

PRICE DIFFERENCES IN WHOLESALE PRICES, RETAIL PRICES AND PRICE REALIZED BY FARMERS FOR ONION AND GRAPES IN KARNATAKA



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February 2016*

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EXECUTIVE SUMMARY

Movement of prices across producer and consumer centres provide useful information about the surplus and deficit prevailing in the market for a particular commodity. This study tries to establish association between the production and consumption or supply and demand for grapes and onion though looking into prevailing prices at the production centres, trading centres and consumption centres of these two commodities. The study mainly based on primary survey data looks into the price movements by tracking the price obtained by the farmers, price paid and received by the wholesalers, price paid and received by the retailer and also by the exporters if any for different varieties of onion and grapes. The study provides useful policy feedback on price convergence/divergence for these two specific commodities.

Main Objectives

The study focuses on the following two main objectives

- 1). Studying the relationship between movements in market arrivals and market prices for two main commodities in Karnataka namely, onion and grapes.
- 2). Studying the divergence among farm harvest prices, wholesale prices, retail prices and export prices (subject to availability) and the relationship between these movements.

The methodology followed in the study is the following:

The study uses both the secondary and the primary survey data to study price variations across producers, wholesaler and retailers. The commodities selected are grapes and onion. For selecting the sample for the study for each selected crop, three major producing districts in the state were selected. From each selected districts a number of 50 farm households growing grapes and onion each were selected for the detailed household survey. Thus, 150 households each for grape and onion were selected from three districts in Karnataka each. In addition to 300 farmers, few wholesalers and retailers from the nearest town to the study region were also selected for the detailed survey.

Main Findings

Demographic profile, cropping pattern, production and cost of selected crops

Among the selected households, adult members constituted around 3/4th share while children had 1/4th share in the family. Generally the large and medium farmers were proportionately more educated compared to marginal and small farmers. Looking at the socio-economic characteristics of the selected farmers, majority of the selected farmers belonged to general categories. Around 98 per cent of the selected farmers had their main occupation in agriculture and only less than 2 per cent had their earnings from dairy, own business and some other minor occupations. Among selected farmers, average size of holdings was around 3.34 hectares (8.3 acres) per household. Out of total cultivated area only 47 per cent was

irrigated and rest 53 per cent was rainfed. Almost entire irrigated area was irrigated by groundwater, i.e., tube well while surface irrigation was almost nil among the selected households. Per household irrigated area was only 1.6 hectares out of total operated area of 3.3 hectares. The lower size holdings had higher irrigation intensity and it declined with the increase in holdings size.

Almost one fourth area by the selected households was devoted to the reference crop namely, either the grapes crop or onion crop. In addition to the reference crops households also were growing cereal crops like ragi, maize and jowar, pulse crops like bengal-gram and green gram, oilseeds like sunflower and groundnut, cash crops like cotton, vegetables including, tomato, potato, beetroot, cabbage and lemon and fruit crops like mango and so on. Across various farm size categories, small farmers had comparatively higher percentage of area under grapes as against the onion crop where large farmers had higher proportion compared smaller size farmers.

Among the reference crops, there were three varieties grown by the selected farmers, namely red onion, rose onion and chincholi. In comparison to onion, selected farmers in the case of grapes were growing seven varieties of grapes, namely Bangalore Blue; Black; Dilkhush, Thomson; Sonaka; Sharath; and Manikchand. Some of these varieties like thomson were exportable varieties. On average, out of total cropped area the selected farmers occupied half of the area under onion and grapes as these two crops were the reference crops. Out of total area under onion crop among the selected households, kharif crop alone constituted around 87 per cent of the total area under onion crops. The summer season occupied 10 per cent of the total area under onion and rabi season occupied only 3 per cent of the total onion crop area among the selected households. In the case of grapes, out of total area by the selected households, around 35 per cent was harvested in kharif and around 65 per cent of the remaining area was harvested in the summer season.

On average, red onion production was 68 quintals per household that was completely sold by the selected households, rose variety was 41 quintals out of which 38 quintals per household was sold and chincholi variety production was 28 quintals that was completely sold. The price of red onion was highest, Rs 2681 per quintal as compared to Rs 2400 in the case of Chincholi variety and Rs 1080 for rose variety. Among the six varieties of grapes, per household production varied from 142 quintals in the case of Sonakka to 79 quintals for bangalore blue, 76 quintals sharath and manikchand each, 69 quintals thomson seedless, 46 quintals dilkhush and 38 quintals in the case of black variety. The price obtained by the selected farmers was highest for thomson seedless Rs 6464, followed by Rs 5767 for sonakka, Rs 5133 for sharath variety, Rs 2188 for dilkhush, Rs 2100 for Manikchand, Rs 1831 for bangalore blue and the price was lowest Rs 1363 for black variety.

By and large there were economies of scale as far as cost of production is concerned in onion crops. Average cost per hectare of red onion was Rs 82 thousand and clearly cost of production had inverse relation with farm size. Among different components of cost, contribution of labour cost owned and hired was around 47 per cent while marketing cost constituted around 10 per cent and the remaining 43 per cent was contributed by the material and machinery cost. The proportion of labour cost was higher among the small and marginal famers while large farmers had higher share of machinery cost in the total cost of production. In the case of rose variety onions, the average cost per hectare was Rs 1.38 lakh and it was found highest in the case of small farmers and lowest in the case of large farmers. The overall share of labour force in total cost of production for rose onion was accounted at 38 per cent. The share of marketing cost in the case of rose onion was much less only 3.5 per cent as

mostly it was exposed off within the village by the selected farmers. The chincholi variety was produced only by one marginal farmer who cultivated around 2 hectares of area under this crop.

In the case of grapes, out of total cost, variable cost consisted 70 to 85 per cent and fixed cost (amortized into the life period of the plant) ranged between 15-30 per cent. On average, total cost per hectare varied between Rs 1.5 lakh to Rs 3.7 lakh for different varieties of grapes grown by our selected households. Out of total cost of production and marketing, around 60 percent or more was accounted for by manure, fertilizer, pesticides and insecticides among all varieties of grapes grown by the selected households. Similarly, out of total cost, labour hired or owned constituted around 10 to 15 per cent share while machinery hired or owned constituted only less than 5 per cent share among all varieties of grapes grown. Marketing cost also was less than 5 per cent.

Marketing channels and net profits for grapes and onion

Per household net profits (over total cost) varied from Rs 39 thousand to Rs 4.89 lakh among different farm size holdings. Overall profit per hectare was measured at Rs 1.15 lakh and it varied from Rs 65 thousand for marginal farmers to Rs 1.39 lakh for the large farmers. It is, however, noted here that although cost includes depreciation, as well as imputed family labour cost but it does not include imputed value of owned land cultivated by the farmers. Given the lower per hectare revenue or value of productivity for the smaller categories and given their cost of production, except large farmers all other three categories of farmers borne losses in the cultivation of rose onions. The loss per hectare was Rs 43 thousand for the marginal farmers, Rs 16 thousand for the small farmers, Rs 10 thousand for the medium farmers while large farmers earned profits of Rs 88 thousand per hectare. For the chincholi variety profit per household realised by the one farmer who grew it was Rs 31 thousand. Thus, profit per hectare for different varieties of onion varied from Rs 1.15 lakh for red onion, Rs 13 thousand for chincholi to Rs 2 thousand for the rose variety.

Per household profits earned were highest for sonaka variety Rs 14.9 lakh during the reference year followed by thomson seedless Rs 5.75 lakh, sharath and bangalore blue both having per household profit of slightly above Rs 1 lakh while, black, dilkhush and manikchand varieties earned less than Rs 1 lakh per household. Glancing through per hectare profitability of grapes it is seen from the results that per hectare profit was once again highest for sonaka variety Rs 10 lakh followed by Thomson seedless Rs 7.5 lakh and sharath variety with Rs 2.5 lakh per hectare. Profit per hectare was Rs 1 lakh for Bangalore blue and Rs 60 thousand in the case of manikchand and less than Rs 50 thousand for balck and dilkhush varieties. Although, at the aggregate all varieties had positive profitability, but as one looks across various farm size holdings, in some cases we notice farmers ending up with huge losses. On the overall, we found better profitability in grapes as compared to foodgrains and most other commercial crops but at the same time it also points out the risky nature of cultivation of grapes crop somewhat the similar results found for the onion crop as well.

In the case of red and chincholi onions, the entire surplus was sold by the selected framers through regulated markets in Karnataka. Rose onions, on the other hand, were mainly produced for export purpose and this variety was not sold in the regular channel of regulated mandis. In the case of rose onion we had around 50 farmers producing this variety and all of them sold their produce through commission agents who exported to Malaysia and other East Asian countries. However, the product was not exported by the farmers themselves. Among

all varieties of grapes there was predominantly only one channel, i.e., commission agents through which our selected farmers sold their grapes. Only in the case of thomson seedless and sonaka variety a handful numbers of farmers sold their grapes through regulated mandis. In all other cases product was sold only through commission agents. Thus, more or less all selected farmers followed an informal chain to dispose off their grapes crop.

For red onions, price per quintal varied from Rs 2342 for the marginal farmers to Rs 3009 for medium farmers and it averaged at Rs 2681. For rose onion, although they were produced for export purpose, price realized for the same was much lower compared to red onions. The price for rose onions averaged at Rs 1080 per quintal and it varied between Rs 982 for medium farmers to Rs 1180 for the large farmers. Chincholi onion was grown only by one farmer and the realized price was Rs 2400 per quintal. For the six varieties of grapes grown by the selected farmers, the price per quintal obtained averaged at Rs 1831 for Bangalore blue, Rs 1023 for black variety, Rs 2188 for dilkhush, Rs 7050 for thomson seedless, Rs 8731 for sonaka, Rs 5133 for sharath and Rs 2100 for manikchand. Comparing the commission agent and regulated market channels for thomson seedless variety, it was seen that regulated market offered much higher average price of Rs 8800 compared to price offered by commission agents Rs 5299 only. Similarly, in the sonaka variety, regulated market average price was Rs 12000 per quintal compared to Rs 5461 by the commission agents. Across farm size there was no uniform pattern observed for both onion and grapes. In some varieties large farmers obtained highest price whereas in other cases it was marginal or small farmers who obtained the best price.

Variability in wholesale and retail prices of grapes and onion

Wholesale prices of grapes varied from around Rs 2 thousand per quintal to around Rs 5 thousand per quintal in the duration period of around fourteen years from 2001 to 2014. Retail prices, on the other hand, varied from Rs 2.7 thousand per quintal to above Rs 7 thousand per quintal during the same time period. However, intra year fluctuations were higher compared to variation in the annual average prices. The deviations were higher among retail prices as compared to wholesale prices as highest standard deviation value for wholesale prices was 1925 whereas the same for retail prices was 3032. On average, the retailers' margin over the wholesale price varied between 15 to 80 percent while the average mark-up value for the period 2003 to 2014 was estimated at 45 percent. Further comparing intra year average mark-up, the highest mark-up was observed in the months of February and March above 50 per cent, followed by November, January and May, above 40 percent and the months of December and April, less than 40 percent.

Coefficients of variation between wholesale and retail prices were more equitable compared to their range of average prices and standard deviations. Mark-up values were much larger in the case of onion as compared to grapes. The average mark-up percentage in Bangalore was 41 percent, in Bijapur 82 percent and in Hubli it was 97 percent while overall average mark-up was 69 percent. As compared to this the average mark-up in grapes was 45 percent. The range of high mark-up in onion was also much higher as compared to grapes. The highest mark-up in Bangalore was 132 percent while in Bijapur it was 125 percent and in Hubli it was above 250 percent. The phenomenon of extremely high prices of onion in retail markets and their increased volatility causing a huge hue and cry in the society during the recent past has become very common. Even in the month of August 2015 onion prices touched sky high rate of above Rs 60-70 per kg.

Among our selected wholesalers, mark-up percentage varied from 11 percent for red onion to 26 percent for summer rose onion, 42 percent for kharif rose onion and 15 per cent for kharif red onions. In the case of grapes the mark up percentage was measured as around 6 percent for grapes in Chikabalapur district, 17 percent in Bangalore and as high as 50 per cent in Bijapur district. In the case of retailers, the mark up percentage was much higher compared to wholesaler and among the two crops the mark up percentage for onion was much higher compared to grapes. Summarising the whole discussion, mark up was almost less than 50 percent among the wholesalers of both onion and grapes but it was mostly above 50 percent among the retailers and its highest range crossed 300 percent in onion indicating to some extent high volatility in onion prices. This high volatility benefited the retailers in terms of high margin but the advantage of same does not reach to the producers.

Stakeholders' Opinions

Looking at the reasons why farmers were growing the reference crops, namely onion and grapes, above 20 percent of the selected farmers indicated that they were growing the crop as it facilitated their personal consumption. Around 70 percent of them indicated that they were growing this crop for profit purpose. The problem faced by farmers were ranked 1 to 4 indicating rank 1 as highest severity of the problem and rank 4 as lowest severity. The highest numbers of farmers gave rank 1 to the poor road network and transportation facility, followed by non availability of good quality seeds, poor refrigeration and other infrastructure problems and traders' collusion and trade malpractices. Thus, poor infrastructure and marketing facilities along with poor quality seeds led to low returns to the farmers. Turning to the problems faced by the wholesalers and retailers in the reference crops, The major (rank one) problems faced by the wholesalers of onion were poor quality of supply obtained in the market leading to low price realized by the wholesalers, poor road network, high market charges, low availability of post harvest facilities like refrigeration, erratic and fluctuating production and so on. Further, wholesalers pointed out that the lack of cold storage facility or godown facility was the major deficiency they face as the same could play a big role in stabilizing the price obtained by them. Lack of transportation facility, underdeveloped onion market and unnecessary intervention by the government from time to time were the other big problems they pointed out in their wholesale onion business.

Like in the case of onion, grapes farmers also ranked number one problem in the wholesale business of grapes, viz., poor road network; high marketing charges; low quality and fluctuating supply; and mixing up the different varieties by the wholesalers thereby creating distrust among the buyers and consequently bringing down the price for the wholesalers. Unlike the wholesalers of grains, the wholesalers of grapes did not have a license facility and providing license to them will provide them legal status for trading and would increase their profitability. In addition, wholesalers indicated that provision of institutional credit, transport facility and storage and warehousing facilities were the other requirements which could facilitate them in the grapes trading. Looking at the problems faced by the retailers of onions, low and poor quality of supply, unnecessary government intervention, competition from large organised retail chains and non remunerative prices were the core problems faced by the retailers of onion. Like in the case of wholesalers of grapes, onion and grapes retailers also pointed out that they were not licensed and did not have a particular space or shop where they can carry out their business. In addition they were requiring godown facility, institutional credit and transportation facility.

Policy Suggestions

Karnataka is endowed with congenial agro-climatic conditions making it possible to grow different varieties of horticultural crops. However, there are several challenges that have to be addressed properly so as to strengthen the horticulture sector in general and the crops analyzed in this study in particular. In order to meet the challenges faced by the growers, major emphasis has to be on post harvest infrastructure and processing for better value addition to the horticultural products, transfer of technology by making the extension systems more accountable and better accessible and precision farming to venture into new opportunities and promotion of genetic modified organisms (GMOs) in horticultural crops. There were large numbers of farmers who expressed their dissatisfaction regarding marketing facilities. For marketing their grape produce farmers depended on merchants and intermediaries who were exploitative in nature. Suitable wholesale and terminal markets with in-built cold chain and where-house facility for the sale of horticultural crops need to be opened in big cities and towns in the horticulture production belt. There is also need for creation of chain of collection centres of farmers' produce in rural areas to feed the terminal/wholesale markets.

In the case of onions, a multi pronged strategy needs to be adopted to stabilize their prices as volatility in the same affects both producers as well as consumers. The speculative activities among the wholesalers and retailers aggravate the situation as in the present study we have seen that price wedge was much higher at the retail chain than the wholesale chain in the case of onion. It is therefore, important that retail chain is closely monitored to regulate storage and check unscrupulous trade practices at both wholesale and retail trade. To enhance production of onions, more incentive in terms of better price and better marketing infrastructure need to be provided to the farmers. Proper market intelligence system could also help in building up better information system that would facilitate timely policy decisions on exports and imports to even out the fluctuation in prices at the retail level. Better storage facilities need to be developed at the field level. Promotion of processing as dehydrated onion or in the form of paste can help in increasing their shelf life and thus bringing down the volatility in onion prices.

Chapter 1

Introduction

1.1 Brief Introduction of the study

There is sufficient past and contemporary evidence to prove that growth in agriculture acts as a precursor to the economic development of a country (Demaine, 1994). This is especially true for a predominantly agricultural country like India where agriculture still occupies a major place in all economic activities. Scientific methods and new strategy of farming have tremendously increased production of some crops in regions over the last few years. However, with diversified economic characteristics, regional specialization in production of agricultural commodities is inevitable. Based on the theory of comparative advantage such regional specialization would result in optimum land use and overall higher production. Nevertheless, such regional specialization would require the establishment of appropriate trade linkages between deficit and surplus areas of production as well as consumption. In other words, markets in the deficit and surplus areas and markets in the production and consumption areas must be inter-linked for the perfect flow of commodities to take place between the regions. In the absence of such market integration the buyers and sellers will not realise the gains of technological advancement. For in these circumstances, the current price signals will not be transmitted down the marketing chain and farmers will fail to specialise according to comparative advantage. Therefore, horizontal as well as vertical market integration is needed for the perfect flow of information and to bring efficiency in the production system. In this report an attempt is being made to understand the nature and extent of relationship between export prices, wholesale prices, retail prices and farm gate prices among few selected commodities.

Under the market structure methodology the marketing efficiency is measured by directly comparing the present marketing system with the requirements of a competitive market. The approach aims at an assessment of the economic efficiency of the markets on the basis of such criteria as the degree of departure of actual conditions from the conditions of a perfectly competitive market¹. Following market structure approach, time series price data had been

¹ Market Structure relates to the organisational aspects of market such as number and type of buyers/agents operating in the market, the ease or difficulty of entry into the trade, modes of disposal and the sale alternatives available. Market Conduct relates to the patterns and trading practices which market agents follow. It includes

used by a number of studies to throw light on the degree of competition in the marketing system². It is pointed out that in spatially separated markets prices are supposed to move in unison in response to the forces of supply and demand. The accuracy and speed of price adjustment can be taken as an indicator of efficiency. Thus, according to this methodology, correlation coefficients between the time series of prices prevailing at different wholesale markets can be expected to be close to unity if the markets are integrated. However, the inference of competitiveness drawn from high correlation coefficient between the two markets suffers from limitation of presence of auto-correlation in time series data. The basic problem is that two functionally isolated markets can appear to be synchronised if prices in each are influenced by a common factor. Two price series that pose significant upward trends due to general trend, common seasonality or any other synchronous common factor will yield a relatively high positive correlation³. It is therefore advisable that such trends must be removed from the data before performing analysis for the purpose of inferences.

Price spread is the difference between the price received by the producer and price paid by the consumer for a given commodity in market at a given point of time. The studies on price spread determine whether or not the existing marketing margins are excessive in relation to the services rendered by the market. The markets which involve less amount of margins are generally considered to be the efficient markets. However, the above criteria of determining marketing efficiency is static in time and space as it ignores storage function as well as inter market trade. Marketing margin studies accounting for differences in time and space are hypothesised as:

- a) Prices through space vary no more than the cost of transportation from one point to another.
- b) Prices through time vary only by the cost of storage.
- c) Prices of different forms of products vary no more than the difference in cost of processing and marketing them.

such aspects as handling, grading and storage followed by different agencies. Finally, Market Performance relates to the temporal and spatial pricing efficiency and the ability of the system to adapt to new and changing situations, etc.

² see for e.g., Cummings (1967), Lelle (1971), Jones (1968, 1972), Kainth (1982), Stigler and Sherwin (1985) and Neal (1987).

³ G. Blyn (1973) pointed out that time series correlation of raw price data contains the trend and seasonal components, which would give an upward bias to the correlation coefficients.

Though no marketing system is perfect it would be relatively rare for prices to be consistently out of line in time, space or form in a competitive marketing system. This is because any known divergence from perfect pricing should immediately attract traders who, seeking profits would equalise prices by buying in the low priced markets and selling in the high priced ones (Moore, et.al., 1973).

The correlation between price movements of a commodity in any two markets will be perfect (1.0) under conditions of perfect competition. However, in real world perfect competition is only hypothetical as conditions of perfect knowledge, perfect mobility and perfect homogeneity of products are not satisfied in actual market transactions. Perfect mobility is hindered by transportation cost. Cost of shipment between two places causes variation in their prices. The larger the transportation cost, the larger the range within which prices can move in relation to the other market without there being any shipment of goods. This will mean a larger residual term and a lower correlation between prices in the two markets. However, this high cost of shipment may not necessarily be a result of an inefficient transport system. It may be due to merely long distance between the two markets. This kind of imperfection cannot be corrected by increasing transactions between the two markets as it is not caused by transport bottlenecks but by location distance of the two markets. Thus correlation is expected to be higher between the markets which are closely located and lower for distant markets.

1.2 Macro Overview of Agriculture in Karnataka

Agriculture is an important part of economy of Karnataka state. The state has got a topography that is highly suitable for agricultural activities. In other words, Karnataka's relief, soil, climatic conditions taken together contribute immensely towards growing various agricultural commodities. Agriculture is one of the main occupations of the people in the state. About 12.31 million hectares of land, i.e., 64.6 percent of the total area is used for agriculture in Karnataka. According to 2011 Population Census, agriculture supported 13.74 million workers, which constituted about 49.28 per cent of the total workforce in the state. In rural areas, dependence of population on agriculture for livelihood is still higher at 70.68 per cent. Agriculture of Karnataka is mainly dependent on monsoon given the majority of land being dryland agriculture in the state. Agriculture in Karnataka can be classified into three main seasons during the year, viz.:

- Kharif (June to September)

- Rabi (October to February) and
- Summer (March to May)

Some of the important crops that form the basis of agriculture in Karnataka are: rice, jowar, maize, pulses, oilseeds, cashew-nuts, coconut, arecanut, cardamom, chillies, cotton, sugarcane, coffee, tobacco etc. Karnataka is the largest producer of coffee, coarse cereals and raw silk among all states in India. Horticulture also plays a vital role in the economy of Karnataka. The state is the major producer of horticultural commodities. About 40 percent of the total Income of the state is generated from horticulture. Karnataka occupies the second position in terms of the horticultural productions in India.

The agriculture and allied sector's contribution to Karnataka's GSDP was around 43 percent in 1980-81 that came down to 26 per cent in 2001-02, further down to 16.8 percent during 2007-08 and it lingers around 12 to 14 per cent during the latest period for which data is available. Despite the declining share of primary sector in GSDP, agriculture remains the primary activity and main livelihood source for the rural population in the state. Besides, agriculture provides raw material for a large number of industries. Agriculture in the state is characterized by wide crop diversification. The extent of arid land in Karnataka being second only to Rajasthan in the country, agriculture is highly dependent on the vagaries of the southwest monsoon. The most important challenge faced by agriculture in the state is food security, besides improving the livelihood of the farmers. Karnataka has attained self sufficiency in food grains especially in the course cereals and pulses, but still continues to be in deficit in rice and oilseeds (Kumar 2010). Development of agriculture improves the purchasing power of the major section of our population, which in turn will also help the development of other industries. Thus, it can be concluded that agriculture is an important part of the economy of Karnataka.

Karnataka is known for its rich biodiversity in India. The State has been identified as one of the 10 agro-climatic zones, suited for the majority of agricultural and horticultural crops (GoK, 2011). Despite a paradigm shift in economic activities from agriculture to non-agriculture sectors in recent years in the State, the growing need for increase in agricultural production and productivity has been greatly felt with the growth of the population not only for food security but also for generating employment. Karnataka is one of the states in India with the lowest level of area under irrigation. The gross irrigated area to gross cropped area was only 31.8 per cent against the national average of 45.3 per cent in 2009-10. The State

Government has undertaken several irrigation development programs particularly in the dry zone of northern part of Karnataka to augment irrigation potential. The cumulative irrigation potential increased from 24.07 lakh hectares in 1993-94 to 34.43 lakh hectares in 2009-10 (Government of Karnataka 2013). Notwithstanding, there exists huge gap between potential created and actual utilisation of irrigation facilities. The cropping intensity in the state stood at 103.5 per cent in 1960-61 which increased to 113.3 per cent in 1990-91 and further to 124.1 per cent in 2010-11.

The growth rate of the three major sectors in three decades has been presented in Table 1.1. The overall GSDP growth rate of Karnataka in last two decades was higher than the GDP of the country during the same period. In 1981-1991, the overall growth rate of primary sector in Karnataka was 1.62 per cent; while it was 3.05 per cent for all India during the same time period. Fortunately, the growth rate of primary sector of Karnataka increased in the following decades at the rate of 3.65 per cent and 4.75 per cent in 1991-2001 and 2001-2011, respectively. However, at all India level, it was 3.25 per cent and 3.18 per cent in 1991-2001 and 2001-2011, respectively, which was slightly lower than Karnataka. The growth rate of industry (secondary) sector at all India level was slowly increasing from 6.28 per cent in first decade (1981-1991) to 6.57 in the second decade and finally reached to 7.55 per cent in the last decade (2001-2011). However, for the state of Karnataka, it was 7.32 per cent in 1981-1991, reduced to 6.84 per cent in 1991-2001 and finally increased to 7.63 per cent in the last decade (2001-2011).

Table 1.1: Sectoral Growth Rate (Exponential) in Three Decades

	Growth Rates	1981-91	1991-01	2001-11
Karnataka	Agri, & allied Sector	1.62	3.65	4.75
	Secondary Sector	7.32	6.84	7.63
	Services Sector	6.06	9.57	8.72
	GSDP	4.57	7.22	7.77
All India	Agri, & allied Sector	3.05	3.25	3.18
	Secondary Sector	6.28	6.57	7.55
	Services Sector	6.40	7.48	9.20
	GDP	5.28	6.20	7.18

Note: All the figures are found to be significant at 1% level

Source: Authors' Estimation from RBI (2011); Planning Commission (2011)

As expected, at all India, the service sector reported around 6.40 per cent growth rate in 1981-1991, rose to 7.48 per cent in 1991-2001 and further increased to 9.20 per cent in the last decade. On the other hand, in Karnataka, it was fluctuating, increased from 6.06 per cent in first decade to 9.57 per cent in 1991-2001 and finally reduced to 8.72 per cent in 2001-2011. The sector surpassed the growth of industries and agriculture to become fastest growing sector for the Karnataka Economy. Most of the growth in services has been in information technology (IT), business process outsourcing (BPO) services and knowledge based activity both at National and state economy.

1.3 Relevance of the Study

Price instability imposes costs on both producers as well as consumers. If the price of a particular commodity falls below a certain level producers loose because the price may not be able to cover the actual cost of production. However, consumers benefit from low prices because they can buy more of the same commodity. Alternatively, if the price of a commodity goes up producers gain but consumers lose because they have to adjust their expenditure and budget in response to changes in relative prices. While positive price incentives help the government to achieve self-sufficiency in those commodities, extreme changes in commodity prices spill over to other sectors of the economy, which leads to increase in the overall rate of inflation. Therefore, there is a need to balance the twin objectives of self-sufficiency through the provision of remunerative prices to producers and to protect the consumers by imposing rationing not allowing the prices to go sky high that become unaffordable for the consumers, especially the poor ones. The latter phenomenon has been observed quite frequently in India during the recent past in the case of onion. There has been incidences where unusual rise in onion prices led to a sort of political instability. Therefore it is essential to have proper information on both the demand and supply of agricultural commodities to have a proper planning for future food security. Movement of prices across producer and consumer centres provides useful information about the surplus and deficit prevailing in the market for a particular commodity. This study tries to establish association between the production and consumption or supply and demand for grapes and onion though looking into prevailing prices at the production centres, trading centres and consumption centres of these two commodities. The study mainly based on primary survey data looks into the price movements by tracking the price obtained by the farmers, price paid and received by the wholesalers, price paid and received by the retailer and also by the exporters if any for different varieties

of onion and grapes. The study provides useful policy feedback on price convergence/divergence for these two specific commodities.

1.4 Background of Study Crops

1.4.1 Grape cultivation

Grape cultivation is one of the most remunerative farming enterprises in India. Kautilya in his '*Arthashastra*' written in the fourth century BC mentioned the type of land suitable for grape cultivation. Cultivation of grapes is believed to have been introduced into the Northern India by the Persian invaders in 1300 AD, from where they were introduced into the West and South (Daulatabad in Aurangabad district of Maharashtra) during the historic event of changing the capital from Delhi to Daulatabad by King Mohammed-bin-Tughlak. Ibn Batuta, a Moorish traveller who visited Daulatabad in 1430 AD, reported to have seen flourishing vineyards in south India. Grape was also introduced in the south into Salem and Madurai districts of Tamil Nadu by the Christian missionaries around 1832 AD and into Hyderabad province by the Nizam of Hyderabad in the early part of the 20th century. From Delhi, Daulatabad, Madurai, Salem and Hyderabad, grape cultivation spread to different parts of the country.

Grape is grown under a variety of soil and climatic conditions in three distinct agro-climatic zones, namely, sub-tropical, hot tropical and mild tropical climatic regions in India. The sub-tropical region covers the north-western plains. Vines undergo dormancy and bud break starts in the first week of March while the rains arrive in the first week of June and therefore only 90-95 days are available from the initiation of growth to harvest. Consequently, 'Perlette' is the only early ripening variety grown in this region. Single pruning and a single harvest is the accepted practice here. The hot tropical region covers Nashik, Sangli, Solapur, Pune, Satara, Latur and Osmanabad districts of Maharashtra; Hyderabad, Ranga Reddy, Mahbubnagar, Anantapur and Medak districts of Andhra Pradesh; and Bijapur, Bagalkot, Belgaum, Gulberga districts of northern Karnataka. This is the major viticulture region accounting for 70 percent of the area under grapes in the country. Vines do not undergo dormancy and double pruning and a single harvest is the general practice in this region. Thompson Seedless and its clones (Tas-A-Ganesh, Sonaka), Anab-e-Shahi, Sharad Seedless and Flame Seedless are the varieties grown in this region. Mild tropical region includes Bangalore and Kolar districts of Karnataka; Chittoor district of Andhra Pradesh and Coimbatore; and Madurai and Theni districts of Tamil Nadu. Principal varieties are Bangalore Blue (Syn. Isabella), Anab-e-

Shahi, Gulabi (Syn. Muscat Hamburg), and Bhokri. Thompson Seedless is grown only with limited success. Except for Thompson Seedless, two crops are harvested in a year.

The major varieties of grapes grown in India are, Thomson Seedless, Sonaka, Anab-e-Shahi, Perlette, Bangalore blue, Pusa seedless, Beauty seedless etc. Maharashtra occupies the first position with a production of 0.68 MT of grapes, followed by Karnataka. The other states growing grapes are Punjab, Andhra Pradesh and Tamil Nadu. Approximately 85 percent of the total production, irrespective of the variety, is consumed fresh. About 120,000 tonnes of Thompson Seedless and its mutants, namely, Tas-A-Ganesh, Sonaka and Manik Chaman are dried for raisins. Some 20,000 tonnes of Bangalore Blue are crushed to make juice, and 10,000 tonnes of Bangalore Blue, Cabernet Sauvignon, Chenin Blanc, Chardonnay, Merlot, Pinot Noir and Uni Blanc are crushed to process into wine (Shikhamany, 2001).

1.4.2 Onion Cultivation

Onion is valued for its bulbs having characteristic odour, flavour and pungency. Bulbs are suited for storage for a long period and for long distance transport. It is used as salad and cooked in many ways in curries, fried, boiled, baked and used in making soups, pickles etc. Value addition in onion is done by marketing dehydrated onions and onion flakes. Onion bulb is rich in minerals like phosphorus (50mg/100g) and calcium (180mg/100g). Many medicinal uses are reported for bulbs and is commonly used as diuretic and applied on wounds and boils. Onion greens are also used by harvesting crop at pencil thickness and when small bulb is formed.

Onion is a cool season vegetable and grows well under mild climate without extreme heat or cold or excessive rainfall. It does not thrive when the average rainfall exceeds 75-100cm during monsoon period. The young seedlings withstand freezing temperature. The ideal temperature for vegetative growth is 12.8 – 23.0^o C. For bulb formation it requires long days and still higher temperature (20-25^o C). Even though onion is treated as a long day plant, for bulb formation and its development, varieties differ in their response to length of day. Onion varieties differ in size, colour of skin, pungency, and maturation etc., of bulbs. Large sized bulbs are mild in pungency and are sweet in taste compared to small sized onions. Red coloured cultivars are more pungent than silver skinned varieties and keep better in storage. Yellow cultivars have less demand in the market. The local cultivars are known and marketed

after the names of places where they are grown. Poona Red, Nasik Red, Bellary Red, Patna Red and Patna White are common in onion trade. Most of the improved varieties were developed through mass selection from local collections of segregating populations.

India is the second largest producer of onion in the world, next to China with over 15 million tonnes produced in 2010-11. Onion in India is grown across the country and also consumed in all parts of the country. As a culinary ingredient it adds to the taste and flavour in a wide range of food preparations, besides its use in salads. Thus there is a steady demand for onions not only in India but also the entire Asian continent, where Indian onions have found wide acceptance. Maharashtra is the leading onion producing state in India followed by Karnataka and Gujarat. The states of Maharashtra, Karnataka and Gujarat contribute over 50 percent of all India production with Maharashtra alone accounting for over 30 percent of country's total production. The other significant contributors are Madhya Pradesh, Bihar, Andhra Pradesh and Rajasthan.

India is the third biggest exporter of onion in the world, next to Netherlands and Spain. Major export is to Gulf countries, Malaysia, Singapore, Sri Lanka and Bangladesh. Export of onion is channelized through NAFED. Depending on preference of colour and size of bulbs, different varieties are exported. Middle East countries prefer light red to dark red bulbs. In Malaysia preference is for dark red bulbs. In America and Japan, demand is for yellowish or brown onion having mild pungency. Europe and Japan markets prefer large sized bulbs while in Singapore, demand is for small onions.

1.5 Objectives of the Study

The study focuses on the following two main objectives

- 1). Studying the relationship between movements in market arrivals and market prices for two main commodities in Karnataka namely, onion and grapes.
- 2). Studying the divergence among farm harvest prices, wholesale prices, retail prices and export prices (subject to availability) and the relationship between these movements.

1.6 Data base and Methodology

The study uses both the secondary and the primary survey data to study price variations across producers, wholesaler, retailers and exporters. The commodities selected for the state

of Karnataka are grapes and onion as per the requirement of the coordinator centre. For selecting the sample for the study for each selected crop, three major producing districts in the state were selected. From each selected districts a number of 50 farm households growing grapes and onion each were selected for the detailed household survey. Thus, 150 households each for grape and onion were selected from three districts in Karnataka each. In addition to 300 farmers, few wholesalers, retailers and exporters from the nearest town to the study region were also selected for the detailed survey. To maintain the symmetry across vertical channels, it was tried to collect information on the same varieties in all the four questionnaires, i.e., farmers, wholesalers, retailers and exporters.

1.7 Overview

The report contains seven chapters. The first chapter introduces the subject and provides details of the reference crops, objectives and methodology followed in the study. Second chapter starts with presenting demographic profile and cropping pattern of the study region. Subsequently production and consumption details of reference crops are discussed variety wise. Chapter three presents economics of the study crop giving details of value of production, cost of cultivation and profitability of reference crops variety wise. Chapter four presents marketing aspects of the reference crops. This chapter presents various marketing channels followed by the selected farmers and their price realisation across various marketing channels.

Chapter five starts with presenting price pattern over time and space using monthly data from the secondary sources. It presents intra year variability and percentage mark-up of wholesale and retail prices starting from 2000-01 onwards. Subsequently, the chapter presents percentage mark-up based on the primary survey of farmers, wholesalers and retailers. Chapter six presents perceptions of the farmers and problems faced by the wholesalers and retailers in the trade of onion and grapes. Finally last chapter presents summary of the findings and major conclusions and policy suggestions.

Chapter 2

Demographic Profile and Cropping Pattern of the Study Region

2.1 General overview of the study region

As discussed in the previous chapter the study uses both the secondary and the primary survey data to study price variations across producers, wholesaler, retailers and exporters. The commodities selected for the state of Karnataka are grapes and onion as per the requirement of the coordinator centre. Karnataka is one of the important states growing different varieties of Grapes. In Karnataka, the important Grape growing districts are Bangalore (U), Bangalore (R), Kolar, Bijapur, Bagalkot, Belgaum, Koppal and Gulbarga. The progressive grape growers of the Northern part of the state are growing grapes of high quality and exporting to Europe, Russia and Middle East countries. In Karnataka, grapes are being grown in an area of 9,700 hectares and the estimated production is about 1.67 lakh tons. Most of the grapes produced in the state are sold in the local market as fresh fruits and a small quantity is sold as raisins. The fresh grapes are spoilt very fast, and therefore, the farmer is liable for economic losses, if the produce is not marketed in the internal markets immediately. Keeping this point in view, the Department of Horticulture and the KAPPEC, in consultation with the IIHR, the Karnataka Grape Growers Association, Bijapur, and private exporters, are striving hard to export the grapes.

In the case of onion, maximum production takes place in Maharashtra state (4905.0 thousand tons) followed by Karnataka (2592.2 thousand tons), Gujarat (1514.1 thousand tons), Bihar (1082.0 thousand tons), Madhya Pradesh (1021.5 thousand tons) and Andhra Pradesh (812.6 thousand tons). In Rajasthan, Haryana and Uttar Pradesh it is grown to some extent, i.e., 494.2, 453.9 and 368.6 thousand tons, respectively. The requirement of onion is almost constant throughout the year and availability of fresh onion is limited to 7 or 8 months and there is lean periods when prices shoot up because of poor storage conditions available in the country. There are three main seasons of onion production namely (i) Kharif crop (ii) late Kharif or summer (iii) Rabi crop. The concentrated pockets of onion grown in Karnataka are Darwad, Chitradurg, Gadag, Haveri, Bagalkot and Davengere. Three Agri Export Zones have been established in Maharashtra, Karnataka and Madhya Pradesh states. Rose onion growers

(export variety) have been trained on scientific farming of onion in Maharashtra and in Karnataka.

Annex Table 2.1A provides names of districts and blocks where grapes and onions are produced in Karnataka. For selecting the sample for the study for each selected crop, three major producing districts in the state were selected. From each selected districts a number of 50 farm households growing grapes and onions each were selected for the detailed household survey. Thus, 150 households each for grape and onion were selected from three districts in Karnataka each. For selecting the households, probability proportional to size sampling method was adopted. The population was divided into small farmers operating less than 5 acres, medium farmers operating 5 to 10 acres and large farmers above 10 acres. In addition to 300 farmers, few wholesalers, retailers and exporters from the nearest town to the study region were also selected for the detailed survey. To maintain the symmetry across vertical channels, it was tried to collect information on the same varieties in all the four questionnaires, i.e., farmers, wholesalers, retailers and exporters. For instance, if the farmer's questionnaire contains data on prices of rose onion, price data in the questionnaires of wholesaler, retailer and exporter should also have information on the same varieties. In addition, it was tried to have data for the same specified months and years in all the questionnaires for the sake of comparability. These months have been selected to reflect two peak months and one lean month for both the commodities. Tables 2.1a and 2.1b present the districts and taluks from where the sample was selected. The grapes farmers were surveyed from Devanhali and Dodabalapur taluks in Bangalore rural, Basvanagar, Bijapur and Indi Taluks in Bijapur district and Chikabalapur and Sidalgat taluk in Chikabalapur district. A total number of 152 households were selected who were growing different varieties of grapes. For onion, Bagepalli, Chinthama and Sidlagatt were selected in Chikabalapur district, Challaker, Chitradurga and Hiriyr were selected in Chitradurga district and Gadag, Rona and Shirahat were selected in Gadag district. A total number of 150 households were selected for different varieties of onions. In addition to farmers around 5 wholesalers were selected from Chikabalapur, 7 were selected from Bangalore rural and 9 were selected from Bijapur district in the case of grapes. Similarly, for grapes, 10 retailers were selected from Chikabalapur, 8 were selected from Bangalore rural and 9 were selected from Bijapur district. In the case of onion, 10 wholesalers were selected from Bangalore and 9 each were selected from Chikabalapur and Gadag districts. A total number of 20 retailers were selected, 10 each from Chitradurga and Gadag districts for the onion crop.

Table 2.1a: Name of districts and block/tehsils from where sample was selected - grapes

(No of households)

Districts	Devana hali	Doddaball pur	Basava na	Bijap ura	Indi	Chickab alapur	Gowribi dn	Sidal agat	Total
Bangalore	34	17	-	-	-	-	-	-	51
Bijapura	-	-	6	31	14	-	-	-	51
Chickaballa pura	-	-	-	-	-	42	1	7	50
Total	34	17	6	31	14	42	1	7	152

Table 2.1b: Name of districts and block/tehsils from where sample was selected – onion

(No of households)

Districts	Bage palli	Chinth Ama	Sidlagatt	Chall aker	Chitra Durga	Hiriyur	Gadag	Rona	Shirahat	Total
Chikkablla pura	16	15	19	-	-	-	-	-	-	50
Chitradurga	-	-	-	12	22	16	-	-	-	50
Gadag	-	-	-	-	-	-	20	21	9	50
Total	16	15	19	12	22	16	20	21	9	150

2.2 Demographic profile, caste composition, education profile etc.

The selected 302 farmers have been divided into four sub categories, marginal (less than 1 hectare), small (1-2 hectare), medium (2-4 hectare) and large (above 4 hectare). Looking at the distribution of households across farm size (Table 2.2) marginal farmers constituted around 1/4th of the selected households, followed by small farmers with a share of around 1/3rd farmers and medium farmers around 18 per cent share while large farmers constituted slightly above 23 per cent share.

Table 2.2: Distribution of households across farm size

Size	Numbers	Percentage of total	NSA (acres)	NSA (ha)	Cropping intensity
Marginal	70	23.3	1.89	0.77	2.67
Small	107	35.4	3.94	1.60	1.36
Medium	54	17.9	7.59	3.07	1.10
Large	71	23.5	21.53	8.72	1.00
Total	302	100.0	8.25	3.34	1.16

Among the selected households, adult members constituted around 3/4th share while children had 1/4th share in the family. Across various size holdings there was not much significant difference in the family composition. However, family size had an inverse relationship with farm size as family size increased from 5 members in the case of

marginal farmers to almost 8 members for large farmers. Generally in the case of farming, families are nuclear at the lower size of holdings and they are mostly combined families for medium and large farmers indicating inverse relationship of farm and family size (Table 2.3a). It is however, to be noted that head of the family was normally the male member among our selected households (Table 2.3b).

Table 2.3a: Gender distribution of family members across farm size

Farm Size	Male	Female	Total	Children	Family size
Marginal	53.0	47.0	100.0	21.9	4.9
Small	53.1	46.9	100.0	22.1	6.3
Medium	52.9	47.1	100.0	26.7	6.2
Large	52.3	47.7	100.0	27.4	7.9
Total	52.8	47.2	100.0	24.4	6.3

Table 2.3b: Gender distribution of household head across farm size

Farm Size	Male	Female	Total
Marginal	100.0	0.0	100.0
Small	100.0	0.0	100.0
Medium	96.3	3.7	100.0
Large	100.0	0.0	100.0
Total	99.3	0.7	100.0

Among our selected farmers, majority (above 50 per cent) of them were educated up to high school, higher secondary or graduate and above. 14 per cent were educated up to secondary level and 12 per cent had attended primary education. Around 17 per cent were illiterate. Generally the large and medium farmers were proportionately more educated compared to marginal and small farmers. The large farmers had 40 per cent farmers educated up to higher secondary and above while only 7.5 per cent were illiterate. On the other hand, marginal farmers educated up to higher secondary or above were 20 per cent and their proportion among the illiterate farmers was around 16 per cent (Table 2.4). Looking at the socio-economic characteristics of the selected farmers, majority of the selected farmers belonged to general categories. Around slightly less than 70 per cent of the selected farmers were from the general category and slightly less than 20 per cent belonged to Other Backward Castes. Rest around 11 per cent selected farmers belonged to Scheduled Caste (SC) and Scheduled Tribe (ST) category (Table 2.5). Generally, lower strata in the Caste was associated with lower size of holdings. About the religion of the selected farmers, majority of them belonged to either Hindu religion, around 96 per cent or Muslim religion around 3 per cent (Table 2.6). Around 98 per cent of the selected farmers had their main occupation in agriculture and only less than 2 per cent had their

earnings from dairy, own business and some other minor occupations (Table 2.7). It was mentioned in the previous section that average household size among the selected farmers was 6.3 members per family. Out of that around 3.5 members were working in the farming and it varied from 2.8 members in the case of marginal farmers, 3.4 members for small farmers, 3.2 members in the case of medium farmers and 4.4 members in the case of large farmers (Table 2.7).

Table 2.4: Education of the head of family across farm size

Farm Size	Illiterate	Primary	Secondary	High School	Higher Secondary and above	Total
Marginal	15.7	21.4	15.7	25.7	21.4	100.0
Small	21.5	11.2	16.8	28.0	22.4	100.0
Medium	20.4	5.6	11.1	31.5	31.5	100.0
Large	7.0	8.5	11.3	35.2	38.0	100.0
Total	16.6	11.9	14.2	29.8	27.5	100.0

Table 2.5: Caste distribution of selected households across farm size

Farm Size	SC	ST	OBC	Others	Total
Marginal	10.0	8.6	12.9	68.6	100.0
Small	3.7	8.4	20.6	67.3	100.0
Medium	3.7	1.9	27.8	66.7	100.0
Large	1.4	5.6	16.9	76.1	100.0
Total	4.6	6.6	19.2	69.5	100.0

Table 2.6: Religion of selected households across farm size

Farm Size	Hindu	Muslim	Others	Total
Marginal	97.1	2.9	0.0	100
Small	96.3	2.8	0.9	100
Medium	94.4	3.7	1.9	100
Large	97.2	1.4	1.4	100
Total	96.4	2.6	1.0	100

Table 2.7: Occupation distribution of selected households across farm size

Farm Size	Agriculture	Dairy	Salary and pension	Own Business and Others	Total	No of members working in agriculture
Marginal	97.1	1.4	0.0	1.4	100.0	2.8
Small	99.1	0.0	0.0	0.9	100.0	3.4
Medium	96.3	0.0	1.9	1.9	100.0	3.2
Large	98.6	0.0	1.4	0.0	100.0	4.4
Total	98.0	0.3	0.7	1.0	100.0	3.5

2.3 Irrigation and Cropping Pattern

Among the selected farmers, average size of holdings was around 3.34 hectares (8.3 acres) per household. The marginal farmers operated 0.8 hectares, followed by small farmers 1.6 hectare, medium farmers 3 hectares and large farmers 8.7 hectares (Table 2.2). Out of total cultivated area only 47 per cent was irrigated and rest 53 per cent was rainfed. Almost entire irrigated area was irrigated by groundwater, i.e., tube well while surface irrigation was almost nil among the selected households. Per household irrigated area was only 1.6 hectares out of total operated area of 3.3 hectares. Across various households, the marginal farmers had above 80 per cent area irrigated, followed by small farmers 72 per cent, medium farmers 59 per cent and large farmers only 33.5 per cent (Table 2.8a). Thus, the lower size holdings had higher irrigation intensity and it declined with the increase in holdings size.

Table 2.8a: Irrigation details of selected households

Farm Size	Irrigated area (in ha)					Un-irrigated area (in ha)	Total area in ha
	Canal	Tube well	Tank	Others	Total		
Marginal	0.0	43.5	0.0	0.0	43.5	10.1	53.6
Small	0.0	122.6	0.0	0.0	122.6	48.1	170.6
Medium	0.0	97.8	0.0	0.0	97.8	68.2	166.0
Large	1.4	206.1	0.0	0.0	207.5	411.3	618.8
Total	1.4	469.9	0.0	0.0	471.3	537.7	1009.0
% Irrigated area							
Marginal	0.0	81.2	0.0	0.0	81.2	18.8	100.0
Small	0.0	71.8	0.0	0.0	71.8	28.2	100.0
Medium	0.0	58.9	0.0	0.0	58.9	41.1	100.0
Large	0.2	33.3	0.0	0.0	33.5	66.5	100.0
Total	0.1	46.6	0.0	0.0	46.7	53.3	100.0

Table 2.8b: Irrigation details of selected households

Farm Size	Irrigated area (ha per hh)					Un-irrigated area (in ha per hh)	Total area in ha per hh
	Canal	Tube well	Tank	Others	Total		
Marginal	0.0	0.6	0.0	0.0	0.6	0.1	0.8
Small	0.0	1.1	0.0	0.0	1.1	0.4	1.6
Medium	0.0	1.8	0.0	0.0	1.8	1.3	3.1
Large	0.0	2.9	0.0	0.0	2.9	5.8	8.7
Total	0.0	1.6	0.0	0.0	1.6	1.8	3.3

Table 2.9 presents cropping pattern among the selected households. As the sample was selected among those farmers who had onion and grapes as their main crop as these were the reference crops, these also dominated in the cropping pattern. As in this chapter we have clubbed all the 302 households together for the sake of general information on the

sample, the cropping pattern should be understood in that respect, as mostly the households who were growing grapes were not the onion growing households and the vice-a-versa. Almost one fourth area by the selected households was devoted to the reference crop namely, either the grapes crop or onion crop. In addition to the reference crops households also were growing cereal crops like ragi, maize and jowar, pulse crops like bengal-gram and green gram, oilseeds like sunflower and groundnut, cash crops like cotton, vegetables including, tomato, potato, beetroot, cabbage and lemon and fruit crops like mango and so on (Table 2.9). Across various farm size categories, small farmers had comparatively higher percentage of area under grapes as against the onion crop where large farmers had higher proportion compared to smaller size farmers. The small farmers tried to overcome diseconomies of scale over their counterpart large farmers by growing multiple crops as their cropping intensity was more than double compared to large farmers (Table 2.2).

Table 2.9: Cropping pattern of selected farmers (area in ha)

	Onion	Grapes	Ragi	Other major crops	Other vegetables	Other fruits	Total
Marginal	13.0	75.7	24.2	13.4	7.1	9.7	143.1
Small	53.6	91.5	27.7	48.1	10.3	0.6	231.9
Medium	49.2	58.3	9.9	58.8	5.7	0.0	181.9
Large	176.1	64.2	4.9	353.4	13.0	5.3	616.6
Total	292.0	289.7	66.7	473.8	36.0	15.6	1173.6
% of gross cropped area							
Marginal	9.1	52.9	16.9	9.4	4.9	6.8	100
Small	23.1	39.4	12.0	20.8	4.5	0.3	100
Medium	27.0	32.0	5.5	32.3	3.1	0.0	100
Large	28.6	10.4	0.8	57.3	2.1	0.9	100
Total	24.9	24.7	5.7	40.4	3.1	1.3	100

2.4 Area under the reference crops - Variety wise

The above discussion provided us the details of farmers' operational holdings and the pattern of the cropping followed by them vis-a-vis the reference crop grown by the selected farmers. This section provides more details about the reference crop sown by the farmers, variety wise and also profile of their production and productivity. There were three varieties grown by the selected farmers, namely red onion, rose onion and chincholi. Out of these three varieties, rose onion was the small size onion which was mainly exported to the East-Asia, mainly Malaysia. Red onion occupied almost whole area under onion in the case of large farmers while it was only 50 per cent in the case of marginal and small farmers whereas for medium farmers it was 77 per cent. Small

farmers had 50 per cent of the rose onion variety that was grown mainly for export purpose while it was 30 per cent for marginal farmers, above 20 per cent for medium famers and less than 10 per cent for the large farmers. It is strange to see the export variety is mainly grown by the small and marginal farmers and not by the large farmers. In the case of Chincholi variety, only the marginal farmers were growing this variety on a small area (Table 2.10a).

Table 2.10a: Area under the study crop variety wise - Onion

Area sown (ha)				
	Variety 1 (red onion)	Variety 2 (rose onion)	Variety 3 (chincholi)	Total
Marginal	6.6	4.0	2.4	13.0
Small	26.9	26.1	0.0	53.0
Medium	37.7	11.5	0.0	49.2
Large	161.9	15.0	0.0	175.3
Total	233.1	56.6	2.4	292.1
Percentage of area sown				
Marginal	50.5	30.8	18.7	100.0
Small	50.8	49.2	0.0	100.0
Medium	76.5	23.5	0.0	100.0
Large	92.4	8.5	0.0	100.0
Total	79.8	19.4	0.8	100.0

The initiation of grape cultivation in Karnataka can be traced back to the 18th century. At that time, the erstwhile Nizam of Hyderabad brought the fruity variety and introduced it in the state, particularly in the northern districts of Belgaum, Bidar, Bagalkote, Bijapur and Gulbarga. Later, in the 19th century, the Christian missionaries popularized it in the southern districts of the state. Due to the favorable agro-climatic conditions the grape cultivation flourished in the state. The state is India's second largest producer of grapes. The state cultivates different varieties of the fruit. It has prominent grape growing regions like Nandi Valley, Cauvery Valley and Krishna Valley. Apart from the above mentioned valleys, there is extensive cultivation of the crop in Mysore, Koppal and Chikmagalur districts. The state government is extending various kinds of support for the establishment of new wineries and the production of grape-wine in the state. The state has several vineyards and enjoys a healthy production of high quality grapes. Three major varieties of grapes are grown in the state, namely – Thomson seedless, Anab-E-Shahi Dilkush and Bangalore Blue. Wine grapes are grown once in a year. The farmers of the state are aware of the benefits of growing this cash crop. The main advantage is that while fruity variety is easily perishable, the wine grape is not. Moreover, the fruity

variety is also open to competition from its counterparts in the other states. Hence, a large number of farmers have taken to cultivating wine grapes. This has boosted the cause of wineries in the state. In comparison to onion, selected farmers in the case of grapes were growing seven varieties of grapes, namely Bangalore Blue; Black; Dilkhush, Thomson; Sonaka; Sharath; and Manik Chaman. Some of these varieties like thomson were exportable varieties.

Table 2.10b: Area under the study crop variety wise – Grapes

	Variety 1 (bangalore blue)	Variety 2 (black)	Variety 3 (dilkush)	Variety 4 (thompson seedless)	Variety 5 (sonaka)	Variety 6 (sharath)	Variety 7 (manik chaman)	Total
Marginal	18.8	15.0	21.3	13.0	2.0	5.7	0.0	75.7
Small	32.2	11.1	25.1	18.7	0.0	2.4	1.6	91.5
Medium	17.0	0.8	21.1	15.0	2.0	0.0	2.4	58.3
Large	17.0	9.7	12.1	18.4	6.9	0.0	0.0	64.2
Total	85.0	36.6	79.6	65.1	10.9	8.1	4.0	289.3
Percentage of area sown								
Marginal	24.8	19.8	28.1	17.1	2.7	7.5	0.0	100.0
Small	35.2	12.1	27.4	20.4	0.0	2.7	1.8	100.0
Medium	29.2	1.4	36.1	25.7	3.5	0.0	4.2	100.0
Large	26.5	15.1	18.9	28.7	10.7	0.0	0.0	100.0
Total	29.4	12.7	27.5	22.5	3.8	2.8	1.4	100.0

Table 2.10b shows that the highest share in area among the selected farmers was the Bangalore blue (29 per cent), followed by Dilkhush (27.5 per cent), Thomson seedless (22.5 per cent) and the Black variety, Sonaka, Sharath and Manik Chaman shared rest of less than 20 per cent area under grapes (Table 2.10b). The exportable variety namely thomson was grown in higher percentage by the large farmers compared to that of small farmers unlike the case of onions. On the overall, there was no significant difference among large and small farmers in terms of varietal differences in the grapes area among the selected farmers. On average, out of total cropped area the selected farmers occupied half of the area under onion and grapes as these two crops were the reference crops (Table 2.10c) under study.

Table 2.10c: Area under study crops as a percentage of GCA

Farm Size	Area under crop (ha)	Crop area as a % of GCA
Marginal	88.7	62.0
Small	145.1	62.6
Medium	107.5	59.1
Large	240.3	39.0
Total	581.7	49.6

Further, dividing the area under onion and grapes by the selected farmers into different season, as mentioned above, onion were grown in three seasons in Karnataka, kharif, summer and rabi seasons. On the other hand, grapes were harvested twice in a year, during the kharif and rabi seasons. Table 2.11a shows that out of total 292 hectares of area under onion crop among the selected households, around 255 hectares was under kharif crop alone that constitutes around 87 per cent of the total area under onion crop. The summer season (29 hectares) occupied 10 per cent of the total area under onion and rabi season (8 hectares) occupied only 3 per cent of the total onion crop area among the selected households. Thus, onion crop was mainly grown in the kharif season by the selected households.

Table 2.11a: Area under study crop - Onion
Variety wise and season wise

	Variety 1 (red onion)	Variety 2 (rose onion)	Variety 3 (chincholi)	Total
Kharif				
Marginal	6.6	2.1	2.4	11.1
Small	26.9	12.8	0.0	39.8
Medium	36.8	3.6	0.0	40.5
Large	159.1	4.9	0.0	164.0
Total	229.5	23.4	2.4	255.3
Summer				
Marginal	0.0	1.9	0.0	1.9
Small	0.0	11.6	0.0	11.6
Medium	0.8	4.3	0.0	5.1
Large	2.8	7.3	0.0	10.1
Total	3.6	25.1	0.0	28.7
Rabi				
Marginal	0.0	0.0	0.0	0.0
Small	0.0	1.6	0.0	1.6
Medium	0.0	3.6	0.0	3.6
Large	0.0	2.8	0.0	2.8
Total	0.0	8.1	0.0	8.1
All Seasons				
Marginal	6.6 (50.5)	4.0 (30.8)	2.4 (18.7)	13.0 (100)
Small	26.9 (50.8)	26.1 (49.2)	0.0 (0)	53.0 (100)
Medium	37.7 (76.5)	11.5 (23.5)	0.0 (0)	49.2 (100)
Large	161.9 (92.4)	15.0 (8.5)	0.0 (0)	175.3 (100)
Sum total	233.1 (79.8)	56.6 (19.4)	2.4 (0.8)	292.1 (100)

In the case of grapes, out of total 289 hectares of area by the selected households, around 100 hectares were harvested in the kharif season that is around 35 per cent of the total

area under grapes and rest 189 hectares, i.e., around 65 per cent of the remaining area was harvested in the summer season. Among various varieties, Bangalore Blue, Black and Dilkush were grown almost half in the kharif season and half in the summer season while rest of the four varieties were grown completely in the summer season (Table 2.11b) including the exportable variety of Thompson.

Table 2.11b: Area under study crop - Grapes
Variety wise and season wise

	Variety 1 (bangalore blue)	Variety 2 (black)	Variety 3 (dilkush)	Variety 4 (thompson seedless)	Variety 5 (sonaka)	Variety 6 (sharath)	Variety 7 (manik chaman)	Total
Kharif								
Marginal	8.8	8.1	10.4	0.0	0.0	0.0	0.0	27.3
Small	16.4	5.5	12.5	0.0	0.0	0.0	0.0	34.5
Medium	8.5	0.0	10.5	0.0	0.0	0.0	0.0	19.0
Large	8.5	4.9	5.7	0.0	0.0	0.0	0.0	19.0
Total	42.2	18.5	39.2	0.0	0.0	0.0	0.0	99.9
Summer								
Marginal	10.0	6.9	10.9	13.0	2.0	5.7	0.0	48.4
Small	15.8	5.5	12.5	18.7	0.0	2.4	1.6	56.6
Medium	8.5	0.8	10.5	15.0	2.0	0.0	2.4	39.3
Large	8.5	4.9	6.5	18.4	6.9	0.0	0.0	45.1
Total	42.8	18.1	40.4	65.1	10.9	8.1	4.0	189.4
All Seasons								
Marginal	18.8 (24.8)	15.0 (19.8)	21.3 (28.1)	13.0 (17.1)	2.0 (2.7)	5.7 (7.5)	0.0 (0)	75.7 (100)
Small	32.2 (35.3)	11.1 (12.2)	25.1 (27.5)	18.7 (20.5)	0.0 (0)	2.4 (2.7)	1.6 (1.8)	91.1 (100)
Medium	17.0 (29.2)	0.8 (1.4)	21.1 (36.1)	15.0 (25.7)	2.0 (3.5)	0.0 (0)	2.4 (4.2)	58.3 (100)
Large	17.0 (26.5)	9.7 (15.1)	12.1 (18.9)	18.4 (28.7)	6.9 (10.7)	0.0 (0)	0.0 (0)	64.2 (100)
Total	85.0 (29.4)	36.6 (12.7)	79.6 (27.5)	65.1 (22.5)	10.9 (3.8)	8.1 (2.8)	4.0 (1.4)	289.3 (100)

2.5 Summary of the Chapter

Among the sample farmers, marginal farmers constituted around 1/4th of the selected households, followed by small farmers with a share of around 1/3rd and medium farmers around 18 per cent share while large farmers constituted slightly above 23 per cent share. Majority (above 50 per cent) of the selected households were educated up to high school, higher secondary or graduate and above, 14 per cent were educated up to secondary level and 12 per cent had attended primary education. Around 17 per cent were illiterate. Around 98 per cent of the selected farmers had their main occupation in agriculture and only less than 2 per cent had their earnings from dairy, own business and some other minor occupations. Average size of holdings was around 3.34 hectares (8.3 acres) per household. Out of total

cultivated area only 47 per cent was irrigated and rest 53 per cent was rainfed. The lower size holdings had higher irrigation intensity and it declined with the increase in holdings size. Almost one fourth area by the selected households was devoted to the reference crop namely, either the grapes crop or onion crop. In addition to the reference crops households also were growing cereal crops like ragi, maize and jowar, pulse crops like bengal-gram and green gram, oilseeds like sunflower and groundnut, cash crops like cotton, vegetables including, tomato, potato, beetroot, cabbage and lemon and fruit crops like mango and so on.

Among the reference crops, there were three varieties grown by the selected farmers, namely red onion, rose onion and chincholi. In comparison to onion, selected farmers in the case of grapes were growing seven varieties of grapes, namely Bangalore Blue; Black; Dilkhush, Thomson; Sonaka; Sharath; and Manik Chaman. On average, out of total cropped area the selected farmers occupied half of the area under onion and grapes as these two crops were the reference crops. Out of total area under onion crop among the selected households, kharif crop alone constituted around 87 per cent of the total area under onion crops. The summer season occupied 10 per cent of the total area under onion and rabi season occupied only 3 per cent of the total onion crop area among the selected households. Thus, onion crop was mainly grown in the kharif season by the selected households. In the case of grapes, out of total area by the selected households, around 35 per cent was harvested in kharif and around 65 per cent of the remaining area was harvested in the summer season.

Chapter 3

Production, Cost and Profitability of Onion and Grapes in Karnataka

3.1 Production of grapes and onion by different varieties

In the previous chapter we discussed cropping pattern and area under reference crops variety wise. In this chapter we begin with presenting production and consumption details of reference crops by varieties grown without differentiating by the season in which they were grown. We shall present a brief summary of production and consumption of different varieties of onion and grapes by the selected households. There was hardly any consumption or stock retained by the selected households as the two reference crops are mainly the commercial crops which farmers grow only for the market. Tables 3.1.1a to 3.1.1c present production and consumption details of onion and Table 3.1.2a to 3.1.2g present details about the grapes⁴.

Among the three varieties of onion grown by the selected households, on average farmers cultivated 2.3 hectares of red onions and around 100 households grew this variety. Rose onion was grown by 50 households with 0.75 hectares per household while chincholi variety was grown only by one household on 2.4 hectares of area. On average, red onion production was 168 quintals per household that was completely sold by the selected households, rose variety was 101 quintals out of which 94 quintals per household was sold and chincholi variety production was 70 quintals that was completely sold. The price of red onion was highest, Rs 2681 per quintal as compared to Rs 2400 in the case of Chincholi variety and Rs 1080 for rose variety.

Among the six varieties of grapes cultivated by the selected farmers, the highest total area operated was under thomson seedless and dilkhush varieties. Per household area operated was averaged around 1 hectare only and it varied from 0.53 hectares in the case of sharath variety to 1.4 hectares in the case of sonaka variety. Per household production varied from 350 quintals in the case of sonaka to 195 quintals for bangalore blue, 188 quintals sharath and

⁴ The details of production and consumption variety wise by seasons, namely kharif, rabi and summer is provided in Annex Tables 3.1.1A to 3.2.9A. The season wise discussion is not done to avoid too much bifurcation that could create a lot of confusion to the reader.

manik chaman each, 170 quintals thomson seedless, 114 quintals dilkhush and 94 quintals in the case of black variety. The price obtained by the selected farmers was highest for thomson seedless Rs 6464, followed by Rs 5767 for Sonaka, Rs 5133 for sharath variety, Rs 2188 for dilkhush, Rs 2100 for manik chaman, Rs 1831 for bangalore blue and the price was lowest Rs 1363 for black variety.

Table 3.1.1a: Production, Consumption and Other Details of Onion: Variety - Red

Farm Size	Area (ha)	Production (qtls)	Consumed (qtls)	Retained / stocked for future use(qtls)	Wastage	Sold (qtls)	Price (Rs/ctl)	No of hh
Total								
Marginal	6.58	563	0.00	0.00	1	562	2342	11
Small	27.73	2674	0.00	0.00	23	2651	2448	25
Medium	34.82	2295	0.00	0.00	45	2250	3009	18
Large	158.30	11175	0.00	0.00	108	11067	2924	45
Total	227.43	16707	0.00	0.00	177	16629	2681	99
Per household								
Marginal	0.60	51.18	0.00	0.00	0.09	51.09	2342	-
Small	1.11	106.96	0.00	0.00	0.92	106.04	2448	-
Medium	1.93	127.50	0.00	0.00	2.50	125.00	3009	-
Large	3.52	248.33	0.00	0.00	2.40	245.93	2924	-
Total	2.30	168.76	0.00	0.00	1.79	167.97	2681	-

Table 3.1.1b: Production, Consumption and Other Details of Onion: Variety - Rose

Farm Size	Area (ha)	Production (qtls)	Consumed (qtls)	Retained / stocked for future use(qtls)	Wastage	Sold (qtls)	Price (Rs/ctl)	No of hh
Total								
Marginal	3.5	318	0	0	15	304	1014	7
Small	17.0	2058	0	0	128	1930	1144	27
Medium	8.9	1262	0	0	113	1149	982	11
Large	8.1	1400	0	0	105	1295	1180	5
Total	37.5	5039	0	0	361	4678	1080	50
Per household								
Marginal	0.50	45.48	0.00	0.00	2.08	43.44	1014	-
Small	0.63	76.24	0.00	0.00	4.76	71.48	1144	-
Medium	0.81	114.72	0.00	0.00	10.26	104.46	982	-
Large	1.62	280.00	0.00	0.00	21.00	259.00	1180	-
Total	0.75	100.78	0.00	0.00	7.22	93.56	1080	-

Table 3.1.1c: Production, Consumption and Other Details of Onion: Variety - Chincholi

Farm Size	Area (ha)	Production (qtls)	Consumed (qtls)	Retained / stocked for future use(qtls)	Wastage	Sold (qtls)	Price (Rs/ctl)	No of hh
Marginal	2.4	70.00	0.00	0.00	0.00	70.00	2400	1
Small	-	-	-	-	-	-	-	-
Medium	-	-	-	-	-	-	-	-
Large	-	-	-	-	-	-	-	-

Total	2.4	70.00	0.00	0.00	0.0	70.00	2400	1
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Table 3.1.1d: Production, Consumption and Other Details of Onion: Variety - All varieties

Farm Size	Area (ha)	Production (qtls)	Consumed (qtls)	Retained / stocked for future use(qtls)	Wastage	Sold (qtls)	Price (Rs/qty)	No of hh
Total								
Marginal	12.48	951	0	0	16	936	1919	19
Small	44.73	4732	0	0	151	4581	1796	52
Medium	43.72	3557	0	0	158	3399	1996	29
Large	166.4	12575	0	0	213	12362	2052	50
Total	267.33	21816	0	0	538	21377	1941	150
Per household								
Marginal	0.66	50.05	0.00	0.00	0.84	49.26	1919	-
Small	0.86	91.00	0.00	0.00	2.90	88.10	1796	-
Medium	1.51	122.66	0.00	0.00	5.45	117.21	1996	-
Large	3.33	251.50	0.00	0.00	4.26	247.24	2052	-
Total	1.78	145.44	0.00	0.00	3.59	142.51	1941	-

Table 3.1.2a: Production, Consumption and Other Details of Grapes: Variety - Bangalore Blue

Farm Size	Area (ha)	Production (qtls)	Consumed (qtls)	Retained / stocked for future use (qtls)	Wastage	Sold (qtls)	Price (Rs/qty)	No of hh
Total								
Marginal	6.2	1190	0	13	42	1147	2180	10
Small	13.2	2610	0	14	150	2459	1493	14
Medium	7.3	1220	0	0	75	1145	1775	4
Large	7.7	1200	0	4	40	1158	1875	4
Total	34.3	6220	0	31	307	5909	1831	32
Per household								
Marginal	0.62	119.00	0.00	1.31	4.20	114.71	2180	10
Small	0.94	186.43	0.00	1.01	10.71	175.63	1493	14
Medium	1.83	304.98	0.00	0.00	18.77	286.27	1775	4
Large	1.93	299.98	0.00	0.99	10.00	289.48	1875	4
Total	1.07	194.37	0.00	0.97	9.59	184.66	1831	32

Table 3.1.2b: Production, Consumption and Other Details of Grapes: Variety - Black

Farm Size	Area (ha)	Production (qtls)	Consumed (qtls)	Retained / stocked for future use(qtls)	Wastage	Sold (qtls)	Price (Rs/qty)	No of hh
Total								
Marginal	5.7	393	0	0	52	341	1290	10
Small	4.7	610	0	0	40	570	2400	4
Medium	0.0	0	0	0	0	0	-	0
Large	4.9	400	0	0	20	380	400	1
Total	15.3	1403	0	0	112	1291	1363	15
Per household								
Marginal	0.57	39.30	0.00	0.00	5.20	34.10	1290	10
Small	1.18	152.52	0.00	0.00	10.00	142.50	2400	4
Medium	-	-	-	-	-	-	-	-
Large	4.90	399.89	0.00	0.00	20.01	379.89	400	1

Total	1.02	93.53	0.00	0.00	7.46	86.07	1363	15
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Table 3.1.2c: Production, Consumption and Other Details of Grapes: Variety - Dilkush

Farm Size	Area (ha)	Production (qtls)	Consumed (qtls)	Retained / stocked for future use (qtls)	Wastage	Sold (qtls)	Price (Rs/ctl)	No of hh
Total								
Marginal	10.4	1580	0	25	67	1512	3244	18
Small	13.7	1570	0	34	83	1467	2247	15
Medium	10.9	1420	0	17	53	1365	1763	8
Large	6.5	580	0	2	14	566	1500	4
Total	41.6	5150	0	78	217	4910	2188	45
Per household								
Marginal	0.58	87.78	0.00	1.39	3.72	84.00	3244	18
Small	0.91	104.66	0.00	2.27	5.53	97.80	2247	15
Medium	1.36	177.50	0.00	2.13	6.63	170.62	1763	8
Large	1.63	144.99	0.00	0.49	3.52	141.47	1500	4
Total	0.92	114.44	0.00	1.73	4.82	109.11	2188	45

Table 3.1.2d: Production, Consumption and Other Details of Grapes: Variety - Thompson seedless

Farm Size	Area (ha)	Production (qtls)	Consumed (qtls)	Retained / stocked for future use(qtls)	Wastage	Sold (qtls)	Price (Rs/ctl)	No of hh
Total								
Marginal	5.7	625	0	0	10	620	4788	8
Small	18.7	1573	0	5	36	1537	6083	18
Medium	15.0	2483	0	20	20	2443	5730	10
Large	19.6	3002	0	10	100	2892	9256	9
Total	59.0	7683	0	35	166	7492	6464	45
Per household								
Marginal	0.71	78.12	0.00	0.00	1.25	77.50	4788	8
Small	1.04	87.38	0.00	0.27	2.00	85.39	6083	18
Medium	1.50	248.31	0.00	2.00	2.00	244.31	5730	10
Large	2.18	333.56	0.00	1.10	11.12	321.35	9256	9
Total	1.31	69.12	0.00	0.32	1.49	67.40	6464	45

Table 3.1.2e: Production, Consumption and Other Details of Grapes: Variety - Sonaka

Farm Size	Area (ha)	Production (qtls)	Consumed (qtls)	Retained / stocked for future use(qtls)	Wastage	Sold (qtls)	Price (Rs/ctl)	No of hh
Total								
Marginal	2.0	330	0	10	0	320	4333	3
Small	0.0	0	0	0	0	0	-	0
Medium	1.2	60	0	0	0	60	2800	1
Large	6.9	2066	0	0	0	2066	10167	3
Total	10.1	2456	0	10	0	2446	5767	7
Per household								
Marginal	0.67	110.00	0.00	3.33	0.00	106.67	4333	3
Small	-	-	-	-	-	-	-	-
Medium	1.20	60.02	0.00	0.00	0.00	60.02	2800	1

Large	2.30	688.64	0.00	0.00	0.00	688.64	10167	3
Total	1.44	350.85	0.00	1.41	0.00	349.43	5767	7

Table 3.1.2f: Production, Consumption and Other Details of Grapes: Variety - Sharath

Farm Size	Area (ha)	Production (qtls)	Consumed (qtls)	Retained / stocked for future use(qtls)	Wastage	Sold (qtls)	Price (Rs/qlt)	No of hh
Total								
Marginal	0.8	430	0	5	7	423	4900	2
Small	2.0	550	0	0	25	525	5000	3
Medium	0.4	150	0	0	5	145	5500	1
Large	0.0	0	0	0	0	0	-	0
Total	3.2	1130	0	5	37	1093	5133	6
Per household								
Marginal	0.40	215.00	0.00	2.50	3.50	211.50	4900	2
Small	0.67	183.36	0.00	0.00	8.32	175.04	5000	3
Medium	0.40	149.93	0.00	0.00	4.99	144.99	5500	1
Large	-	-	-	-	-	-	-	-
Total	0.53	188.34	0.00	0.82	6.18	182.16	5133	6

Table 3.1.2g: Production, Consumption and Other Details of Grapes: Variety – Manik Chaman

Farm Size	Area (ha)	Production (qtls)	Consumed (qtls)	Retained / stocked for future use(qtls)	Wastage	Sold (qtls)	Price (Rs/qlt)	No of hh
Total								
Marginal	0.0	0	0	0	0	0	-	0
Small	0.81	250	0	0	0	250	2200	1
Medium	1.2	120	0	0	10	110	2000	1
Large	0.0	0	0	0	0	0	0.0	0
Total	2.0	370	0	0	10	360	2100	2
Per household								
Marginal	0.00	0.00	0.00	0.00	0.00	0.00	-	0
Small	0.81	249.96	0.00	0.00	0.00	249.96	2200	1
Medium	1.20	120.00	0.00	0.00	10.00	109.92	2000	1
Large	0.00	0.00	0.00	0.00	0.00	0.00	-	0
TOTAL	1.00	185.00	0.00	0.00	4.94	179.94	2100	2

Table 3.1.2h: Production, Consumption and Other Details of Grapes: Variety – All varieties

Farm Size	Area (ha)	Production (qtls)	Consumed (qtls)	Retained / stocked for future use(qtls)	Wastage	Sold (qtls)	Price (Rs/qlt)	No of hh
Total								
Marginal	30.8	4548	0	53	178	4363	3456	51
Small	53.1	7163	0	53	334	6808	3237	55
Medium	36.0	5453	0	37	163	5268	3261	25
Large	45.6	7248	0	16	174	7062	3866	21
Total	165.5	24412	0	159	849	23501	3455	152
Per household								
Marginal	0.60	89.18	0.00	1.04	3.49	85.55	3456	-
Small	0.97	130.24	0.00	0.96	6.07	123.78	3237	-

Medium	1.44	218.12	0.00	1.48	6.52	210.72	3261	-
Large	2.17	345.14	0.00	0.76	8.29	336.29	3866	-
TOTAL	1.09	160.61	0.00	1.05	5.59	154.61	3455	-

3.2 Cost of production on onion and grapes

This section presents cost of production for different varieties of selected crops of grapes and onions. In the case of onions, the cost incurred consists of three components, production cost, marketing cost and labour cost. Production cost here includes mainly the material cost. The material cost includes cost for seeds, irrigation, manure and fertilizer, pesticides, insecticides and weedicides and hired and owned machinery charges including cost of depreciation. The marketing cost includes cost for storage, transportation, loading/unloading, packing material, market fees, cess etc. The labour cost includes imputed value of family labour and cost for hired labour. It is to be noted, that labour cost includes both the components of production cost as well as marketing cost. We have clubbed all the labour cost right from ploughing, sowing, weeding, harvesting, transportation and marketing together. Tables 3.2.1a, b and c present cost estimates for red, rose and chincholi varieties of onion cultivated by the selected households.

Table 3.2.1a: Cost of Production Details of Onion: Variety Red (Rs per hectare)

Details	Marginal	Small	Medium	Large	Total
Seed	10040	20304	14053	9605	11603
Irrigation	0	0	0	0	0
Manure & Fertilizer	24822	23466	20877	11903	15061
Labour (bullock + manual) owned	21681	14498	9143	4704	7069
Labour (bullock + manual) hired	50453	45329	33506	27076	30962
Machinery hire charges	9424	6332	6867	3161	4297
Machinery owned charges	46	573	331	1308	1032
Pesticides/ Weedicides	6126	5955	5512	3058	3876
I) Total input cost	122591	116459	90288	60814	73899
Storage cost	0	0	0	0	0
Transportation, Marketing and other (market fees, cess, if any etc)	2006	815	1109	0	327
Any other cost	10189	10859	7637	6480	7299
II) Total marketing cost	12195	11674	8745	6480	7626
Total Cost	134786	128133	99034	67294	81525
Productivity (qtls/hect)	86	96	66	71	73

The statistics in tables reveal that by and large there were economies of scale as far as cost of production is concerned in onion crops. Average cost per hectare of red onion was Rs 1.35 lakh for marginal farmers, 1.28 lakh for small farmers, around Rs 1 lakh for medium farmers and Rs 67 thousand in the case of large farmers thus establishing clearly inverse relation with farm size. Economies of scale were in operation in almost all cost components and thereby per hectare cost was found higher for small farmers in comparison to large farmers. In the

total cost, contribution of labour cost owned and hired was around 47 per cent while marketing cost constituted around 10 per cent and the remaining 43 per cent was contributed by the material and machinery cost. The proportion of labour cost was higher among the small and marginal famers while large farmers had higher share of machinery cost in the total cost of production.

Table 3.2.1b: Cost of Production Details of Onion: Variety Rose (Rs per hectare)

Details	Marginal	Small	Medium	Large	Total
Seed	7736	7129	7287	7694	7345
Irrigation	0	21524	18525	3705	14948
Manure & Fertilizer	46883	46499	38762	44854	44344
Labour (bullock + manual) owned	25200	18971	13323	6169	15453
Labour (bullock + manual) hired	39131	39688	35892	40273	38861
Machinery hire charges	6984	5840	5558	0	4620
Machinery owned charges	0	382	2223	4903	1759
Pesticides/ Weedicides	9142	12482	10228	7904	10646
I) Total input cost	135076	152515	131798	115502	137976
Storage cost	0	0	0	0	0
Transportation, Marketing and other (market fees, cess, if any etc)	0	0	7663	0	0
Any other cost	0	1705	9684	618	0
II) Total marketing cost	0	1705	17346	618	0
Total Cost	135076	154221	149144	116120	137976
Productivity (qtls/hect)	90	121	142	173	134

In the case of rose variety onions, the average cost per hectare was Rs 1.38 lakh and it varied from Rs 1.35 lakh for marginal farmers to Rs 1.54 lakh for small farmers, Rs 1.5 lakh for medium farmers and Rs 1.16 lakh per hectare for large farmers. Thus, in the case of rose onion also the cost was found highest in the case of small farmers and lowest in the case of large farmers. The proportion of labour cost in the total cost of production in the case of rose onion was around 48 per cent for marginal farmers that reduced to 38 per cent in the case of small farmers and 33 per cent in the case of medium but slightly increased to 40 per cent in the case of large farmers. The overall share of labour force in total cost of production for rose onion was accounted at 38 per cent. The share of marketing cost in the case of rose onion was much less only 3.5 per cent as mostly it was exposed off within the village by the selected farmers. Fertilizer accounted for almost 1/3rd of total cost of production among all size of holdings. In the case of Chincholi variety the average cost was almost half that of other two varieties while its productivity per hectare was also less than one third to one fourth. The average cost was estimated at Rs 56 thousand per hectare. The chincholi variety was

produced only by one marginal farmer who cultivated around 2 hectares of area under this crop.

Table 3.2.1c: Cost of Production Details of Onion: Variety Chincholi (Rs per hectare)

Details	Marginal	Small	Medium	Large	Total
Seed	3458	-	-	-	3458
Irrigation	0	-	-	-	0
Manure & Fertilizer	16137	-	-	-	16137
Labour (bullock + manual) owned	1503	-	-	-	1503
Labour (bullock + manual) hired	24988	-	-	-	24988
Machinery hire charges	1029	-	-	-	1029
Machinery owned charges	0	-	-	-	0
Pesticides/ Weedicides	3293	-	-	-	3293
I) Total input cost	50409	-	-	-	50409
Storage cost	0	-	-	-	0
Transportation, Marketing and other (market fees, cess, if any etc)	6052	-	-	-	6052
Any other cost	0	-	-	-	0
II) Total marketing cost	6052	-	-	-	6052
Total Cost	56460	-	-	-	56460
Productivity (qtls/hect)	29	-	-	-	29

Table 3.2.1d: Cost of Production Details of Onion: All Varieties (Rs per hectare)

Details	Marginal	Small	Medium	Large	Total
Seed	7078	13717	10670	8650	7469
Irrigation	0	10762	9263	1853	4983
Manure & Fertilizer	29281	34983	29820	28379	25181
Labour (bullock + manual) owned	16128	16735	11233	5437	8008
Labour (bullock + manual) hired	38191	42509	34699	33675	31604
Machinery hire charges	5812	6086	6213	1581	3315
Machinery owned charges	15	478	1277	3106	930
Pesticides/ Weedicides	6187	9219	7870	5481	5938
I) Total input cost	102692	134487	111043	88158	87428
Storage cost	0	0	0	0	0
Transportation, Marketing and other (market fees, cess, if any etc)	2686	408	4386	0	2126
Any other cost	3396	6282	8661	3549	2433
II) Total marketing cost	6082	6690	13046	3549	4559
Total Cost	108774	141177	124089	91707	91987
Productivity (qtls/hect)	68	109	104	122	79

The cost estimates differ in the case of grapes from onion in terms of fixed cost which farmers incur in the case of plantation (perennial) crops as in the latter case there is gestation period between the stage of sowing and bearing fruits. The cost incurred in plantation crops consists of two components, fixed cost and variable cost. The fixed cost of perennial crops consists of initial planting and gestation period cost. The variable cost is the running cost

every year at the time of plant bearing fruit⁵. The major components of variable costs in grapes were topping and pruning, manure and fertilizer and harvesting and collection. Tables 3.2.2a up to 3.2.2h present cost estimates for various varieties of grapes grown by the selected farmers. Out of total cost, variable cost consisted 70 to 85 per cent and fixed cost (amortized into the life period of the plant) ranged between 15-30 per cent. On average, total cost per hectare varied between Rs 1.5 lakh to Rs 3.7 lakh for different varieties of grapes grown by our selected households. The cost per hectare was measured at Rs 2.23 lakh for Bangalore blue, Rs 1.55 lakh for black variety, Rs 2.27 lakh for dilkhush, Rs 2.66 lakh for thomson seedless, Rs 3.68 for sonaka, Rs 2.47 for sharath variety and Rs 3.73 for the manikchand variety. per hectare 55 thousand out of which Rs 24 thousand was for the labour cost (44 percent) and rest of Rs 31 thousand (56 percent) was for the material cost. Out of total cost, fixed cost including seed and planting material, field preparation and supporting material amortized over the life period of the plant (15 years in the present case) was accounted for around 30 per cent in the case of Bangalore blue, 19 per cent for black variety, 24 per cent for dilkhush variety, 16 per cent for Thomson seedless, 20 per cent for sonaka, 16 per cent for sharath and 18 per cent for manic chaman. Out of total cost of production and marketing, around 60 percent or more was accounted for by manure, fertilizer, pesticides and insecticides among all varieties of grapes grown by the selected households. Similarly, out of total cost, labour hired or owned constituted around 10 to 15 per cent share while machinery hired or owned constituted only less than 5 per cent share among all varieties of grapes grown. Marketing cost also was less than 5 per cent while hardly any household stored grapes and most of the cases sale took place at the field itself through commission agents and thereby hardly any transportation cost was also borne by the households.

Table 3.2.2a: Cost of Production Details of Grapes: Variety 1 Bangalore blue (Rs per hectare)

Details	Marginal	Small	Medium	Large	Total
Seed and establishment cost*	80971	65248	75773	52984	67555
Irrigation	585	0	0	0	105
Manure & Fertilizer	71589	68987	89805	68942	73868
Labour (bullock + manual) owned	10164	5761	1935	4505	5456
Labour (bullock + manual) hired	30542	14337	13907	17661	17899
Machinery hire charges	650	0	0	0	117
Machinery owned charges	5103	3628	5009	4420	4364
Pesticides/ Weedicides	98069	39232	29722	51425	50505
I) Total input cost	297673	197194	216151	199936	219869
Storage cost	0	0	0	0	0
Transportation, Marketing and other	0	0	0	0	0

⁵ For more details on cost of cultivation among perennial crops see Annexure 3.1 at the end of the chapter.

(market fees, cess, if any etc)					
Any other cost	4469	1566	4254	5590	3561
II) Total marketing cost	4469	1566	4254	5590	3561
Total Cost	302142	198759	220405	205526	223430
Productivity (qtls/hect)	193	198	167	156	181

Table 3.2.2b: Cost of Production Details of Grapes: Variety 2 - Black (Rs per hectare)

Details	Marginal	Small	Medium	Large	Total
Seed and establishment cost*	27603	46629	-	13531	29029
Irrigation	0	0	-	0	0
Manure & Fertilizer	65861	136459	-	22909	74099
Labour (bullock + manual) owned	10030	8307	-	2521	7105
Labour (bullock + manual) hired	27982	17923	-	3386	17031
Machinery hire charges	353	253	-	0	210
Machinery owned charges	2223	2339	-	823	1814
Pesticides/ Weedicides	28056	33187	-	14408	25304
I) Total input cost	162107	245098	-	57579	154591
Storage cost			-		
Transportation, Marketing and other (market fees, cess, if any etc)	0	0	-	0	0
Any other cost	0	549	-	0	170
II) Total marketing cost	0	549	-	0	170
Total Cost	162107	245647	-	57579	154762
Productivity (qtls/hect)	69	129	-	82	92

Table 3.2.2c: Cost of Production Details of Grapes: Variety 3 - Dilkhush (Rs per hectare)

Details	Marginal	Small	Medium	Large	Total
Seed and establishment cost*	81311	68392	39931	10960	55214
Irrigation	0	0	0	0	0
Manure & Fertilizer	116715	66293	58594	17799	69379
Labour (bullock + manual) owned	10579	6362	5235	6336	7121
Labour (bullock + manual) hired	33952	28254	20172	28914	27664
Machinery hire charges	670	146	0	0	216
Machinery owned charges	2977	4176	2360	4245	3409
Pesticides/ Weedicides	81114	44879	45425	82706	60011
I) Total input cost	327318	218502	171716	150961	223014
Storage cost	0	0	0	0	0
Transportation, Marketing and other (market fees, cess, if any etc)	0	0	0	0	0
Any other cost	6799	4947	3271	0	4202
II) Total marketing cost	6799	4947	3271	0	4202
Total Cost	334117	223449	174988	150961	227215
Productivity (qtls/hect)	151	114	130	90	124

Table 3.2.2d: Cost of Production Details of Grapes: Variety 4 - Thomson seedless (Rs per hectare)

Details	Marginal	Small	Medium	Large	Total
Seed and establishment cost*	50103	46954	45639	31804	41880
Irrigation	12350	5774	1335	16042	8697
Manure & Fertilizer	58010	50407	110476	52495	67087
Labour (bullock + manual) owned	15490	12433	9858	7484	10425
Labour (bullock + manual) hired	39229	28622	26713	27677	28842
Machinery hire charges	5046	4363	2343	2114	3167
Machinery owned charges	3622	2075	3379	3281	2956
Pesticides/ Weedicides	91902	84863	165784	61524	98320
I) Total input cost	275751	235490	365526	202421	261373
Storage cost	529	0	0	0	51
Transportation, Marketing and other (market fees, cess, if any etc)	3934	2090	2288	0	1622
Any other cost	0	0	1	10186	3391
II) Total marketing cost	4464	2090	2289	10186	5064
Total Cost	280215	237581	367815	212607	266437
Productivity (qtls/hect)	110	84	166	153	130

Table 3.2.2e: Cost of Production Details of Grapes: Variety 5 - Sonaka (Rs per hectare)

Details	Marginal	Small	Medium	Large	Total
Seed and establishment cost*	83133	-	64948	69724	71833
Irrigation	0	-	0	2761	1877
Manure & Fertilizer	66344	-	44625	31057	39742
Labour (bullock + manual) owned	24725	-	9633	14837	16190
Labour (bullock + manual) hired	52907	-	19143	29408	32876
Machinery hire charges	5632	-	1976	4141	4179
Machinery owned charges	3310	-	2058	5623	4733
Pesticides/ Weedicides	95243	-	60515	249070	195678
I) Total input cost	331294	-	202898	406620	367108
Storage cost	741	-	0	0	148
Transportation, Marketing and other (market fees, cess, if any etc)	2075	-	0	0	415
Any other cost	0	-	5763	0	692
II) Total marketing cost	2816	-	5763	0	1255
Total Cost	334110	-	208661	406620	368363
Productivity (qtls/hect)	163	-	49	300	243

Table 3.2.2f: Cost of Production Details of Grapes: Variety 6 - Sharath (Rs per hectare)

Details	Marginal	Small	Medium	Large	Total
Seed and establishment cost*	97422	0	129896	-	40593
Irrigation	0	0	0	-	0
Manure & Fertilizer	124859	77657	93366	-	91421
Labour (bullock + manual) owned	17599	8966	12721	-	11594
Labour (bullock + manual) hired	44769	23490	18402	-	28173
Machinery hire charges	0	0	0	-	0
Machinery owned charges	6299	1383	1482	-	2624
Pesticides/ Weedicides	102382	48659	43571	-	61454
I) Total input cost	393328	160155	299437	-	235858
Storage cost	0	0	0	-	0
Transportation, Marketing and other (market fees, cess, if any etc)	0	0	0	-	0
Any other cost	0	5928	61750	-	11424
II) Total marketing cost	0	5928	61750	-	11424
Total Cost	393328	166083	361187	-	247282
Productivity (qtls/hect)	531	272	371	-	349

Table 3.2.2g: Cost of Production Details of Grapes: Variety 7 – Manik Chaman (Rs per hectare)

Details	Marginal	Small	Medium	Large	Total
Seed and establishment cost*	-	48711	64948	-	58453
Irrigation	-	0	0	-	0
Manure & Fertilizer	-	117449	144742	-	133825
Labour (bullock + manual) owned	-	22539	8151	-	13906
Labour (bullock + manual) hired	-	26120	41002	-	35049
Machinery hire charges	-	7410	0	-	2964
Machinery owned charges	-	2717	8233	-	6027
Pesticides/ Weedicides	-	109730	49400	-	73532
I) Total input cost	-	334675	316476	-	323756
Storage cost	-	0	0	-	0
Transportation, Marketing and other (market fees, cess, if any etc)	-	0	0	-	0
Any other cost	-	0	0	-	0
II) Total marketing cost	-	0	0	-	0
Total Cost	-	334675	316476	-	323756
Productivity (qtls/hect)	-	309	99	-	183

Table 3.2.2h: Cost of Production Details of Grapes: All Varieties (Rs per hectare)

Details	Marginal	Small	Medium	Large	Total
Seed and establishment cost*	70091	45989	70189	35801	52080
Irrigation	2156	962	223	3761	1526
Manure & Fertilizer	83896	86209	90268	38640	78489
Labour (bullock + manual) owned	14765	10728	7922	7137	10257
Labour (bullock + manual) hired	38230	23124	23223	21409	26791
Machinery hire charges	2059	2029	720	1251	1550
Machinery owned charges	3922	2720	3754	3678	3704
Pesticides/ Weedicides	82794	60092	65736	91827	80686
I) Total input cost	297912	231852	262034	203503	255081
Storage cost	254	0	0	0	33
Transportation, Marketing and other (market fees, cess, if any etc)	1002	348	381	0	291
Any other cost	1878	2165	12507	3155	3349
II) Total marketing cost	3091	2513	12888	3155	3668
Total Cost	301003	234366	274922	206659	258749
Productivity (qtls/hect)	203	184	164	156	186

Looking across various farm size holdings, unlike onion, there was no specific relation between the cost of production and farm size except the case of dilkhush variety that displayed inverse relationship of total cost with farm size. Like in the case of onions, in grapes also, small and marginal farmers spent comparatively less on labour cost as compared to large farmers while the former incurred higher amount of fertilizer as compared to the latter ones. The expenses incurred on machinery did not vary much across farm size and the running cost of machinery was also only marginal as once the grapes garden is established there was no much role for machinery.

3.3 Net returns in the production of onion and grapes

Tables 3.3.1a to 3.3.1c present net returns per hectare realized by the selected farmers growing onion crop. Total area planted under red onion was 227 hectares and it resulted in 16707 quintals of production at the aggregate. The average revenue earned per household was Rs 4.52 lakh that varied from Rs 1.19 lakh for marginal farmers, Rs 2.6 lakh for small farmers, Rs 3.8 lakh for medium farmers and Rs 7.2 lakh for the large farmers. Per hectare revenue averaged around Rs 2 lakh and it ranged between Rs 1.98 lakh to Rs 2.36 lakh per hectare among different size of holdings. Per household net profits (over total cost) varied from Rs 39 thousand for marginal farmers to Rs 1.19 lakh for small farmers, Rs 1.92 lakh for medium farmers and Rs 4.89 lakh for the large farmers. Overall profit per hectare was

measured at Rs 1.15 lakh and it varied from Rs 65 thousand for marginal farmers to Rs 1.39 lakh for the large farmers. It is, however, noted here that although cost includes depreciation, as well as imputed family labour cost but it does not include imputed value of owned land cultivated by the farmers.

Rose onions were planted on an area of 37.5 hectares by the selected households and their aggregate production was 504 tonnes. Per household revenue was recorded around Rs 1 lakh varying from Rs 46 thousand per household for marginal farmers, Rs 87 thousand for small farmers, Rs 1.1 lakh for medium farmers and Rs 3.3 lakh for the large farmers. Revenue per hectares also increased with the holdings size from Rs 92 thousand for marginal farmers to Rs 2 lakh for the large farmers and averaging at Rs 1.5 lakh per hectare. Given the lower per hectare revenue or value of productivity for the smaller categories and given their cost of production as discussed in the previous section, except large farmers all other three categories of farmers borne losses in the cultivation of rose onions. The loss per hectare was Rs 43 thousand for the marginal farmers, Rs 16 thousand for the small farmers, Rs 10 thousand for the medium farmers while large farmers earned profits of Rs 88 thousand per hectare. Losses per household varied from Rs 22 thousand for marginal farmers to Rs 8 thousand for medium farmers while large farmers earned profit of Rs 1.4 lakh per household. For the chincholi variety that was grown by only one household on 2.43 hectares of area produced around 70 quintals of output. Revenue per household was Rs 1.7 lakh while profit per household realised by the farmer was Rs 31 thousand. Per hectare revenue was recorded as Rs 69 thousand while profit per hectare for the chincholi variety was Rs 13 thousand. Thus, profit per hectare for different varieties of onion varied from Rs 1.15 lakh for red onion, Rs 13 thousand for chincholi to Rs 2 thousand for the rose variety.

Table 3.3.1a: Profitability of farming – Onion Red

Farm Size	No of hh	Area (ha)	Production (qtls)	Price (Rs/ctl)	Revenue (Rs)	Cost (Rs)	Profit (Rs)	Revenue Rs per hh	Revenue Rs per ha	Profit Rs per hh	Profit Rs per ha	Profit Rs per quintal	Quantity sold (qtls)
Marginal	11	6.58	563	2342	1318445	886750	431695	119859	200372	39245	65607	767	562
Small	25	27.73	2674	2448	6545952	3553493	2992459	261838	236060	119698	107914	1119	2651
Medium	18	34.82	2295	3009	6905403	3448137	3457266	383633	198317	192070	99290	1506	2349
Large	45	158.30	11175	2924	32680617	10652690	22027927	726236	206447	489509	139153	1971	11067
Total	99	227.43	16707	2681	44787917	18541070	26246847	452403	196931	265120	115406	1571	16629

Table 3.3.1b: Profitability of farming – Onion Rose

Farm Size	No of hh	Area (ha)	Production (qtls)	Price (Rs/ctl)	Revenue (Rs)	Cost (Rs)	Profit (Rs)	Revenue Rs per hh	Revenue Rs per ha	Profit Rs per hh	Profit Rs per ha	Profit Rs per quintal	Quantity sold (qtls)
Marginal	7	3.52	318	1014	322936	475775	-152839	46134	91684	-21834	-43392	-480	304
Small	27	17.00	2058	1144	2355745	2622380	-266635	87250	138540	-9875	-15681	-130	1930
Medium	11	8.91	1262	982	1238956	1328410	-89454	112632	139101	-8132	-10043	-71	1149
Large	5	8.10	1400	1180	1651995	940240	711755	330399	204021	142351	87902	508	1295
Total	50	37.53	5039	1080	5442801	5366805	75996	108856	145024	1520	2025	15	4678

Table 3.3.1c: Profitability of farming – Onion Chincholi

Farm Size	No of hh	Area (ha)	Production (qtls)	Price (Rs/ctl)	Revenue (Rs)	Cost (Rs)	Profit (Rs)	Revenue Rs per hh	Revenue Rs per ha	Profit Rs per hh	Profit Rs per ha	Profit Rs per quintal	Quantity sold (qtls)
Marginal	1	2.43	70	2400	168000	137150	30850	168000	69160	30850	12700	441	70
Small	0	-	-	-	-	-	-	-	-	-	-	-	-
Medium	0	-	-	-	-	-	-	-	-	-	-	-	-
Large	0	-	-	-	-	-	-	-	-	-	-	-	-
Total	1	2.43	70	2400	168000	137150	30850	168000	69160	30850	12700	441	70

Table 3.3.1d: Profitability of farming – Onion All Varieties

Farm Size	No of hh	Area (ha)	Production (qtls)	Price (Rs/ctl)	Revenue (Rs)	Cost (Rs)	Profit (Rs)	Revenue Rs per hh	Revenue Rs per ha	Profit Rs per hh	Profit Rs per ha	Profit Rs per quintal	Quantity sold (qtls)
Marginal	19	12.53	951	1903	1809381	1499675	309706	95231	144404	16300	24717	326	936
Small	52	44.73	4732	1881	8901697	6175873	2725824	171186	199010	52420	60940	576	4581
Medium	29	43.73	3557	2290	8144359	4776547	3367812	280840	186242	116131	77014	947	3498
Large	50	166.4	12575	2730	34332612	11592930	22739682	686652	206326	454794	136657	1808	12362
Total	150	267.39	21816	2310	50398718	24045025	26353693	335991	188484	175691	98559	1208	21377

Table 3.3.2a: Profitability of farming – Grapes Bangalore blue

Farm Size	No of hh	Area (ha)	Production (qtls)	Price (Rs/ctl)	Revenue (Rs)	Cost (Rs)	Profit (Rs)	Revenue Rs per hh	Revenue Rs per ha	Profit Rs per hh	Profit Rs per ha	Profit Rs per quintal	Quantity sold (qtls)
Marginal	10	6.15	1190	2180	2594300	1859336	734965	259430	421574	73496	119432	618	464
Small	14	13.16	2610	1493	3896803	2615254	1281549	278343	296157	91539	97398	491	996
Medium	4	7.29	1220	1775	2165381	1606190	559191	541345	297138	139798	76733	458	464
Large	4	7.69	1200	1875	2249861	1580969	668893	562465	292482	167223	86956	557	469
Total	32	34.29	6220	1831	11388736	7661748	3726988	355898	332115	116468	108685	599	2392

Table 3.3.2b: Profitability of farming – Grapes Bangalore black

Farm Size	No of hh	Area (ha)	Production (qtls)	Price (Rs/ctl)	Revenue (Rs)	Cost (Rs)	Profit (Rs)	Revenue Rs per hh	Revenue Rs per ha	Profit Rs per hh	Profit Rs per ha	Profit Rs per quintal	Quantity sold (qtls)
Marginal	10	5.67	393	1290	506970	918824	-411854	50697	89444	-41185	-72663	-1048	341
Small	4	4.74	610	2400	1464000	1163591	300409	366000	309067	75102	63420	492	570
Medium	-												
Large	1	4.86	400	400	160000	279737	-119737	160000	32933	-119737	-24646	-299	380
Total	15	15.26	1403	1363	1912757	2362152	-449395	127517	125319	-29960	-29443	-320	1291

Table 3.3.2c: Profitability of farming – Grapes Dilkhush

Farm Size	No of hh	Area (ha)	Production (qtls)	Price (Rs/ctl)	Revenue (Rs)	Cost (Rs)	Profit (Rs)	Revenue Rs per hh	Revenue Rs per ha	Profit Rs per hh	Profit Rs per ha	Profit Rs per quintal	Quantity sold (qtls)
Marginal	18	10.45	1580	3244	5126222	3489971	1636252	284790	490766	90903	156649	1036	1512
Small	15	13.74	1570	2247	3527267	3071296	455970	235151	256623	30398	33174	290	1467
Medium	8	10.93	1420	1763	2502750	1912823	589927	312844	228955	73741	53967	415	1365
Large	4	6.48	580	1500	870000	977886	-107886	217500	134306	-26971	-16655	-186	566
Total	45	41.60	5150	2188	11270274	9451975	1818299	250451	270925	40407	43710	353	4910

Table 3.3.2d: Profitability of farming – Grapes Thomson seedless

| Farm Size |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Marginal | 8 | 5.67 | 625 | 4788 | 2992188 | 1588263.4 | 1403924 | 374023 | 527907 | 175491 | 247692 | 2246 | 620 |
| Small | 18 | 18.70 | 1573 | 6083 | 9569083 | 4452015.8 | 5117068 | 531616 | 511594 | 284282 | 273575 | 3253 | 1537 |
| Medium | 10 | 14.98 | 2483 | 5730 | 14227590 | 5509773.6 | 8717816 | 1422759 | 949788 | 871782 | 581973 | 3511 | 2443 |
| Large | 9 | 19.64 | 3002 | 9256 | 27785178 | 4174670.4 | 23610507 | 3087242 | 1415039 | 2623390 | 1202432 | 7865 | 2892 |
| Total | 45 | 58.99 | 7683 | 6464 | 49663659 | 15724723 | 33938936 | 1103637 | 841930 | 754199 | 575355 | 4417 | 7492 |

Table 3.3.2e: Profitability of farming – Grapes Sonaka

Farm Size	No of hh	Area (ha)	Production (qtls)	Price (Rs/ctl)	Revenue (Rs)	Cost (Rs)	Profit (Rs)	Revenue Rs per hh	Revenue Rs per ha	Profit Rs per hh	Profit Rs per ha	Profit Rs per quintal	Quantity sold (qtls)
Marginal	3	2.02	330	4333	1430000	676336	753664	476667	706420	251221	372310	2284	320
Small	-	-	-	-	-	0	-	-	-	-	-	-	-
Medium	1	1.21	60	2800	168000	253434	-85434	168000	138320	-85434	-70341	-1424	60
Large	3	6.88	2066	10167	21004333	2798599	18205734	7001444	3051806	6068578	2645186	8812	2066
Total	7	10.12	2456	5767	14162933	3728370	10434563	2023276	1399298	1490652	1030935	4249	2446

Table 3.3.2f: Profitability of farming – Grapes Sharath

Farm Size	No of hh	Area (ha)	Production (qtls)	Price (Rs/ctl)	Revenue (Rs)	Cost (Rs)	Profit (Rs)	Revenue Rs per hh	Revenue Rs per ha	Profit Rs per hh	Profit Rs per ha	Profit Rs per quintal	Quantity sold (qtls)
Marginal	2	0.81	430	4900	2107000	339919	318484	1053500	2602145	159242	393328	741	423
Small	3	2.02	550	5000	2750000	136113	336200	916667	1358500	112067	166083	611	525
Medium	1	0.40	150	5500	825000	199854	146230	825000	2037750	146230	361187	975	145
Large	-	-	-	-	-	-	0	-	-	-	-	-	-
Total	6	3.24	1130	5133	5800667	675887	800914	966778	1790956	133486	247282	709	1093

Table 3.3.2g: Profitability of farming – Grapes Manik Chaman

Farm Size	No of hh	Area (ha)	Production (qtls)	Price (Rs/ctl)	Revenue (Rs)	Cost (Rs)	Profit (Rs)	Revenue Rs per hh	Revenue Rs per ha	Profit Rs per hh	Profit Rs per ha	Profit Rs per quintal	Quantity sold (qtls)
Marginal	-	-	-	-	-	-	-	-	-	-	-	-	-
Small	1	0.81	250	2200	550000	270992	279008	550000	679250	279008	344575	1116	250
Medium	1	1.21	120	2000	240000	384384	-144384	240000	197600	-144384	-118876	-1203	110
Large	-	-	-	-	-	0	-	-	-	-	-	-	-
Total	2	2.02	370	2100	777000	655376	121624	388500	383838	60812	60082	329	360

Table 3.3.2h: Profitability of farming – Grapes All Varieties

Farm Size	No of hh	Area (ha)	Production (qtls)	Price (Rs/ctl)	Revenue (Rs)	Cost (Rs)	Profit (Rs)	Revenue Rs per hh	Revenue Rs per ha	Profit Rs per hh	Profit Rs per ha	Profit Rs per quintal	Quantity sold (qtls)
Marginal	51	30.77	4548	3245	14756680	8872649	4435435	289347	479580	86969	144148	975	3680
Small	55	53.17	7163	3037	21757153	11709262	7770204	395585	409200	141276	146139	1085	5345
Medium	25	36.02	5453	3691	20128721	9866459	9783346	805149	558821	391334	271609	1794	4587
Large	21	45.55	7248	7184	52069372	9811861	42257511	2479494	1143126	2012262	927717	5830	6373
Total	152	165.52	24412	3891	94976026	40260231	50391929	624842	573804	331526	304446	2064	19984

Profitability of grapes cultivation is presented in Tables 3.3.2a to 3.3.2g for different varieties of grapes produced by our selected farmers. The area cultivated was highest under Thomson seedless around 59 hectares followed by dilkhush 42 hectares, Bangalore blue 34 hectares, black 15 hectares, sonaka 10 hectares while area under sharath and manic chaman was only 3 and 2 hectares, respectively. The aggregate output of grapes produced by the selected households varied from 768 tonnes for Thomson seedless, 622 tonnes Bangalore blue, 515 tonnes dilkhush, 245 sonaka, 140 tonnes black, 113 tonnes sharath and only 37 tonnes that of manikchand variety. The revenue per household from selling grapes varied from Rs 20 lakh for sonaka to Rs 11 lakh for thomson seedless, Rs 9.7 lakh for sharath, Rs 3.9 lakh for manic chaman, Rs 3.6 lakh for Bangalore blue and less than Rs 3 lakh for the other two varieties namely dilkhush and black. Revenue earned per hectare is an indicator of value of farm productivity and we can also compare it across various farm size holdings. The value of productivity was highest for sharath Rs 18 lakh per hectare followed by sonaka around Rs 14 lakh per hectare, thomson seedless Rs 8.4 lakh per hectare, manic chaman Rs 3.8 lakh, Bangalore blue Rs 3.3 lakh, dilkhush Rs 2.7 lakh and black variety Rs 1.25 lakh per hectare. It is evident that commercial plantation crops like grapes generate much higher revenue compared to any food crop. However, the cost borne by the farmers in the case of plantation crops is also much higher compared to food crops as was discussed in the previous section. Given the nature of high revenue and high cost in grapes, it would be interesting to see the profitability aspects of growing grapes which is likely to lead the farmers either with high positive returns in terms of profits or negative returns in terms of losses.

Per household profits earned were highest for sonaka variety Rs 14.9 lakh during the reference year followed by thomson seedless Rs 5.75 lakh, sharath and bangalore blue both having per household profit of slightly above Rs 1 lakh while, black, dilkhush and manic chaman varieties earned less than Rs 1 lakh per household. Glancing through per hectare profitability of grapes it is seen from the results that per hectare profit was once again highest for sonaka variety Rs 10 lakh followed by Thomson seedless Rs 7.5 lakh and sharath variety with Rs 2.5 lakh per hectare. Profit per hectare was Rs 1 lakh for Bangalore blue and Rs 60 thousand in the case of manic chaman and less than Rs 50 thousand for black and dilkhush varieties. Although, at the aggregate all varieties had positive profitability, but as one looks across various farm size holdings, in some cases we notice farming ending up with huge losses. In the case of black variety, except medium farmers, all other categories underwent losses ranging from Rs 25 to 75 thousand per hectare. In the case of dilkhush variety, large

farmers had losses per hectare of Rs 17 thousand. In the case of sonaka variety whereby generally farmers earned huge profits, the medium size category observed losses of Rs 70 thousand per hectare. Similarly, in manic chaman variety, medium farmers observed a loss of Rs 1.18 lakh per hectare. Thus, whereas grapes growers observed a huge amount of profits per hectare, some farmer categories in few varieties also were found having observed losses although mostly losses per hectare remained to the tune of Rs 1 lakh or much less than that whereas profits went up to Rs 10 lakh per hectare. These facts establish better profitability in grapes as compared to foodgrains and most other commercial crops but at the same time it also points out the risky nature of cultivation of grapes crop somewhat the similar results found for the onion crop as well.

3.4 Summary of the Chapter

On average, red onion production was 68 quintals per household that was completely sold by the selected households, rose variety was 41 quintals out of which 38 quintals per household was sold and chincholi variety production was 28 quintals that was completely sold. The price of red onion was highest, Rs 2681 per quintal as compared to Rs 2400 in the case of Chincholi variety and Rs 1080 for rose variety. Among the six varieties of grapes, per household production varied from 142 quintals in the case of Sonaka to 79 quintals for bangalore blue, 76 quintals sharath and manic chaman each, 69 quintals thomson seedless, 46 quintals dilkhush and 38 quintals in the case of black variety. The price obtained by the selected farmers was highest for thomson seedless Rs 6464, followed by Rs 5767 for Sonaka, Rs 5133 for sharath variety, Rs 2188 for dilkhush, Rs 2100 for manic chaman, Rs 1831 for bangalore blue and the price was lowest Rs 1363 for black variety.

By and large there were economies of scale as far as cost of production is concerned in onion crops. Average cost per hectare of red onion was Rs 1.35 lakh for marginal farmers, 1.28 lakh for small farmers, around Rs 1 lakh for medium farmers and Rs 67 thousand in the case of large farmers thus establishing clearly inverse relation with farm size. In the case of rose variety onions, the average cost per hectare was Rs 1.38 lakh and it varied from Rs 1.35 lakh for marginal farmers to Rs 1.54 lakh for small farmers, Rs 1.5 lakh for medium farmers and Rs 1.16 lakh per hectare for large farmers. In the case of grapes, total cost per hectare varied between Rs 1.5 lakh to Rs 3.7 lakh for different varieties of grapes grown by our selected households.

Per household net profits (over total cost) in the case of red onion varied from Rs 39 thousand for marginal farmers to Rs 1.19 lakh for small farmers, Rs 1.92 lakh for medium farmers and Rs 4.89 lakh for the large farmers. Overall profit per hectare was measured at Rs 1.15 lakh and it varied from Rs 65 thousand for marginal farmers to Rs 1.39 lakh for the large farmers. Given the lower per hectare revenue or value of productivity for the smaller categories and given their cost of production, except large farmers all other three categories of farmers borne losses in the cultivation of rose onions. The loss per hectare was Rs 43 thousand for the marginal farmers, Rs 16 thousand for the small farmers, Rs 10 thousand for the medium farmers while large farmers earned profits of Rs 88 thousand per hectare. Losses per household varied from Rs 22 thousand for marginal farmers to Rs 8 thousand for medium farmers while large farmers earned profit of Rs 1.4 lakh per household. For the chincholi variety profit per household realised by the one farmer who grew it was Rs 31 thousand.

Per household profits earned from grapes were highest for sonaka variety Rs 14.9 lakh during the reference year followed by thomson seedless Rs 5.75 lakh, sharath and bangalore blue both having per household profit of slightly above Rs 1 lakh while, black, dilkhush and manic chaman varieties earned less than Rs 1 lakh per household. Glancing through per hectare profitability of grapes it is seen from the results that per hectare profit was once again highest for sonaka variety Rs 10 lakh followed by Thomson seedless Rs 7.5 lakh and sharath variety with Rs 2.5 lakh per hectare. Profit per hectare was Rs 1 lakh for Bangalore blue and Rs 60 thousand in the case of manic chaman and less than Rs 50 thousand for balck and dilkhush varieties. Although, at the aggregate all varieties had positive profitability, but as one looks across various farm size holdings, in some cases we notice farming ending up with huge losses. These facts establish better profitability in grapes as compared to foodgrains and most other commercial crops but at the same time it also points out the risky nature of cultivation of grapes crop somewhat the similar results found for the onion crop as well.

ANNEXURE - 3.1

The Cost of Production of Perennial Crops

The cost of production of perennial crops differs from that of annual crops by manifolds. First, in case of annual crops there is none or very little gestation period between the initial investment in terms of plantation of crop and receiving the final output. In case of perennial (plantation) crops, however, the gestation period varies from 3-4 years to 8-10 years. The cultivators are subjected to a huge investment and a long waiting period before they get their first output on the planted crops. Second, unlike annual crops, which yield only for one period and have to be replanted again, there is an extended period of output flow in the case of plantation crops. Third, productivity of plantation crops may vary according to the age of the trees (in their youth, maturity and old age periods) whereas productivity of annual crops may remain constant (or a gradual increase) over a period of time.

Due to the gestation period in the beginning and extended output flows in the later periods in plantation crops, the method of estimating cost of production as applicable in annual crops cannot be applied on the plantation crops. Precise estimation of cost of cultivation in plantation crops therefore necessitates availability of information on price and quantity of inputs and output of these crops for their entire life period. It is very difficult to get such information from the planters of these crops who hardly maintain account for such a long period of time.

However, to examine the cost and returns of perennial crops in India mostly homogeneous costs and returns are assumed for different age periods of plants (Chand, 1994). Samples are drawn for different age groups/periods of trees⁶. From such a sample the quantity and value of inputs and outputs are obtained for each age group by dividing the total life of the perennial crops in homogenous periods. In this way estimated returns and cost over life time of the plants are mixture of production and cost of different plants of various age groups. We have used the same methodology in our calculation of cost of production.

We could gather the data related to inputs used and their paid out price and output produced by the planters during the current year (2009-10 prices) or at the most few years back. In addition, we could also get the cost estimates for the initial plantation as well as the amount spent during the gestation period of the plants. As our sample for the perennial crops namely, grapes, pomegranates, flowers and medicinal plants consisted of different age periods ranging from one year to the last year of the life of the plant, we could compile the data on cost and returns for different age groups of plants from the given data for the current year itself.

Since variable cost estimates were given by the planter at current prices, thereby these cost estimates for different size groups refer to the simple average of expenditure given by

⁶ See for example Gupta and George (1974), Subrahmanyam and Mohandoss (1982), Misra (1992), Sarma (1996).

different planters in the respective size classes. Thus our estimates for the variable cost for different size groups are average amount spent during the current year by the planters in the respective size groups on labour used, manure and fertilizer, pesticides and insecticides, irrigation, repair and maintenance etc. The variable cost includes interest on working capital, which is one-year payment on the amount borrowed by planters during the current or previous years. The variable cost also includes depreciation, which is calculated over the value of all the fixed assets of the planters using a discount rate of 10 percent.

As discussed above, the plantation crops differ from annual crops in terms of their long gestation period between the initial investment and first output. Therefore cultivators of plantation crops are subject to a fixed cost, comprising the plantation cost plus the cost incurred during the gestation period. The plantation cost includes initial land preparation cost, cost of digging pits, lining, cost of plants or nursery, refilling with top soil, planting and other miscellaneous charges. The cost incurred during the gestation period includes expenses on inter-culture, manure and fertilizers, insecticides, weeding, irrigation, mulching, shading and other miscellaneous charges.

The case of fixed cost is different from that of variable cost. Fixed cost is incurred in the initial years of plantation till the plants start yielding whereas the variable cost is subject to every year expenses after the plant starts yielding. Therefore it becomes necessary to apportion the fixed cost over the life span of the plant to get the estimates of total cost incurred on a particular plant during a year. For apportioning the fixed cost we have assumed the optimum life period for grapes 15 years, pomegranate 30 years, flowers 10 years and medicinal and aromatic crops 5 years. The discount rate used is the same as used for depreciation, i.e., 10 percent. The following annual amortization method⁷ is used for calculating annual value of fixed cost:-

$$P = B \frac{i}{1 - (1 + i)^{-n}}$$

Where P = is the amount of annual payment

B = is the initial amount

n = is number of years (life period of plantation)

i = is the interest or discount rate (10% in the present case)

It is to mention here that the estimates for fixed cost were given by the planters at the current prices irrespective of the age of the plant. Therefore the given amount of fixed cost was amortized over the life period of plant to get per annum cost for this one time expenditure.

⁷ Subrahmanyam and Mohandoss (1982)

Chapter 4

Marketing Channels and Prices for Onion and Grapes in Karnataka

4.1 Marketing channels for grapes and onion by different varieties

After harvesting and packing where do farmers market their produce is seen in this chapter. Marketing of agricultural commodities in India, especially that of grains is mostly done through the network of regulated markets under the Agricultural Produce Marketing Committee Act (APMC) that hitherto was binding on the both, the sellers and the buyers until recently when the Act was liquidated and direct entry of buyers is allowed to procure the produce from the farm. However, in the case of horticultural crops, generally there is no provision in the regulated *mandis* for handling of horticultural crops such as fruits and vegetables. Therefore, there is a separate network of wholesale markets for the horticultural crops. However, like grains, all the horticultural crops are not sold through regulated or wholesale markets and there are multiple players in the sale of horticultural crops.

In Karnataka, Agricultural Produce Marketing Committee Yards and APMC Act includes the marketing of horticultural produces also. But in practice only few horticultural products that are less perishable like coconut, arecanut potato and onions are marketed through APMC's that is around 6 percent of the total production of horticultural crops. Most of the vegetables and fruits in larger cities and towns are traded in the central market area, usually municipal market. The wholesale trade of fruits and vegetables is carried out by small auction sales or negotiated sales in terms of baskets/bags etc. In Karnataka, some special efforts mentioned below have been made to improve marketing of horticultural products.

Establishment of horticultural produces co-operative marketing society (HOPCOMS). It is a Cooperative body engaged in marketing of fruits and vegetables in three districts namely, Bangalore urban, Bangalore rural and Kolar districts. At present about 100 metric tonnes of fruits and vegetables are handled per day. At the district level, processing societies have been established in the state. The main objective of these societies is procurement of fruits and vegetables directly from the farmers and sell to the consumers directly through its outlets situated in the cities and towns at a reasonable price. At state level as an apex federal body

namely, Karnataka State Horticultural Co-operative Federation (KHF) has been established to perform the activities similar to that of Karnataka Milk Federation. KHF has drawn market promotional plans for its member societies. Through NCDC it is planned to support the credit requirement of the societies. There is also Raithara Santhe Karnataka State Agricultural Marketing Board, a State Government organization initiative towards marketing of fruits and vegetables. The board had created infrastructure for marketing fruits and vegetables directly from the growers to the consumers without any middlemen or commission agent. At present this is in action at Yelahanka town near Bangalore city.

The Department of Agriculture Marketing, a state government department opened a new market complex near Bangalore City exclusively for marketing of fruits. Safal fruit and vegetable auction market is a new project implemented by the National Dairy Development Board. This is a vast project developed in an area of 60 acres of land distribution centers, wholesale and retail sale counters. This project will also develop cash and carry stores in prime localities of cities. At present about 300 metric tones of fruits and vegetables are handled per day. In selected districts village level growers associations have been organized with backward and forward linkages. The task set under NHM Action Plan for Karnataka is to provide linkages to train the farmers on production and post harvest management of fruits and vegetables.

However, the initiatives as mentioned above concentrate mostly in Bangalore and other big city centres and there is generally a lack of backward linkage up to the producers in the villages. Tables 4.4.1a to 4.1.1c present marketing channels thorough which different varieties of onion crops by the selected farmers was being sold. As mentioned above, like foodgrains, onions were generally marketed through regulated markets in the mandis or in some cases also they were lifted by the commission agents from the field. In the case of red and chincholi onions, the entire surplus was sold by the selected framers through regulated markets in Karnataka. All the 99 selected farmers in the case of red onion and one selected farmer in the case of chincholi onion sold their product through regulated market irrespective of the farm size.

Rose onions, on the other hand, were mainly produced for export purpose and this variety was not sold in the regular channel of regulated mandis without any exception among various categories of our selected farmers. In the case of rose onion we had around 50 farmers

producing this variety and all of them sold their product through commission agents. On enquiry with the farmers, our field survey team gathered information that these onions were exported to Malaysia and other East Asian countries. However, the product was not exported by the farmers themselves. They generally got in touch with a commission agent either somewhere in Karnataka or in Chennai, the port from where the shipment is done for the export. As and when consignment is required, the commission agent would inform the farmers to keep the product ready for uplifting. On the instructions of the commission agent, farmers would do the bagging of the product and on order immediately uplifting of the onion takes place. The loading, transportation and other market fees would be paid by the commission agent and farmers get the price of their produce after sale of the product takes place at the export destination. Tables 4.2.1a to 4.2.1c show percentage of quantity of different varieties of onions sold through different channels. It is clearly seen from the tables that 100 per cent quantity of onions were sold through regulated mandis in the case of red and chincholi onion and through commission agents in the case of rose onions.

Numbers and percentage of farmers selling through various channels of different varieties of grapes is presented in Tables 4.1.2a to 4.1.2g. Among all varieties, there was predominantly only one channel, i.e., commission agents through which our selected farmers sold their grapes. Only in the case of thomson seedless and sonaka variety a handful numbers of farmers sold their grapes through regulated mandis. In all other cases product was sold only through commission agents. The results presented in Table 4.2.2a to 4.2.2h also show that 100 per cent produce was sold through commission agents in the case of Bangalore blue, black, dilkhush, sharath and manic chaman while this percentage was 99 in the case of sonaka and 78 per cent in the case of thomson seedless. The regulated market was only 1 per cent in sonaka and 22 per cent in thomson seedless. Thus, more or less all selected farmers followed an informal chain to dispose off their grapes crop.

Table 4.1.1a: Marketing Channels for Onion - Variety 1 (Red)

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
No of households marketing through various channels						
Marginal	0	0	11	0	0	11
Small	0	0	25	0	0	25
Medium	0	0	18	0	0	18
Large	0	0	45	0	0	45
Total	0	0	99	0	0	0
% of households marketing through various channels						
Marginal	0	0	100	0	0	100

Small	0	0	100	0	0	100
Medium	0	0	100	0	0	100
Large	0	0	100	0	0	100
Total	0	0	100	0	0	100

Table 4.1.1b: Marketing Channels for Onion - Variety 2 (Rose)

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
No of households marketing through various channels						
Marginal	0	7	0	0	0	7
Small	0	27	0	0	0	27
Medium	0	11	0	0	0	11
Large	0	5	0	0	0	5
Total	0	50	0	0	0	50
% of households marketing through various channels						
Marginal	0	100	0	0	0	100
Small	0	100	0	0	0	100
Medium	0	100	0	0	0	100
Large	0	100	0	0	0	100
Total	0	100	0	0	0	100

Table 4.1.1c: Marketing Channels for Onion - Variety3 (Chincholi)

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
No of households marketing through various channels						
Marginal	0	0	1	0	0	1
Small	0	0	0	0	0	0
Medium	0	0	0	0	0	0
Large	0	0	0	0	0	0
Total	0	0	1	0	0	1
% of households marketing through various channels						
Marginal	0	0	100	0	0	100
Small	0	0	0	0	0	0
Medium	0	0	0	0	0	0
Large	0	0	0	0	0	0
Total	0	0	100	0	0	100

Table 4.1.1d: Marketing Channels for Onion - All Varieties

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
No of households marketing through various channels						
Marginal	0	7	12	0	0	19
Small	0	27	25	0	0	52
Medium	0	11	18	0	0	29
Large	0	5	45	0	0	50
Total	0	50	100	0	0	51
% of households marketing through various channels						
Marginal	0	37	63	0	0	100
Small	0	52	48	0	0	100
Medium	0	38	62	0	0	100
Large	0	10	90	0	0	100
Total	0	98	196	0	0	100

Table 4.1.2a: Marketing Channels for Grapes - Variety (Bangalore blue)

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
No of households marketing through various channels						
Marginal	0	10	0	0	0	10
Small	0	14	0	0	0	14
Medium	0	4	0	0	0	4
Large	0	4	0	0	0	4
Total	0	32	0	0	0	32
% of households marketing through various channels						
Marginal	0	100	0	0	0	100
Small	0	100	0	0	0	100
Medium	0	100	0	0	0	100
Large	0	100	0	0	0	100
Total	0	100	0	0	0	100

Table 4.1.2b: Marketing Channels for Grapes - Variety (Black)

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
No of households marketing through various channels						
Marginal	0	10	0	0	0	10
Small	0	4	0	0	0	4
Medium	0	0	0	0	0	0
Large	0	1	0	0	0	1
Total	0	15	0	0	0	15
% of households marketing through various channels						
Marginal	0	100	0	0	0	100
Small	0	100	0	0	0	100
Medium	0	100	0	0	0	100
Large	0	100	0	0	0	100
Total	0	100	0	0	0	100

Table 4.1.2c: Marketing Channels for Grapes - Variety (Dilkhush)

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
No of households marketing through various channels						
Marginal	0	18	0	0	0	18
Small	0	15	0	0	0	15
Medium	0	8	0	0	0	8
Large	0	4	0	0	0	4
Total	0	45	0	0	0	45
% of households marketing through various channels						
Marginal	0	100	0	0	0	100
Small	0	100	0	0	0	100
Medium	0	100	0	0	0	100
Large	0	100	0	0	0	100
Total	0	100	0	0	0	100

Table 4.1.2d: Marketing Channels for Grapes - Variety (Thomson seedless)

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
No of households marketing through various channels						
Marginal	0	8		0	0	8
Small	0	14	4	0	0	18
Medium	0	8	2	0	0	10
Large	0	7	2	0	0	9
Total	0	37	8	0	0	45
% of households marketing through various channels						
Marginal	0	100	0	0	0	100
Small	0	78	22	0	0	100
Medium	0	80	20	0	0	100
Large	0	78	22	0	0	100
Total	0	82	18	0	0	100

Table 4.1.2e: Marketing Channels for Grapes - Variety (Sonaka)

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
No of households marketing through various channels						
Marginal	0	3	0	0	0	3
Small	0		0	0	0	0
Medium	0	1	0	0	0	1
Large	0	2	1	0	0	3
Total	0	6	1	0	0	7
% of households marketing through various channels						
Marginal	0	38	0	0	0	100
Small	0	0	0	0	0	100
Medium	0	10	0	0	0	100
Large	0	67	33	0	0	100
Total	0	86	14	0	0	100

Table 4.1.2f: Marketing Channels for Grapes - Variety (Sharath)

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
No of households marketing through various channels						
Marginal	0	2	0	0	0	2
Small	0	3	0	0	0	3
Medium	0	1	0	0	0	1
Large	0	0	0	0	0	0
Total	0	6	0	0	0	6
% of households marketing through various channels						
Marginal	0	100	0	0	0	100
Small	0	100	0	0	0	100
Medium	0	100	0	0	0	100
Large	0	0	0	0	0	100
Total	0	100	0	0	0	100

Table 4.1.2g: Marketing Channels for Grapes - Variety (Manic Chaman)

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
No of households marketing through various channels						
Marginal	0	0	0	0	0	0
Small	0	1	0	0	0	1
Medium	0	1	0	0	0	1
Large	0	0	0	0	0	0
Total	0	2	0	0	0	2
% of households marketing through various channels						
Marginal	0	0	0	0	0	0
Small	0	100	0	0	0	100
Medium	0	100	0	0	0	100
Large	0	0	0	0	0	0
Total	0	100	0	0	0	100

Table 4.1.2h: Marketing Channels for Grapes - All Varieties

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
No of households marketing through various channels						
Marginal	0	51	0	0	0	51
Small	0	51	4	0	0	55
Medium	0	23	2	0	0	25
Large	0	18	3	0	0	21
Total	0	143	9	0	0	152
% of households marketing through various channels						
Marginal	0	100	0	0	0	100
Small	0	93	7	0	0	100
Medium	0	92	8	0	0	100
Large	0	86	14	0	0	100
Total	0	94	6	0	0	100

Table 4.2.1a: Percentage of Quantity Sold through Various Channels - Onion Red

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
Marginal	0	0	100	0	0	100
Small	0	0	100	0	0	100
Medium	0	0	100	0	0	100
Large	0	0	100	0	0	100
Total	0	0	100	0	0	100

Table 4.2.1b: Percentage of Quantity Sold through Various Channels - Onion Rose

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
Marginal	0	100	0	0	0	100
Small	0	100	0	0	0	100
Medium	0	100	0	0	0	100
Large	0	100	0	0	0	100
Total	0	100	0	0	0	100

Table 4.2.1c: Percentage of Quantity Sold through Various Channels - Onion Chincholi

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
Marginal	0	0	100	0	0	100
Small	0	0	0	0	0	100
Medium	0	0	0	0	0	100
Large	0	0	0	0	0	100
Total	0	0	100	0	0	100

Table 4.2.1d: Percentage of Quantity Sold through Various Channels - Onion All Varieties

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
Marginal	0	32	68	0	0	100
Small	0	42	58	0	0	100
Medium	0	33	67	0	0	100
Large	0	10	90	0	0	100
Total	0	22	78	0	0	100

Table 4.2.2a: Percentage of Quantity Sold through Various Channels - Grapes Bangalore blue

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
Marginal	0	100	0	0	0	100
Small	0	100	0	0	0	100
Medium	0	100	0	0	0	100
Large	0	100	0	0	0	100
Total	0	100	0	0	0	100

Table 4.2.2b: Percentage of Quantity Sold through Various Channels - Grapes Black

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
Marginal	0	100	0	0	0	100
Small	0	100	0	0	0	100
Medium	0	100	0	0	0	100
Large	-	-	-	-	-	-
Total	0	100	0	0	0	100

Table 4.2.2c: Percentage of Quantity Sold through Various Channels - Grapes Dilkhush

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
Marginal	0	100	0	0	0	100
Small	0	100	0	0	0	100
Medium	0	100	0	0	0	100
Large	0	100	0	0	0	100
Total	0	100	0	0	0	100

Table 4.2.2d: Percentage of Quantity Sold through Various Channels - Grapes Thomson seedless

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
Marginal	0	100	0	0	0	100
Small	0	76	24	0	0	100
Medium	0	64	36	0	0	100
Large	0	87	13	0	0	100
Total	0	78	22	0	0	100

Table 4.2.2e: Percentage of Quantity Sold through Various Channels - Grapes Sonaka

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
Marginal	0	100	0	0	0	100
Small	0	0	0	0	0	100
Medium	0	100	0	0	0	100
Large	0	98	2	0	0	100
Total	0	99	1	0	0	100

Table 4.2.2f: Percentage of Quantity Sold through Various Channels - Grapes Sharath

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
Marginal	0	100	0	0	0	100
Small	0	100	0	0	0	100
Medium	0	100	0	0	0	100
Large	-	-	-	-	-	-
Total	0	100	0	0	0	100

Table 4.2.2g: Percentage of Quantity Sold through Various Channels - Grapes Manik Chaman

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
Marginal	0	0	0	0	0	100
Small	0	100	0	0	0	100
Medium	0	100	0	0	0	100
Large	0	100	0	0	0	100
Total	0	100	0	0	0	100

Table 4.2.2h: Percentage of Quantity Sold through Various Channels - Grapes All Varieties

Farm size	Village Market	Commission Agent	Regulated Market	Govt Agencies	Others	Total
Marginal	0	100	0	0	0	100
Small	0	95	5	0	0	100
Medium	0	83	17	0	0	100
Large	0	94	6	0	0	100
Total	0	93	7	0	0	100

4.2 Price obtained by the selected farmers for different varieties of grapes and onion

As our selected farmers sold their onion crop only in one channel and grapes in only two channels it is not possible to compare price obtained by the farmers in different channels for the same variety. We can only compare prices across various farm size holdings. Tables 4.3.1 and 4.3.2 present prices obtained by farmers for onion and grapes for different varieties. For red onions, price per quintal varied from Rs 2342 for the marginal farmers to Rs 3009 for medium farmers and it averaged at Rs 2681. For rose onion, although they were produced for export purpose, price realized for the same was much lower compared to red onions. The price for rose onions averaged at Rs 1080 per quintal and it varied between Rs 982 for medium farmers to Rs 1180 for the large farmers. Chincholi onion was grown only by one farmer and the realized price was Rs 2400 per quintal.

For the six varieties of grapes grown by the selected farmers, the price per quintal obtained averaged at Rs 1831 for Bangalore blue, Rs 1023 for black variety, Rs 2188 for dilkhush, Rs 7050 for thomson seedless, Rs 8731 for sonaka, Rs 5133 for sharath and Rs 2100 for manic chaman. Comparing the commission agent and regulated market channels for thomson seedless variety, it was seen that regulated market offered much higher average price of Rs 8800 compared to price offered by commission agents Rs 5299 only. Similarly, in the sonaka variety, regulated market average price was Rs 12000 per quintal compared to Rs 5461 by the commission agents. The large difference in the realized price could be because of difference in quality and difference of time period of sale. Comparing various farm size categories, the highest price for Bangalore blue was obtained by the marginal farmers Rs 2180 per quintal while lowest price was for the small farmers Rs 1493 per quintal. The comparison for black variety was more interesting where large farmers obtained only Rs 400 per quintal that was too low (possibly for some quality defects) while small farmers obtained Rs 2400 per quintal. In the case of dilkhush variety, highest price obtained by marginal farmers Rs 3244 and lowest price happened in the case of large farmers Rs 1500 per quintal. Thomson seedless presented the opposite case where large farmers obtained highest price of Rs 8271 per quintal and marginal farmers obtained lowest price of Rs 4788 per quintal. Similarly in the case of sonaka highest price was obtained by large farmers Rs 10625 per quintal and lowest price went to medium farmers Rs 2800 per quintal. Last and the least, price differences were not very large in sharath (Rs 5500 for large farmers and Rs 4900 for marginal farmers) and manic chaman (Rs 2200 for small farmers and Rs 2000 for medium farmers). Thus across farm size there was no uniform pattern observed for both onion and grapes. In some varieties large farmers obtained highest whereas in other cases it was marginal or small farmers who

obtained the best price. The price obtained also varied with different seasons of sale like those who sold in the off season obtained higher price than that of sale during the peak season.

Table 4.3.1a: Price Received under Various Channels - Onion Red

Farm size	Village Market		Comm. Agent		Regulated Market		Govt Agencies		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Marginal	-	-	-	-	228	2342	-	-	228	2342
Small	-	-	-	-	1073	2448	-	-	1073	2448
Medium	-	-	-	-	951	3009	-	-	951	3009
Large	-	-	-	-	4481	2924	-	-	4481	2924
Total	-	-	-	-	6732	2681	-	-	6732	2681

Table 4.3.1b: Price Received under Various Channels - Onion Rose

Farm size	Village Market		Comm. Agent		Regulated Market		Govt Agencies		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Marginal	-	-	123	1014	-	-	-	-	123	1014
Small	-	-	781	1144	-	-	-	-	781	1144
Medium	-	-	465	982	-	-	-	-	465	982
Large	-	-	524	1180	-	-	-	-	524	1180
Total	-	-	1894	1080	-	-	-	-	1894	1080

Table 4.3.1c: Price Received under Various Channels - Onion Chincholi

Farm size	Village Market		Comm. Agent		Regulated Market		Govt Agencies		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Marginal	-	-	-	-	28	2400	-	-	28	2400
Small	-	-	-	-	-	-	-	-	-	-
Medium	-	-	-	-	-	-	-	-	-	-
Large	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	28	2400	-	-	28	2400

Table 4.3.1d: Price Received under Various Channels - Onion All Varieties

Farm size	Village Market		Comm. Agent		Regulated Market		Govt Agencies		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Marginal	0	-	123	1014	256	2371	0	-	379	1919
Small	0	-	781	1144	1073	2448	0	-	1854	1796
Medium	0	-	465	982	951	3009	0	-	1416	1996
Large	0	-	524	1180	4481	2924	0	-	5005	2052
Total	0	-	1894	1080	6760	2540.5	0	-	8654	2054

Table 4.3.2a: Price Received under Various Channels - Grapes Bangalore blue

Farm size	Village Market		Comm. Agent		Regulated Market		Govt Agencies		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Marginal	-	-	464	2180	-	-	-	-	464	2180
Small	-	-	996	1493	-	-	-	-	996	1493
Medium	-	-	464	1775	-	-	-	-	464	1775
Large	-	-	469	1875	-	-	-	-	469	1875
Total	-	-	2392	1831	-	-	-	-	2392	1831

Table 4.3.2b: Price Received under Various Channels - Grapes Black

Farm size	Village Market		Comm. Agent		Regulated Market		Govt Agencies		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Marginal	-	-	138	1290	-	-	-	-	138	1290
Small	-	-	231	2400	-	-	-	-	231	2400
Medium	-	-	-	-	-	-	-	-	-	-
Large	-	-	154	400	-	-	-	-	154	400
Total	-	-	523	1023	-	-	-	-	523	1023

Table 4.3.2c: Price Received under Various Channels - Grapes Dilkhush

Farm size	Village Market		Comm. Agent		Regulated Market		Govt Agencies		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Marginal	-	-	612	3244	-	-	-	-	612	3244
Small	-	-	594	2247	-	-	-	-	594	2247
Medium	-	-	553	1763	-	-	-	-	553	1763
Large	-	-	229	1500	-	-	-	-	229	1500
Total	-	-	1988	2188	-	-	-	-	1988	2188

Table 4.3.2d: Price Received under Various Channels - Grapes Thompson seedless

Farm size	Village Market		Comm. Agent		Regulated Market		Govt Agencies		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Marginal	-	-	251	4788	-	-	-	-	251	4788
Small	-	-	472	5679	150	7500	-	-	622	6589
Medium	-	-	633	5188	356	7900	-	-	989	6544
Large	-	-	1017	5543	154	11000	-	-	1171	8271
Total	-	-	2373	5299	660	8800	-	-	3033	7050

Table 4.3.2e: Price Received under Various Channels - Grapes Sonaka

Farm size	Village Market		Comm. Agent		Regulated Market		Govt Agencies		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Marginal	-	-	130	4333	-	-	-	-	130	4333
Small	-	-	-	-	-	-	-	-	-	-
Medium	-	-	24	2800	-	-	-	-	24	2800
Large	-	-	816	9250	20	12000	-	-	836	10625
Total	-	-	970	5461	20	12000	-	-	990	8731

Table 4.3.2f: Price Received under Various Channels - Grapes Sharath

Farm size	Village Market		Comm. Agent		Regulated Market		Govt Agencies		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Marginal	-	-	171	4900	-	-	-	-	171	4900
Small	-	-	213	5000	-	-	-	-	213	5000
Medium	-	-	59	5500	-	-	-	-	59	5500
Large	-	-	-	-	-	-	-	-	-	-
Total	-	-	443	5133	-	-	-	-	443	5133

Table 4.3.2g: Price Received under Various Channels - Grapes Manik Chaman

Farm size	Village Market		Comm. Agent		Regulated Market		Govt Agencies		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Marginal	-	-	-	-	-	-	-	-	-	-
Small	-	-	101	2200	-	-	-	-	101	2200
Medium	-	-	45	2000	-	-	-	-	45	2000
Large	-	-	0	0	-	-	-	-	0	0
Total	-	-	146	2100	-	-	-	-	146	2100

Table 4.3.2h: Price Received under Various Channels - Grapes All Variety

Farm size	Village Market		Comm. Agent		Regulated Market		Govt Agencies		Total	
	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price	Qty Sold	Price
Marginal	0	-	1766	3456	0	-	0	-	1766	3456
Small	0	-	2607	3170	150	7500	0	-	2757	3322
Medium	0	-	1778	2718	356	7900	0	-	2134	2912
Large	0	-	2685	3095	174	11500	0	-	2859	3779
Total	0	-	8835	3291	680	10400	0	-	9515	4008

4.3 Month wise sale of different varieties of grapes and onion

After having seen the marketing channels and price obtained from different channels, in this section we see the temporal behaviour of the farmers in marketing their produce after harvesting and how price obtained by the farmers differed across time. Red onion variety was sold during the kharif harvest season of October, November and December (Table 4.4.1a). The average price was highest in October Rs 2954 per quintal, which declined during the peak season in November to Rs 2656 and in December Rs 2370 per quintal. Rose onion price increased from Rs 1049 per quintal in the month of April to Rs 1200 per quintal in the month of May and the kharif variety obtained the average price of Rs 1081 per quintal during the month of September. In the case of chincholi, the sale was done in the month of November only with an average price of Rs 2400 per quintal. Thus, in onion there was not any particular direction in the movement of prices in the post harvest period as price in two varieties moved

in opposite directions while red onion price declined as harvest progressed and rose onion price increased.

Looking at temporal behaviour of prices realized by the selected farmers of grapes, it is observed in statistics presented in Tables 4.4.2a to 4.4.2g that in the case of Bangalore blue, farmers sold their product in the months of April, May and September through commission agents. Price variations were minimal in the month of April and September both averaging at Rs 1681 per quintal while price in the month of May was very high Rs 8000 in which case only small quantity was sold by the marginal farmers at that price. In the case of black variety, the whole quantity was sold in the month of September and average price realized was Rs 1363 per quintal. Dilkhush variety was sold across four months two months in the summer season and two months in the winter seasons. Price was highest in the month of November Rs 8250 per quintal and lowest in the month of May Rs 1750 per quintal. The price varied from Rs 1750 per quintal in the month of May to Rs 1824 in the month of September. Among the other varieties, sonaka, sharath and manic chaman were sold at one point of time after harvest to the commission agents while some amount was sold through regulated mandis in the case of sonaka. The price realized for sharath averaged at Rs 15400 per quintal, manic chaman at Rs 2100 per quintal and sonaka varied between Rs 5461 in the case of commission agents and Rs 12000 in the case of regulated mandis. The thomson seedless was sold in April and September with a price variation of Rs 5332 and Rs 5000 per quintal, respectively from the commission agent while it was recorded as Rs 8800 for the small quantity sold through regulated market in the month of April. Thus, prices of grapes varied much wider across various seasons and across different varieties as compared to onion crop.

4.4 Summary of the Chapter

In the case of red and chincholi onions, the entire surplus was sold by the selected farmers through regulated markets in Karnataka. All the 99 selected farmers in the case of red onion and one selected farmer in the case of chincholi onion sold their product through regulated market irrespective of the farm size. Rose onions, on the other hand, were mainly produced for export purpose and this variety was not sold in the regular channel of regulated mandis. Among all varieties of grapes there was predominantly only one channel, i.e., commission agents through which our selected farmers sold their grapes. Only in the case of thomson seedless and sonaka variety a handful numbers of farmers sold their grapes through regulated

mandis. In all other cases product was sold only through commission agents. Thus, more or less all selected farmers followed an informal chain to dispose off their grapes crop.

For red onions, price per quintal varied from Rs 2342 for the marginal farmers to Rs 3009 for medium farmers and it averaged at Rs 2681. For rose onion, price realized was much lower compared to red onions. The price for rose onions averaged at Rs 1080 per quintal and it varied between Rs 982 for medium farmers to Rs 1180 for the large farmers. Chincholi onion was grown only by one farmer and the realized price was Rs 2400 per quintal. For the six varieties of grapes grown by the selected farmers, the price per quintal obtained averaged at Rs 1831 for Bangalore blue, Rs 1023 for black variety, Rs 2188 for dilkhush, Rs 7050 for thomson seedless, Rs 8731 for sonaka, Rs 5133 for sharath and Rs 2100 for manic chaman. Across farm size, there was no uniform pattern observed for both onion and grapes. In some varieties large farmers obtained highest whereas in other cases it was marginal or small farmers who obtained the best price.

Table 4.4.1a: Month wise Quantity Sold in Different Channels: Onion Red

Farm size	Oct-13		Nov-13		Dec-13	
	Qty (quintals)	Price (Rs per quintal)	Qty (quintals)	Price (Rs per quintal)	Qty (quintals)	Price (Rs per quintal)
Regulated market						
Marginal			59	2267	169	2370
Small	865	2425	209	2540		
Medium	283	3917	668	2600		
Large	2248	2521	2233	3219		
Total	3396	2954	3168	2656	169	2370

Table 4.4.1b: Month wise Quantity Sold in Different Channels: Onion Rose

Farm size	Apr-13		May-13		Sep-13	
	Qty (quintals)	Price (Rs per quintal)	Qty (quintals)	Price (Rs per quintal)	Qty (quintals)	Price (Rs per quintal)
Commission Agent						
Marginal	19	1000			104	1020
Small	205	1214			577	1115
Medium	162	733	45	1200	259	1057
Large	267	1250			257	1133
Total	653	1049	45	1200	1196	1081

Table 4.4.1c: Month wise Quantity Sold in Different Channels: Onion Chincholi

Farm size	Nov-13		May-13		Sep-13	
	Qty (quintals)	Price (Rs per quintal)	Qty (quintals)	Price (Rs per quintal)	Qty (quintals)	Price (Rs per quintal)
Regulated market						
Marginal	28	2400				
Small						

Medium						
Large						
Total	28	2400				

Table 4.4.2a: Month wise Quantity Sold in Different Channels: Grapes Bangalore blue

Farm size	Apr-13		May-13		Sep-13	
	Qty (quintals)	Price (Rs per quintal)	Qty (quintals)	Price (Rs per quintal)	Qty (quintals)	Price (Rs per quintal)
Commission Agent						
Marginal	23	1800	20	8000	421	1500
Small	219	1325			776	1560
Medium	65	1800			399	1767
Large	57	1800			412	1900
Total	364	1681	20	8000	2008	1682

Table 4.4.2b: Month wise Quantity Sold in Different Channels: Grapes Bangalore black

Farm size	Sep-13		May-13		Sep-13	
	Qty (quintals)	Price (Rs per quintal)	Qty (quintals)	Price (Rs per quintal)	Qty (quintals)	Price (Rs per quintal)
Commission agent						
Marginal	138	1290				
Small	231	2400				
Medium						
Large	154	400				
Total	523	1363				

Table 4.4.2c: Month wise Quantity Sold in Different Channels: Grapes Dilkhush

Farm size	Apr-13		May-13		Sep-13		Nov-13	
	Qty (quintals)	Price (Rs per quintal)						
Commission agent								
Marginal					606	2056	6	8250
Small			77	2500	517	2229		
Medium					553	1763		
Large	161	2500	40	1000	28	1250		
Total	161	2500	117	1750	1704	1824	6	8250

Table 4.4.2d: Month wise Quantity Sold in Different Channels: Grapes Thomson seedless

Farm size	Apr-13		Sep-13	
	Qty (quintals)	Price (Rs per quintal)	Qty (quintals)	Price (Rs per quintal)
Commission agent				
Marginal	251	4788		
Small	472	5679		
Medium	633	5188		
Large	394	5633	623	5000
Total	1750	5322	623	5000
Regulated market				
Marginal				
Small	150	7500		
Medium	356	7900		
Large	154	11000		

Total	660	8800		
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Table 4.4.2e: Month wise Quantity Sold in Different Channels
Grapes Sonaka

Farm size	April – 13	
	Qty (quintals)	Price (Rs per quintal)
Commission agent		
Marginal	130	4333
Small		
Medium	24	2800
Large	816	9250
Total	970	5461
Regulated market		
Marginal		
Small		
Medium		
Large	20	12000
Total	20	12000

Table 4.4.2f: Month wise Quantity Sold in Different Channels
Grapes Sharath

Farm size	April – 13	
	Qty (quintals)	Price (Rs per quintal)
Commission agent		
Marginal	172	4900
Small	213	5000
Medium	59	5500
Large		
Total	444	15400

Table 4.4.2g: Month wise Quantity Sold in Different Channels
Grapes Manik Chaman

Farm size	April – 13	
	Qty (quintals)	Price (Rs per quintal)
Commission agent		
Marginal		
Small	101	2200
Medium	45	2000
Large		
Total	146	2100

Chapter 5

Price patterns over time and space

5.1 Introduction

It was highlighted in the Introduction chapter that price instability imposes costs on both producers as well as consumers. If the price of a particular commodity falls below a certain level producers loose because the price may not be able to cover the actual cost of production. However, consumers benefit from low prices because they can buy more of the same commodity. Alternatively, if the price of a commodity goes up producers gain but consumers lose because they have to adjust their expenditure and budget in response to changes in relative prices. The latter phenomenon has been observed quite frequently in India during the recent past in the case of onion. There has been incidences where unusual rise in onion prices led to a sort of political instability. This chapter tries to establish association between the farm harvest prices, wholesale prices and retail prices for grapes and onion through looking into prevailing prices at the production centres, trading centres and consumption centres of these two commodities.

The farm harvest price was not available for the commodities under review. Therefore it was not possible to compute mark-up over farm harvest prices for a time series data. However, we could obtain time series data for wholesale and retail prices as published by Directorate of Economics and Statistics, Government of India in their annual publication titled, Agricultural Prices in India. The price series for grapes was available for Bangalore only while for onion the series was available for a numbers of districts in Karnataka. We present the annual average prevailing wholesale and retail prices their deviation around the mean and coefficient of variation as well as percentage mark-up of retail prices over wholesale prices. For the sake of comparison of farm harvest price with wholesale and retail prices, we use our primary survey data which was collected from the farmers, wholesalers and retailers. The analysis is presented in the following paragraphs in this chapter.

5.2 Variability in wholesale and retail prices of grapes and onion

Statistics presented in Table 5.1 shows that average wholesale prices of grapes varied from around Rs 2 thousand per quintal to around Rs 5 thousand per quintal in the duration period of around fourteen years from 2001 to 2014. Retail prices, on the other hand, varied from Rs 2.7 thousand per quintal to above Rs 7 thousand per quintal during the same time period. However, the average annual prices shown in Table 5.1 do not show the intra year fluctuations which are far higher compared to variation in the annual average prices. This is depicted in Figure 5.1 where it is seen that highest wholesale price of grapes touched almost Rs 8 thousand per quintal and retail prices surpassed Rs 11 thousand per quintal in Bangalore during the above mentioned period. Intra year variations are reflected in the standard deviation values presented in the table. The deviations were higher among retail prices as compared to wholesale prices as highest standard deviation value for wholesale prices was 1925 whereas the same for retail prices was 3032. Coefficient of variation is a better indicator for dispersion as it is unit free. The value of Coefficient for wholesale prices was lowest 10.9 during 2006 and highest 43.5 during the year 2007. The value for retail prices was lowest 7.1 in 2003 and highest 42.4 during 2009. However, because of data gaps in the case of retail prices, coefficient of variation was not available for all the years and thereby it is difficult to make comparison of price variations between wholesale and retail prices. Nevertheless, the retail prices were reported above wholesale prices without any exception and the difference was excessive during some years as is seen from Table 5.1.

In order to see to what extent higher margin is charged by the retailers above that of wholesale price, we have calculated the percentage mark-up on the wholesale price. The mark up explains the margin between the wholesale and retail prices. Table 5.2 presents percentage mark-up of monthly retail prices over wholesale prices in grapes in Bangalore for which data was available. The mark-up is calculated as difference in prices between wholesale and retail as a percentage of wholesale prices. On average, the mark-up was highest 80 percent during the year 2006 and it was lowest 15 percent during 2005. In other words, the retailers' margin over the wholesale price varied between 15 to 80 percent while the average mark-up value for the period 2003 to 2014 was estimated at 45 percent. In order to see, out of this margin how much was the net profit of retailers one further needs information about what percentage out of this margin goes as waste (as wastage percentage in the case of fruits and vegetables is much higher compared to other products) and how much is the price for the services rendered by the retailers. Further comparing intra year average mark-up, the highest mark-up was observed in the months of February and March above 50

per cent, followed by November, January and May, above 40 percent and the months of December and April, less than 40 percent.

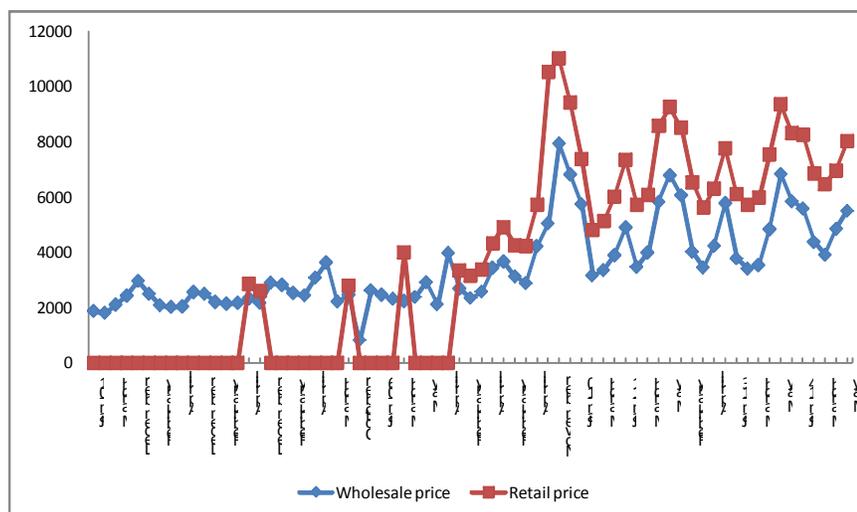


Figure 5.1: Monthly wholesale and retail prices of grapes in Karnataka (Rs per quintal)

Table 5.1: Average wholesale and retail prices of grapes and their variability in Bangalore market (Rs per quintal)

Year	Avg whole-sale price	Avg retail price	Avg arrivals	COV wp	COV rp	COV arrivals	Stdev wp	Stdev Rp	Stdev arrivals
2001	2221	-	539	21.4	-	59.6	475	-	321
2002	2268	-	264	11.5	-	37.0	261	-	98
2003	2304	2724	374	12.6	7.1	54.2	291	192	203
2004	2886	-	155	16.5	-	85.3	477	-	132
2005	2010	2800	337	41.1	-	168.2	826	-	567
2006	2446	4000	212	10.9	-	63.2	267	-	134
2007	3034	-	30	43.5	-	37.7	1320	-	11
2008	2747	3555	723	17.1	14.7	19.9	470	524	143
2009	4802	7151	1197	40.1	42.4	56.4	1925	3032	675
2010	4032	5819	1080	29.4	19.6	21.3	1185	1141	230
2011	4988	7386	791	27.1	20.8	52.0	1352	1537	412
2012	4702	6938	1347	24.4	16.8	77.4	1149	1166	1042
2013	4702	7156	785	29.8	20.6	62.2	1402	1476	488
2014	4837	7297	1078	15.0	10.7	60.4	723	778	651

Table 5.2: Monthly percentage mark up of retail price over wholesale price of grapes in Bangalore

Year	January	February	March	April	May	November	December	Avg
2003	-	-	-	23.60	19.87	-	-	21.73
2005	-	-	-	14.66	-	-	-	14.66
2006	-	-	80.18	-	-	-	-	80.18
2008	25.36	35.07	32.45	26.46	-	-	-	29.84
2009	34.86	36.87	47.54	36.24	108.97	38.50	38.01	48.71
2010	27.98	52.86	52.81	54.28	-	-	-	46.98
2011	49.78	64.73	52.81	47.35	36.19	-	-	50.17

2012	40.36	62.62	63.09	49.10	34.20	-	-	49.87
2013	61.80	67.43	69.21	55.94	36.59	42.11	-	55.52
2014	47.67	56.72	65.48	43.67	45.45	-	-	51.80

Table 5.3: Average wholesale and retail prices of onion and their variability in various markets in Karnataka

Markets	Year	Avg wholesale price	Avg retail price	Avg arrivals	Std ev wp	Stdev rp	Stdev arrivals	COV wp	COV rp	COV arrivals	Mark-up
Bangalore	2001	580	438	32550	96	71	17477	16.5	16.3	53.7	3.4
Bangalore	2002	359	400	103733	97	104	62406	26.9	26.1	60.2	12.8
Bangalore	2003	558	450	239771	246	141	158458	44.0	31.4	66.1	-27.2
Bangalore	2004	567	600	421171	175	-	310388	30.9	-	73.7	26.1
Bangalore	2005	627	817	411513	238	402	250064	38.0	49.2	60.8	18.9
Bangalore	2006	432	620	455852	68	140	216885	15.7	22.6	47.6	-
Bangalore	2007	900	1236	489024	192	266	389593	21.4	21.5	79.7	70.3
Bangalore	2008	631	864	430637	219	269	220940	34.7	31.2	51.3	-
Bangalore	2009	977	1680	422703	359	460	256381	36.7	27.4	60.7	35.4
Bangalore	2010	1135	2125	519129	665	1531	216934	58.6	72.0	41.8	132.0
Bangalore	2011	1066	1704	543826	560	806	267659	52.6	47.3	49.2	72.6
Bangalore	2012	822	1450	543563	347	474	235216	42.3	32.7	43.3	44.5
Bangalore	2013	2025	3075	615237	910	1490	420108	44.9	48.5	68.3	66.3
Bangalore	2014	837	1660	627375	174	270	80685	20.8	16.3	12.9	-
Bijapur	2000	250	-	9647	83	-	2792	33.0	-	28.9	-
Bijapur	2001	450	250	564	-	-	-	-	-	-	-
Bijapur	2002	246	300	3308	6	-	1304	2.4	-	39.4	-
Bijapur	2003	301	-	4062	72	-	2371	24.0	-	58.4	-
Bijapur	2004	295	600	2868	100	-	1049	33.7	-	36.6	124.7
Bijapur	2005	393	733	1988	223	350	2156	56.8	47.7	108.4	50.0
Bijapur	2006	263	492	4824	84	29	3110	31.9	5.9	64.5	13.6
Bijapur	2007	479	1217	4510	131	266	4914	27.4	21.8	109.0	108.9
Bijapur	2008	345	875	5790	219	176	4041	63.5	20.2	69.8	-
Bijapur	2009	753	1425	4687	527	579	4499	70.0	40.6	96.0	111.8
Bijapur	2010	-	1700	-	-	424	-	-	25.0	-	-
Hubli	2000	275	-	84854	92	-	61515	33.4	-	72.5	-
Hubli	2001	552	580	85175	125	148	41385	22.7	25.6	48.6	-
Hubli	2002	311	-	45027	113	-	15917	36.2	-	35.4	-
Hubli	2003	432	721	35235	152	179	10872	35.2	24.8	30.9	9.7
Hubli	2004	444	925	64996	95	275	72735	21.4	29.8	111.9	105.1
Hubli	2005	515	913	84292	209	305	115368	40.6	33.4	136.9	42.1
Hubli	2006	347	638	49612	55	192	42948	15.9	30.1	86.6	175.9
Hubli	2007	672	1318	89678	138	331	141123	20.6	25.1	157.4	-
Hubli	2008	466	1091	31275	172	515	29514	36.9	47.2	94.4	-
Hubli	2009	758	1492	93233	208	511	136876	27.5	34.2	146.8	107.8
Hubli	2010	997	1858	107990	398	1370	123445	40.0	73.7	114.3	250.7
Hubli	2011	895	1542	83960	321	571	68527	35.9	37.1	81.6	59.5
Hubli	2012	674	1117	67008	158	159	37536	23.5	14.2	56.0	28.2
Hubli	2013	1508	3358	100027	697	1788	103114	46.2	53.2	103.1	91.0
Hubli	2014	672	1600	58559	81	141	5551	12.0	8.8	9.5	-

Table 5.3 presents annual average wholesale and retail prices and their intra year variability in various markets in Karnataka for the period 2001 to 2014. One can observe that lowest wholesale price of onion in Bangalore was Rs 359 per quintal in 2002. In comparison, lowest

price in Bijapur was Rs 246 in 2002 and Rs 275 in Hubli during 2000. On the opposite, the highest wholesale price in Bangalore was Rs 2025 in 2013, Rs 1508 in Hubli during 2013 and only Rs 753 in Bijapur in 2009. The retail prices, on the other hand, had much higher variation. The wedge between lowest and highest retail prices was between Rs 400 to Rs 3075 in Bangalore, Rs 250 to Rs 1700 in Bijapur and between Rs 580 to Rs 3358 in Hubli. Thus, highest wholesale price wedge in all the three markets in Karnataka was Rs 246 to Rs 2025 while wedge in retail prices was between Rs 250 to Rs 3358. The above fact emerges more clearly if one looks at inter year standard deviation values whereby highest value of standard deviation for wholesale prices was 910 while for retail prices the value was 1788.

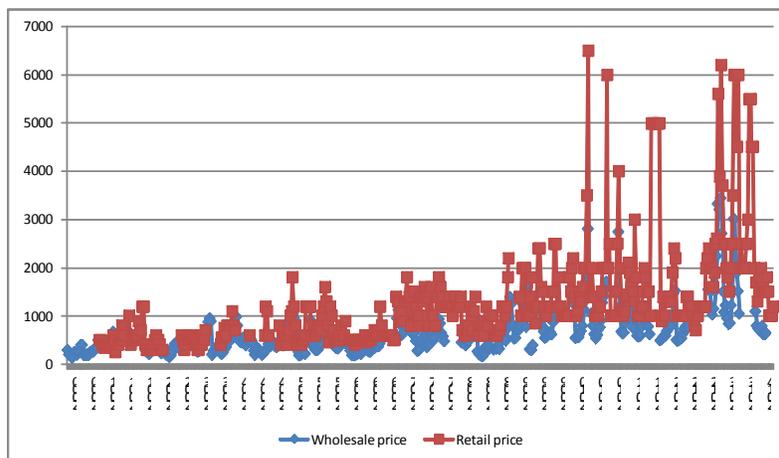


Figure 5.2: Monthly wholesale and retail prices of onion in Karnataka (Rs per quintal)

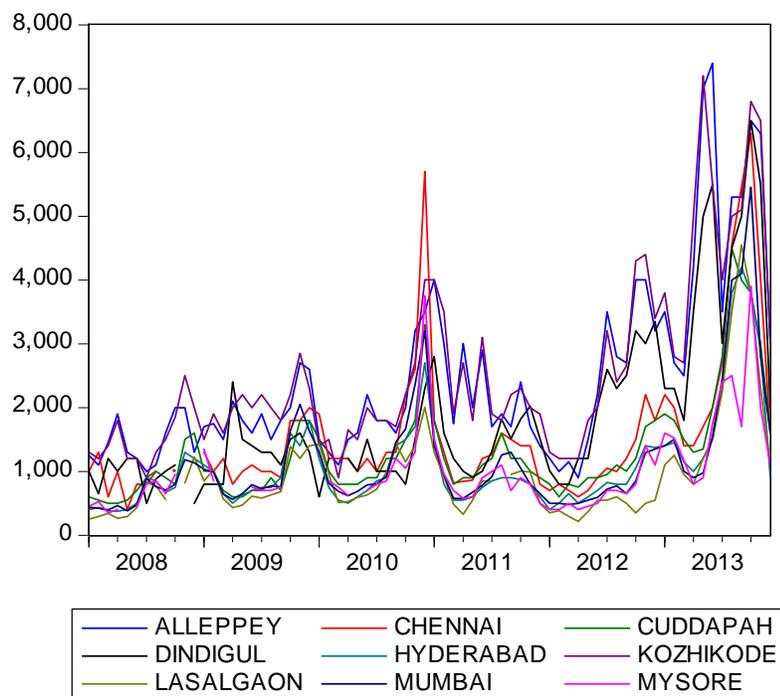


Figure 5.3: Monthly wholesale prices of onion in different markets (Rs per quintal)

However, inter year variations in wholesale and retail prices as discussed above were much less than the intra year variations as depicted by Figure 5.2. The upper spike in wholesale prices was around Rs 2 thousand per quintal while in retail prices it was less than Rs 3.5 thousand per quintal as discussed above. However, in the case of intra year prices, the wholesale prices touched the upper range of almost Rs 4 thousand per quintal while retail prices touched around Rs 7 thousand per quintal (Figure 5.2). Coefficients of variation between wholesale and retail prices were more equitable compared to their range of average prices and standard deviations. Looking at percentage mark-up of retail prices, it is clearly evident that mark-up values were much larger in the case of onion as compared to grapes. The average mark-up percentage in Bangalore was 41 percent, in Bijapur 82 percent and in Hubli it was 97 percent while overall average mark-up was 69 percent. As compared to this the average mark-up in grapes was 45 percent. The range of high mark-up in onion was also much higher as compared to grapes. The highest mark-up in Bangalore was 132 percent while in Bijapur it was 125 percent and in Hubli it was above 250 percent. It is discernible from Figure 5.2 that the spikes in both wholesale and retail prices of onion increased at much faster rate during the last five years post 2010. The phenomenon of extremely high prices of onion in retail markets and their increased volatility causing a huge hue and cry in the society during the recent past has become very common. Even in the month of August 2015 onion prices touched sky high rate of above Rs 60-70 per kg. In order to compare wholesale prices of onion in Karnataka with the neighbouring states we collected this information in the neighbouring states. Figure 5.3 plots wholesale prices in the neighbouring markets along with Mysore. It is observed from the figure that wholesale prices have touched high range of above Rs 6000 per quintal more oftenly in the recent past. The volatility is rather high in the onion terminal markets like Lasalgaon, Mumbai and Chennai as has also been observed by some of the recent studies carried out on onion⁸.

5.3 The variability in prices among the selected farmers, wholesalers and retailers

This section presents variability and mark-up in prices among the selected farmers, wholesalers and retailers. In order to capture the ground reality, we selected a sample of 28 wholesalers of onion from Bangalore, Chikkabalapur and Gadag and 21 wholesalers of grapes from Bangalore, Chikkabalapur and Bijapur. Similarly, 20 retailers of onion were selected from Gadag and Chitradurga and 27 retailers of grapes were selected from

⁸ See for example, Chengappa et al. 2012, Chadha et al. 2012, Niam (2013).

Bangalore, Chikkabalapur and Bijapur. The information was collected about where the wholesalers and retailers procured their product, in what quantity and where they sold and at what price the product was bought and sold. Tables 5.4 to 5.22 present the details of selected sample, purchase and sale pattern of wholesalers and retailers and the mark-up earned by them. The wholesalers of both onion and grapes generally purchased their quantity from the farmers (Table 5.6) either from the surrounding villages in the local district or from the neighbouring districts or neighbouring states. Destination for sale for the wholesalers of onion was either in the Agricultural Produce Market Committees (APMCs) in the local district or APMCs in the neighbouring districts or states or in some cases the wholesalers sold their produce in the big terminal markets like in the case of red onions. In the case of exportable variety of rose onions, wholesalers sold their produce to the traders who were operating from Chennai as the same was the port for exports of rose onion to the countries in Easter Asia. Destination for sale for the wholesalers in the case of grapes was crossing the boundaries of the state where they bought the product. For example farmers buying from Chikalabalpur, Bijapur and Bangalore generally sold their product in distant markets in Andhra Pradesh, Kerala, Tamil Nadu Orissa, Chhattisgarh, Maharashtra and so on. They generally preferred to sell their product in the big terminal markets like Chennai, Hyderabad, Kochi etc.

The retailers of onions purchased their quantity from the regulated markets like APMCs mostly in the surrounding production belts where either the farmers brought their produce or traders sold it though the commission agents in the regulated mandis. Unlike wholesalers who sold in terminal markets, retailers on the other hand, sold their produce in the town or district markets where from hawkers and petty shopkeepers buy and sell the same to the consumers. In the case of grapes, the retailers either bought their product from local village farmers or from nearby local contractors, local wholesalers, local towns or from surrounding villages. They sold their product through small vendors, small huts in the vicinity of the tehsil, town or district and in some cases nearby districts or towns.

Looking at the volume of quantity purchased and the average purchase and sale prices, data in tables reveal that the scale of operation was much higher by the red onion wholesalers as compared to other onion wholesalers or wholesalers of grapes. For example, in the case of red onions, quantity bought by wholesalers averaged at 14 thousand tonnes per head compared to average quantity of less than 500 tonnes per head procured for all other varieties

of onions. Similarly, in the case of grapes, wholesalers procured average quantity of around one thousand tonnes per head. The quantity procured and sold by retailers on the other hand averaged less than 10 tonnes per head for both the commodities. The mark-up was calculated as difference between net price received and the price paid for buying the product by both wholesalers and retailers. The last column of table presents the mark-up as a percentage of purchase price. It is seen from statistics in the tables that mark-up percentage for wholesalers varied from 11 percent for red onion to 26 percent for summer rose onion, 42 percent for kharif rose onion and 15 per cent for kharif red onions. In the case of grapes the mark up percentage was measured as around 6 percent for grapes in Chikabalapur district, 17 percent in Bangalore and as high as 50 per cent in Bijapur district. It is to be noted that in the case of grapes the wholesalers purchased mixed varieties and therefore it was not possible to work out mark up for different varieties separately. In the case of retailers, the mark up percentage was much higher compared to wholesaler and among the two crops, the mark up percentage for onion was much higher compared to grapes. The mark up percentage in onion was 354 per cent in Chitradurga and 85 percent in Gadag. In the case of grapes, the mark up was 130 per cent in Chikabalapur, 86 percent in Bangalore and 60 percent in Bijapur. The summary Table 5.22 shows that the mark up was almost less than 50 percent among the wholesalers of both onion and grapes but it was mostly above 50 percent among the retailers and its highest range crossed 300 percent in onion indicating to some extent high volatility in onion prices to high margin by the retailers who raised the overall price paid by the consumers but the advantage of same does not reach to the producers.

5.4 Summary of the Chapter

Wholesale prices of grapes varied from around Rs 2 thousand per quintal to around Rs 5 thousand per quintal in the duration period of around fourteen years from 2001 to 2014. Retail prices, on the other hand, varied from Rs 2.7 thousand per quintal to above Rs 7 thousand per quintal during the same time period. However, intra year fluctuations were higher compared to variation in the annual average prices. The deviations were higher among retail prices as compared to wholesale prices as highest standard deviation value for wholesale prices was 1925 whereas the same for retail prices was 3032. On average, the retailers' margin over the wholesale price varied between 15 to 80 percent while the average mark-up value for the period 2003 to 2014 was estimated at 45 percent.

Coefficients of variation between wholesale and retail prices were more equitable compared to their range of average prices and standard deviations. Mark-up values were much larger in the case of onion as compared to grapes. The phenomenon of extremely high prices of onion in retail markets and their increased volatility causing a huge hue and cry in the society during the recent past has become very common. Among our selected wholesalers, mark-up percentage varied from 11 percent for red onion to 26 percent for summer rose onion, 42 percent for kharif rose onion and 15 per cent for kharif red onions. In the case of grapes the mark up percentage was measured as around 6 percent for grapes in Chikkabalapur district, 17 percent in Bangalore and as high as 50 per cent in Bijapur district. In the case of retailers, the mark up percentage was much higher compared to wholesaler and among the two crops the mark up percentage for onion was much higher compared to grapes. This high volatility benefited the retailers in terms of high margin but the advantage of same does not reach to the producers.

Table 5.4: Details of wholesalers and retailers selected for onion and grapes

Commodity	District	Wholesalers interviewed	Retailers interviewed
Onion	Bangalore	10	-
	Chikkabalapur	9	-
	Gadag	9	10
	Chitradurga	-	10
Aggregate		28	20
Grapes	Banagalore	7	8
	Chikkabalapur	5	10
	Bijapur	9	9
Aggregate		21	27

Table 5.5: Where from wholesalers procured their produce (percentage)

Commodity	District	Farmers	Commission agents	Others
Onion	Bangalore	100.0	0.0	0.0
	Chikkabalapur	100.0	0.0	0.0
	Gadag	100.0	0.0	0.0
Grapes	Banagalore	100.0	0.0	0.0
	Chikkabalapur	100.0	0.0	0.0
	Bijapur	100.0	0.0	0.0

Table 5.6: Details of red onion purchased by wholesalers selected from Bangalore

Supply procured from	Quantity procured (tons)	Purchase price (Rs/ton)	Destination for sale	Turnover (Rs crore)	Net price received (Rs per ton)	Margin	Margin %
Gadag, Chitradurga, Bellary, Nasik	5400	25000	APMC Yashwantpur	16.2	29750	4750	19.0
Gadag, Chitradurga, Bellary, Nasik	14400	50000	APMC Yashwantpur	79.2	54500	4500	9.0
Gadag, Chitradurga, Bellary, Nasik	13500	40000	APMC Yashwantpur	60.8	44600	4600	11.5
Karnataka and Maharashtra	10800	50000	APMC Yashwantpur	59.4	54500	4500	9.0
Karnataka and Maharashtra	12000	40000	APMC Yashwantpur	54.0	44600	4600	11.5
Karnataka and Maharashtra	18000	35000	APMC Yashwantpur	72.0	39650	4650	13.3
Gadag, Chitradurga, Bellary, Nasik	14850	55000	APMC Yashwantpur	89.1	59450	4450	8.1
Karnataka and Maharashtra	24000	55000	APMC Yashwantpur	144.0	59450	4450	8.1
Karnataka and Maharashtra	19200	50000	APMC Yashwantpur	105.6	54450	4450	8.9
Karnataka and Maharashtra	10800	40000	APMC Yashwantpur	48.6	44600	4600	11.5
Average	14295	44000	-	72.9	48555	4555	11.0

Table 5.7: Details of kharif rose onion purchased by wholesalers selected from Chikkabalapur

Supply procured from	Quantity procured (tons)	Purchase price (Rs/ton)	Destination for sale	Turnover (Rs crore)	Net price received (Rs per ton)	Margin	Margin %
Bagepalli village	200	10000	Chennai	0.28	13150	3150	31.5
Bagepalli village	500	12000	Chennai	0.70	12960	960	8.0
Surrounding villages	375	12000	Chennai	0.56	13683	1683	14.0
Surrounding villages	800	12000	Chennai	1.28	14227	2227	18.6
Surrounding villages	200	10000	Chennai	0.30	13840	3840	38.4
Surrounding villages	750	10000	Chennai	1.40	17351	7351	73.5
Surrounding villages	400	15000	Chennai	1.00	23750	8750	58.3
Surrounding villages	300	13000	Chennai	0.69	21667	8667	66.7
Surrounding villages	150	12000	Chennai	0.32	19667	7667	63.9
Average	408	11778	-	0.73	16699	4921	41.8

Table 5.8: Details of summer rose onion purchased by wholesalers selected from Chikkabalapur

Supply procured from	Quantity procured (tons)	Purchase price (Rs/ton)	Destination for sale	Turnover (Rs crore)	Net price received (Rs per ton)	Margin	Margin %
Bagepalli village	400	13000	Chennai	0.72	17175	4175	32.1
Bagepalli village	200	15000	Chennai	0.36	16925	1925	12.8
Surrounding villages	450	7000	Chennai	0.45	8993	1993	28.5
Surrounding villages	600	10000	Chennai	1.20	18227	8227	82.3
Surrounding villages	500	12000	Chennai	0.50	8847	-3153	-26.3
Surrounding villages	600	10000	Chennai	0.20	2017	-7983	-79.8
Surrounding villages	700	12000	Chennai	1.40	18786	6786	56.5
Surrounding villages	250	15000	Chennai	0.63	22000	7000	46.7
Surrounding villages	100	10000	Chennai	0.20	18500	8500	85.0
Average	422	11556	-	0.63	14608	3052	26.4

Table 5.9: Details of kharif red onion purchased by wholesalers selected from Gadag

Supply procured from	Quantity procured (tons)	Purchase price (Rs/ton)	Destination for sale	Turnover (Rs crore)	Net price received (Rs per ton)	Margin	Margin %
Surrounding villages	1800	14000	Kolkata, Coimbatore	2.70	14994	994	7.1
Surrounding villages	650	14000	Kolkata, Hyderabad	1.04	15988	1988	14.2
Surrounding villages	800	12000	Madurai, Coimbatore	1.44	18000	6000	50.0
Surrounding villages	300	16000	Madurai, Coimbatore	0.54	17930	1930	12.1
Surrounding villages	1200	13000	Vijayawada, Coimbatore	1.80	14992	1992	15.3
Surrounding villages	450	14000	Kolkata, Hyderabad, Coimbatore	0.68	14982	982	7.0
Surrounding villages	1200	13000	Chennai, Madurai	1.80	14993	1993	15.3
Surrounding villages	600	18000	Tamil Nadu, Punjab, Delhi, Gujarat, Maharashtra	1.20	19980	1980	11.0
Surrounding villages	950	16000	Gujarat, Delhi	1.62	16984	984	6.2
Average	883	14444	-	1.42	16538	2094	15.4

Table 5.10: Quantity sold by wholesalers across various months and price variations across time

Wholesaler selected from	Variety	May-June 2014		Sept-Nov 2014	
		Qty Sold (qtls)	Sale Price (Rs/qty)	Qty Sold (qtls)	Sale Price (Rs/qty)
Bangalore	Red onion	72225	4900	70725	4900
Chikkabalapur	Rose onion	2114	1744	1417	2022
Gadag	Red onion			8033	1656

Table 5.11: Source of procurement for retailers for onion

Choice preference	Source of procurement (No of retailers)			
	Farmers	Commission agent	Wholesalers	Others
First	8	14	3	0
Second	2	3	1	0
Third	0	0	0	1
Fourth	0	1	1	0
Percentage of retailers				
First	40	70	15	0
Second	10	15	5	0
Third	0	0	0	5
Fourth	0	5	5	0
Total	50	90	25	5

Table 5.12: The retailers' margin on onion

Place from where supply is procured from	Quantity procured (tons)	Purchase price (Rs/ton)	Destination for sale	Turnover (Rs)	Net Price received	Mark-up	Mark-up %
Chitradurga retailers Kharif variety							
APMC and Surrounding villages	18	6000	Challkere Market	3.00	16167	10167	169
APMC and Surrounding villages	30	6000	Challkere Market	5.50	18213	12213	204
APMC and Surrounding villages	1	2400	Challkere Market	0.25	23900	21500	896
APMC and Surrounding villages	1	2400	Challkere Market	0.25	23800	21400	892
APMC and Surrounding villages	20	2000	Chitradurga Market	4.40	21400	19400	970
APMC and Surrounding villages	36	6000	Chitradurga Market	4.70	12206	6206	103
APMC and Surrounding villages	7	6000	Challkere Market	1.20	16643	10643	177
APMC and Surrounding villages	18	9000	Challkere Market	2.70	14700	5700	63
APMC and Surrounding villages	18	8000	Challkere Market	2.16	11700	3700	46
APMC and Surrounding villages	14	12000	Chitradurga Market	1.96	13700	1700	14
Average	16.3	5980	-	2.612	17243	11263	354
Chitradurga retailers rabi variety							
APMC and Surrounding villages	0.5	6000	Challkere Market	0.07	12800	6800	113
APMC and Surrounding villages	0.5	6000	Challkere Market	0.07	12200	6200	103
APMC and Surrounding villages	25	22000	Chitradurga Market	5.75	22400	400	2
Average	8.7	11333	-	2.0	15800	4467	73

Chitradurga retailers summer variety							
APMC and Surrounding villages	0.5	9000	Chalkere Market	0.10	18800	9800	109
APMC and Surrounding villages	0.5	9000	Chalkere Market	0.10	18200	9200	102
APMC and Surrounding villages	25	25000	Chalkere Market	6.75	26400	1400	6
Average	8.7	14333	-	2.3	21133	6800	72
Gadag retailers all variety							
APMC and Surrounding villages	84	15000	Gadag Market	14.90	17538	2538	17
APMC and Surrounding villages	9	2000	Gadag Market	0.90	9922	7922	396
APMC and Surrounding villages	7	5000	Gadag Market	1.26	17980	12980	260
APMC and Surrounding villages	72	8000	Gadag Market	9.24	12333	4333	54
APMC and Surrounding villages	12	9000	Gadag Market	1.32	10227	1227	14
APMC and Surrounding villages	300	8000	Gadag Market	30.00	9528	1528	19
APMC and Surrounding villages	350	9000	Gadag Market	38.59	10137	1137	13
APMC and Surrounding villages	90	9000	Gadag Market	9.00	9400	400	4
APMC and Surrounding villages	108	12000	Gadag Market	17.28	15320	3320	28
APMC and Surrounding villages	36	10000	Gadag Market	5.40	14537	4537	45
Average	106.8	8700	-	12.79	12692	3992	85

Table 5.13: Details of grapes purchased by wholesalers selected from Chikkabalapur

Variety	Place from where supply was procured from	Quantity procured (tons)	Purchase price (Rs/ton)	Destination For Sale	Turnover (Rs crore)	Sale price (Rs per ton)	Mark-up	Marke-up (%)
Dilkhush	Surrounding villages	380	25000	Chennai/Hyderabad	0.8	21053	-3947	-16
Black	Surrounding villages	700	15000	Hyderabad	0.8	11429	-3571	-24
Dilkhush	Surrounding villages	720	20000	Chennai, Kochi	0.8	11111	-8889	-44
Dilkhush	Doddamarahalli	1500	20000	Kerala, Orissa	3.3	22000	2000	10
Dilkhush	Surrounding villages	5000	23000	Tamil Nadu	12.5	25000	2000	9
Black	Surrounding villages	360	20000	Hyderabad	0.6	16667	-3333	-17
Dilkhush	Surrounding villages	800	15000	Chennai	2	25000	10000	67
Black	Surrounding villages	360	15000	Kochi, Chennai	0.36	10000	-5000	-33
Bangalore blue	Chikkamarahalli	1000	18000	Kerala, Orissa	1.9	19000	1000	6
Bangalore blue	Surrounding villages	3000	20000	Kerala, Hyderabad	6.9	23000	3000	15
Thomson seedless	Surrounding villages	720	40000	Chennai, Kochi	2	11111	27778	69
Arab-e- shahi	Dhosurnandi	500	25000	Hyderabad	1.4	28000	3000	12
Sharath	Surrounding villages	600	45000	Tamil Nadu	3	50000	5000	11
Dilkhush	Yavalahalli	2000	25000	Kerala, Orissa	5.4	27000	2000	8
Dilkhush	Bomanhalli	3000	23000	Kerala, Orissa	7.5	25000	2000	9
Arab-e- shahi	Venkatagi	1000	30000	Hyderabad	3.2	32000	2000	7
Sharath	Hosa huda village	1000	40000	Kerala	4.5	45000	5000	13
Average		1332	24647	-	3.35	23669	2355	5.9

Table 5.14: Details of grapes purchased by wholesalers selected from Bangalore

Variety	Place from where supply was procured from	Quantity procured (tons)	Purchase price (Rs/ton)	Destination For Sale	Turnover (Rs crore)	Sale price (Rs per ton)	Mark-up	Marke-up (%)
Arab-e- shahi	Surrounding villages	1000	13000	Chennai	1.65	15750	2750	21.2
Dilkhush	Surrounding villages	500	25000	Kerala	1.30	26000	1000	4.0
Dilkhush	Surrounding villages	500	30000	Kerala	1.60	32000	2000	6.7
Dilkhush	Surrounding villages	300	20000	Kerala, Tamil Nadu	0.75	25000	5000	25.0
Black	Surrounding villages	800	22000	Andhra Pradesh	2.70	33750	11750	53.4
Dilkhush	Surrounding villages	1400	25000	Kerala	3.68	26286	1286	5.1
Dilkhush	Surrounding villages	160	19000	Kerala	0.44	27500	8500	44.7
Bangalore blue	Surrounding villages	250	18000	Tamil Nadu, Kerala	0.50	20000	2000	11.1
Black	Surrounding villages	1200	13000	Tamil Nadu	1.74	14500	1500	11.5
Black	Surrounding villages	150	10000	Kerala	0.26	17133	7133	71.3
Dilkhush	Surrounding villages	2000	12000	Chennai	2.20	10625	-1375	-11.5
Dilkhush	Surrounding villages	2000	10000	Kerala	2.20	11000	1000	10.0
Black	Surrounding villages	400	15000	Tamil Nadu	0.64	16000	1000	6.7
Black	Surrounding villages	4000	23000	Hyderabad	10.40	25813	2813	12.2
Black	Surrounding villages	400	18000	Hyderabad	0.76	19000	1000	5.6
Bangalore blue	Surrounding villages	500	12000	Tamil Nadu	0.70	14000	2000	16.7
Dilkhush	Surrounding villages	500	25000	Kerala, Tamil Nadu	1.50	30000	5000	20.0
Bangalore blue	Surrounding villages	1000	18000	Hyderabad, Chhatt.	1.99	19900	1900	10.6
Sharath	Surrounding villages	500	50000	Chennai	3.50	68500	18500	37.0
Black	Surrounding villages	600	13000	Kerala	0.84	14000	1000	7.7
Dilkhush	Surrounding villages	800	26000	Hyderabad	2.16	27000	1000	3.8
Bangalore blue	Surrounding villages	450	22000	Tamil Nadu, Kerala	1.17	26000	4000	18.2
Bangalore blue	Surrounding villages	800	30000	Hyderabad	2.48	31000	1000	3.3
Black	Surrounding villages	600	10000	Hyderabad	0.72	12000	2000	20.0
Bangalore blue	Surrounding villages	1200	20000	Tamil Nadu	2.52	21000	1000	5.0
Bangalore blue	Surrounding villages	700	14000	Hyderabad	1.12	16000	2000	14.3
Average		873	19731	-	1.90	23068	3337	16.7

Table 5.15: Details of grapes purchased by wholesalers selected from Bijapur

Variety	Place from where supply was procured from	Quantity procured (tons)	Purchase price (Rs/ton)	Destination For Sale	Turnover (Rs crore)	Sale price (Rs per ton)	Mark-up	Marke-up (%)
Thomson seedless	Surrounding villages	300	12000	Maharashtra	0.42	13967	1967	16.4
Black	Surrounding villages	300	80000	Kerala	2.43	81000	1000	1.3
Thomson seedless	Surrounding villages	1000	25000	Hyderabad	4.00	40000	15000	60.0
Thomson seedless	Surrounding villages	300	25000	Tamil Nadu	1.35	45000	20000	80.0
Manik chaman	Surrounding villages	500	15000	Chitradurga	2.25	45000	30000	200.0
Thomson seedless	Surrounding villages	200	25000	Chitradurga	0.52	26000	1000	4.0
Thomson seedless	Surrounding villages	270	20000	Tamil Nadu	0.67	24815	4815	24.1
Thomson seedless	Farmers	50	50000	Bijapur	0.28	55000	5000	10.0
Sonaka	Farmers	100	25000	APMC	0.28	28000	3000	12.0
Manik chaman	Surrounding villages	200	80000	Andhra Pradesh	1.70	85000	5000	6.3
Sonaka	Surrounding villages	200	40000	Mangalore	1.00	50000	10000	25.0
Sonaka	Surrounding villages	300	30000	Hyderabad	1.35	45000	15000	50.0
Sonaka	Surrounding villages	500	15000	Tamil Nadu	4.00	80000	65000	433.3
Thomson seedless	Sanghvi	1000	20000	Tamil Nadu	4.00	40000	20000	100.0
Sonaka	Surrounding villages	150	20000	Bangalore	0.32	21000	1000	5.0
Sonaka	Surrounding villages	180	18000	TN, AP	0.36	20000	2000	11.1
Sharath	Farmers	40	40000	Bijapur	0.18	45000	5000	12.5
Sharath	Farmers	70	22000	APMC	0.18	26000	4000	18.2
Manik chaman	Surrounding villages	200	30000	Kerala	0.80	40000	10000	33.3
Manik chaman	Surrounding villages	200	30000	Hyderabad	0.80	40000	10000	33.3
Sonaka	Surrounding villages	300	25000	Tamil Nadu	1.35	45000	20000	80.0
Black	Surrounding villages	60	18000	Kerala	0.11	19000	1000	5.6
Thomson seedless	Farmets	100	26000	APMC	0.30	30000	4000	15.4
Thomson seedless	Surrounding villages	200	40000	Tamil Nadu	1.00	50000	10000	25.0
Manik chaman	Surrounding villages	180	24000	Andhra Pradesh	0.45	25000	1000	4.2
Average		276	30200	-	1.20	40791	10591	50.6

Table 5.16: Seasonal price variation in grapes

Sr No	March-May		August-October	
	Qty Sold (qtls)	Sale Price (Rs/ctl)	Qty Sold (qtls)	Sale Price (Rs/ctl)
1	121450	3867	96250	3033
2	98400	3145	61400	2364
3	69800	3742	49000	2200
4	16800	4667	-	-

Table 5.17: Source of procurement for retailers of grapes

Choice preference	Source of procurement (No of retailers)			
	Farmers	Commission agent	Wholesalers	Others
First	11	0	17	0
Second	1	2	5	0
Third	0	0	0	0
Fourth	0	1	0	0
Percentage of retailers				
First	40.7	0.0	63.0	0.0
Second	3.7	7.4	18.5	0.0
Third	0.0	0.0	0.0	0.0
Fourth	0.0	3.7	0.0	0.0
Total	44.4	11.1	81.5	0.0

Table 5.18: Details of grapes purchased by retailers selected from Chikkabalapur district

Variety	Place from where supply is procured from	Quantity procured (tons)	Purchase price (Rs/ton)	Destination for sale	Turnover (Rs Lakh)	Sale price (Rs per ton)	Mark-up	Marke-up (%)
Black	Local villages	30.00	12000	Manchenahalli	10.5	35000	23000	191.7
Dilkhush	Nandi cross	1.00	20000	Chikabalapur bus stand	0.40	37900	17900	89.5
Dilkhush	Chikaballapur	1.50	18000	Gowribidanapur	1.00	66667	48667	270.4
Dilkhush	Local contractor delivery	1.00	25000	Bagepalli bus stand	0.40	39550	14550	58.2
Dilkhush	Chikaballapur	1.00	30000	Gowribidanapur	0.66	66000	36000	120.0
Dilkhush	Nandi cross	1.00	20000	Chikabalapur bus stand	0.40	38800	18800	94.0
Dilkhush	Local contractor delivery	10.00	20000	Bagepalli bus stand	5.25	52500	32500	162.5
Black	Local town	5.00	25000	Bagepalli bus stand	4.75	94640	69640	278.6
Dilkhush	Local town wholesalers	3.00	25000	Bagepalli bus stand	1.35	44400	19400	77.6
Dilkhush	Local villages and town	3.60	26000	Manchenahalli	1.55	42764	16764	64.5
Black	Surround villages	24.00	15000	Manchenahalli	14.40	60000	45000	300.0
Bangalore Blue	Venketagiri katte	1.00	18000	Chikabalapur bus stand	0.40	38000	20000	111.1
Dilkhush	Chikabalapur	1.38	22000	Gowribiddanur	1.30	94203	72203	328.2
Bangalore Blue	Local contractor delivery	2.00	22000	Bagepalli bus stand	0.80	39775	17775	80.8
Dilkhush	Chikabalapur	1.32	35000	Gowribiddanur	0.64	48328	13328	38.1
Bangalore Blue	Nandi cross	1.00	18000	Chikabalapur bus stand	0.38	36800	18800	104.4
Dilkhush	Local contractor delivery	8.00	15000	Bagepalli bus stand	3.00	37500	22500	150.0
Black	Local town	5.00	25000	Bagepalli bus stand	2.00	39640	14640	58.6
Dilkhush	Local villages	3.60	26000	Manchenalli	1.50	41264	15264	58.7
Thomson Seedless	Nandi cross	1.50	60000	Chkabalapur bus stand	1.50	98600	38600	64.3
Dilkhush	Local contractor	2.00	20000	Bagepalli bus stand	0.80	39775	19775	98.9
Thomson Seedless	Nandi cross	1.00	60000	Chikabalapur bus stand	1.00	98800	38800	64.7
Sharath	Nandi cross	1.00	40000	Chikabalapur bus stand	0.80	78500	38500	96.3
Bangalore Blue	Local contactor delivery	2.00	18000	Bagepalli bus stand	0.70	34775	16775	93.2
Dilkhush	Nandi cross	1.00	25000	Chkkabalapur bus stand	0.45	43800	18800	75.2
Dilkhush	Nandi cross	1.00	25000	Chikabalapur bus stand	1.00	98600	73600	294.4
Bangalore Blue	Nandi cross	1.00	20000	Chikaballapur bus stand	0.40	38800	18800	94.0
Bangalore Blue	Nandi cross	0.50	20000	Chikabalapur bus stand	0.23	42200	22200	111.0
Average		4.12	25179		2.06	54556	29378	130.0

Table 5.19: Details of grapes purchased by retailers selected from Bangalore rural district

Variety	Place from where supply is procured from	Quantity procured (tons)	Purchase price (Rs/ton)	Destination for sale	Turnover (Rs Lakh)	Sale price (Rs per ton)	Mark-up	Mark-up (%)
Dilkhush	Delivery from wholesalers	0.50	30000	Doddabalapur	0.30	20000	-10000	-33.3
Dilkhush	Surrounding villages	1.80	25000	Doddabalapur	1.44	80000	55000	220.0
Dilkhush	Delivery from wholesalers	1.50	26000	Doddabalapur	0.75	50000	24000	92.3
Dilkhush	Chikaballapur	2.50	28000	Vijayapura	1.32	52680	24680	88.1
Dilkhush	Surrounding villages	2.80	25000	Vijayapura	1.96	70000	45000	180.0
Dilkhush	Delivery from wholesalers	0.80	35000	Doddabalapur	0.48	58875	23875	68.2
Dilkhush	Delivery from wholesalers	0.30	30000	Doddabalapur	0.18	57000	27000	90.0
Dilkhush	Delivery from wholesalers	0.50	30000	Doddabalapur	0.32	61200	31200	104.0
Bangalore Blue	Delivery from wholesalers	0.60	30000	Doddabalapur	0.36	56667	26667	88.9
Black	Vijayapura	1.80	13000	Vijayapura	0.58	32222	19222	147.9
Bangalore Blue	Delivery from wholesalers	1.00	30000	Doddabalpur	0.50	49100	19100	63.7
Bangalore Blue	Delivery from wholesalers	0.20	25000	Doddabalpur	0.12	55500	30500	122.0
Dilkhush	Delivery from wholesalers	0.70	20000	Doddabalpur	0.30	41571	21571	107.9
Thomson Seedless	Delivery from wholesalers	0.30	80000	Doddabalapur	0.30	93333	13333	16.7
Dilkhush	Delivery from wholesalers	1.20	30000	Doddabalapur	0.60	49250	19250	64.2
Sharath	Delivery from wholesalers	0.50	60000	Doddabalapur	0.50	98200	38200	63.7
Dilkhush	Delivery from wholesalers	0.40	35000	Doddabalapur	0.28	65000	30000	85.7
Bangalore Blue	Delivery from wholesalers	1.50	28000	Doddabalapur	0.60	39400	11400	40.7
Thomson Seedless	Delivery from wholesalers	0.60	90000	Doddabalapur	0.72	118500	28500	31.7
Average		1.03	35263		0.61	60447	25184	86.4

Table 5.20: Details of grapes purchased by retailers selected from Bijapur district

Variety	Place from where supply is procured from	Quantity procured (tons)	Purchase price (Rs/ton)	Destination for sale	Turnover (Rs Lakh)	Sale price (Rs per ton)	Mark-up	Marke-up (%)
Thomson Seedless	Farmers	60.00	30000	Bagewadi bus stand	18.00	29997	-3	0.0
Thomson Seedless	Surrounding villages	24.00	30000	Bagewadi bus stand	9.60	39925	9925	33.1
Thomson Seedless	Surrounding villages	4.80	30000	Bagewadi bus stand	3.84	78350	48350	161.2
Thomson Seedless	Bijapur	5.00	28000	Bagewadi bus stand	2.00	39750	11750	42.0
Sonaka	Surrounding villages	20.00	35000	Bagewadi bus stand	9.00	43500	8500	24.3
Sonaka	Bijapur	8.00	35000	Bagewadi bus stand	4.00	46700	11700	33.4
Thomson Seedless	Surrounding villages	7.00	28000	Bagewadi bus stand	2.80	37000	9000	32.1
Thomson Seedless	Surrounding villages	2.00	25000	Retailers market	0.56	27450	2450	9.8
Thomson Seedless	Wholesalers	3.15	28000	Retailers market	1.12	31746	3746	13.4
Sonaka	Bijapur	3.60	25000	Bagewadi bus stand	2.52	68350	43350	173.4
Thomson Seedless	Surrounding villages	10.00	30000	Bagewadi bus stand	4.00	38500	8500	28.3
Thomson Seedless	Surrounding villages	5.00	30000	Bagewadi bus stand	2.00	36850	6850	22.8
Sonaka	Surrounding villages	3.00	30000	Bagewadi bus stand	1.35	42000	12000	40.0
Manik chaman	Surrounding villages	0.50	20000	Retailers market	0.38	72900	52900	264.5
Black	Surrounding villages	5.00	30000	Bagewadi bus stand	2.25	41850	11850	39.5
Black	Surrounding villages	2.00	35000	Bagewadi bus stand	1.00	47000	12000	34.3
Average		10.19	29312		4.03	45117	15804	59.5

Table 5.21: Seasonal price variation in retail trade of grapes

Name of the district	March-May		August-October	
	Qty Sold (qtls)	Sale Price (Rs/ctl)	Qty Sold (qtls)	Sale Price (Rs/ctl)
Chikabalapur	544	5644	585	8920
Bangalore rural	93	6417	69	5958
Bijapur	2400	4375		

Table 5.22: Summary of purchase and sale price and mark-up among the selected crops

Commodity	Purchase price (Rs/ton)	Net price received (Rs per ton)	Margin	Margin %
Farmers				
Red onion	-	26810	-	-
Rose onion	-	10800	-	-
Chincholi	-	24000	-	-
Wholesalers				
Bangalore blue grapes	-	18310	-	-
Black grapes	-	10230	-	-
Dilkhush grapes	-	21880	-	-
Thomson seedless grapes	-	70500	-	-
Sonaka grapes	-	87310	-	-
Sharath grapes	-	51330	-	-
Manik chaman grapes	-	21000	-	-
Wholesalers				
Red onion – Bangalore	44000	48555	4555	11.0
Kharif rose onion– Chikkabalapur	11778	16699	4921	41.8
Summer rose onion Chikkabalapur	11556	14608	3052	26.4
Kharif red onion Gadag	14444	16538	2094	15.4
Retailers				
Grapes – Chikkabalapur	24647	23669	2355	5.9
Grapes – Bangalore rural	19731	23068	3337	16.7
Grapes – Bijapur	30200	40791	10591	50.6
Retailers				
Kharif onion – Chitradurga	5980	17243	11263	354.0
Rabi onion – Chitradurga	11333	15800	4467	73.0
Summer onion – Chitradurga	14333	21133	6800	72.0
All variety onion – Gadag	8700	12692	3992	85.0
Retailers				
Grapes – Chikkabalapur	25179	54556	29378	130.0
Grapes – Bangalore rural	35263	60447	25184	86.4
Grapes – Bijapur	29312	45117	15804	59.5

Chapter 6

Problems faced by Farmers, Wholesalers and Retailers

6.1 Problems faced by Farmers in growing the Reference Crop

The previous chapters presented details of resource use, cultivation practices, cost of cultivation, profitability and marketing pattern of onion and grapes grown by our selected farmers. We also discussed the price obtained by farmers for different varieties of onion and grapes, their disposal pattern and purchase and sale price and mark-up percentage among wholesalers and retailers of onion and grapes. In this chapter we present the perceptions of farmers in growing the reference crop and the problems faced by farmers, wholesalers and retailers in dealing with the reference crops.

Looking at the reasons why farmers were growing the reference crops, namely onion and grapes, although both the crops were commercial crops and they were grown for profit purpose, but still above 27 percent of the selected onion farmers and 20 percent grape farmers indicated that they were growing this crop as it facilitated their personal consumption of the same commodity (Tables 6.1a and 6.1b). Around 70 percent of them indicated that they were growing the reference crop for profit purpose as well as the crop was suitable within their scheme of production, fits well with the crop rotation and climate wise was suitable for growing in that particular season. Only less than 5 percent farmers indicated that they were growing reference crop to take advantage of government subsidy that was available for the same especially in the case of grapes (e.g., subsidy given under National Horticulture Mission Scheme). Among different farm size categories, there was no significant difference in response of the farmers (Tables 6.1a and 6.1b).

Tables 6.2a and 6.2b present problems faced by farmers in growing the reference crop. The problem faced by farmers have been ranked 1 to 4 indicating rank 1 as highest severity of the problem and rank 4 as lowest severity. In the case of onion, the highest numbers of farmers gave rank 1 to the poor road network and transportation facility (85 percent), followed by collusion among traders and malpractices (52 percent), non availability of good quality seeds (39 percent), poor extension services, poor refrigeration and other infrastructure problems (30 to 40 percent each). Lower and fluctuating yield was given rank 2 by around 43 percent of the selected farmers while around 60 percent farmers gave rank 4 to the problem of distant

market, fluctuating prices and poor quality of water availability. Thus, poor infrastructure and marketing facilities along with poor quality seeds led to low returns to the farmers in the case of onion.

Table 6.1a: Reasons for Growing the Study Crop - Onion

Details	Marginal	Small	Medium	Large	Total
No of households					
Home Consumption	14	25	15	38	92
Profitability	11	26	16	43	96
Land suitability	15	38	23	31	107
Government subsidies	0	1	0	0	1
Fits well with crop rotation	6	17	8	14	45
Any other	0	0	0	0	0
Total	46	107	62	126	341
Percentage of total households in the respective category					
Home Consumption	30.4	23.4	24.2	30.2	27.0
Profitability	23.9	24.3	25.8	34.1	28.2
Land suitability	32.6	35.5	37.1	24.6	31.4
Government subsidies	0.0	0.9	0.0	0.0	0.3
Fits well with crop rotation	13.0	15.9	12.9	11.1	13.2
Any other	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0

Table 6.1b: Reasons for Growing the Study Crop - Grape

Details	Marginal	Small	Medium	Large	Total
No of households					
Home Consumption	22	26	9	10	67
Profitability	35	32	15	14	96
Land suitability	42	48	23	16	129
Government subsidies	11	8	6	6	31
Fits well with crop rotation	11	18	9	3	41
Any other	0	0	0	0	0
Total	121	132	62	49	364
Percentage of total households in the respective category					
Home Consumption	18.2	19.7	14.5	20.4	18.4
Profitability	28.9	24.2	24.2	28.6	26.4
Land suitability	34.7	36.4	37.1	32.7	35.4
Government subsidies	9.1	6.1	9.7	12.2	8.5
Fits well with crop rotation	9.1	13.6	14.5	6.1	11.3
Any other	0.0	0.0	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0

In the case of grapes also the highest numbers of farmers gave rank 1 to the poor road network and transportation facility (84 percent), followed by non availability of good quality seeds (78 percent), poor refrigeration and other infrastructure problems (51 percent) and lower yield and traders' collusion and trade malpractices (33 and 26 percent, respectively). Lower and fluctuating yield was given rank 2 by around 47 percent of the selected farmers

while around 78 percent farmers gave rank 4 to the problem of distant and absence of the market in both the commodities.

Table 6.2a: Problems Faced in Cultivating Onion by the farmers

Details	Rank1	Rank2	Rank3	Rank4	Total
No of farmers					
Lower Yield	38	65	39	8	150
Unstable yield	28	57	33	32	150
Lack of remunerative price	39	39	51	21	150
Poor road network for transportation	128	21	0	1	150
Poor refrigeration facilities	45	12	40	53	150
Other infrastructure problems	52	23	23	52	150
Erratic electricity supply	31	30	46	43	150
Labour problem (due to manual harvesting of basmati)	7	33	49	61	150
Poor quality of underground water	19	13	20	98	150
Non-availability of good quality of seed	59	49	26	16	150
Lack of/poor extension services /lack of technical knowhow	58	41	32	19	150
Price fluctuations	8	15	38	89	150
Lack of MSP/government procurement	49	27	23	51	150
Lack of market information	42	22	51	35	150
Collusion among traders/trade malpractices	78	33	21	18	150
Distant market	27	7	16	100	150
Percentage of farmers					
Lower Yield	25.3	43.3	26.0	5.3	100.0
Unstable yield	18.7	38.0	22.0	21.3	100.0
Lack of remunerative price	26.0	26.0	34.0	14.0	100.0
Poor road network for transportation	85.3	14.0	0.0	0.7	100.0
Poor refrigeration facilities	30.0	8.0	26.7	35.3	100.0
Other infrastructure problems	34.7	15.3	15.3	34.7	100.0
Erratic electricity supply	20.7	20.0	30.7	28.7	100.0
Labour problem (due to manual harvesting of basmati)	4.7	22.0	32.7	40.7	100.0
Poor quality of underground water	12.7	8.7	13.3	65.3	100.0
Non-availability of good quality of seed	39.3	32.7	17.3	10.7	100.0
Lack of/poor extension services /lack of technical knowhow	38.7	27.3	21.3	12.7	100.0
Price fluctuations	5.3	10.0	25.3	59.3	100.0
Lack of MSP/government procurement	32.7	18.0	15.3	34.0	100.0
Lack of market information	28.0	14.7	34.0	23.3	100.0
Collusion among traders/trade malpractices	52.0	22.0	14.0	12.0	100.0
Distant market	18.0	4.7	10.7	66.7	100.0
Total	28.9	22.1	23.0	26.0	100.0

Table 6.2b: Problems Faced in Cultivating Grapes by the farmers

Details	Rank1	Rank2	Rank3	Rank4	Total
No of farmers					
Lower Yield	50	71	26	5	152
Unstable yield	34	69	31	18	152
Lack of remunerative price	40	66	37	9	152
Poor road network for transportation	127	15	9	1	152
Poor refrigeration facilities	78	23	29	22	152
Other infrastructure problems	76	34	30	12	152
Erratic electricity supply	5	46	65	35	151
Labour problem (due to manual harvesting of basmati)	5	31	66	50	152
Poor quality of underground water	12	30	39	71	152
Non-availability of good quality of seed	119	25	8		152
Lack of/poor extension services /lack of technical knowhow	24	61	50	17	152
Price fluctuations	6	15	55	76	152
Lack of MSP/government procurement	51	33	27	41	152
Lack of market information	11	19	65	57	152
Collusion among traders/trade malpractices	39	34	53	26	152
Distant market	10	10	14	118	152
Percentage of farmers					
Lower Yield	32.9	46.7	17.1	3.3	100.0
Unstable yield	22.4	45.4	20.4	11.8	100.0
Lack of remunerative price	26.3	43.4	24.3	5.9	100.0
Poor road network for transportation	83.6	9.9	5.9	0.7	100.0
Poor refrigeration facilities	51.3	15.1	19.1	14.5	100.0
Other infrastructure problems	50.0	22.4	19.7	7.9	100.0
Erratic electricity supply	3.3	30.5	43.0	23.2	100.0
Labour problem (due to manual harvesting of basmati)	3.3	20.4	43.4	32.9	100.0
Poor quality of underground water	7.9	19.7	25.7	46.7	100.0
Non-availability of good quality of seed	78.3	16.4	5.3	0.0	100.0
Lack of/poor extension services /lack of technical knowhow	15.8	40.1	32.9	11.2	100.0
Price fluctuations	3.9	9.9	36.2	50.0	100.0
Lack of MSP/government procurement	33.6	21.7	17.8	27.0	100.0
Lack of market information	7.2	12.5	42.8	37.5	100.0
Collusion among traders/trade malpractices	25.7	22.4	34.9	17.1	100.0
Distant market	6.6	6.6	9.2	77.6	100.0
Total	28.3	23.9	24.8	23.0	100.0

6.2 Problems faced by Wholesalers

Turning to the problems faced by the wholesalers and retailers in the reference crops, Tables 6.3 and 6.4 present problems faced by wholesalers in dealing with the onion crop. As earlier we have ranked the problems faced by the wholesalers into four orders and rank one remains the most severe and rank four remains the least severe. As per the statistics presented in the table, it is seen that the major (rank one) problems faced by the wholesalers of onion were poor quality of supply obtained in the market leading to low price realized by the

wholesalers, poor road network, high market charges, low availability of post harvest facilities like refrigeration, erratic and fluctuating production and so on. Competition from imports and from other wholesalers was the other major problems ranked in the lower orders (Table 6.3). To our direct question of wholesalers' opinion about the wholesale business of onion they indulge in and problems faced by them the wholesalers pointed out that the lack of cold storage facility or godown facility was the major deficiency they face as the same could play a big role in stabilizing the price obtained by them. Lack of information on how to get into the export business was also the big hurdle for them. Lack of transportation facility, underdeveloped onion market and unnecessary intervention by the government from time to time were the other big problems they pointed out in their wholesale onion business.

Table 6.3: Main problems faced by wholesalers of onion

Nature of the problem	Rank 1	Rank 2	Rank 3	Rank 4	Total
No of wholesalers					
Lower supply	13	12	3	0	28
Poor quality supply	22	4	1	1	28
Lower price due to lower demand	17	4	6	1	28
Competition from other wholesalers	0	0	11	17	28
Competition from imports	3	10	7	8	28
Poor road network	17	1	2	8	28
Poor refrigeration facility	14	4	8	2	28
Other infrastructure problems	9	11	4	4	28
Erratic supply production	11	6	8	3	28
High marketing charges	13	14	1	0	28
Mixing of different varieties	28	0	0	0	28
Percentage of wholesalers					
Lower supply	46.4	42.9	10.7	0.0	100.0
Poor quality supply	78.6	14.3	3.6	3.6	100.0
Lower price due to lower demand	60.7	14.3	21.4	3.6	100.0
Competition from other wholesalers	0.0	0.0	39.3	60.7	100.0
Competition from imports	10.7	35.7	25.0	28.6	100.0
Poor road network	60.7	3.6	7.1	28.6	100.0
Poor refrigeration facility	50.0	14.3	28.6	7.1	100.0
Other infrastructure problems	32.1	39.3	14.3	14.3	100.0
Erratic supply production	39.3	21.4	28.6	10.7	100.0
High marketing charges	46.4	50.0	3.6	0.0	100.0
Mixing of different varieties	100.0	0.0	0.0	0.0	100.0

Table 6.4: Opinion of wholesalers of onion on problems faced

Details	Percentage of wholesalers
No knowledge or facility for exports	40
Market is not properly developed	30
Requirement of government permission	20
Cold storage facility or godown facility not available	70
Lack of transportation facility	20

Problems faced by the wholesalers of grapes are presented in Tables 6.5 and 6.6. Like in the case of onion, grapes farmers also ranked number one problem in the wholesale business of grapes, viz., poor road network; high marketing charges; low quality and fluctuating supply; and mixing up the different varieties by the wholesalers thereby creating distrust among the buyers and consequently bringing down the price for the wholesalers. To the question, what were the facilities wholesalers needed, a majority of them indicated that unlike the wholesalers of grains, the wholesalers of grapes did not have a license facility and providing license to them will provide them legal status for trading and would increase their profitability. In addition, wholesalers indicated that provision of institutional credit, transport facility and storage and warehousing facilities were the other requirements which could facilitate them in the grapes trading.

Table 6.5: Problems faced by wholesalers of grapes

Nature of problem	Rank 1	Rank 2	Rank 3	Rank 4	Total
Lower supply	11	7	3	0	21
Poor quality supply	10	8	2	1	21
Lower price due to lower demand	7	8	5	1	21
Competition from wholesalers	1	0	3	17	21
Competition from imports	5	2	5	9	21
Poor road network	18	1	0	2	21
Poor refrigeration facility	4	6	8	2	20
Other infrastructure problems	6	4	4	6	20
Erratic supply production	6	7	6	1	20
High marketing charges	13	6	1	0	20
Mixing of different varieties	10	6	1	2	19
Percentage of wholesalers					
Lower supply	52.4	33.3	14.3	0.0	100.0
Poor quality supply	47.6	38.1	9.5	4.8	100.0
Lower price due to lower demand	33.3	38.1	23.8	4.8	100.0
Competition from wholesalers	4.8	0.0	14.3	81.0	100.0
Competition from imports	23.8	9.5	23.8	42.9	100.0
Poor road network	85.7	4.8	0.0	9.5	100.0
Poor refrigeration facility	20.0	30.0	40.0	10.0	100.0
Other infrastructure problems	30.0	20.0	20.0	30.0	100.0
Erratic supply production	30.0	35.0	30.0	5.0	100.0
High marketing charges	65.0	30.0	5.0	0.0	100.0
Mixing of different varieties	52.6	31.6	5.3	10.5	100.0

Table 6.6: Opinion of wholesalers of grapes on problems faced

Details	Percentage of retailers
Require a licence facility for wholesalers	38.1
Require institutional credit	9.5
Lack of proper transport facility	9.5
Require storage and warehousing facility	4.8
Lack of processing industry for grapes	4.8
Low production of seedless crops	4.8
Garbage problem, no cleanliness and lack of administration	14.3

6.3 Problems faced by Retailers

Looking at the problems faced by the retailers of onions, it is seen from statistics in Table 6.7 that low and poor quality of supply, unnecessary government intervention, competition from large organised retail chains and non remunerative prices were the core problems faced by the retailers of onion. Like in the case of wholesalers of grapes, onion and grapes retailers also pointed out that they were not licensed and did not have a particular space or shop where they can carry out their business. In addition they were requiring godown facility, institutional credit and transportation facility. The other problems they pointed out were the lack of quality supply and the commission they were charged by the government was arbitrary and its volume was very high.

Table 6.7: Main problems faced by retailers of onion

Nature of the problem	Rank 1	Rank 2	Rank 3	Rank 4	Total
No of retailers					
Low supply	8	5	5	2	20
Poor Quality supply	7	10	2	1	20
Non remunerative prices due to lower demand	8	6	2	4	20
Competition from the other retailers	1	1	1	17	20
Competition from the other large organised retail chains	12	3	3	2	20
Competition from imports	9	2	4	5	20
Government intervention in prices	11	2	1	6	20
Poor infrastructure	6	8	3	3	20
Other problems	11	1	1	7	20
Percentage of retailers					
Low supply	40.0	25.0	25.0	10.0	100
Poor Quality supply	35.0	50.0	10.0	5.0	100
Non remunerative prices due to lower demand	40.0	30.0	10.0	20.0	100
Competition from the other retailers	5.0	5.0	5.0	85.0	100
Competition from the other large organised retail chains	60.0	15.0	15.0	10.0	100
Competition from imports	45.0	10.0	20.0	25.0	100
Government intervention in prices	55.0	10.0	5.0	30.0	100
Poor infrastructure	30.0	40.0	15.0	15.0	100
Other problems	55.0	5.0	5.0	35.0	100

Table 6.8: Opinion of retailers on onion on problems faced

Details	Percentage of retailers
Lack of quality supply	5.0
Lack of own shop	25.0
Lack of godown facility	15.0
Lack of institutional credit	30.0
Commission very high in the market	25.0
Lack of own vehicle	5.0

Similar to the onions, in the case of grapes also the retailers indicated that poor quality of supply of grapes was a big problem faced by the retailers. Competition from imports as well as organized retail chain also forced the retailers to sell at more reasonable price that reduced their profitability. Like onion, grapes retailers also pointed out that they were missing a sitting place or own shop for their trade, they required institutional loan, and they need transport facility which could facilitate them in expanding their trade and have a better profitability for their product (Table 6.9 and 6.10).

Table 6.9: Problems faced by retailers of grapes

Nature of problem	Rank 1	Rank 2	Rank 3	Rank 4	Total
Low supply	6	14	5	0	25
Poor Quality supply	13	11	1	0	25
Non remunerative prices due to lower demand	4	13	8	0	25
Competition from the other retailers	0	1	3	21	25
Competition from the other large organised retail chains	6	5	9	5	25
Competition from imports	11	4	5	5	25
Government intervention in prices	12	5	3	5	25
Poor infrastructure	6	1	11	7	25
Other problems	8	0	0	8	16
Percentage of retailers					
Low supply	24.0	56.0	20.0	0.0	100.0
Poor Quality supply	52.0	44.0	4.0	0.0	100.0
Non remunerative prices due to lower demand	16.0	52.0	32.0	0.0	100.0
Competition from the other retailers	0.0	4.0	12.0	84.0	100.0
Competition from the other large organised retail chains	24.0	20.0	36.0	20.0	100.0
Competition from imports	44.0	16.0	20.0	20.0	100.0
Government intervention in prices	48.0	20.0	12.0	20.0	100.0
Poor infrastructure	24.0	4.0	44.0	28.0	100.0
Other problems	50.0	0.0	0.0	50.0	100.0

Table 6.10: Opinion of retailers of grapes on problems faced

Details	Percentage of retailers
Require a place for retailers	59.3
Required loan facility	29.6
Require a vehicle facility	11.1
Low supply	3.7
Unnecessary government intervention	11.1

6.4 Summary of the Chapter

Looking at the reasons why farmers were growing the reference crops, namely onion and grapes, above 20 percent of the selected farmers indicated that they were growing the crop as it facilitated their personal consumption. Around 70 percent of them indicated that they were

growing this crop for profit purpose as well as the crop was suitable within their scheme of production, fits well with the crop rotation and climate wise was suitable for growing in that particular season. Only less than 5 percent farmers indicated that they were growing this crop to take advantage of government subsidy. The highest numbers of farmers gave rank 1 to the poor road network and transportation facility (85 percent), followed by non availability of good quality seeds (60 percent), poor refrigeration and other infrastructure problems and traders' collusion and trade malpractices (40 percent each). Lower and fluctuating yield was given rank 2 by around 40 percent of the selected farmers while around 80 percent farmers gave rank 4 to the problem of distant and absence of the market in both the commodities. Thus, poor infrastructure and marketing facilities along with poor quality seeds led to low returns to the farmers.

Turning to the problems faced by the wholesalers of the reference crops, The major (rank one) problems faced by the wholesalers were poor quality of supply obtained in the market leading to low price realized by the wholesalers, poor road network, high market charges, low availability of post harvest facilities like refrigeration, erratic and fluctuating production and so on. Competition from imports and from other wholesalers was the other major problems ranked in the lower orders by the wholesalers. Further, wholesalers pointed out that the lack of cold storage facility or godown facility was the major deficiency they face. Lack of information on how to get into the export business was also the big hurdle for them. Lack of transportation facility, underdeveloped market and unnecessary intervention by the government from time to time were the other big problems they pointed out in their wholesale business.

Looking at the problems faced by the retailers of onions and grapes, low and poor quality of supply, unnecessary government intervention, competition from large organised retail chains and non remunerative prices were the core problems faced by the retailers. Like in the case of wholesalers of grapes, onion and grapes retailers also pointed out that they were not licensed and did not have a particular space or shop where they can carry out their business. In addition they were requiring godown facility, institutional credit and transportation facility. The other problems they pointed out were the lack of quality supply and the commission they were charged by the government was arbitrary and its volume was very high.

Chapter 7

Summary and Conclusions

Movement of prices across producer and consumer centres provide useful information about the surplus and deficit prevailing in the market for a particular commodity. This study tries to establish association between the production and consumption or supply and demand for grapes and onion though looking into prevailing prices at the production centres, trading centres and consumption centres of these two commodities. The study mainly based on primary survey data looks into the price movements by tracking the price obtained by the farmers, price paid and received by the wholesalers, price paid and received by the retailer and also by the exporters if any for different varieties of onion and grapes. The study provides useful policy feedback on price convergence/divergence for these two specific commodities.

The study focuses on the following two main objectives

- 1). Studying the relationship between movements in market arrivals and market prices for two main commodities in Karnataka namely, onion and grapes.
- 2). Studying the divergence among farm harvest prices, wholesale prices, retail prices and export prices (subject to availability) and the relationship between these movements.

The methodology followed in the study is the following:

The study uses both the secondary and the primary survey data to study price variations across producers, wholesaler and retailers. The commodities selected are grapes and onion. For selecting the sample for the study for each selected crop, three major producing districts in the state were selected. From each selected districts a number of 50 farm households growing grapes and onion each were selected for the detailed household survey. Thus, 150 households each for grape and onion were selected from three districts in Karnataka each. In addition to 300 farmers, few wholesalers and retailers from the nearest town to the study region were also selected for the detailed survey.

7.1 Summary of findings

7.1.1 Demographic profile of selected households

Looking at the distribution of households across farm size, marginal farmers constituted around 1/4th of the selected households, followed by small farmers with a share of around 1/3rd farmers and medium farmers around 18 per cent share while large farmers constituted slightly above 23 per cent share. Among the selected households, adult members constituted around 3/4th share while children had 1/4th share in the family. Among our selected farmers, majority (above 50 per cent) of them were educated up to high school, higher secondary or graduate and above, 14 per cent were educated up to secondary level and 12 per cent had attended primary education. Around 17 per cent were illiterate. Generally the large and medium farmers were proportionately more educated compared to marginal and small farmers. Looking at the socio-economic characteristics of the selected farmers, majority of the selected farmers belonged to general categories. Around 98 per cent of the selected farmers had their main occupation in agriculture and only less than 2 per cent had their earnings from dairy, own business and some other minor occupations

7.1.2 Irrigation and Cropping Pattern

Among the selected farmers, average size of holdings was around 3.34 hectares (8.3 acres) per household. Out of total cultivated area only 47 per cent was irrigated and rest 53 per cent was rainfed. Almost entire irrigated area was irrigated by groundwater, i.e., tube well while surface irrigation was almost nil among the selected households. Per household irrigated area was only 1.6 hectares out of total operated area of 3.3 hectares. The lower size holdings had higher irrigation intensity and it declined with the increase in holdings size. Almost one fourth area by the selected households was devoted to the reference crop namely, either the grapes crop or onion crop. In addition to the reference crops households also were growing cereal crops like ragi, maize and jowar, pulse crops like bengal-gram and green gram, oilseeds like sunflower and groundnut, cash crops like cotton, vegetables including, tomato, potato, beetroot, cabbage and lemon and fruit crops like mango and so on. Across various farm size categories, small farmers had comparatively higher percentage of area under grapes as against the onion crop where large farmers had higher proportion compared smaller size farmers. The small farmers tried to overcome diseconomies of scale over their counterpart large farmers by growing multiple crops as their cropping intensity was more than double compared to large farmers.

Among the reference crops, there were three varieties grown by the selected farmers, namely red onion, rose onion and chincholi. Red onion occupied almost whole area under onion in the case of large farmers while it was only 50 per cent in the case of marginal and small farmers whereas for medium farmers it was 77 per cent. Small farmers had 50 per cent of the rose onion variety that was grown mainly for export purpose while it was 30 per cent for marginal farmers, above 20 per cent for medium farmers and less than 10 per cent for the large farmers.

In comparison to onion, selected farmers in the case of grapes were growing seven varieties of grapes, namely Bangalore Blue; Black; Dilkhush, Thomson; Sonaka; Sharath; and Manikchand. Some of these varieties like thomson were exportable varieties. The highest share in area among the selected farmers was the Bangalore blue (29 per cent), followed by Dilkhush (27.5 per cent), Thomson seedless (22.5 per cent) and the Black variety, Sanaka, Sharath and Manic Chand shared rest of less than 20 per cent area under grapes. The exportable variety namely thomson was grown in higher percentage by the large farmers compared to that of small farmers unlike the case of onions. On the overall, there was no significant difference among large and small farmers in terms of varietal differences in the grapes area among the selected farmers. On average, out of total cropped area the selected farmers occupied half of the area under onion and grapes as these two crops were the reference crops. Out of total area under onion crop among the selected households, kharif crop alone constituted around 87 per cent of the total area under onion crops. The summer season occupied 10 per cent of the total area under onion and rabi season occupied only 3 per cent of the total onion crop area among the selected households. Thus, onion crop was mainly grown in the kharif season by the selected households. In the case of grapes, out of total area by the selected households, around 35 per cent was harvested in kharif and around 65 per cent of the remaining area was harvested in the summer season.

7.1.3 Production of grapes and onion by different varieties

On average, red onion production was 68 quintals per household that was completely sold by the selected households, rose variety was 41 quintals out of which 38 quintals per household was sold and chincholi variety production was 28 quintals that was completely sold. The price of red onion was highest, Rs 2681 per quintal as compared to Rs 2400 in the case of Chincholi variety and Rs 1080 for rose variety. Among the six varieties of grapes, per household production varied from 142 quintals in the case of Sonakka to 79 quintals for

bangalore blue, 76 quintals sharath and manikchand each, 69 quintals thomson seedless, 46 quintals dilkhush and 38 quintals in the case of black variety. The price obtained by the selected farmers was highest for thomson seedless Rs 6464, followed by Rs 5767 for sonakka, Rs 5133 for sharath variety, Rs 2188 for dilkhush, Rs 2100 for Manikchand, Rs 1831 for bangalore blue and the price was lowest Rs 1363 for black variety.

7.1.4 Cost of production of onion and grapes

By and large there were economies of scale as far as cost of production is concerned in onion crops. Average cost per hectare of red onion was Rs 1.35 lakh for marginal farmers, 1.28 lakh for small farmers, around Rs 1 lakh for medium farmers and Rs 67 thousand in the case of large farmers thus establishing clearly inverse relation with farm size. In the total cost, contribution of labour cost owned and hired was around 47 per cent while marketing cost constituted around 10 per cent and the remaining 43 per cent was contributed by the material and machinery cost. The proportion of labour cost was higher among the small and marginal farmers while large farmers had higher share of machinery cost in the total cost of production.

In the case of rose variety onions, the average cost per hectare was Rs 1.38 lakh and it varied from Rs 1.35 lakh for marginal farmers to Rs 1.54 lakh for small farmers, Rs 1.5 lakh for medium farmers and Rs 1.16 lakh per hectare for large farmers. Thus, in the case of rose onion also the cost was found highest in the case of small farmers and lowest in the case of large farmers. The proportion of labour cost in the total cost of production in the case of rose onion was around 48 per cent for marginal farmers, 38 per cent in the case of small farmers and 33 per cent in the case of medium but slightly higher 40 per cent in the case of large farmers. The overall share of labour force in total cost of production for rose onion was accounted at 38 per cent. The share of marketing cost in the case of rose onion was much less only 3.5 per cent as mostly it was exposed off within the village by the selected farmers. The chincholi variety was produced only by one marginal farmer who cultivated around 2 hectares of area under this crop.

In the case of grapes, out of total cost, variable cost consisted 70 to 85 per cent and fixed cost (amortized into the life period of the plant) ranged between 15-30 per cent. On average, total cost per hectare varied between Rs 1.5 lakh to Rs 3.7 lakh for different varieties of grapes grown by our selected households. The cost per hectare was measured at Rs 2.23 lakh for Bangalore blue, Rs 1.55 lakh for black variety, Rs 2.27 lakh for dilkhush, Rs 2.66 lakh for

thomson seedless, Rs 3.68 for sonaka, Rs 2.47 for sharath variety and Rs 3.73 for the manikchand variety. Out of total cost, fixed cost including seed and planting material, field preparation and supporting material amortized over the life period of the plant was accounted for around 30 per cent in the case of Bangalore blue, 19 per cent for black variety, 24 per cent for dilkhush variety, 16 per cent for Thomson seedless, 20 per cent for sonaka, 16 per cent for sharath and 18 per cent for manikchand. Out of total cost of production and marketing, around 60 percent or more was accounted for by manure, fertilizer, pesticides and insecticides among all varieties of grapes grown by the selected households. Similarly, out of total cost, labour hired or owned constituted around 10 to 15 per cent share while machinery hired or owned constituted only less than 5 per cent share among all varieties of grapes grown. Marketing cost also was less than 5 per cent.

7.1.5 Net returns in the production of onion and grapes

The average revenue earned per household from red onion was Rs 4.52 lakh that varied from Rs 1.19 lakh for marginal farmers, Rs 2.6 lakh for small farmers, Rs 3.8 lakh for medium farmers and Rs 7.2 lakh for the large farmers. Per hectare revenue averaged around Rs 2 lakh and it ranged between Rs 1.98 lakh to Rs 2.36 lakh per hectare among different size of holdings. Per household net profits (over total cost) varied from Rs 39 thousand for marginal farmers to Rs 1.19 lakh for small farmers, Rs 1.92 lakh for medium farmers and Rs 4.89 lakh for the large farmers. Overall profit per hectare was measured at Rs 1.15 lakh and it varied from Rs 65 thousand for marginal farmers to Rs 1.39 lakh for the large farmers. It is, however, noted here that although cost includes depreciation, as well as imputed family labour cost but it does not include imputed value of owned land cultivated by the farmers.

Per household revenue for rose onion was recorded around Rs 1 lakh varying from Rs 46 thousand per household for marginal farmers, Rs 87 thousand for small farmers, Rs 1.1 lakh for medium farmers and Rs 3.3 lakh for the large farmers. Revenue per hectares also increased with the holdings size from Rs 92 thousand for marginal farmers to Rs 2 lakh for the large farmers and averaging at Rs 1.5 lakh per hectare. Given the lower per hectare revenue or value of productivity for the smaller categories and given their cost of production, except large farmers all other three categories of farmers borne losses in the cultivation of rose onions. The loss per hectare was Rs 43 thousand for the marginal farmers, Rs 16 thousand for the small farmers, Rs 10 thousand for the medium farmers while large farmers earned profits of Rs 88 thousand per hectare. Losses per household varied from Rs 22

thousand for marginal farmers to Rs 8 thousand for medium farmers while large farmers earned profit of Rs 1.4 lakh per household. For the chincholi variety revenue per household was Rs 1.7 lakh while profit per household realised by the one farmer who grew it was Rs 31 thousand. Per hectare revenue was recorded as Rs 69 thousand while profit per hectare for the chincholi variety was Rs 13 thousand. Thus, profit per hectare for different varieties of onion varied from Rs 1.15 lakh for red onion, Rs 13 thousand for chincholi to Rs 2 thousand for the rose variety.

The revenue per household from selling grapes varied from Rs 20 lakh for sonaka to Rs 11 lakh for thomson seedless, Rs 9.7 lakh for sharath, Rs 3.9 lakh for manikchand, Rs 3.6 lakh for Bangalore blue and less than Rs 3 lakh for the other two varieties namely dilkhush and black. Revenue earned per hectare is an indicator of value of farm productivity. The value of productivity was highest for sharath Rs 18 lakh per hectare followed by sonaka around Rs 14 lakh per hectare, thomson seedless Rs 8.4 lakh per hectare, manikchand Rs 3.8 lakh, Bangalore blue Rs 3.3 lakh, dilkhush Rs 2.7 lakh and black variety Rs 1.25 lakh per hectare. It is evident that commercial plantation crops like grapes generate much higher revenue compared to any food crop. However, the cost borne by the farmers in the case of plantation crops is also much higher compared to food crops. Given the nature of high revenue and high cost in grapes, it would be interesting to see the profitability aspects of growing grapes which is likely to lead the farmers either with high positive returns in terms of profits or negative returns in terms of losses.

Per household profits earned were highest for sonaka variety Rs 14.9 lakh during the reference year followed by thomson seedless Rs 5.75 lakh, sharath and bangalore blue both having per household profit of slightly above Rs 1 lakh while, black, dilkhush and manikchand varieties earned less than Rs 1 lakh per household. Glancing through per hectare profitability of grapes it is seen from the results that per hectare profit was once again highest for sonaka variety Rs 10 lakh followed by Thomson seedless Rs 7.5 lakh and sharath variety with Rs 2.5 lakh per hectare. Profit per hectare was Rs 1 lakh for Bangalore blue and Rs 60 thousand in the case of manikchand and less than Rs 50 thousand for balck and dilkhush varieties. Although, at the aggregate all varieties had positive profitability, but as one looks across various farm size holdings, in some cases we notice farming ending up with huge losses. These facts establish better profitability in grapes as compared to foodgrains and most

other commercial crops but at the same time it also points out the risky nature of cultivation of grapes crop somewhat the similar results found for the onion crop as well.

7.1.6 Marketing channels for grapes and onion by different varieties

In the case of red and chincholi onions, the entire surplus was sold by the selected framers through regulated markets in Karnataka. All the 99 selected farmers in the case of red onion and one selected farmer in the case of chincholi onion sold their product through regulated market irrespective of the farm size. Rose onions, on the other hand, were mainly produced for export purpose and this variety was not sold in the regular channel of regulated mandis. In the case of rose onion we had around 50 farmers producing this variety and all of them sold their product through commission agents who exported to Malaysia and other East Asian countries. However, the product was not exported by the farmers themselves.

Among all varieties of grapes there was predominantly only one channel, i.e., commission agents through which our selected farmers sold their grapes. Only in the case of thomson seedless and sonaka variety a handful numbers of farmers sold their grapes through regulated mandis. In all other cases product was sold only through commission agents. Thus, more or less all selected farmers followed an informal chain to dispose off their grapes crop.

For red onions, price per quintal varied from Rs 2342 for the marginal farmers to Rs 3009 for medium farmers and it averaged at Rs 2681. For rose onion, although they were produced for export purpose, price realized for the same was much lower compared to red onions. The price for rose onions averaged at Rs 1080 per quintal and it varied between Rs 982 for medium farmers to Rs 1180 for the large farmers. Chincholi onion was grown only by one farmer and the realized price was Rs 2400 per quintal. For the six varieties of grapes grown by the selected farmers, the price per quintal obtained averaged at Rs 1831 for Bangalore blue, Rs 1023 for black variety, Rs 2188 for dilkhush, Rs 7050 for thomson seedless, Rs 8731 for sonaka, Rs 5133 for sharath and Rs 2100 for manikchand. Comparing the commission agent and regulated market channels for thomson seedless variety, it was seen that regulated market offered much higher average price of Rs 8800 compared to price offered by commission agents Rs 5299 only. Similarly, in the sonaka variety, regulated market average price was Rs 12000 per quintal compared to Rs 5461 by the commission agents.

Comparing various farm size categories, the highest price for Bangalore blue was obtained by the marginal farmers Rs 2180 per quintal while lowest price was for the small farmers Rs 1493 per quintal. The comparison for black variety was more interesting where large farmers obtained only Rs 400 per quintal that was too low (possibly for some quality defects) while small farmers obtained Rs 2400 per quintal. In the case of dilkhush variety, highest price obtained by marginal farmers Rs 3244 and lowest price happened in the case of large farmers Rs 1500 per quintal. Thomson seedless presented the opposite case where large farmers obtained highest price of Rs 8271 per quintal and marginal farmers obtained lowest price of Rs 4788 per quintal. Similarly in the case of sonaka highest price was obtained by large farmers Rs 10625 per quintal and lowest price went to medium farmers Rs 2800 per quintal. Last and the least, price differences were not very large in sharath (Rs 5500 for large farmers and Rs 4900 for marginal farmers) and manikchand (Rs 2200 for small farmers and Rs 2000 for medium farmers). Thus across farm size there was no uniform pattern observed for both onion and grapes. In some varieties large farmers obtained highest whereas in other cases it was marginal or small farmers who obtained the best price.

Looking at the temporal behaviour of the farmers in marketing their produce after harvest, red onion variety was sold during the kharif harvest season of October, November and December. The average price was highest in October Rs 2954 per quintal, which declined during the peak season in November to Rs 2656 and in December Rs 2370 per quintal. Rose onion price increased from Rs 1049 per quintal in the month of April to Rs 1200 per quintal in the month of May and the kharif variety obtained the average price of Rs 1081 per quintal during the month of September. In the case of chincholi, the sale was done in the month of November only with an average price of Rs 2400 per quintal. Thus, in onion there was not any particular direction in the movement of prices in the post harvest period as price in two varieties moved in opposite directions while red onion price declined as harvest progressed and rose onion price increased.

Looking at temporal behaviour of prices realized by the selected farmers of grapes, in the case of Bangalore blue, farmers sold their product in the months of April, May and September through commission agents. Price variations were minimal in the month of April and September both averaging at Rs 1681 per quintal while price in the month of May was very high Rs 8000 in which case only small quantity was sold by the marginal farmers at that price. In the case of black variety, the whole quantity was sold in the month of September and

average price realized was Rs 1363 per quintal. Dilkhush variety was sold across four months two months in the summer season and two months in the winter seasons. Price was highest in the month of November Rs 8250 per quintal and lowest in the month of May Rs 1750 per quintal. The price varied from Rs 1750 per quintal in the month of May to Rs 1824 in the month of September. Among the other varieties, sonaka, sharath and manikchand were sold at one point of time after harvest to the commission agents while some amount was sold through regulated mandis in the case of sonaka. The price realized for sharath averaged at Rs 15400 per quintal, manikchand at Rs 2100 per quintal and Sonaka varied between Rs 5461 in the case of commission agents and Rs 12000 in the case of regulated mandis. The thomson seedless was sold in April and September with a price variation of Rs 5332 and Rs 5000 per quintal respectively from the commission agent while it was recorded as Rs 8800 for the small quantity sold through regulated market in the month of April.

7.1.7 Variability in wholesale and retail prices of grapes and onion

Wholesale prices of grapes varied from around Rs 2 thousand per quintal to around Rs 5 thousand per quintal in the duration period of around fourteen years from 2001 to 2014. Retail prices, on the other hand, varied from Rs 2.7 thousand per quintal to above Rs 7 thousand per quintal during the same time period. However, intra year fluctuations were higher compared to variation in the annual average prices. The deviations were higher among retail prices as compared to wholesale prices as highest standard deviation value for wholesale prices was 1925 whereas the same for retail prices was 3032. On average, the retailers' margin over the wholesale price varied between 15 to 80 percent while the average mark-up value for the period 2003 to 2014 was estimated at 45 percent. Further comparing intra year average mark-up, the highest mark-up was observed in the months of February and March above 50 per cent, followed by November, January and May, above 40 percent and the months of December and April, less than 40 percent.

Coefficients of variation between wholesale and retail prices were more equitable compared to their range of average prices and standard deviations. Mark-up values were much larger in the case of onion as compared to grapes. The average mark-up percentage in Bangalore was 41 percent, in Bijapur 82 percent and in Hubli it was 97 percent while overall average mark-up was 69 percent. As compared to this the average mark-up in grapes was 45 percent. The range of high mark-up in onion was also much higher as compared to grapes. The highest mark-up in Bangalore was 132 percent while in Bijapur it was 125 percent and in Hubli it

was above 250 percent. The phenomenon of extremely high prices of onion in retail markets and their increased volatility causing a huge hue and cry in the society during the recent past has become very common. Even in the month of August 2015 onion prices touched sky high rate of above Rs 60-70 per kg.

Among our selected wholesalers, mark-up percentage varied from 11 percent for red onion to 26 percent for summer rose onion, 42 percent for kharif rose onion and 15 per cent for kharif red onions. In the case of grapes the mark up percentage was measured as around 6 percent for grapes in Chikabalapur district, 17 percent in Bangalore and as high as 50 per cent in Bijapur district. In the case of retailers, the mark up percentage was much higher compared to wholesaler and among the two crops the mark up percentage for onion was much higher compared to grapes. The mark up percentage in onion was 354 per cent in Chitradurga and 85 percent in Gadag. In the case of grapes, the mark up was 130 per cent in Chikabalapur, 86 percent in Bangalore and 60 percent in Bijapur. Summarising the whole discussion, mark up was almost less than 50 percent among the wholesalers of both onion and grapes but it was mostly above 50 percent among the retailers and its highest range crossed 300 percent in onion indicating to some extent high volatility in onion prices. This high volatility benefited the retailers in terms of high margin but the advantage of same does not reach to the producers.

7.1.8 Stakeholders' Opinions

Looking at the reasons why farmers were growing the reference crops, namely onion and grapes, above 20 percent of the selected farmers indicated that they were growing the crop as it facilitated their personal consumption. Around 70 percent of them indicated that they were growing this crop for profit purpose as well as the crop was suitable within their scheme of production, fits well with the crop rotation and climate wise was suitable for growing in that particular season. Only less than 5 percent farmers indicated that they were growing this crop to take advantage of government subsidy.

The problem faced by farmers were ranked 1 to 4 indicating rank 1 as highest severity of the problem and rank 4 as lowest severity. The highest numbers of farmers gave rank 1 to the poor road network and transportation facility (85 percent), followed by non availability of good quality seeds (60 percent), poor refrigeration and other infrastructure problems and traders' collusion and trade malpractices (40 percent each). Lower and fluctuating yield was given rank 2 by around 40 percent of the selected farmers while around 80 percent farmers

gave rank 4 to the problem of distant and absence of the market in both the commodities. Thus, poor infrastructure and marketing facilities along with poor quality seeds led to low returns to the farmers.

Turning to the problems faced by the wholesalers and retailers in the reference crops, The major (rank one) problems faced by the wholesalers of onion were poor quality of supply obtained in the market leading to low price realized by the wholesalers, poor road network, high market charges, low availability of post harvest facilities like refrigeration, erratic and fluctuating production and so on. Competition from imports and from other wholesalers was the other major problems ranked in the lower orders by the wholesalers. Further, wholesalers pointed out that the lack of cold storage facility or godown facility was the major deficiency they face as the same could play a big role in stabilizing the price obtained by them. Lack of information on how to get into the export business was also the big hurdle for them. Lack of transportation facility, underdeveloped onion market and unnecessary intervention by the government from time to time were the other big problems they pointed out in their wholesale onion business.

Like in the case of onion, grapes farmers also ranked number one problem in the wholesale business of grapes, viz., poor road network; high marketing charges; low quality and fluctuating supply; and mixing up the different varieties by the wholesalers thereby creating distrust among the buyers and consequently bringing down the price for the wholesalers. Unlike the wholesalers of grains, the wholesalers of grapes did not have a license facility and providing license to them will provide them legal status for trading and would increase their profitability. In addition, wholesalers indicated that provision of institutional credit, transport facility and storage and warehousing facilities were the other requirements which could facilitate them in the grapes trading.

Looking at the problems faced by the retailers of onions, low and poor quality of supply, unnecessary government intervention, competition from large organised retail chains and non remunerative prices were the core problems faced by the retailers of onion. Like in the case of wholesalers of grapes, onion and grapes retailers also pointed out that they were not licensed and did not have a particular space or shop where they can carry out their business. In addition they were requiring godown facility, institutional credit and transportation facility. The other problems they pointed out were the lack of quality supply and the

commission they were charged by the government was arbitrary and its volume was very high. Similar to the onions, in the case of grapes also the retailers indicated that poor quality of supply of grapes was a big problem faced by the retailers. Like onion, grapes retailers also pointed out that they were missing a sitting place or own shop for their trade, they required institutional loan, and they need transport facility which could facilitate them in expanding their trade and have a better profitability.

7.2 Policy Suggestions

Karnataka is endowed with congenial agro-climatic conditions making it possible to grow different varieties of horticultural crops. However, there are several challenges that have to be addressed properly so as to strengthen the horticulture sector in general and the crops analyzed in this study in particular. In order to meet the challenges faced by the growers, major emphasis has to be on post harvest infrastructure and processing for better value addition to the horticultural products, transfer of technology by making the extension systems more accountable and better accessible and precision farming to venture into new opportunities and promotion of genetic modified organisms (GMOs) in horticultural crops. There were large numbers of farmers who expressed their dissatisfaction regarding marketing facilities. For marketing their grape produce farmers depended on merchants and intermediaries who were exploitative in nature. Suitable wholesale and terminal markets with in-built cold chain and where-house facility for the sale of horticultural crops need to be opened in big cities and towns in the horticulture production belt. There is also need for creation of chain of collection centres of farmers' produce in rural areas to feed the terminal/wholesale markets.

In the case of onions, a multi pronged strategy needs to be adopted to stabilize their prices as volatility in the same affects both producers as well as consumers. The speculative activities among the wholesalers and retailers aggravate the situation as in the present study we have seen that price wedge was much higher at the retail chain than the wholesale chain in the case of onion. It is therefore, important that retail chain is closely monitored to regulate storage and check unscrupulous trade practices at both wholesale and retail trade. To enhance production of onions, more incentive in terms of better price and better marketing infrastructure need to be provided to the farmers. Proper market intelligence system could also help in building up better information system that would facilitate timely policy decisions on exports and imports to even out the fluctuation in prices at the retail level. Better

storage facilities need to be developed at the field level. Promotion of processing as dehydrated onion or in the form of paste can help in increasing their shelf life and thus bringing down the volatility in onion prices.

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Annex Tables

Table 2.1A: Major districts and blocks/taluks growing grapes and onion in Karnataka

District	Block/Taluk
Grapes	
Bijapur	Indi, Sindgi, Basavna Bagevadi, Muddebihal, Tikota.
Belgaum	Athni, Arkali, Chikodi, Mukeri, Bailhongal, Ramdurg, Khauapur.
Bagalkot	Jamkhandi, Mudhol, Hungund, Badami.
Kolar	Bagepalli, Gauribidanur, Gudibanda, Chikaballapur, Mulbagal, Malur, Bangarapet
Bangalore	Anekal, Sonnenahalti, Kannur, Bagalur, Nagarur, Marangondahalli, Haralur, Mantapa, Solurur, Chandapur.
Onion	
Dharwad	Hubbali, Kundgol, Navalgund, Yadvad, Kalghatgi, Kargod, Kamdali
Bagalkot	Jamkhandi, Mudhol, Hungund, Badami.
Davengere	Harpana, Lalli, Harihar, Vasana, Honnali, Channagiri, Nyamati, Matti.

Table 3.1.1A: Production, consumption and other details: kharif onion, red variety

	Area (hectares per hh)	Production (qtls per hh)	Consumption (qtls per hh)	Retained / stocked (qtls per hh)	Wastage (qtls per hh)	Sold (qtls per hh)	Price (Rs/qtl)
Marginal	0.60	20.72	0.00	0.00	0.04	20.68	2342
Small	1.11	43.30	0.00	0.00	0.37	42.93	2448
Medium	1.93	51.62	0.00	0.00	1.01	50.61	3009
Large	3.52	100.54	0.00	0.00	0.97	99.57	2924
Total	2.30	68.32	0.00	0.00	0.72	67.60	2681

Table 3.1.2A: Production, consumption and other details: kharif onion, rose variety

Farm Size	Area (hectares per hh)	Production (qtls per hh)	Consumption (qtls per hh)	Retained / stocked (qtls per hh)	Wastage (qtls per hh)	Sold (qtls per hh)	Price (Rs/qtl)
Marginal	0.50	21.74	0.00	0.00	0.93	20.81	1020
Small	0.64	30.85	0.00	0.00	2.02	28.83	1115
Medium	0.56	16.40	0.00	0.00	1.32	15.08	1125
Large	1.48	91.77	0.00	0.00	6.07	85.70	1133
Total	0.69	33.33	0.00	0.00	2.14	31.19	1098

Table 3.1.3A: Production, consumption and other details: summer onion, rose variety

Farm Size	Area (hectares per hh)	Production (qtls per hh)	Consumption (qtls per hh)	Retained / stocked (qtls per hh)	Wastage (qtls per hh)	Sold (qtls per hh)	Price (Rs/qrtl)
Marginal	0.46	28.74	0.00	0.00	0.81	27.94	1180
Small	0.61	29.05	0.00	0.00	1.89	27.17	1258
Medium	0.81	44.82	0.00	0.00	2.66	42.16	906
Large	1.50	66.51	0.00	0.00	4.63	61.89	1700
Total	0.79	38.82	0.00	0.00	2.39	36.43	1261

Table 3.1.4A: Production, consumption and other details: rabi onion, rose variety

Farm Size	Area (hectares per hh)	Production (qtls per hh)	Consumption (qtls per hh)	Retained / stocked (qtls per hh)	Wastage (qtls per hh)	Sold (qtls per hh)	Price (Rs/qrtl)
Marginal	-	-	-	-	-	-	-
Small	0.81	36.44	0.00	0.00	2.43	34.01	1200
Medium	0.89	68.83	0.00	0.00	7.29	61.54	1020
Large	2.83	242.91	0.00	0.00	20.24	222.67	1500
Total	1.11	82.49	0.00	0.00	7.69	74.80	1240

Table 3.2.1A: Production, consumption and other details: kharif Bangalore blue

Farm Size	Area (hectares per hh)	Production (qtls per hh)	Consumption (qtls per hh)	Retained / stocked (qtls per hh)	Wastage (qtls per hh)	Sold (qtls per hh)	Price (Rs/qrtl)
Marginal	0.60	49.39	0.00	0.53	1.78	47.57	1500
Small	0.93	72.60	0.00	0.38	4.10	68.48	1500
Medium	1.82	123.48	0.00	0.00	7.59	115.89	1775
Large	1.70	113.36	0.00	0.73	4.05	108.74	1800
Total	1.05	77.76	0.00	0.43	3.82	73.83	1644

Table 3.2.2A: Production, consumption and other details: summer Bangalore blue

Farm Size	Area (hectares per hh)	Production (qtls per hh)	Consumption (qtls per hh)	Retained / stocked (qtls per hh)	Wastage (qtls per hh)	Sold (qtls per hh)	Price (Rs/qrtl)
Marginal	0.66	71.52	0.00	0.63	2.56	68.87	1733
Small	0.97	78.37	0.00	0.78	3.33	74.70	1493
Medium	1.82	153.85	0.00	0.00	8.10	145.75	1075
Large	1.92	131.58	0.00	0.61	6.98	124.49	1550
Total	1.11	92.99	0.00	0.61	4.19	88.60	1463

Table 3.2.3A: Production, consumption and other details: kharif black

Farm Size	Area (hectares per hh)	Production (qtls per hh)	Consumption (qtls per hh)	Retained / stocked (qtls per hh)	Wastage (qtls per hh)	Sold (qtls per hh)	Price (Rs/qtl)
Marginal	0.54	15.88	0.00	0.00	1.89	13.99	1322
Small	0.34	17.64	0.00	0.00	1.16	16.48	2400
Medium	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Large	1.21	40.49	0.00	0.00	2.02	38.46	400
Total	0.47	17.80	0.00	0.00	1.33	16.47	1374

Table 3.2.4A: Production, consumption and other details: summer black

Farm Size	Area (hectares per hh)	Production (qtls per hh)	Consumption (qtls per hh)	Retained / stocked (qtls per hh)	Wastage (qtls per hh)	Sold (qtls per hh)	Price (Rs/qtl)
Marginal	0.54	12.69	0.00	0.00	1.21	11.47	1467
Small	2.17	97.17	0.00	0.00	9.11	88.06	1533
Medium	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Large	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.77	25.71	0.00	0.00	2.43	23.28	1500

Table 3.2.5A: Production, consumption and other details: kharif dilkhush

Farm Size	Area (hectares per hh)	Production (qtls per hh)	Consumption (qtls per hh)	Retained / stocked (qtls per hh)	Wastage (qtls per hh)	Sold (qtls per hh)	Price (Rs/qtl)
Marginal	0.58	33.96	0.00	0.56	1.39	30.12	3300
Small	0.92	42.38	0.00	0.92	2.24	39.60	2247
Medium	1.35	70.63	0.00	0.76	2.61	69.28	1800
Large	1.62	58.70	0.00	0.20	1.42	67.41	1500
Total	0.93	46.03	0.00	0.69	1.91	44.11	2212

Table 3.2.6A: Production, consumption and other details: summer dilkhush

Farm Size	Area (hectares per hh)	Production (qtls per hh)	Consumption (qtls per hh)	Retained / stocked (qtls per hh)	Wastage (qtls per hh)	Sold (qtls per hh)	Price (Rs/qtl)
Marginal	0.61	64.52	0.00	0.86	3.16	76.16	2400
Small	0.86	95.28	0.00	2.00	5.56	87.56	2440
Medium	1.32	137.15	0.00	1.52	3.80	132.84	2575
Large	1.62	101.21	0.00	0.51	2.83	98.38	2300
Total	0.93	92.18	0.00	1.35	4.09	92.75	2429

Table 3.2.7A: Production, consumption and other details: summer thomson

Farm Size	Area (hectares per hh)	Production (qtls per hh)	Consumption (qtls per hh)	Retained / stocked (qtls per hh)	Wastage (qtls per hh)	Sold (qtls per hh)	Price (Rs/qtl)
Marginal	0.67	27.89	0.00	0.00	0.00	27.89	4922
Small	1.05	39.14	0.00	0.11	0.77	39.14	5947
Medium	1.50	100.53	0.00	0.81	0.81	98.91	5730
Large	1.91	69.82	0.00	0.00	2.25	67.57	10367
Total	1.24	55.92	0.00	0.22	0.91	55.15	6742

Table 3.2.8A: Production, consumption and other details: summer sonaka

Farm Size	Area (hectares per hh)	Production (qtls per hh)	Consumption (qtls per hh)	Retained / stocked (qtls per hh)	Wastage (qtls per hh)	Sold (qtls per hh)	Price (Rs/qtl)
Marginal	0.67	44.53	0.00	1.35	0.00	43.18	4333
Small	0.81	97.17	0.00	0.00	0.00	97.17	2600
Medium	1.21	24.29	0.00	0.00	0.00	24.29	2800
Large	2.29	278.81	0.00	0.00	0.00	278.81	10167
Total	1.37	136.44	0.00	0.51	0.00	135.93	4975

Table 3.2.9A: Production, consumption and other details: summer sharath

Farm Size	Area (hectares per hh)	Production (qtls per hh)	Consumption (qtls per hh)	Retained / stocked (qtls per hh)	Wastage (qtls per hh)	Sold (qtls per hh)	Price (Rs/qtl)
Marginal	0.40	87.04	0.00	1.01	1.42	85.63	4900
Small	0.67	74.22	0.00	0.00	3.37	70.85	5000
Medium	0.40	60.73	0.00	0.00	2.02	58.70	5500
Large	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.54	76.25	0.00	0.34	2.50	73.75	5133

ANNEXURE – NOTE
Comments by AERU, IEG, Delhi

This is a well-written report with a good overview chapter and insightful analysis in the subsequent chapters. Few comments/suggestions are given below, which should help in improving the report.

Chapter 3

In chapter 3 there are many interesting points in the tables that the author might like to analyze more.

- i) For instance, the average input costs of marginal farmers appear to be higher than those of the large farmers in quite a few cases – tables 3.2.1a, 3.2.2a, 3.2.2b, 3.2.2c. This could mean i) that the input intensity of these farms for these crops/varieties is more than the large farms ii) or that the prices paid for these inputs are higher iii) or both. Another possibility is that, since these are all simple averages, extreme values may be affecting the averages. The calculations may need to be checked too. The author may like to add a few lines on this.
- ii) In table 3.2.1a, costs of storage and transportation for large farmers are 0. Is it that the large farmers are selling all their produce at the farm level? May need checking and explanation.
- iii) Similar problem as above in 3.2.1b for all categories except medium farmers.
- iv) In tables 3.3.1a to 3.3.2g the production figures do not match with corresponding production figures in 3.1.1a to 3.1.2g, whereas the area figures match exactly. Also the cost figures in these tables do not match exactly (although they match upto few digits) with corresponding cost figures in tables 3.2.1a to 3.2.2g
- v) In tables 3.1.2d and 3.1.2e the price varies substantially among various categories of farmers. Of course, price depends upon several factors – time of sale, channel etc but at the same time it is important to check for extreme values, which may have been reported by one or two farmers. Such extreme value can pull up or push down the average price for the group. Extreme values can also occur due to mistakes at inputting stage. Therefore, the calculations may be checked once again for accuracy. If calculations are found correct, then an explanation, if possible, may be provided for such heterogeneity in prices

Chapter 4

- i) Table 4.2.1c: The 'Total' column shows 100% for small, medium and large farmers even though there are no sales in these categories. May be corrected. Similar corrections are needed in tables 4.2.2e to 4.2.2g
- ii) In tables 4.3.1a, 4.3.2a, 4.3.2b, 4.3.2c, 4.3.2e, 4.4.1a, 4.4.2b and 4.4.2c the price varies substantially among various categories of farmers for the same marketing channel, variety and month. An explanation in few lines, if possible, may be provided for this. The price variation could be because of the extreme values that may have been reported by one or two respondents. Therefore, extreme values may also be checked for accuracy.

Chapter 5

- i) Table 5.3: It is interesting to note, as pointed out by the author, that the % mark-up in case of onions is much higher than grapes and has increased after 2011. Is instability in production one of the factors for this? Can anything be said about this aspect?
- ii) In Table 5.7 there is a wide range in the margin earned by wholesalers, with a minimum of 8% to maximum of 73%, although the source & destination are the same. It will enrich the analysis if some explanation is provided
- iii) In Table 5.8, some wholesalers reported negative margins, even to the extent of -80%, while some have reported margins of +85%. The figures may need checking and if found correct, some explanation may need to be provided
- iv) In Table 5.12 there is a very wide range in the retailers' margin, with a minimum of 2% to maximum of 970%, although the source & destination are broadly the same. Any plausible explanations?
- v) In Table 5.13, again there is a wide range in the margin earned by wholesalers of grapes, with a minimum of -33% to maximum of 69%. Again the source and destination appear to be broadly the same. Similar is the case with Tables 5.15, 5.18, 5.19 and 5.20. May like to comment on these.

Other Comments

1. For the following tables figures need to be presented in actual numbers:
Page No. 14, Table 2.3a (Gender distribution of family members across farm size), Page No. 15, Table 2.4 (Education of the head of family across farm size), Page No. 15, Table 2.5 (Caste distribution of selected households across farm size)
2. The column for Variety no – 8 can be removed in Table no. 2.11b because all the figures in this column are zero.

3. One table may be presented for total of all variety for production, consumption and other details (in which price can be simple average of all varieties). For example - one combined table can be made for onion as sum of Table 3.1.1a, Table 3.1.1b and Table 3.1.1c. Similarly for Grapes.
4. Page no. 28, Table 3.2.1a onwards: (all other tables for Cost of Production Details), transportation and marketing costs are merging in one column. These costs may be presented separately. This is required to keep the uniformity in the combined final report. Also, kindly report the area and production figures as required in prescribed table format in place of productivity for similarity in reports. Also provide one table for all the varieties together (similar way, as mentioned in comment 3).
5. Page no. 36, Table no. 3.3.1a onwards: (all other tables for Profitability of farming) area under variety mentioned in Table 3.3.1a in page no. 36 is not matching with the variety-wise area as reported in Table 2.10a in page no. 18. Similarly, please check the area reported in Table 3.3.1b onwards for other varieties of onion and grapes and compare it with Table 2.10a for onion and Table 2.10b for grapes. Kindly check for other figures too which are calculated based on the area i.e. production etc. Also provide one table for all the varieties together (similar way, as mentioned in comment 4).
6. Page no. 48, Table 4.1.1a onwards: Kindly provide one table for all the varieties together for onion and grapes (similar way, as mentioned in comment 3), price as simple average of varieties, for major table headings:
 1. Marketing channels for study crops
 2. Percentage of Quantity Sold through Various Channels
 3. Price Received under Various Channels
 4. Month wise Quantity Sold in Different Channels
7. Page no. 86, Table 6.1 and Page no. 87, Table 6.2: The tables for 'Reasons for Growing the Study Crop' and 'Problems Faced in Cultivating' are combined for onion and grapes. These should be presented separately for each crop. Also for Table 6.2, the sum as well as % distribution is calculated rank-wise, it should be presented at the last rows, problem-wise. Same steps can be taken for Table no. 6.3, Table no. 6.5, Table no. 6.7 and Table no. 6.9.

Action Taken Report on the Comments

Chapter 3: There was reporting errors in production data that have now been corrected. Appropriate explanation provided in the analysis wherever required.

Chapter 4: Corrections are made in the tables and explanation provided where every necessary.

Chapter 5: Data in tables checked and necessary explanation provided.

Other Comments:

1. There is no need of providing actual numbers if required they can easily be worked out from the percentage figures as actual numbers are provided in the initial tables in the chapter. The changes made in Table 2.11b.
2. Total tables have been worked out and presented where ever possible.
3. Separate tables for reasons for growing the study crop and problems faced in cultivating reference crops have been worked out and presented in the chapter. Rank wise calculations do not make any sense and that is why it has been avoided in the analysis. Each problem has been ranked one to four and similar way percentages have been worked out. The Coordinator Centre can follow their own way of presentation as both percentage and actual data is given in the tables.