second largest producers of fruits and vegetables in the world yet the commercial processing of fruits and vegetables in our country is less than 2.00 per cent as against 83 per cent in Malaysia, 80 per cent, in South Africa, 78 per cent in Philippines, 70 per cent in Brazil and 65 per cent in USA. The main reason being that domestic consumption of processed fruits is quite meager because of economic reasons and also as a matter of habit. The Indian consumers by and large very much prefer fresh fruits. The high cost of packaging pushes up the cost of processed items and thereby makes them out of reach of a common man. Because of the varied climatic conditions, fresh fruits are available throughout the year. The fruits like apples oranges and grapes can be put in the cold storages for prolonging their shelf life and making them available during the off season. Some fruits like guava, oranges, pomegranates and anola have two seasons so they are available in fresh form for four to five months within a year.

The process of economic liberalization started in July 1991 has given boost to this sector. From 1991 to 1996, 629 proposals for establishing FVPI were approved with total investment of Rs. 6.793 cores. It is note worthy that the multinationals have showed interest in this sector. After the liberalization a few modern plants have now come up and many are in pipe line 1120 proposals of industrial incenses and 100 per cent foreign orientated units were approved by MPEI and Government of India and 248 proposals have already been implanted as Joint Ventures. The important countries with which the Joint Ventures have been signed are USA UK Netherlands, Switzerland and Germany.

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Crop Diversification in Akola District

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The present investigation aims in studying the Crop diversification in Akola district. The present study was based on secondary data collected from different government publications. The data covered a period of 15 years i.e. 1995-96 to 2009-10. In all 6 crops were considered for study.. Herfindahl index and entropy index has been used to study the extent of crop diversification. In order to study the economics of crop diversification, land concentration was computed for selected years.

Tahsilwise analysis showed that the area under *Kharif Jowar* has found to be decreased in all the tahsils of Akola district. Area under soybean crop was increased in Balapur and Murtijapur tahsil. The area under *Wheat* has found to be increased in Akot and Patur tahsils*. Cotton* still remains as major crop of the district.

In Akot, Balapur, Murtijapur and Patur tahsils along with Akola district crop diversification has significantly increased during the study period. The diversification from subsistence crop to more commercial crops were took place in selected tahsils. Cotton and Soybean shows increasing land concentration ratio from

year 1995-96 to 2009-10, so soybean is more adventitious crops in Akot, Balapur, Murtijapur and Patur tahsils of Akola district.

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Manufacturing of Sugarcane Jaggery: A Profitable Agri-business

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The jaggery and khandsari industry in India is equally important to that of sugar industry. The total production of jaggery in Maharashtra during 2010-11 was 35.16 thousand quintals. It ranked third in the country while the first and second was Uttar Pradesh and Tamil Nadu states, respectively. In Uttar Pradesh as much as 50 per cent of cane produced still goes to the production of jaggery. Kolhapur, Satara, Sangli and Pune districts of the Maharashtra State lead in jaggery making. Nearly, 35 to 40 per cent of total jaggery production is from these four districts.

The jaggery processing units are profitable; even if only own sugarcane is processed. However, it was more profitable when the jaggery-processing unit prepares the jaggery of other's on rent basis. The estimated break-even quantity of jaggery production was 373.46 quintals. The actual quantity of jaggery production was 950.24 quintals, being higher than the quantities of jaggery production required for Break-even Point. It is therefore, inferred that the performance of the jaggery processing unit was satisfactory.

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Marketing of paddy in Raigad district. (M.S.)

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"Marketing of paddy in Raigad district (Maharashtra State)" was undertaken with a sample of 80 paddy cultivators from Pen and Alibag and five intermediaries each namely, wholesaler, commission agent, processor / miller in the study area. In

the marketing of paddy following four channel were observed viz. i) Producer-Processor-Wholesaler-Retailer-Consumer ii)Producer-Commission agent -Processor-Retailer-Consumer iii) Producer- Commission agent-Wholesaler-Processor-Consumer iv) Producer-Wholesaler (A) - Processor-Wholesaler (B) - Retailer-Consumer. N.B. Wholesaler A stands for collection of paddy and Wholesaler B stands for sale of Rice. Out of the 80 paddy cultivators, maximum cultivators preferred to sale their produce through processor/miller (38.75%) followed by commission agent (35.00%) and wholesaler (26.25%) and maximum quantity sold to commission agent i.e 41.89 per cent, processor 34.42 per cent and least quantity i.e 23.69 per cent was marketed through wholesaler.

The total per quintal marketing expenses incurred by market functionaries were highest in channel IV (Rs.190.96) i.e., 18.54 per cent, followed by 17.07 per cent, 16.43 per cent and 15.57 per cent of consumer price in channel I, channel III and channel II, respectively. The producer's share in consumer's rupee was highest 82.69 per cent (Rs.851.78) in channel IV followed by 81.06 per cent (Rs.753.89) in channel II, 80.59 per cent (Rs.741.43) in channel III and 79.79 per cent (Rs. 697.40) in channel I. Further, it is revealed that, the involvement of large number of intermediaries have decreased the producers share in consumer's rupee to considerable extent. The marketing efficiency (ME) in channel II was highest (428.08%) whereas, it was 416.33 per cent in channel III, 376.03 per cent in channel I and 354.71 per cent in channel IV. The marketing efficiency revealed that, channel II was relatively efficient as compared to other channels. Even though the price received by producers in channel II, III and IV was higher than channel I, the marketing efficiency was observed to be low. Whereas, in channel III, though the price received by producer was comparatively low, than channel IV, the marketing efficiency was higher

Key words : Marketing, Price spread, Marketing efficiency.

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Economics of milk processing of co-operative Vs. private dairy in Western Maharashtra

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Maharashtra is the sixth largest milk producing state in the country and accounts for 7.24 per cent share in the total milk production of the country. The study was undertaken to examine the milk collection, distribution and relevant costs of selected co-operative and private dairy units in Western Maharashtra. The information on various aspects viz; collection, processing, distribution, management and problems faced by dairy units were collected for the years from 1999 to 2008 for co-operative dairy units and 2006 to 2008 for private dairy units.

The average daily milk collection and total milk collection within the year on an average, increased substantially over the period of 10 years. The milk collection increase is to the extent of 48.23 per cent, implies aggressive progress by the co-operative dairy units. However, private dairy units did not grow and perform on par with co-operative dairy units as indicated by slow progress in average daily milk collection and total milk collection (15.00 per cent). Per litre cost of collection, processing, distribution and management cost of milk was relatively higher in co-operative dairy units than private dairy units. This was mainly due to efficient management by private dairy units. The dairy units whether co-operative or private, faced several problems in their business activity viz; irregularity in electricity supply, high administrative cost and overhead charges, heavy competition in collection of milk. The most emphasized problem was that of cut- throat competition for milk collection.

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Inputs and yield gap Analysis of Paddy in Maharashtra

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India is one of the world's largest producer of white rice, accounting 20 Percent of world rice production. It is preeminent staple food of the Eastern and Southern parts of the country. It is one of the chief grains of the nation and occupies the biggest area under cultivation, as it is one of the principal food crops. It is in fact the dominant crop of the country. The area, production and productivity of paddy was 41.92 Million hectare, 89.19 Million tonnes and 2125 Kgs/hectare,

The study is based on the primary data collected from the 85 farm families under the Comprehensive Scheme for Studying the Cost of Cultivation of Principal Crops from Western Maharashtra (17), Marathwada (11), Vidarbha (27) and Konkan (30) regions of the State. The data pertained to the agricultural year 2010-2011. The differentials between the recommended and actual use levels of important input like seed, manure and fertilizers have been estimated. The two yield gaps were calculated on the basis of per hectare potential yield, potential farm yield and actual yield obtained. Simple statistical tools were employed for the purpose.

The per hectare gap in use of all the inputs under study for the paddy was maximum for manure (92.87 per cent) and minimum in case of seed (10.53 per cent) in Marathwada region. The excess use of Nitrogen and phosphorus fertilizer was observed in Konkan and Western Maharashtra region. There existed a total gap of 52.19 per cent at the state level. The maximum gap (76.69 per cent) was noticed in Marathwada region followed by Vidarbha (62.56 per cent).The coefficient of path analysis showed that the total effect of gap in use of seed, manure and NPK fertilizer showed that negative effect was the major variable contributed for yield gap. Uncertainty /high rainfall, high input prices, lower prices for paddy and lack of irrigation facilities were the major reasons for input use gaps. Whereas, Uncertainty /high rainfall, less use of inputs, lack of irrigation facilities and Incidence of weeds were major reason for yield gap.

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Resource Allocation Efficiency of Wheat In Western Maharashtra

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Agriculture is the most important sector of Indian economy. Agriculture sector employs more than 58 per cent of population and contribute 14.3 per cent of GDP in economy during the 2010-11. The key issue of this sector in the Maharashtra State is low productivity in foodgrains as compared to national and inters state productivity. Limited availability of agricultural land, quality of land and rainfed agriculture has restricted the scope for increase in agricultural production. The objectives of the study were to examine the per hectare changes in resource use levels and their efficiency in selected Cereals, Oilseeds and Pulses and to estimate the per hectare changes in costs and returns structure of selected crops. The emphasis has been given on the simple tabular analysis based on means, percentages. The zonewise cross sectional data of two point of time i.e. 1991-92 and 2008-09 was used for estimating the resource use efficiency. The results indicated that The per cent change in per hectare resource use for wheat at overall level was highly significant in case of P and K fertilizer ingredients. At on overall level, the per hectare resource use gap analysis showed that the per cent gap in use of seed for wheat crop was found to be negative indicating the excess use and per cent gap for manure, N, P and K fertilizers were decreased over a period of 18 year. During 1991-92 and 2008-09, at the overall level the independent variables like human labour, N and P fertilizers found positively significant and bullock labour and N fertilizers were observed to be significant, respectively. At the overall level, Marginal Value Product shown that human labour, N and P fertilizers and bullock labour and N fertilizers during 1991-92 and 2008-09 was higher that the unit costs, respectively. At the overall level the per hectare total cost of cultivation i.e. Cost 'C' and gross profit were observed to be increased by 267.50 and 94.21 per cent over the base year, respectively. The B:C ratio of Wheat during the the year 1991-92 was greater than unity but during the year 2008-09 shown less than unity, it means this crop was in loss.

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Impact of Kolhapur Type Weir on input use and farm production in Pune District

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An economic evaluation of K.T. weir is essential for providing justification to the investment made on this activity. It is important to have the empirical data on different aspects of farm families, which are influenced by the K. T. weir. The economic studies for assessing their impact on farm economy deserve its importance as it provides sustainable livelihood to the beneficiaries. Therefore, the present investigation is an attempt to study the changes especially in land use, cropping pattern, input use, production, costs, returns, employment and income pattern of beneficiaries.

In all, 90 beneficiaries (30 each from base, middle and top region of K. T. weir) were selected from Jadhavwadi, Nimgaonsava, Shiroli, Bori and Bagwadimatha as the sample cultivators. The 'before' and 'after' approaches were adopted for the collection and analysis of data. Irrigated and cultivable area has increased by 37.70 and 7.69 per cent, respectively after construction of K.T. weir. The area of cash crops, vegetables and fodder crops has gone up by 74.07, 79.17 and 52.08 per cent, respectively. While the area under cereals and pulses has decreased by 62.77 and 88.46 per cent. The per farm number of total cattle reared by the sample cultivators has increased from 4.65 to 5.26, with a significant rise in number of cross bred cows. The productivities of major crops had considerably increased from 4.35 to 19.34 per cent over the base year. The per hectare net income from crop production has raised by 96.09 percent, with B: C ratio of 1.88. The per hectare total income accrued jointly from the crop production and livestock activities showed an increase of 76.01 per cent with overall B:C ratio of 1.72. The increased irrigation facilities and number of milch animals has resulted into an increase in per worker annual employment of male and female labourers by 99.71 and 51.61 per cent.

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Analysis of gap between recommended and actual use levels of inputs and output for cotton in Maharashtra

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Cotton is the most important commercial crop of India. It is generally regarded as King of Textile Fibers which has made significant contribution to the National economy. It provides sustainable livelihoods for millions of rural population. Today, the textile industry has grown as the largest industry in India. India has the largest area (11.00 million ha) under cotton in the world. This is almost one fourth of the world cotton area. Though India ranks first in area, its production (33.50 million bales) is very low when compared to other major cotton producing countries in the world. The production share of India in the world is much lower for the vast area that this crop occupies, the main reason for it is low productivity. Though cotton is cultivated across different states in India, major cotton producing states are Maharashtra, Gujarat and Andhra Pradesh. While these three states together occupied about 65 per cent of India's total area in 2010-11, Maharashtra alone accounted for 39.59 lakh ha area (i.e. 34 per cent) with production of 77.04 lakh bales having average productivity of 331 Kg/ha during the period. The area under rainfed cotton was 66 per cent at the national level, predominant cultivation of cotton under rainfed condition increases the uncertainty in getting the expected yield and different kinds of pests attack significantly reduce the yield of crop. Indian cotton scenario has changed dramatically due to the adoption of Bt cotton during recent years.

Keywords: yield gap , cotton.

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Resource Use Level and Yield Gap Analysis of Sugarcane Farms in Maharashtra.

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Sugarcane is one of the most important cash crop in the World as well as in the India of Maharashtra economy. It is the most prominent and ancient source of sugar used by mankind.. As sugarcane occupies a pivotal place on the economic map of Maharashtra, efforts are needed to increase the productivity of sugarcane to develop the economy of the state. This can be achieved by adopting new sugarcane production technologies like balanced use of fertilizers, manures, micronutrients, weedicides, use of improved methods of irrigation and new planting of sugarcane, newly released varieties, etc.

The excess use of seed was observed in all the regions of Maharashtra. It is observed that farmers have used manure for ratoon sugarcane irrespective of its recommendation.

In order to bridge this gap, the use of recommended level of input is most essential. It is therefore suggested that, the farmer should be motivated through visit to progressive farmers and farmer's rallies, seminars and other communication means etc. for the use of recommended inputs.

Keywords: yield gap , sugarcane.

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Hi-Tech Floriculture : A Promising Agri-Business in Satara District

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Maharashtra is a leading State in agriculture and now emerged as an important horticultural state in the country. The principle flowers grown in Maharashtra are roses, carnation, chrysanthemum, marigold, aster, jasmine, etc. In polyhouses, important flowers grown are roses, carnation and gerbera. The present

study attempted to examine the economics of production of selected cut flowers, marketing channels and their relative costs, constraints and remedial measures thereon and various factors influencing price of cut flowers in Satara district of Western Maharashtra.

The Satara tahsil was purposviely selected having maxiumum area under flower cultivation. Six villages were selected randomly. The five cultivators from each category of roses and gerbera growers were selected from each village and thus total 10 cut flower growers were selected from each village. Thus, 30 rose cultivators and 30 gerbera cultivators were selected randomly. In all, 60 cut flower growers were selected for the study. The data pertained to the year 2008-09 was analysied with simple tabular analysis and multiple linear function.

Two types of polyhouses were observed i.e. GH-1 naturally ventilated and GH-2 partially controlled. Majority of polyhouses were erected on medium type of soil. The average cost of erection of rose polyhouse was Rs. 6.98 lakhs whereas, the corresponding figures for gerbera was Rs.6.50 lakhs. The cost of framework was more than 45 per cent. The cost of polythene film ranged from 6.88 to 7.08 per cent of the total cost of polyhouse construction. In the case of rose cut flower polyhouses, the cost of cultivation was worked out to Rs. 6, 16,101.84. The share of paid out cost, i.e. Cost' A' was 64.29 per cent. The major item of cost incurred was the apportioned cost of planting material, which was Rs. 75130.05 (12.19 per cent) for the rose polyhouses. The family labour charges were worked out 4.59 per cent.

For the gerbera cut flower producing polyhouses, the total cost of cultivation, worked out to Rs. 5, 89,599.23. The share of Cost' A' and Cost 'B' was 66.22 and 95.42 per cent, respectively. The major item of cost was the apportioned cost of planting material which was to the tune of 53,529 (9.08 per cent). The average cost of marketing of produce was worked out to be around ₹ 101894.80 and ₹104252.20 for rose and gerbera cut flowers, respectively. The commission of commission agents shared nearly 45 per cent. The input output ratio for rose and gerbera polyhouses worked out to 1.67 to 1.79. The material used for packaging is corrugated boxes, rolling paper and rubber band. For the protection purpose of

delicate and long sized petals of gerbera flowers a polythene cap is used. Average price received during monsoon season was on the lower side, while winter prices were on higher side. The net price received for the sale of cut flowers was influenced by the season in which they were sold and the grade of cut flowers. The producers share worked out to 71.99 and 69.11 per cent for rose and gerbera, respectively. The high price fluctuation (96.67 per cent) was the major constraint in the cut flower marketing followed by inadequate credit for the establishment (81.67 per cent). The Small and medium farmers who have entered this industry recently faced problem in technical know-how. Incidence of pests and diseases should be taken care if not it causes economic losses to farmers destroying entire produce was faced by 51.67 per cent of farmers. In case of marketing, the constraints were of inadequate transport facilities, unorganized markets, high cost of packing materials, lack of storage facilities, non availability of freight space and high commission charges. The high-tech agri-business is a profitable enterprise and as such, the floriculture industry should be encouraged by evolving low cost polyhouse structure and good quality varieties indigenously. The Government should make available market information to the farmers which will enable them to plan the production and market the produce and adequate capital and infrastructure facilities like transport and cold storage.

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Tobacco Production and Marketing- Agricultural Business in Nipani Area of Karnataka State

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Tobacco is one of the important commercial crops of India. About 100 countries produce tobacco, but the major producers are China, India, Brazil, United States, Turkey, Indonesia, Argentina, Zimbabwe and Malawi. The Asian countries had major share in area and production of the tobacco, constituting more than 55 per cent of the world output of tobacco leaves, the major countries being China (38.65 per cent of the total world output), India (8.38 per cent), Indonesia (2.66 per cent), Pakistan (1.66 per cent), Turkey (1.20 per cent), etc. Among the different

tobacco types cultivated in India, bidi tobacco forms the biggest chunk (36 per cent) followed by Virginia tobacco (16 per cent), Natu tobacco (9.5 per cent) and Hookah tobacco (7.6 per cent). The commercial cultivation of tobacco is concentrated in states like Andhra Pradesh, Karnataka, Gujarat, Maharashtra, Bihar, Tamil Nadu and West Bengal. More than 50 per cent of tobacco produced in Karnataka is bidi tobacco. Belgaum is the major district of bidi tobacco production constituting 87 per cent of total production of bidi tobacco in the state. Average yield of Belgaum district is 1059 Kg per hectare. Chikodi taluka contributes 68.9 per cent of the total area under bidi tobacco in Belgaum district. Nipani area is the major bidi producing area and wholesale market is in Chikodi taluka.

The primary source of data for the present study was the information given by selected tobacco growers of Nipani area in Chikodi Taluka of Belgaum district. The sampling design adopted for the investigation was single stage simple random sampling. On the basis of maximum area under tobacco, the six villages were selected. fifteen cultivators and five each from the three categories small, medium and large selected by simple randomization. The present study composed of 90 tobacco growers, 30 each from small, medium and large size groups of holdings and spread over 6 villages of Chikodi taluka of Belgaum district. The data pertaining to the year 2009-10 was collected by the survey method. The data were subjected to functional analysis by using the Cobb-Douglas type of production function.

Except the human labour and bullock labour, all other inputs use level showed an increasing trend with increase in the size of holding. This might be because of better economic condition of medium and large farmers as compared to the small farmers. At the overall level, the per hectare cost of cultivation of tobacco worked out to Rs. 47262.01.At the overall level the average per hectare yield of tobacco was 9.72 quintals. The per hectare gross income was Rs. 70330.55 while per hectare profit at Cost 'A', Cost 'B' and Cost 'C' was Rs. 38947.47, Rs. 26894.47 and Rs. 23068.53, respectively. The average per quintal price reveived by small, medium and large groups of farms was Rs.7070.46, Rs. 7240.00 and Rs. 7364.16, respectively. It is inferred from the result that tobacco cultivation on small size farms was less profitable as compared to those on medium and large farms because of low returns due to higher costs of resources. It is observed that at the overall level, the output input ratios at Cost 'A', Cost 'B' and Cost 'C' were 2.24, 1.62 and 1.49,

respectively. It is suggested that the adequate application of complex fertilizers, manure, frequency of irrigation and sufficient use of pesticides is necessary on small and medium farms to achive higher yields and in turn higher output-input ratios and bridge the gap.The factors such as area under tobacco, expenses on labour and expenses on fertilizers and manure have significant and positive influence on the tobacco output in value terms. The expenses on seedlings has negative but non-significant influence. It indicates the high cost incurred on purchased seedlings affects the net income from the tobacco. Hence, it is recommended that famers should go for raising of seedlings rather than purchasing them, as self raised seedlings cost less than the purchased one.

Bidi tobacco in the sample area is mostly sold in the village itself.The main *dalal* in the area and sub-*dalal* for the particular village visit the tobacco growers to inspect tobacco heaps, draw out samples carry out necessary quality test. The grower is requested to indicate the expected price. At the end of the bargain, the final price is announced. All the transactions are on trust and there is no written agreement.The present system of marketing of *bidi* tobacco has certain practices very much against grower. The per quintal cost of marketing was found to be Rs. 605.68. The major items of costs were deduction of weight, commission charges and transport charges.

The farmers should be educated for using the ecommended level of manure and fertilizers, which significantly increase the yield.The eradication of various malpractices and irregularities in the marketing of tobacco need to be tackled through establishment of efficient co-operative marketing societies.

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Impact of farm-ponds on input use and farm production of beneficiaries in Ahmednagar district

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Different types of treatment activities are carried out in a watershed. Farm pond is one of these treatments which is, now a day's mostly preferred by the farmers in Scarcity zone of Maharashtra. State Agricultural Department economically

assists the farmers through MREGS, NHM and RKVY for farm pond construction. An economic evaluation of such a farm ponds is essential, for assessing their impact on farm economy of the beneficiaries. The present investigation is an attempt to study the changes in land use and cropping pattern, costs and returns and employment and income pattern of the beneficiaries.

In all, 60 beneficiaries (20 each from 15x15x3 mt, 20x20x3 mt and 30x30x3 mt size) were selected from Balamtakali, Bodhegaon, Kambi from Shevgaon tahsil and Nadurnimbeditya, Yeli, Bhalgaon from Pathardi tahsil. The 'before' and 'after' approach was adopted for the collection and analysis of data. Irrigated and cultivable area has increased by 9.86 and 0.86 per cent, respectively after construction of Farmponds. The area of oilseeds, fruit and cash crops, has increased by 450.00, 46.15 and 31.12 per cent, respectively, while the area under cereals and pulses decreased by 43.14 and 16.22 per cent. The per farm average number of total cattle reared by sample cultivators have decreased from 4.41 to 4.33 with a significant rise in the number of crossbred cows instead of local cows. The productivities of major crops had considerably increased (ranged between 1.41 to 21.98 per cent) over the base year. The per hectare net income from crop production had gone up by 63.46 percent with the B: C ratio of 1.49. The per hectare total income accrued jointly from the crop production and the livestock activities showed an increase of 28.97 per cent with an overall B:C ratio of 1.42. The increased irrigation facilities and milch animals had resulted into increase in per worker annual employment of male and female workers by 7.44 and 7.50 per cent, respectively. In short, the Farmponds has resulted in diversifying the cropping pattern, improving the productivities of crops and increase in employment and income levels of families.

This paper has been drawn from Research Review Committee Report "Impact of farm-ponds on the farm economy of beneficiaries in Ahmednagar district" Department of Agricultural Economics, MPKV, Rahuri (Maharashtra).

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Prospects For Export Of Sugar From India Under WTO Regime

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India is the second largest producer of sugar in the world after Brazil and it produces approximately 22 million tonnes of sugar annually. The data were obtained for the period of 22 years beginning with 1985-86 to 2006-07. The data were divided into two sub periods i.e. Pre-WTO period (1985-86 to 1994-95), Post-WTO period (1995-96 to 2006-07) and overall period (1985-86 to 2006-07).The data obtained from secondary sources were analyzed to obtain estimates The percentage change in the export of Indian sugar to different countries, their shares in the total export and variability in export were estimated. The percentage change in the export of Indian sugar to different countries, their shares in the total export and variability in export were estimated. The results of the study revealed that India was exporting sugar to 83 countries and the export of sugar from India increased tremendously from 0.11 to 133.13 lakh tonnes during entire period of 22 years. The export of sugar in India during Pre-WTO period was 0.47 lakh tonnes while it was 29.23 lakh tonnes per annum during Post-WTO period.

The maximum variability in the export of Indian sugar was observed in France and Indonesia during Pre-WTO period and Egypt and Oman during Post-WTO period. The countries having the highest share for the export of sugar from India and the countries in which the Indian sugar fetched the highest price i.e. France and South Africa wherein the marginal exports were noticed during Pre-WTO period. The lower export price for Indian sugar was fetched in Pakistan where the percentage share in export of sugar from India was more over the Post-WTO period. The countries like Belgium and France in which the Indian sugar fetched the highest price where the lower export price was noticed during Post-WTO period.

The study suggests that the efforts need to be made to minimize variability in the export of Indian sugar to France, China and South Africa. There is a need to divert the sugar exports from Pakistan to Belgium and France in which highest price was fetched and the sugar exports were marginal in these countries.

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Input and yield gap analysis of rabi foodgrain crops in Solapur district

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In India, rabi crops play a major role to meet the food grains requirement of ever growing population. Out of total food grain production, rabi crop production is nearly half. Rabi jowar, wheat and gram are the major rabi crops.

Though there is significant increase in area and production of rabi crops, the productivity showed decreasing trend in last two decades. In general, most of the farmers are not using the recommended levels of inputs. Therefore, there exists a gap between the recommended and actual use levels of input mix. This leads to a gap in the potential yield and the actual yield of the rabi crops (jowar, wheat and gram), which is called yield gap. The present investigation was attempted to examine the input use and output levels, to estimate the yield alongwith factors responsible for the yield gap and the constraints in cultivation of jowar, wheat and gram. Jowar, wheat and gram are the major rabi crops of Maharashtra. Solapur is one of the important district of rabi jowar, wheat and gram. Hence, the present study was purposively conducted in Solapur district of Maharashtra.

Madha, Malshiras and Barshi tahsils were selected purposively. Three villages from each tahsil with probability proportion to area under rabi crops were selected randomly, 15 cultivators, i.e. 5 each from small (below 2 ha), medium (2.1 to 4.0 ha) and large (above 4.0 ha) size classes were selected randomly from each of the village. The total sample size of 135 rabi crop cultivators comprised of 45 each from small, medium and large size categories of farms. The yield gaps were estimated by using the methodology developed by International Rice research Institute (IRRI), Manila, Philippines.

The inputs used for rabi jowar were far below than the recommendation. In the case of wheat except seeds other inputs were used below the recommendation. But in the case of gram all the inputs were used in excess. This

lead to gap between the potential farm yield and actual farm yield. The highest yield gap was observed in the case of gram among all the selected rabi crops. There existed a great variability in the production elasticities of different inputs used in the production of rabi jowar, wheat and gram. Human labour, bullock labour, nitrogenous, phosphorous and potash fertilizers, number of irrigations and expenditure on seed and plant protection measures were the major factors responsible for the yield gap. Lack of credit availability, lack of irrigation facilities, labour management, low availability of improved varieties, high costs of fertilizers, irregular power supply, inadequacy of labour at required time and unavailability of biofertilizers were the major constraints faced by the rabi crop growers.

With the ever growing population food security has become a major issue. As rabi crops have a significant contribution in the food basket, their production needs to be increased by increasing the area under rabi crops or bringing the improvement in productivity. However, the expansion in the area is quite difficult due to restricted area, hence, the alternative way is to increase productivity of the rabi crops. In view, the farmers should be encouraged for judicious use of the inputs. The use of important variables has to be carefully extended by the rabi crop farmers to minimize the yield gap. Besides, the input supply system should ensure quality improved seed, regular supply of water, adequate and uninterrupted power supply and technical know-how to the growers for scientific cultivation of the rabi crops

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Price Parity of Cereal Crops in Western Maharashtra

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Agriculture is the most important sector of Indian economy. Agriculture sector employs more than 58 per cent of population and contribute 14.3 per cent of GDP in economy during the 2010-11. The producers have always been alleging that the increase in the prices of their produce were not in proportion to increase in the input prices. A sound price policy is one that ensures remunerative prices to the producers and also reasonable prices to the consumers and which reduces the regional

imbalances in agricultural income by maintaining parity between costs, prices and income of different agricultural commodities. The Objectives of the study were to examine the changes in input-output prices of selected crops and to evaluate the parity between the costs, prices and income from these crops. The present investigation was based on the secondary data collected in " The Scheme for Creating Permanent Machinery for Studying the Cost of Cultivation of Principal Crops in Maharashtra State" sponsored by the Government of Maharashtra. The data pertains to the 18 years i.e. from 1991-91 to 2008-09 were considered for the said study. The results indicated that the indices at current and constant prices of major input for selected crops shown tremendous increase during the period under consideration. The indices of cost of production and minimum support prices of major cereals was observed to be more than 100 with few exceptions at current and constant prices during the study period. The parity indices between FHP of cereals and input prices were not favorable because market prices of jowar and wheat were not sufficient to cover the increased prices of inputs. The parity indices of gross income to per quintal cost of production of jowar and wheat affected the profitability adversely. Compound growth rates (CGR) of input prices were more than double to the prices of output at MSP and FHP, except at MSP for wheat. The price-cost ratio of cereals were less than unity, indicating that output prices were not covering the costs. Thus the increase in MSP, FHP and thereby income of the crop is not sufficient to cover the cost of cultivation of all cereals.

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Ready to Eat Food Industry - A Market Oriented Agri- Business

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The fruits and vegetables are highly perishable commodities and undergo losses between harvesting to consumption. The present level of post-harvest losses of fruits and vegetables is about 25 to 30 %. The vegetables processing industry is playing the key role in reducing the post harvest losses. In

view, it is imparaitive need to study the efficient processing unit. The Tasty Bite Eatables, Ltd., Pune (Export Oriented Unit) is one of the Indian Ready to Eat Food Products Company recognized by ISO-9001/2000 certificate. This unit is having the well established efficient processing and distribution system wherein the operations like sorting, washing, cooking, packaging, storage, transportation are inspected for quality assurance of food production.

The initial capital investment of the processing unit was ₹ 92.30 lakh out of which plant and machinery (59 %) occupied major share. Presently, the total investment of the unit is ₹ 3889.76 lakh. The annual expenditure of the processing unit increased from ₹ 1599.19 lakh in the year 2004-05 to ₹ 1727.60 lakh during year 2008-09.

The sell of finished vegetable food products by the firm in 2004-05 was 1095.49 tonnes which increased to 1773.27 tonnes in 2008-09. The total cost estimates of five years indicated that the average total cost of processing unit was ₹ 1922.45 lakh. The proportion of fixed cost was 30.70 % (₹ 590.21 lakh) and variable cost was 69.30% (₹ 1332.24 lakh). The average per kg cost of processing was the highest in for Agra peas and greens, (₹ 136.62) followed by Kashmiri spinach (₹ 117.01), Channa masala (₹ 111.83), Bombay potatoes (₹108.29) and Aloo palak (₹101.19). The average per kg cost of processing was the highest in Paneer makhani (₹ 158.03) followed by Peas paneer (₹154.13), Jaipur vegetables (₹148.19), Bengal lentil (₹ 122.53) and Punjab egg plant (₹120.40).

The estimated break-even quantity of vegetables required for processing was worked out to 385.75 tonnes. The per cent utilization of installed capacity increased continuously from 41.39 % (2004-05) to the 63.45 % (2008-09). The rate of capital turnover was the highest (202.46 %) in the year 2008-09 and the highest net returns on capital were ₹2340.60 lakhs in the same year. The average profitability index during the period was 20.83 %. The profitability index was the highest in the year 2008-09 (25.87 %). The pay back period of processing unit is 2.60 years. This indicated that the processing unit has already recovered its capital investment from its profit.

The study results suggested that the ready to eat food industry is one of the profitable industries in the food market but, it is in developing state. The efforts need be taken to expand and increase such type of food processing units for integrating production, processing and distribution system to earn more and more foreign exchange.

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Economic of Production of Selected Vegetables in Parbhani District

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The study was conducted on 120 farmers (60 of tomato and 60 of brinjal) during rabbi season in 2010-11 in Parbhani District of Marathwada Region of Maharashtra state. For the present study multistage sampling design was used and data was collected by direct interview method. The average cost of cultivation of tomato and brinjal was Rs. 103678.53 and Rs. 109947.69, respectively. Per hectare yield obtained from tomato and brinjal was 299.24 q and 280.12 q respectively. The cost return ratio of tomato was 1:1.81 and of brinjal it was 1:2.17. Resource use efficiency also calculated in study which shows the scope to increase or reduce the quantity of resources used in production.

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Marketing of Selected Vegetables In Parbhani District

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The present study, focused on the identification of tomato and brinjal marketing channels, ascertainment of marketing cost, market margin, price spread, marketing efficiency and producers share in consumer's rupee in Parbhani District of Marathwada Region of Maharashtra state. The primary data collected from 120

farmers, 6 wholesalers and 6 retailers. The prevalent channels for marketing of tomato and brinjal have been identified as Channel-I (Producer-Consumer), Channel-II (Producer-Retailer- Consumer) and Channel-Ill (Producer-Wholesaler-Retailer-Consmer). The results showed that marketing cost was highest in Channel-Ill where as producers, share and marketing efficiency was higher in Channel-I as compare to the Channel-II and Channel-III.

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Economics of Production and Problems of Fishermen in Marathwada region

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The study was conducted on 60 fish producers, during season in 2011-12 in Parbhani district of Marathwada Region of Maharashtra state. For the present study multistage sampling design was used and data was collected by direct interview method. An overall level, per farm total cost of production of fish was Rs. 62164/- the net returns earned by the small and large producers were Rs. 55503 and Rs. 98210 while on an overall size farm, it was Rs. 768565. B: C ratio small and large fish farmer was 1:2.26 and 1:2.22 and overall B: C ratio was 1:2.24 respectively. The cost and net returns per kg were also computed in all the categories of producers. The cost for the production of one kg fish was worked out to be Rs. 30.09, Rs. 31.51 in case of small and large producers, respectively. On an overall, it was Rs. 31.30. The net returns per kg earned by small, large and average producers were Rs. 39.09, Rs. 38.49 and Rs. 38.70 respectively.

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Marketing of Inland Fishery In Parbhani District

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The present Study, focused on the marketing of inland fishery in Parbhani District of Marathwada Region of Maharashtra state for the year 2010-11. The primary data collected from 60 fish producers the prevalent channels for marketing offish have been identified as Channel- I Fish farmer (Producer) - consumer, Channel -II Fish farmer (Producer) — retailer — consumer, Channel -III Fish farmer (Producer) -wholesaler — retailer - consumer, Channel -IV Fish farmer (Producer)- wholesaler -Trader- retailer— consumer. Total marketing cost of fish was higher in case of channel-IV Rs. 435, followed by channel III, II and I. i.e. Rs.290, Rs.195 and Rs.130 respectively. Share of transportation and packing charges was contributing higher in all channels as compared to other item of expenditure.

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Marketing of cole crops in Hingoli District of Marathwada Region

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The present study, focused on the marketing of cole crops in Hingoli District of Marathwada Region of Maharashtra states. The primary data collected from 120 farmers. The results showed that marketing cost was highest in Channel-III where as producers share and marketing efficiency was higher in Channel-I as compare to the Channel-II and Channel- III . Total marketing cost of cauliflower was higher (Rs. 106.20) in channel-III followed by (Rs. 38.32) in channel-II and (Rs. 30.96) in in channel-I. Share of transportation charges was found higher in all channels as

compared to other items of expenditure. The share of commission charges was quite high in cauliflower. Total marketing cost of Cabbage was higher (Rs. 94.90) in channel-III followed by (Rs. 35.80) in channel-II and (Rs. 33.44) in channel-I.

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Economics of Marketing of Sweet Sorghum and Constraints Faced By Sweet Sorghum Grower

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Jowar (Sorghum bicolar, Monch) belongs to family gramineace and Origin-Ethiopia. It is the fifth most important cereal crop following Rice, Wheat, Maize and Barley in the world. In India, total area under jowar cultivation 03.01 million hectares with production of 03.22 million production and productivity 1071 kg per hectare in year 2010-11 (www.agricoop.nic.in). Area covered by rabi jowar in Maharashtra is 32.24 lakh hectares with production of 23.67 thousand tones and productivity 734 kg per hectare. Jowar is major cereal crop in Marathwada region. Area under rabi jowar is 1120.30 thousand hectare with production of 947 thousand tones and productivity 858 kg/ha in year 2008-09. The study was conducted on 120 fanners, during rabbi season in 2010-11 in Aurangabad District of Marathwada Region of Maharashtra state. The techniques like arithmetic mean, weighted mean, percentage, frequency, ratio, tabular analysis method were used to analyze the data in the present study. In order to determine profitability of sweet sorghum, costs and returns are important aspects. The results revealed that at overall level, sweet sorghum crop was dominating in the cropping pattern. In all categories of farm rental value of land and hired human labour were predominant item of expenditure. From the energy utilization view, threshing, harrowing and weeding were peak energy utilization period. The results revealed that at overall level, The average cost of cultivation of Sweet Sorghum was Rs. 82454.09, per hectare yield obtained from sweet sorghum was 15.45 qtls., per hectare net profit of sweet sorghum was Rs. 114746.66, hi general, output-input ratio was 02.90. In general, per quintal cost of cultivation was

Rs. 39830.60. The elasticity's of production with respect to area, human labour and machine labour, showed positively significant on sweet sorghum farm while, these with respect to bullock labour, seed shared scope to increase resources in production of sweet sorghum. In general, share of retention for consumption was increased as increase in farm size. On the contrary, marketed surplus increased as increase in farm size.

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