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SUMMARY AND CONCLUSION

The present study on 'Economics of Production and Marketing of Potato in district Kanpur-dehat', assumes greater significance in context to understanding the complexities and bottlenecks, involved in its production and marketing. Potato is an important cash crop of the study area and plays an important role in farm economy of the farmers by providing them higher income and employment and leading to commercialization of agriculture. However, the producers face a number of problems which mostly revolve round the supply of inputs, storage and marketing of potato along with uncertainty and wide price fluctuations. Taking these points in view, the present study was undertaken during 2007-2009, with the following objectives:

Objectives:

(i) To find out the economics of production of potato crop, under different size group of farms, of the selected area.

(ii) To work out the marketable surplus of potato on sample farms and its flow through different marketing channels, in the study area.

(iii) To workout the marketing cost, marketing margins and producers share, in consumer's price in potato, in the study area.

(iv) To suggest suitable measures for tackling the problems faced in production and marketing of potato.
RESEARCH METHODOLOGY:

The research methodology of the study consisted of a three stage stratified random sampling technique in selection of blocks, villages and the farmers in district Kanpur-dehat, which was selected purposively. From the district, a list of blocks growing at least 5 per cent area under potato crop was prepared and from this list two blocks namely Bhoganipur and Rajpur were selected purposively. Now a list of villages of each selected blocks, growing at least 8 per cent area under potato was prepared and from the list 20 villages from each block were selected randomly. In case of selection of farmers, a list of farmers growing at least 20 percent potatoes to their total cropped area, was prepared for each of the selected villages. The farmers were grouped into three size groups of farm holdings i.e. below 1 hect, 1-2 hect and 2 hect and above size groups. Then a random selection of 09 farmers was made from each villages. The number selected in each size group was kept proportional to total number of farmers falling under each size group in the universe of 40 villages. Thus, the study was made of 360 farmers, selected from 40 villages of two blocks, in district Kanpur-dehat.

In order to study the economics of marketing of potato, one village market-Rajpur and one wholesale/regulated Mandi-Bhognipur was selected purposively. To workout the marketing cost, marketing margins and producer's share in consumer's price, 10 cases were studied.
The enquiry was conducted by survey method. The data was collected by personal interview with the respondents on pre-prepared schedules & questionnaires. The secondary data were compiled from published report, journals and office head quarters.

**Farm Structure and Cropping Pattern:**

The average size of farm holdings (both blocks combined) came to 1.82 hectares. It was 0.75 hectare on marginal farms of below 1 hectare size group, 1.52 hectares on small farms of 1-2 hectare size group and 4.44 hectares on 2 hectare and above size group of farms. Amongst different size group of farms, marginal farmers accounted for 46.12 percent, small farmers 31.38 percent and big farmers 22.50 percent to total farmers under study. As regards average size of family, it consisted of 6.80 members, varying from 6.60 to 7.03 members on different size group of farms. The number of adult workers available on farms came to 2.70, highest being 2.85 on marginal farms & lowest (2.55) on big farms.

The average investment in fixed capital on perform basis including land, worked out to Rs. 4,30167.60, while excluding land, it came to Rs. 54,929.10 perform. These values on per hectare basis were Rs. 2,36,355.80, including land and Rs. 30180.80 per hectare, excluding land of the total investment in fixed capital, land value accounted for the highest share, followed by implements and machinery, irrigation
structure. The investment in implements & machinery, irrigation and farm building gave an increasing trend with the increase in farm size, which was due to increase in farm business and better financial position of big farmers.

The main source of irrigation on sample farms were canal and tube wells, which on an average irrigated almost equal area being 46.10 and 45.96 percent respectively. The area irrigated by canal was higher on big farms due to domination of big farmers over canal water and large size of farming. Against this, tube wells irrigated higher percentage of area on marginal and small farms.

An examination of cropping pattern showed that Paddy, Wheat, Potato and maize were the main crops grown by the sample farmers. Of the total cropped area, Paddy accounted for the highest area being 27.75 percent closely followed by wheat 26.28 per cent, potato 20.67 percent and maize 7.21 per cent. As regards different size groups, the percentage area occupied by different crops did not show much variations.

The average intensity of cropping on sample farms came to 166.76 percent, which was higher being 171.83 percent on marginal farms followed by 169.43 percent on small farms and 163.75 on big farms. The higher intensity on marginal farms was due to taking of more crops on per unit of area as compared to big farms.
**Economics of Potato Production:**

An economic analysis of potato cultivation revealed that it incurs a high cost of cultivation. On an overall basis, average total cost of cultivation (variable + fixed cost) on per hectare basis worked out to Rs. 59236.90. Potato gave an average yield of 205.25 quintals per hectare, and a gross income of Rs. 92670.37, resulting an average net income of Rs. 33433.47 per hectare. The cost-benefit ratio came to 1:1.56.

A size group wise analysis showed that the total cost of cultivation on marginal farms was lowest being Rs. 53808.63 per hectare as compared to big farms where it came to highest being Rs. 65068.77 per hectare. Thus, cost of cultivation gave an increasing trend with the increase in size of farms. It was due to higher investment of inputs by big farmers and better financial position. Similar was the case with returns which were lower on marginal farms and higher on big farms due to higher investment of production inputs resulting in higher yields and income.

Amongst different inputs, seed cost accounted for the highest cost being 22.20 percent, followed by human labour (22.11 percent), manures and fertilizers (14.48 percent), bullock + machinery power and irrigation cost to total cost of cultivation (keeping rental value constant). As regards
different size group of farms, percentage share of manures and fertilizers, irrigation charges, plant protection and bullock+ machinery power showed an increasing trend with the increase in size of farms, while seed cost a decreasing trend due to increase in size of farm business.

A break-up of cost according to different cost-concepts showed that cost A (operational or variable cost), cost C and C₂ etc showed an increasing trend with the increase in size of farm holdings. A similar trend was found with the returns over these cost-concepts. It was because of the reasons as given above. The average cost of production per quintal come to Rs. 288.60 on the basis of total C₁. It was Rs. 204.08 on the basis of cost A, (operational cost) and Rs. 317.47 on the basis of cost C₂ (Managerial cost). Cost of production per quintal gave an increasing trend with the increase in farm size, due to increase in cost in proportion to yield.

Marketing of Potato:

In marketing of potato a large number of market functionaries were involved. In village market village traders, itinerant dealers, weighman, Palledar and retailers were very common, while in wholesale/regulated market, commission agents, broker auctioners, wholesaler, retailers, weigh man, Palledar etc were operating. The potato growers used different marketing channels for the disposal of their
produce. The main channels used by them were, (i) Producer-Village trader-Wholesaler-Retailer-Consumer (ii) Producer-commission agent-wholesaler-Retailer-consumer (iii) Producer-Wholesaler-Retailer-Consumer and (iv) Producer-Commission agent-Wholesaler (Cold Storage)-Retailer-consumer.

The study showed that the largest quantity of marketable surplus of potato (43.96 percent) was marketed through channel II (Regulated mandi) followed by channel I (29.43 percent), channel IV (15.98 Percent), and lowest through channel IIIrd (10.63 percent). The analysis also revealed that marginal and small farmers (upto 2 hect. size group) preferred to sell their produce through channel I (village market) where village trader was involved or through channel IIIrd where producer direct sold their produce to wholesaler. It was due to small size of produce scattered over a large area and advance money taken from the wholesalers.

Market functionaries or agencies who move in produce from the producer to consumer, involve cost. Thus, the producer, wholesaler and retailers pay marketing cost and middleman charge margin of profit. The study revealed that the total marketing cost paid by different agencies came to Rs. 138.55 per quintal. It was paid highest by wholesaler (Rs. 47.55 per quintal) followed by producer (Rs. 44.00 per quintal), Retailer Rs. 27.00 and village trader Rs. 20.00 per quintal. Amongst different
items of marketing cost, it was highest on transport (Rs. 34.50 per quintal) followed by commission charge (Rs. 23.25), Bardana charges (Rs. 15.00) and loading and unloading (Rs. 12.00).

As regards Producer’s share in the price paid by the consumer, it came lowest being 52.33 percent in a channel, when the produce was marketed in post storage period. In this marketing channel producer-commission agent-wholesaler (cold storage)-Retailer-consumer were involved. The highest Producer’s share of 67.95 percent was worked out in channel IIInd (Regulated mandi), when potato was sold during pre storage period. This marketing channel consisted of producer-commission agent-wholesaler-Retailer-consumer. The next higher producer’s share of 61.43 percent was found in channel I when produce was sold through village traders to wholesaler and then retailer. Thus, it concludes that longest the chain of middle men in a marketing channel the lower was the producer’s share in the price paid by the consumer. It was due to higher marketing cost and high margin of profits charged by the intermediaries. It was the reason that marketing efficiency of regulated market was found higher than village market.

**Problems faced by Producers:**

The problems faced by the sample farmers were studied by an opinion survey. It revealed that most of the problems centered around the sup-ply of inputs, storage, transportation and marketing of potato along with wide price fluctuations.
Irrigation of potato was found to be more difficult and costly in the study area. It was due to irregular supply of water in canal and lack of electric power supply for running tube wells. Potato requires a number of irrigation timely, during its production period, so it needs assured irrigation facilities. To overcome this problem, canal should be made regular in supply of irrigation water, and electric power supply should be made available in day time for more duration to irrigate potato timely. Another inputs which created problems were non availability of good quality potato seeds and chemical fertilizers in time. It needs extension and strengthening of cooperatives to play a greater role in seed production and its marketing and supply of fertilizers at reasonable prices timely. Potato crop incurs a high cost in its cultivation, which is difficult to afford for marginal and small farmers. There is need to develop low cost technology for potato production and control over input prices.

Uncertainty and high fluctuation in potato prices was one of the major problem experienced by all potato growers of the study area. It causes serious losses to producers due to low prices. Under such condition, the farmers by and large get very low prices, the consumers pay high pieces in off season and traders reap good dividends. Improvement in market intelligence, contract farming, diversification in
use of potato and government support price may be suggested few measures for stabilizing the potato prices. Transportation bottle necks resulted an increase in marketing cost. Potato being a perishable commodity requires quick and safe transpiration to avoid losses due to spoilage, rotting and other damages. So it needs control over transport, transport charges and railways to provide transport facilities at reasonable rates during peak season.

In the district, cold storage facilities were inadequate and majority of the farmers were unable to avail cold storage facilities. The lack of storage facilities cause violent price fluctuations, as they are forced to sell off their produce at lower prices, owing to financial compulsions. There is need to expand installed capacity of the cold storages. It also needs expansion of cold storage facilities in cooperative sector to, end the malpractices and monopoly of private sector in cold storage industry. High marketing cost was a common problem in potato marketing, which resulted in low producer’s share in the price paid by the consumer. Marketing cost may be reduced by minimizing number of middlemen in marketing channels and licensing the market functionaries. Producer’s share may be increased by selling the produce through regulated markets. As regards problem of marketing information’s, it may be displayed on notice board of the markets, block head quarters etc.
CONCLUSIONS:

From the findings of the present study, the following conclusions may be drawn:

(i.) The study area is dominated by small size of farm holdings. The average size of holdings came to 1.82 hectares. The small farmers larger in number cultivated lesser area while big farmers few in number cultivated highest area. It indicates the uneven distribution of farm holdings in the study area.

(ii.) The per hectare investment in fixed capital, made by sample farmers, showed a positive relationship with the increase in farm size. A lower investment on marginal & small farms was due to their small size of farm business, tiny and scattered farm holdings and poor financial position and vice-versa.

(iii.) The farmers grew few selected crops only. Major portion of cropped area was allotted to food grains crops. Paddy and Wheat together accounted for more than 54 percent area under their cultivation. The average intensity of cropping was about 166 percent.

(iv.) Potato cultivation was found a capital intensive and labour intensive. Total cost of cultivation came around Rs. 60,000.00 per
hectare. Of the total cost, seed cost accounted for the highest share, followed by human labour, manure and fertilizers, tractor + bullock power and irrigation charges. It gave a net income of Rs. 33433.00 per hectare and cost benefit ratio of 1:1.56.

(v.) A high marketing cost and high margin of profits charged by the intermediaries, resulted in lower producer’s share in the price paid by the consumers. The producer’s share in pre-storage period ranged in between 61.43 percent (village market) to 67.95 percent (Regulated Mandi). In post-storage period it came to 52.33 percent only. A lower producer’s share in village market and in post-storage period was due to presence of more number of middle men in the marketing channel and extra storage cost respectively.

(vi.) The marketing efficiency was found higher for Regulated Mandi as compared to village market due to comparatively low marketing cost and margin of profits.

(vii.) The major problems faced by the farmers in production & marketing of potato centered around the input supply, storage, transportation and marketing of potato along with wide price fluctuations.
Policy Implications:

The findings and discussion of the study leads us to conclusion that potato marketing of the district is not efficient, integrated and is not in a position to face the emerging challenges of potato production and utilization in the coming decades. In this context, price stabilization should be the first priority in a well planned marketing strategy. Potato is a risky crop and their supply would be adversely affected if measures are not taken by the government to stabilize the price. Expanding of the existing cold storage facilities could be one of the best methods to stabilize the price. The government should announce support price of potato well in advance so that the growers can plan their potato acreage accordingly. It has been observed that gluts and price crash situations have occurred mostly on those years where high area was allotted to potato crop.

Improvement in market intelligence, start of forward markets, contract farming and diversification in use of potato way also be suggested as the important policy measures for stabilization of potato prices.

To reduce the price gap between producers and consumers there is need for promoting producer’s cooperatives. Some of the problems like
grading, market malpractices, and exploitation by traders can be overcome, if the potato growers market their produce through cooperative societies. So cooperative societies, in the district need to be strengthened. Such cooperative institutions can easily compete with strong traders associations.

Due to highly expensive nature of production and complex marketing system of potato crop, there is a strong need for creation of a single unified agency, say Potato Marketing Board, which can coordinate with different agencies, control the marketing system in a planned way. Such an agency should be entrusted with functions like development and regulation of cold storage on an integrated basis in consuming and producing areas, evolution and implementation of price support policy measures in collaboration with state agencies and export promotion in potatoes.

As regards consumption of potatoes it remains low in our country (15 kg per capita/year) as compared to other countries like Europe (86 kg per capita/year), America (63 kg per capita/year). It’s utilization may be increased by Processing various products like potato chips, papad and starch etc. processing of potatoes to produce industrial raw material like starch has not received much attention so far. There is need to provide essential support to private sector for establishing processing industries.
However, it needs supply of fresh potatoes for production of chips and other production like starch etc.

**Testing of Hypothesis:**

One the basis of findings and discussion of the present study, the hypothesis laid out in chapter IIInd are hereby confirmed.

The First hypothesis that the Income and Production of potato grower vary with the use of input resources, is confirmed according to findings given in chapter VI. This hypothesis is also confirmed according to finding reported by Chaudhary and Sen (1981), Bakshi and Banerjee (1984), Hatai, L.D. et al. (2007).

The second hypothesis that the Producer's share in consumer's rupee in higher in short channels of marketing in comparison to long channels is confirmed according to finding given in chapter VII. This hypothesis is also confirmed according to findings given by Yadav, Rajendra Kumar et. al. (2000), Naik & Patnaik (1983), Chauhan (1983). Acharya & Ahmad (1975).

The third hypothesis that the 'Marketable surplus of potato vary with size of farms', is confirmed according to findings given in chapter VII. This hypothesis is also confirmed according to findings given by Kumar, Nalini Ranjan et al. (2008).