CHAPTER-II

REVIEW OF LITERATURE

A comprehensive review of literature is an essential part of any scientific investigation. In this chapter, an attempt has been made to review the related studies critically. The available research work has been presented under following heads.

2.1 Cost and returns
2.2 Profitability
2.3 Resource use efficiency
2.4 Marketing costs, marketing margins and price spread
2.5 Constraints

2.1 Cost and returns

Naik et al. (1997) conducted study to evaluate the economics of onion production in Bijapur district of Karnataka. Multi stage sampling design was employed and 80 sample farmers were selected comprising 33 small and 47 large farmers. The study revealed that the per hectare cost of cultivation was Rs. 13203.00 and Rs. 14396.00 on small and large farms, respectively. It was also found that the human labour, bullock labour, rental value of land, interest on working capital and FYM were the major contributors to the total cost of cultivation. The per hectare net income realized was Rs. 20968.00 and Rs. 23924.00 on small and large farm, respectively.

Mohapatra (2001) studied the production and marketing of onion in Bolangir district of Odisha. The result showed that the cost of cultivation of onion per hectare was Rs. 17949.00 while cost of production was Rs. 97.00 per quintal. They also observed that human labour (33.00%), manure and fertilizers (16.66%), seed (11.10%), plant protection chemicals (9.69%) and bullock labour (6.94%) were major components of cost of cultivation. Total fixed costs constituted 17.16 per cent of total cost of cultivation of onion crop.
Kamble et al. (2002) studied the cost and return structure of onion production in Bellary and Dharwad districts of Karnataka, based on data from 120 sample farms (38 small, 38 medium, and 44 large farms). They observed that mean per hectare total cost of cultivation in Dharwad district was Rs. 7338.55, 8723.78, and 7916.97 on small, medium and large farms, respectively. In Bellary district, mean per hectare total cost of cultivation was Rs. 9739.39, 11190.37 and 11874.39 on small, medium and large farms, respectively. Mean per hectare net returns in Dharwad district were Rs. 6602.45, 111426.97, and 7484.28 on small, medium and large farms, respectively. In Bellary district, mean per hectare net returns were Rs. 6350.13, 4553.60, and 6558.78 on small, medium and large farms, respectively.

Ahmad et al. (2008) conducted study on investigation cost and revenue of onion production at Jammu and Kashmir. It was observed that the cost of seedlings proved to be the highest operational cost i.e. Rs. 3200.00 per acre, followed by Rs. 2400.00 on farm yard manure (FYM) and Rs. 1600.00 on land preparation per acre. It is suggested that the growers do not follow the practices such as; seed rate, transplanting method, chemical fertilizer and timely irrigations. The major reasons of post-harvest losses were due to improper handling, immature crop harvesting and inappropriate storage.

Hile et al. (2008) examined the cost, economics and problems of rabi onion storage in Pune district of Maharashtra. It is revealed that the per quintal storage cost of rabi onions is Rs. 98.16. The share of fixed and variable costs in the total storage cost is 5.12 per cent and 94.88 per cent, respectively. Onion producers get more remunerative profit for stored onions than for non-stored ones.

Patel (2009) revealed that on an average, the cost of cultivation per hectare of onion crop found to be Rs. 17860.55 as Cost-A1 and it was 64.52 per cent of the total cost in Khargone district of Madhya Pradesh state. There is no Cost-A2 because farmers used their own land for the cultivation of onion. It is also revering that the average operational or variable cost that is Cost-B1, found to be Rs. 18032.98 per hectare which was 65.14 per cent of total cost. In case of Cost-B2, the average value was found to be Rs. 21532.98 per hectare and it was 77.78 per cent of total cost. It is noted from the study that Cost-C1, C2 and C3 found to be Rs. 21983.39, Rs. 25483.39 and Rs. 27681.73 per hectare in cultivation of onion, respectively. The Cost-C1 and C2 was 79.41 and 92.05 per cent of total cost (Cost-C3).
Sidhu et al. (2010) examined the supply analysis of onion in Raipura block of Patiala district in Punjab. The results revealed that the total cost of cultivation was estimated at Rs. 49563.00 per hectare. Within the variable cost of cultivation, the share of human labour was about 42.00 per cent, indicating the labour-intensive character of the vegetable crops. The share of fixed cost in total cost was 25.00 per cent. Gross return was Rs. 1.24 lakh per hectare for onion, while the return over variable cost was Rs. 87656.00 per hectare where the net returns amounted to be Rs. 74597.00 per hectare of onion crop.

Barakade et al. (2011) carried out study to determine the economics of onion cultivation, price spread, marketing channels and marketing efficiency of onion in Satara district of Maharashtra state. They observed that the total variable cost was Rs. 93500.19 (i.e. 91.09%) while fixed cost of production was Rs. 9136.85 (i.e. 8.90%) to total cost of production. Land preparation (3.09%), seeds (6.15%), nursery raising (1.13%), manures (7.30%), fertilizers (7.42%), pesticides (5.65%), irrigation (4.77%), transplanting (5.06%), weeding and hoeing (3.84%), harvesting and curing (6.67%), repair and maintained (1.71%), interest on variable cost (3.75%) and transportation and marketing cost (34.49%) were different components of the total cost of production of onion. Among the different items of cost, the rental value of land, bullock charges, machine charges, total hired human labour charges, seeds, manures, fertilizers, plant protection and irrigation cost were the major items of cost of cultivation in all small, medium and large size of farmers..

Goyal (2011) reported the cost of onion cultivation for different level of technology used and on the basis of different cost concepts in Sehore district of Madhya Pradesh. The data on cost of cultivation per hectare on sample holding revealed that the average Cost-A1 comes to Rs. 17341.52. This cost found to higher in the farm of high adoption level i.e. Rs. 18999.01 followed by Rs. 15684.04 on low adoption level of farm, respectively. The reason for higher cost in high technological adoption status of onion production was due to judicious and higher use of inputs and their respective cost evolved in production process.

Ardeshna et al. (2014) found that the cultivation of onion is concentrated in the Saurashtra region of Gujarat. The area, production and productivity of onion crop increased at the rate of 9.53, 8.74 and 0.52 per cent annum, respectively during the period from 2001-02 to 2011-12. The cost of onion used as a raw material in onion processing was found to be
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the major cost (67.61%) in total cost of processing which was to the tune of Rs. 11477.00 per tonne in the year 2012-13. The processors incurred the cost of Rs. 318.34 towards marketing of processed products obtained from processing of one tonne of onion. The net profit of Rs. 1931.64 per tonne of onion processing was realized by the processors. The processors got Rs. 1.15 per investment of one rupee while they recovered their total investment in 5.08 years. The processors preferred round shaped white onion having average diameter of 58.00 mm in order to obtain better quality of processed products.

Lokapur and Kulkarni (2014) analyzed cost and returns structure of major vegetables in the Belgaum district of Karnataka. The study revealed that the average per hectare utilization of human labour was the highest in case of potato farms (78.77 man days) followed by onion farmers (70.25 man days), tomato farmers (66.37 man days) and green chilli farmers’ (48.13 man days). The total cost incurred by farmers on potato cultivation was higher (Rs. 47299.86/ha) as compared to onion (Rs. 31240.2/ha), green chilli (Rs. 25797.37/ha) and tomato (Rs. 27532.42/ha). The high cost in potato was attributed to high seed rate.

Shukla et al. (2014) studied the trends in area, production and productivity of onion crop in different agro-economic regions of Uttar Pradesh for the period 1995-96 to 2009-10. It was divided into three periods viz., phases-I, II and III. The estimation of growth rate was done by compound growth rate method. It was observed that the overall growth rate in area and production of onion in the state was of decreasing trend, which was 2.48 and 0.99 per cent per annum, respectively. The overall growth rate in productivity of onion was observed in increasing trend, which was to the tune of 1.53 per cent per annum. The estimated projections showed that the area under onion would be around 17.49 thousand hectares, while production and productivity would be 332.08 thousand tonnes and 182.96 quintal per hectare, respectively, for the year 2020-21.

Thilagavathi et al. (2014) studied the economics analysis of production and marketing of onion in Perambalur district of Tamil Nadu. It was found that the cost of cultivation of small onion was Rs. 44346.18/ha. The gross income realized was Rs. 95583.10/ha and the net income was Rs. 51236.92/ha.
Khot *et al.* (2015) studied in Wardha district of Maharashtra for the year 2011-12 using standard cost concept for working out cost and returns of onion. It was found that the per hectare cost of cultivation of small farmers at Cost-C was Rs. 113900.72 while that of in case of medium farmers was Rs. 110066.23 and Rs. 121782.02 in case of large group of farmers. The per hectare cost of cultivation for overall level at Cost-A, Cost-B and Cost-C were Rs. 58468.46, Rs. 104584.95 and Rs. 114282.99 respectively.

Patel (2015) examined the economic analysis of production of onion in Middle Gujarat. Results of the study indicated that the average cost of cultivation (Cost-C2) of onion per hectare was Rs. 104783.80. It was the highest on large farms and the lowest on marginal farms by Rs. 106809.30 and Rs. 100369.20, respectively. On an average, Cost-A (paid out cost) formed 74.49 per cent while Cost-B accounted for 80.26 per cent of total cost. Out of total cost (Cost-C2), human labour cost ranked first with (34.54%) followed by planting material (15.49%), managerial cost (9.09%), interest on working capital (7.98%), irrigation charges (6.35%), rental value of own land (5.35%), fertilizer cost (4.93%), manures and cakes (4.77%), plant protection chemicals (3.67%), bullock labour (2.30%) and tractor charges (2.18%). Thus, these major items of expenditure contributed (96.65%) to total cost.

Meena *et al.* (2016) studied the cost and returns of onion in Rajasthan. The results revealed that on an average, Rs. 77850.00 spent per hectare of onion cultivation. Cost of cultivation of large farm category was highest, (Rs.91595.00), followed by medium farms (Rs. 83689.00) and small farms (Rs. 72258.00). Among the different components of cost of cultivation, human labour accounted for the largest portion (28.45%) followed by cost of seed (17.43%). The other major components were rental value of land (12.85%), irrigation charges (11.92%), FYM (9.52%), plant protection chemicals (5.87%), fertilizers (5.20%) and machinery (3.22%). The cultivation of onion requires more labour for harvesting and cutting, application of irrigation and transplanting/sowing and as such the share of human labour accounted for the highest share of Rs. 22456.00 per hectare (28.85%). Large farmers spent (Rs. 12835.00/ha) on manures and fertilizers, which was higher than that of medium (Rs. 12134.00/ha) and small farmer’s category (Rs. 10853.00/ha).
Anonymous (2017) reported that the average returns per hectare over total cost (Cost-C2) worked out for onion cultivation was Rs. 9192.00 in the year 2015-16 in Junagadh district of Gujarat. It is also reported that the cost of producing one quintal of onion was Rs. 581.00. The average farm harvest price received by the farmers of onion was Rs. 612.08 per quintal which was higher than the per quintal cost of production.

Laxmi et al. (2017) conducted study to examine economics of organic onion production in Nalanda district of Bihar. They found that the total cost of cultivation of organic and conventional onion per hectare worked out to be Rs. 86868.00 and Rs. 83516.00, respectively. The net income per hectare was Rs. 175392.00 and Rs. 156484.00, respectively. It was found that organic farmers earned 9.20 per cent more gross income compared to the conventional farmers of onion. Organic farming is generally more profitable in terms of gross returns than conventional farming, irrespective of the more cost of cultivation of crop. Area under organic onion production is growing at the rate of 10 per cent on year to year basis and at a compound growth rate of 10.00 per cent. Findings revealed that organic onion production has potential to increase income by 9.00 per cent and employment by 18.00 per cent.

2.2 Profitability

Dixit and Singh (2003) conducted study on the effects of improved farming techniques and farmers' practice on the yield and profitability of tomato and onion in Madhya Pradesh, during the rabi season from 1998-99 to 2000-01. The results revealed that the adoption of improved farming practices recorded average yields of 256.00 quintal per hectare for tomato and 200 quintal per hectare for onion, which were higher by 43.50 and 39.50 per cent than the yields recorded for farmers' practice. The average net returns obtained with the adoption of improved farming practices were 12868.70 and 27424.30 rupees per hectare for tomato and onion, respectively. The average incremental cost benefit ratios recorded for tomato (2.73) and onion (3.08) indicated the profitability of using improved farming technologies.

Rajput et al. (2003) investigated relative profitability of different potato cultivation (Kufri Lavkar, Kufri Jyoti and Kufri Sindhuri) in Indore district of Madhya Pradesh. Among the cultivars, the overall returns of Rs. 26574.00 and net return of Rs. 6788.00 were highest
in Kufri Jyoti, while the lowest gross return of Rs. 23781.00 and net returns of Rs. 6165.00 were observed in Kufri Lavkar. The area of Kufri Jyoti was observed to be 71.60 per cent on small farms, 66.60 per cent on medium-sized farms and 76.50 per cent on large farms. The cost of cultivation of Kufri Jyoti was the highest (Rs. 19966.00) in all size groups among all cultivars. The cost of production per quintal estimated to be the lowest in Kufri Sindhuri (Rs. 140.00 per quintal) among the three-size group. Overall, the cost of potato production was the lowest (Rs. 140.00 per quintal) on small farms and the highest (Rs. 160.00 per quintal) on large farms. Kufri jyoti recorded the highest overall gross returns per hectare (Rs. 19966.00), followed by Kufri Lavkar (Rs. 17616.00), Kufri sindhuri recorded the highest overall net returns per hectare.

Durgawati et al. (2005) conducted a study on economic analysis of onion and potato in the Malwa Region of Madhya Pradesh. It was revealed that the gross income obtained from onion was highest in small size group of farmers (Rs. 55290.00/ha) followed by Rs. 51870.00 per hectare in medium size group of farmers and Rs. 50472.00 per hectare in large size group of farmers. The average productivity and gross return of onion recorded in the study area was 87.57 quintal/ha and Rs. 52554.00, respectively. In potato the gross income was Rs. 56100.00 (highest) in small size group of farmers followed by Rs. 54200.00 in medium size group of farmers and Rs.53880 in large size group of farmers. The average productivity and gross return potato recorded in the study area was 120.00 quintal/ha and Rs. 55319.00, respectively.

Mondloi (2006) reported that the cultivation of chilli shows variation in productivity with reference to size group at Dhar district of Madhya Pradesh state. The yield per hectare was higher in case of medium farms. This variation in productivity ultimately influences the level of profit. It directly shows cultivation of chilli becoming relatively more remunerative and it has to be accounted for its higher rental value of land. The higher imputed value of family labour on small farms reflects farm profitability. It also shows that there is more opportunity of employment for family labour on small farms group growing chilli. In case of small farms, higher interest on capital assets reflects higher fixed assets per hectare of land as compared to less fixed assets per hectare of land on medium and large farms. The function fitted reveals nearly 93.60 per cent ($R^2 = 0.93$) of the variation in the dependent variable (i.e.
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gross income from chilli) thereby indicating that variables left out from analysis do not play an important role in explaining the variation in gross income from chilli while the analysis of variance showed that the sensitivity of the regression has been significant to the extent of 90.00 per cent profitability or highly significant (F = 4.85).

Barakade (2011) examined the economics of rabi onion marketing in Satara district of Western Maharashtra. It was found that the average net returns obtained by onion growers amounted to Rs. 49800.41 per hectare with gross returns of Rs. 152437.45 per hectare. The average yield per hectare of onion was 258.50 quintal. He also observed that the cost of production of rabi onion per quintal was Rs. 397.04 while net profit per quintal of onion production was Rs.192.66. The Cost Benefit Ratio comes to about 1:1.48. It is definitely an encouraging return to the farmers only in four to five months.

Lokapur and Kulkarni (2014) reported that cultivation of vegetables was found to be profitable as indicated by net returns and high B:C ratios in the Belgaum district of Karnataka. The gross returns per quintal was found to be highest in green chilli (Rs. 1860.27) due to better price followed by onion (Rs. 1349.94), potato (Rs. 1257.94) and tomato (Rs. 1200.03). However, a net return per quintal was found to be more in case of onion (Rs. 1011.26) followed by green chilli (Rs. 991.67) and potato (Rs. 801.69). The average yield was more in case of potato (103.67 quintal/ha) followed by onion (92.24 quintal/ha). The B:C ratio per rupee invested in vegetable production was highest in case of onion (3.99) and this was followed by potato crop (2.76), tomato (2.36) and green chilli (2.14).

Madariya (2015) reported that the net income is real profit for which farmers are interested to realize as high as possible at Dhar district of Madhya Pradesh state. The study revealed that the highest net income Rs. 9288 per hectare was realized by chilli growers when they adopted “high level” of chilli production technology. On the other hand, with the “moderate” and “least adoption” of technology, chilli growers realized, respectively Rs. 8470.00 and Rs. 6839.00 per hectare as net profit from chilli cultivation. Study also reported that the benefit of 1.23 over per rupee investment found on “high level of adoption” farms followed by benefits realized in case of “moderate” and “least adoption” of technological status farms.
Patel (2015) studied the economic analysis of production of onion in Middle Gujarat. The results revealed that the average yield of onion per hectare was 281.27 quintal on sample farms which realized Rs. 327721.24, Rs. 249671.45, Rs. 243622.56 and Rs. 228986.36 as gross income, farm business income, family labour income and farm investment income, respectively. The net profit per hectare over Cost-C2 was Rs. 222937.50. It varied from Rs. 172014.50 on marginal farms to Rs. 253769.23 on large farms. The overall input-output ratio on Cost-C2 was about 1:3.12 which was the highest on large farms 1:3.37 and the lowest on marginal farms 1:2.71. Looking to the cost, return and input-output ratio, it is concluded that onion cultivation was profitable vegetable crop in Middle Gujarat condition.

Anonymous (2017c) reported that the input-output ratio worked out for onion crop was 1.00:1.05. It showed that, on average, one rupee invested in onion cultivation yield Rs.1.05. Thus, it can be concluded that the cultivation of onion crop for the year 2015-16 was found slightly remunerative to their growers in Gujarat.

2.3 Resource use efficiency

Naik et al. (1998) analyzed the resource use efficiency and productivity of various factors involved in onion production using Cobb-Douglas production function in Bijapur district of Karnataka. They observed that regression coefficients for land and farm yard manure were positive and highly significant.

Kumar and Arora (1999) examined the resource use efficiency of chilly in their study on economic issues in vegetable production in Uttar Pradesh. The coefficient of multiple determinations ($R^2$) was 0.32 indicating that about 32.00 per cent of variation in chili production was explained by the variables included in the model. The regression co-efficient of human labour and expenditure on chemical fertilizers turned out to be positive with statistically significant impact on the yield of chilli.

Singh et al. (2000) worked out resource use efficiency of brinjal in Madhya Pradesh. The study revealed that all the variables included in Cobb-Douglas function viz., rental value of own land, human labour, irrigation, manures & fertilizers and plant protection had a significant influence on increasing the gross value of produce. The value of regression
co-efficient ranged from 0.11 (manures & fertilizers) to 0.68 (human labour). In case of potato the coefficient for irrigation was negative 0.98 indicating there by excessive use of irrigation water by the farmers. Human labour (0.87), plant protection (0.53) and manures & fertilizers (0.29) were other variables, which exhibited positive and significant influence on gross value of the produce. The value of co-efficient of multiple determinations (R^2) was 0.88. This indicated that 88 per cent of variation in gross value of produce in cases of brinjal and potato was explained by the variables included in the function.

Suryawanshi (2000) studied the resource use efficiency in the production of onion in Western Maharashtra. He observed that, the per hectare human labour use was more in kharif onion (325.48 man days) than that in rabi onion (270.34 man days). In case of rabi onion per hectare human labour use was highest in small size group (292.33 man days) followed by large sized group (266.00 man days) and medium sized group (254.76 manndays). The per hectare use of bullock labour was more for kharif onion (16.12 pair days) than that for rabi onion (9.18 pair days). In rabi onion, the bullock labour was the highest in small sized group followed by large and medium sized groups. The per hectare use of seed, nitrogen and phosphorus at the overall level was 7.61, 64.60 and 42.99 kg, respectively. Human labour, nitrogen, phosphorus and potash were positive and significant at 1 per cent level. It has indicated that these were the important variables for which output was responsible.

Wadhwani and Bhogal (2001) in Western region of Uttar Pradesh measured resource use efficiency in production of potato using Cobb-Douglas production function taking per hectare yield as dependent variable. It was found that the co-efficient of multiple determinations (R^2) was 0.63 indicating that about 63.00 per cent of variation in potato production was explained by the variable included in the model. The cost of farm yard manure, expenditure on chemical fertilizer, plant protection and irrigation had a positive and significant influence on increasing the yield per hectare. The value of regression co-efficient ranged from (-1.12) for land to (0.29) for irrigation.

Dileep et al. (2002) examined resource use efficiency of contract farms and non-contract farms of tomato in Haryana state, India. Data were collected from total sample of 100 farmers of different size groups of Ellenabad block of Sira district during 1999-2000. They fitted Cobb-Douglas production function model and obtained allocative efficiency
based on marginal value productivity. The results showed that there existed a scope to increase the production of tomato by increasing the use of critical inputs particularly fertilizer, irrigation and plant protection chemicals in the case of noncontract farms whereas the contract farmers made excessive use of plant protection chemicals.

Thilagavathi et al. (2002) studied resource use efficiency of rainfed chillies (Capsicum annum), as well as the cost, returns and constraints faced by farms cultivating chilli in Vilathikulam taluka of Tamil Nadu. The results revealed that the bullock and machine labour had non–significant effects in the output levels of rainfed chillies, whereas human labour, seeds used and the application of manures, fertilizers and crop protection chemicals were highly significant. Statistical analysis showed that one unit increase in human labour will increase the output of chilli by 2.30 kg/acre. Similarly, one unit increase in fertilizers and plant protection chemicals increased the output of chillies by 2.90 kg/acre. The net return of chilli farms from one acre of land was Rs. 6670.00.

Verma (2003) in Shajapur district of Madhya Pradesh measured resource use efficiency in production and marketing of potato using Cob-Douglas production function taking gross return of potato in rupees as dependent variable. It was found that the co-efficient of multiple determinations ($R^2$) was 0.97 indicating that 97.24 per cent of the variation in gross returns was explained by the variable include in the function. The elasticities of production with respect to human labour (0.12%), bullock labour (0.21%), seed (0.40%), machine power (0.12%), irrigation (0.01%), land (0.33%) were found significant at 1 per cent level, with positive effect on increasing the gross return of potato. The regression co-efficient of manures and fertilizers and plant protection were (-0.07) and (-0.16), respectively.

Verma et al. (2004) studied on economic analysis of production, resource use efficiency and constraints of onion in Indore district of Madhya Pradesh. Sample of eight villages and 80 farmers as sample size were selected for study. Data pertained to year 2000-2001. From study observed that all farms were utilizing manures and fertilizers human labour, irrigation, machine power and seed underutilized. Variables like bullock labour, plant protection chemicals excessively used on the farms. The negative marginal value product of bullock labour and plant protection chemical which were available in abundance on all farms
was used excessively and inefficiently. There is scope to increase their use up to the optimum level where efficiency of input use is maximum. The coefficient of multiple determinations was high on small farms 0.9906, on medium farms 0.9900 and quite low on large farms 0.9495 and on all farms 0.9756 respectively, indicating the goodness of fit. Hence there is a lot of scope for increasing the use of these inputs up to the optimal level in order to achieve their efficient use.

Ghulghule et al. (2008) Study was carried out in Ahmednagar district of Maharashtra state with an aim to find out resource use efficiency of kharif and rabi onion production. Analysis of Cobb-Douglas production function for kharif onion reflected that sum of regression coefficient found to be 1.04, indicating constant returns to scale. Male labour, female labour, manures and nitrogen were found significant indicating that there is scope to increase the use of these resources. For rabi onion, regression coefficient was found to be 0.97, indicating constant return to scale. Area, manures, seed and nitrogen were found highly significant indicating that there is scope to increase the use of these inputs in rabi onion production.

Rathod (2008) studied an economic analysis of production and marketing of chilli in Anand district of Middle Gujarat. The result of the coefficient of multiple determinations ($R^2$) indicates that among all of seven variables (seedling, bullock labour charges, human labour, cost of fertilizers, manures, insecticide and irrigation) have explained 93 per cent variation in total output of chilli. The regression coefficient of seedlings, irrigation, human labour and fertilizers turned out to be positive and statistically significant implying positive and significant impact on yield of chilli. The inputs such as manures, insecticides and bullock labour were found to be negatively non-significant which shows that they did not contributed any increase in the output level.

Khatri et al. (2011) examined the resource use efficiency of important vegetables in Chorayasi taluka of South Gujarat. They found that nitrogen, potassium fertilizers and other working capital were the important resource variables positively influencing the crop output. The comparison of marginal value products of resources inputs with their per unit prices indicated optimum use of resource variables such as nitrogen, potassium and other working
capital in the production of brinjal crop, while cropped area, bullock labour, nitrogen and potassium in the case of cauliflower crop.

Sameer *et al.* (2014) analyzed the resource use efficiency of major vegetables in the Belgaum district which has high concentration of area under vegetables. The multi-stage random sampling procedure was adopted to choose 120 sample farmers. The results of the Cobb-Douglas production revealed that the regression coefficient for seeds was found to be significant in case of all the vegetable farmers and the co-efficient of multiple determination was \( R^2 \) 74 per cent, 86 per cent, 97 per cent and 96 per cent in case of onion, potato, green chilli and potato respectively. In case of onion farmers the MVP and MFC ratio was found greater than unity. In case of potato farmers also the ratio was found greater than unity except in case of PPC. In case of green chilli farmers, the ratio for the bullock labour was found negative and in case of tomato farmers the ratio was more than 1 except for the human labour and fertilizers.

Haque *et al.* (2015) estimated values of co-efficient and related statistics of Cobb-Douglas production function of onion cultivation in some selected areas of Bangladesh. It was found from the model that the co-efficient of human labour, seedling, Transplanting and insecticides were positive and significant, which indicated that 1 per cent increases in the use of human labour, seedling, Transplanting and insecticides, keeping other factors constant would increase the yield by 0.01 per cent, 0.01 per cent, 0.005 per cent, and 0.002 per cent, respectively. The value of the coefficient of determination \( R^2 \) was 0.79, which indicated that around 79 per cent of the variation in yield was explained by the independent variables included in the model. The F-value was found 34.08 which were significant at 1% level implying that the variation of yield mainly depends on the explanatory variables included in the model.

Karthick *et al.* (2015) investigated the determinants of the resource use efficiency and technical efficiency of onion production in Perambalur district of Tamil Nadu. The empirical results show that, bulbs, plant protection chemicals and human labour, machine hours, and phosphorous have a positive and significant influence on onion yield. Economic efficiencies are more than one for bulb, nitrogen, phosphorous, potash, plant protection chemicals,
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machine hours, land size values, farmyard manure and human labour in onion production which meant that these resources are being used at sub optimum level and there exists the possibility of increasing the yield of onion by increasing their use. The technical efficiency for the farms was estimated to be 78 per cent, which indicates the possibility of increasing the yield of onion by adopting better technology. This study suggested that development of awareness of modern agricultural practices through demonstration, farm visits, framers meetings etc., by the government as well as removal all inputs distributional bottlenecks would ensure increased onion production in the study area.

Patel (2015) conducted study on economic analysis of production and marketing of onion in Middle Gujarat. He studied the efficiency of resources used by onion growers by using Cobb Douglas production function was employed and taking gross income as a dependent variable. This analysis indicated that only cost of human labour, planting material and plant protection chemicals was found highly positive and significant influence on the gross income. The value of co-efficient of multiple determinations (R$^2$) was 0.93 which showed that 93.00 per cent variation in the gross income was accounted by the independent variables included in the function. The sum of regression co-efficient (1.15) indicated increasing return to scale. Therefore, more rational use of the inputs leading to get higher returns.

Ajay et al. (2017) carried out to study the economics of resources use efficiency in production of onion crop in Ambala district of Haryana. Linear and Cobb-Douglas production functions were used for the purpose of finding out elasticites of different inputs used on the farms. Cobb-Douglas function was found to be the best fit because of high R$^2$ value. The value of R$^2$ (coefficient of multiple determination) showed that 94 per cent of the variation in the yield of onion was explained by variables included in the model. However, only nitrogen variable was found significantly positive, whereas weedings is negatively significant. They found that the additional rupee invested in nitrogen brings additional rupee of Rs. 596.25.
2.4 Marketing costs, marketing margins and price spread

Naik et al. (1995) studied the marketing of onion in Bijapur district in Karnataka. The result showed that total cost in marketing of onion per quintal incurred by village merchant was Rs. 34.90. Of the total marketing cost, transportation cost (64.76%) incurred was the highest followed by package cost (21.78%) and wastage cost (10.31%). The total marketing margins in channel-I (Producers- consumers) were Rs. 133.12 and Rs. 123.73 in small and large farmers, respectively. In channel-II (Producer- Retailer- Consumer), the total marketing margins were Rs. 100.68 and Rs. 101.93 in small and large farmers, respectively.

Shyamasundar and Achoth (1996) studied the price spread in marketing of irrigated onion in Chickballapur taluka of Kolar district. The result showed that the producer, who sold their onion in channel-I, could realise 64.62 per cent of the consumer rupee, with a net price of Rs. 157.27 per quintal. The marketing cost incurred by producers accounted for 4.20 per cent of the consumer’s rupee. The costs incurred by village level traders, whole-sellers and retailers accounted for 3.57 per cent, 1.39 per cent and 3.03 per cent of the sale price, respectively. In channel-II, the price spread analysis indicated that producers received 72.45 per cent of the consumer’s rupee with a producer’s net price of Rs. 176.32 per quintal. Marketing cost incurred by producers accounted 4.80 per cent of the consumer’s rupee. The cost incurred wholesalers and retailers accounted for 1.39 per cent and 3.03 per cent of the sale price, respectively. In channel-III, the producer’s share in the consumer’s rupee 63.53 per cent was relatively low as compared to channel-I and channel-III with a net price of Rs. 163.57 per quintal. The cost incurred by producers, commission agents and trader- cum – retailers accounted for 4.56 per cent, 0.74 per cent and 9.47 per cent of the consumer’s rupee, respectively. In channel-IV, producers could realise only 60.94 per cent of the consumer’s rupee with a net price of Rs. 162.57 per quintal. The cost incurred by producers, commission agents and cart vendors accounted for 4.38 per cent, 0.71 per cent and 11.77 per cent of the consumer’s rupee, respectively. Thus, the result of price spread analysis indicated that producers got the highest net price per quintal in channel-II and lowest in channel-I.

Shiyani and Kakadia (1999) studied time series analysis of marketing pattern of onion in selected markets of Saurashtra region of Gujarat. The major findings emerged from the
study indicated that the proportion of peak period arrivals of onion was relatively higher in the lean and mid periods than the peak periods. The price differences also varied considerably in different years. Creation of appropriate places, extending marketing, finance, of minimum support price and stable export policy for onion were the major suggestions of the study.

Balappa and Hugas (2003) analysed the costs and returns of onion production as well as the channels, costs, and margins of onion marketing in North Karnataka. The analysis was based on data for the year 1999-2000 collected from a sample of 150.00 growers, 30.00 wholesalers, 30.00 commission agents, and 30.00 retailers. It revealed that although farmers are producing adequate quantities of onions to meet consumer demand, they are facing problems in marketing their produce. On the other hand, market intermediaries are accruing higher margins by incurring less cost.

Singh and Chauhan (2004) studied the marketing of vegetable in Himachal Pradesh. The results showed that producer’s share in consumer’s rupee observed in case of cauliflower were 54.09 per cent. Marketing costs on grading (0.25%), packing (1.50%), transportation (2.00%), loading/unloading (0.59%) and commission charges (4.06%) in wholesale market incurred by producers were observed to be Rs. 67.25 (8.41%) and the market efficiency was found to be the 1.18.

Kumar et al. (2005) reported that the producer's share in consumer's rupee was maximum in channel-I i.e. producer- consumer (96.95%) since the farmers sold the onion to consumer directly followed by (channel-II producer- retailer- consumer) (81.82%) and channel-III (producer- wholesaler- retailer- consumer).

Shrichand and Jain (2008) examined the various components of onion crop production and marketing costs, marketing channels, producer's share in consumer's rupee and price spread. A survey was conducted among 240 farmers in the Malwa Plateau of Madhya Pradesh, because it accounts for 37.15 per cent of total area and 51.50 per cent of total production in the state in 2005-06. Findings showed that on an average, farmers incurred a total cost of cultivation of Rs. 51990.35 per hectare, of which variable cost accounted for more than 91.00 per cent. An appraisal of components of marketing costs
clearly revealed that commission charge formed the most significant constituent of the total marketing cost incurred by the farmers. Four important marketing channels were identified in the marketing of vegetables in different markets. It has been observed that the price spread varied not only between the markets but also between the different channels of marketing for the same vegetable and within the different vegetables themselves. The overall average net returns obtained by onion growers amounted to be Rs. 138756.55 per hectare with gross returns of Rs. 190746.89 per hectare.

Verma (2008) concluded that multistage random sampling technique was used to select sample of farmers from four villages of Indore Block of the district. Mainly three marketing channels were found through which onion growers sold their produce vis. Channel-I: Producer- Consumer, channel-II: Producer- Retailer- Consumer and channel-III: Producer- wholesaler- Retailer- Consumer. The marketing cost was highest in channel-III, followed by channel-II and I.

Sidhu et al. (2010) examined the supply analysis of onion and cauliflower in Raipura block of Patiala district in Punjab. They found that the marketing costs of onion incurred by sample farmers, secondary wholesaler and retailer were: Rs. 35.23, Rs. 49.38 and Rs. 12.46 per quintal, respectively. The marketing margins of secondary wholesaler and retailer were Rs. 26.00 per quintal and Rs. 195.00 per quintal, respectively. In producer- retailer-consumer supply chain, the marketing cost incurred by retailer was Rs. 37.36 per quintal and his marketing margin was Rs. 197.00 per quintal. The share of wholesalers in consumer rupee was 3.28 per cent and that of retailers was 24.57 per cent under channel-I. In channel-II, the marketing costs of retailers were 4.42 per cent and their margins constituted 23.31 per cent of what consumer paid. The elasticity of price transmission of onion was 0.63, 0.66 and 0.90 between Pune-Ludhiana, Pune-Patiala and Patiala-Ludhiana markets, respectively.

Barakade et al. (2011) carried out study to determine the economics of onion cultivation, price spread, marketing channels and marketing efficiency of onion in Satara district. Satara district is leading in onion production and covers 12.38 per cent of total area under onion in the state. A study was conducted in Western part of the Satara district. A
sample of 180 onion growers was selected randomly from 20 villages in ten tahsils of Satara district of Maharashtra state. They classified marketing of onion according to different marketing channels which differs by product and by rural and urban location. They also observed that the maximum quantity of onion was passed through channel-IV (75.90%) followed by channel-II (21.30%), channel-III (12.98%) and channel-I (2.88%). The onion growers were observed to use different channels viz. Producers- consumers, producers-wholesalers- consumers and producer- wholesaler- retailer- consumer, respectively.

Narasimha and Yashodhara (2012) conducted study in Chitradurga district of Karnataka to know the marketing behaviour of onion growers. The findings of the study depicts that the 51.25 per cent of onion growers sell their produce of onion one month after harvest and 48.75 per cent of onion growers sell onion immediately after harvest. Majority (53.75%) of the onion growers marketed to commission agents followed by traders (21.25%), wholesaler (16.25%) and village level traders (8.75%). Majority (85.00%) marketed at Bangalore APMC followed by village itself (12.50%) and terminal markets (2.50%). Further, the finding revealed that majority of the respondents (83.75%) will get the market price information from the source like others who visited market followed by phone (71.25%), television (43.75%), newspaper (26.25%), personal visit to the market (2.50%) and radio (1.25%).

Jadav et al. (2011) studied the marketing cost, margin and price spread in marketing of potato in Middle Gujarat. The study indicated that the marketing cost incurred by different functionaries was Rs. 188.19 per quintal of potato accounting for 26.28 per cent of consumer’s price. Further, it was observed that producer’s share was 47.40 per cent of the price paid by potato consumers.

Narendra (2014) studied at South Gujarat and reported that there is strong market integration among selected onion market pairs which can be due to movement of produce from one market to another market. Therefore, in order to continue the competitive condition of these markets there is need to strengthen the market intelligence and communication within markets which would provide a better platform for guiding the farmers in marketing their produce.
Patel (2015) studied the economic analysis of marketing of onion in Middle Gujarat. He reported that as being a market oriented crop, on an average about 95.00 per cent of onion production was marketable while negligible portion was utilized for other purposes. The producer to wholesaler-cum-commission agent to retailers to consumer was the major marketing channel as more than 50 per cent of onion moved through this route. Total marketing cost incurred by onion growers amounted to Rs. 16.26 per quintal on sell to village merchant, Rs. 32.31 on sell to wholesalers and Rs. 34.24 on sell to wholesalers-cum-commission agents. Of this, the major share was of transportation and packing cost. The share of marketing cost and margins borne by village merchants in consumer’s price was 7.77 and 27.95 per cent where as it found 7.92 per cent and 6.29 per cent by wholesalers and by wholesalers-cum-commission agents, respectively. The price spread in onion marketing was low in channel-I i.e. 36.64 per cent while in channel-II and III it was 41.62 and 41.71 per cent, respectively. A look to producer’s share observed the highest in channel-I (63.36%) and low in both channel-II and III. Marketing efficiency was the highest in channel-I (1.72) followed by channel-II (1.40) and channel-III (1.39). Thus, channel-I is more efficient as compared to other two existing channels as in this channel producer’s share in consumer’s rupees was more (63.36%), while price spread was less (36.64%) and marketing efficiency was the highest (1.72).

Sashimatsung and Giribabu (2015) examined economic analysis of marketing of chillie in Mokokchung district of Nagaland. The study explores marketable surplus, cost, margin and price spread of chilli production and marketing. The study revealed that after holding 9.50 per cent for domestic purpose, producers were left with 90.50 per cent as marketable surplus of which the actual marketed surplus was 86.33 per cent due to 4.17 per cent loss in spoilage and wastage. Further, they observed that a majority of the farmer-producer (52.30%) sell their produce to retailers i.e. channel–II indicating the most prominent channel. The net price received by producers in consumer’s rupee was 97.63, 82.43 and 61.90 per cent, respectively in channel-I, channel-II and channel-III signifying that the producer- consumer channel has the highest marketing. They further concluded that, 93.00 per cent of chilli was traded in market by way of retailers and wholesalers and only 7.00 per cent within village.
Patel and Pundir (2016) carried out study to estimate the price spread and marketing efficiency in the marketing of cauliflower in Middle Gujarat of different channels by using different tools such as price spread, marketing costs, marketing margins and marketing efficiency. As cauliflower is market oriented crop, on an average about 93.00 per cent of production was marketed, while negligible portion was utilized for other purposes. The producer to wholesaler-cum-commission agent to retailer to consumer was the major marketing channel as more than 50 per cent of cauliflower moved through this route. The marketing efficiency was lower than unity (0.77). They suggested that market information and provision of logistic support need to be made available to the cauliflower growers to improve existing marketing system. Dhara et al. (2016) studied on marketing problems encountered by coconut growers in Thanjavur district of Tamil Nadu. The study found that the Lack of exclusive market for coconut, lack of co-operative marketing system, scarcity of labour for transportation and marketing and lack of market information were the problems in marketing of coconut. Fluctuation in market price was the major trading constraint whereas, lack of availability of long term credit in financial aspects and lack of village level co-ordination was the major physical constraints.

Amarnath et al. (2017) examined the Marketing and price forecasting of aggregatum onion in Tamil Nadu. The study revealed that the marketable surplus was 84.30 per cent of the total onion production and the rest of the production was retained for seed purpose, home consumption and social obligation. Five types of marketing channels were identified in the study area and price spread was estimated for each of the five marketing channels. Marketing channel-I of farmers’ market was the efficient marketing channel which was due to better pricing mechanism, lesser price spread due to absence of intermediaries and better regulation despite the operation of traders in this channel.
2.5 Constraints

Kiresur and Ganeshkumar (1998) conducted study at Dharwad district of Karnataka. They reported that absence of storage facilities was the major problem expressed by 91.23 per cent of onion growers followed by delay in payment of sale proceeds (89.47%), high commission charges (84.21%), lack of cheapest transport facilities and inadequate infrastructural facilities and civic amenities at the market both expressed by 70.18 per cent of farmers. High charges of Hamali (68.42%), lack of proper grading facilities (61.40%) and faulty weighment system (14.04%) were other problems.

Shah (1999) concluded that due to poor storage conditions in term of ventilation, majority of the onion producers were seem to market produce immediately after harvesting, various marketing intermediaries had certainly taken advantage of this situation. This had undoubtedly led to unremunerative prices offer for most of onion producers.

Pandey (2000) presents the constraints limiting onion productivity and increasing post harvest losses in Andhra Pradesh, India, and the strategies to increase productivity and minimize post harvest losses by adopting production and post harvest technologies in onion production such as the use of quality seeds of the recommended variety, selection of suitable land, use of manures and fertilizers, weeding, irrigation, suitable chemical treatments and proper storage.

Waman and Patil (2000) reported that high cost of onion seed and fertilizers was considered as major constraints face of onion growers at Maharashtra. Lack of knowledge about recommended fertilizer doses, difficulty in identifying the pests and diseases of onion, water shortage in summer, labour problem for weed control, ineffective and costly weedicide, had the production constraints of onion growers. Labour problem during harvesting, lack of knowledge about improved storage structure, lack of knowledge about grading, open auction sale leading to less market price, low price and fluctuation in market price. Irregular purchase of onion by NAFED was the marketing problems faced by growers.

Mohapatra (2001) conducted a study on production and marketing of onion in Bolangir district of Odisha. They observed that majority of the grower faced the marketing
problem. Different constraints reported in study include; A) Infrastructural constraints: unavailability of storage godown, poor transportation facilities, etc. B) Economic constraints; Non-availability of adequate institutional credit facilities at right time compels them to borrow money-lenders and middleman at exorbitant rate of interest, etc. C) Social constraints: illiteracy and backwardness of farmers also hinder them to get up-to-date market information, etc.

Chandrashekhar (2007) reported at Gadag district of Karnataka regarding different problems of marketing of onion different marketing problems includes lack of remunerative price (96.66%), fluctuation in market price (93.33%), without involvement of middlemen commission agents it is very difficult to sell the onion in market (81.66%) and commission agents charge heavy commission (71.66%).

Khunt et al. (2008) studied the performance and problems of regulated markets in Gujarat for the year 2003-04. The study was based on survey of six regulated markets, 60 farmers and 30 traders. The results revealed that major constraints felt by the farmers were shortage of labour, delay in marketing process, lack of facilities for grading, insurance while marketing finance, inadequate storage, lack of transport facilities and irregular electric supply were the constraints identified by the traders. Besides these, there were also some market specific problems, which need to be rectified for smooth operating of regulated market.

Maghade et al. (2008) examined the marketing practices followed and problems observed by onion growers (n=120) in Ahmednagar district, Maharashtra. The results revealed that the most of the onion growers (38.33%) sold their produce in the local market i.e. Rahata and Rahuri, while 26.67 per cent growers sold their onions in the Lasalgaon and Pune markets, respectively. Most of the respondents had experienced low prices. They also observed fluctuations in market prices as major constraints.

Patel (2009) reported that farmer of Khargone district of Madhya Pradesh faced several constraints barring the sustainable production of the traditional or local practices of onion crop in the area. These are related to resources, management faults and stresses of abiotic and biotic nature. The main constraints found were high cost of inputs followed by
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low price of output, unavailability of proper market, lack of own fund and lack of knowledge about recommended dose of inputs and recommended practices of onion cultivation.

Aher et al. (2011) studied constraints faced by the onion growers in production, marketing management and suggestions made by them to overcome the problems in Ahmednagar district. The findings of the study revealed that non availability of electricity in time was the major constraint faced by 94.79 per cent of respondents followed by high cost of onion seed (82.29%), fertilizers at higher rates (66.66%), non-availability of labour and higher wages (64.58%) in the production while high transportation cost was faced by 86.45 per cent respondents followed by unpredictable price fluctuation (84.37%), high commission charges (83.33%), in marketing management. To overcome these constraints, they suggested to made provision for availability of electricity in time, increase seed production at taluka seed farm, supply of fertilizers under government provision, contract farming system should be done and cheaper transportation facility, price support facility and minimum commission charges.

Barakade (2011) reported at Satara district in Maharashtra about constraints faced of farmers in marketing of onion. The result revealed that the high price of seed, fertilizers, pesticides and fungicides were the main problem expressed by (86.11%) of the sampled onion farmers in production followed by non-availability of funds from institutional sources (53.88%), high wage rate of labour (92.77%), on-availability of good quality of seed (68.88%), and ignorance of severe infestation of insect-pest disease control (60.00%). Non-availability of adequate storage facilities of onion was the main problem expressed by (63.33%) of the sample farmers did not store onion on their farm due to lack of storage structure followed by price fluctuations and crashes (93.88%).

Gopala et al. (2012) conducted study in Chitradurga district during 2010-11 to know the marketing knowledge and marketing problems faced by the onion growers. The findings of the study depicts that considerable percentage (41.25%) of the onion growers belongs to medium level of marketing knowledge category. Whereas, 31.25 and 27.50 per cent of the respondents belongs to low and high marketing knowledge categories, respectively. Major problems faced by onion growers are fluctuation in market price, followed by high cost of
transportation and absence of storage facilities. Fixing minimum price for the produce, display of price at each market places, providing storage facilities and providing concessional transportation charges were the major suggestions given by farmers to overcome marketing problems.

Patil and Rajasab (2012) carried out to study the constraints experienced by the onion growers from Gulbarga district of Karnataka. They revealed that onion growing area and onion growers are increasing in Gulbarga district, but onion growers are facing many constraints like poor quality seeds, high cost of branded seed, costly seedling, shortage and costly labourers, shortage of water, erratic load shedding, heavy weed infestation, costly manures, no ideas of dosages fertilizers and chemicals, and time of application, lack of knowledge of diseases, pests and their control measures, low yield, poor storage facilities and negligible market information, Awareness, training programs and active participation of horticulture department are needed to overcome these constraints.

Khandvi et al. (2013) carried out study in Buldhana district of vidarbha region in Maharashtra. Constraints analysis of onion growers were analyzed at different stages for cultivation, storage and marketing practices of onion crop. It is observed that in case of input supply constraints (55.33%) farmers faced with non availability of improved seeding at proper time followed by inadequate availability of FYM (27.33%). As regard the technical constraints (53.33%) farmers faced with irregular supply of electricity. In case of financial constraints (21.33%) respondents faced the problem with irregular supply of Agricultural Loans at time of planting of seedling, transporting, purchasing the fertilizer, pesticides and insecticides followed by high cost of improved variety of seeds, fertilizers and insecticides (16.00%). In case of labour constraints majority of the respondent faced the problem of high wages of labour (22.00%) followed by non availability of labour at the time of transplanting and harvesting (18.66%). As regard to storage constraints (33.33%) of the respondents faced the problem with non availability of proper storage facilities. In case of marketing constraints (64.66%) of respondents faced the problem of low price to onion.

Patel et al. (2013) studied constraints faced by tomato and brinjal vegetable growers of North Gujarat. The major production constraints faced by the vegetable growers were
higher production cost, plant protection and higher prices of insecticides/pesticides. In marketing of vegetables, growers opined the problems of higher price fluctuations and lack of transportation facilities. Small farmers had the problems of credit facility and lack of information about high yielding variety for the production of vegetables. Further, they faced the problem of lack of marketing information and lack of co-operative marketing societies as the major marketing constraints.

Vinayak et al. (2013) studied on marketing of onion in major onion growing districts of Dharwad in Northern Karnataka. They reported that onion poses more problems as compared to other agricultural commodities due to its high degree of perishability. The arrivals and prices of onion are also difficult to predict. There were low prices when arrivals are in large quantity and high prices in the lean season.

Jayanthi and Vaideke (2014) observed that the marketing of agricultural goods was more complicated when compared to marketing of non agricultural goods in Sulur Taluka, Coimbatore district. Farmers were facing many problems in both cultivation and marketing of onion. Agricultural production was generally depends on fertility of land, climate condition and rain fall. Onion was one of the important agricultural commodity and spice crop. Onion was a perishable agricultural product and it required proper storage facility. Hence, the research finds initiative to study the problems of farmers in cultivation and marketing of onion and provides suitable measures for the same. The respondents had assigned the first rank to labour charge, second rank to financial problem, third rank to high wages followed by climate condition, poor diseases, severity of diseases, and high prices of input, poor quality of fertilizers and lack of knowledge about improved technologies.

Sanjay et al. (2015) examined to study different marketing channels, marketing efficiency and problem/constraints in vegetable marketing in Varanasi district of Uttar Pradesh. They opined that major problems faced by farmers was fluctuation in market prices, failing in assessment of demand, lack of storage facilities, high cost of labour, lack of grading and packaging, high cost of transportation facility, high cost of pesticides and hence they expected that no malpractices should be followed at selling unit with proper regulation in the market, good transportation facility, good packing facility, good storage facility. The major
problems faced by wholesalers were fluctuation in market prices, failing in assessment of demand, timely supply, lack of financial assistance from any company and hence they expected providing financial assistance from companies should be followed by buyers with proper regulation in the market. The major problems the retail outlet in the vegetable supply chain faced were fluctuation in market prices, failing in assessment of demand, timely supply, high cost of transportation facility and hence they expected adequate physical facilities, proper planning in assessment of demand, timely supply of produce, less price fluctuation, good transportation facility, less physical loss of produce, proper planning of procurement and less competition to exist in the market.

Raj et al. (2017) conducted study in Naraingarh and Bararablocks in Ambala district of Haryana. Major problems faced by the onion growers in production were costly storage facilities 95.55 per cent, lack of knowledge of recommended fertilizer doses 91.11 per cent and high cost of seed 71.11 per cent. Problems faced in marketing of onion were accounted as lack of minimum support price 95.00 per cent, high fluctuations in market prices 78.89 per cent, malpractices adopted by market functionaries 67.78 per cent, and existence of large number of intermediaries in marketing process 60.00 per cent and high transportation cost 58.89 per cent.