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Constraints of production and suggest suitable policy measures of cauliflower grower on sample farms in Varanasi District of Eastern U.P

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Abstract
Keeping in view the importance of the vegetable crops in nutritional security and generating the income and employment to the farm population a study on economics of cauliflower cultivation in Chiraigaon block of Varanasi district of U.P. was conducted in agriculture year 2016-2017. Stratified purposive cum random sampling technique was applied to select the sample respondents primary data were collected through interview method. Tabular and function analysis was done to present the result. Cauliflower cultivation was found profitable on each size group of farms and it was characterized of decreasing returns to scale as sum of elasticity were less than one in all categories of farms. Value of multiple coefficient of determination (R^2) shows 93.65, 80.67 and 95.87 per cent variation in output due to all included input factors in study. MVP of all the input factors in every farms size except few were more than one which showed the further possibility of increased expenditure to receive additional profit.

Keywords: cauliflower, tabular analysis, ranking

Introduction
Cauliflower is one of the most important winter vegetables in India. It was introduced in India during 1822 from France. Cauliflower is grown for its tender head or curd. It is a delicate crop and needs more care to grow successfully than most of the other vegetable. It can be grown in all types of soil with good fertility and good water regime. However, for early crops, in tropical and subtropical regions, a light to light medium soil may be preferred so that the drainage is easier in the rainy season. Therefore, in the cultivation of Cauliflower steady growth is important since rampart growth may retard the formation of curd and it may also slow the growth of bracts. Under the Indian conditions, especially in North India the mid-season crop and late crop will grow very well in medium heavy and heavy soils when temperature is 10-16^0 C for curd formation. In the plain region of India, it is available from September to May. The optimum pH for cauliflower cultivation is 6-6.5. However, it has been reported that maximum yield of cauliflower is obtained at soil having pH between 5.5-6.5. Cauliflower is sensitive to high acidity. It is delicious cool season vegetable. The head is eaten while the stalk and surrounding thick, green leaves are used in vegetable broth or discard. India is the second largest producer of Cauliflower in the world after China followed by Italy, France and Spain. Cauliflower cover an area of 414 m. ha in India, its production is 7897 million tonnes and productivity is 19.1 tonnes/ha which constitutes 21.92% of world Cauliflower production. Production of China is 806 million tonnes & worldwide highest productivity recorded in Japan. In India, major Cauliflower producing State are West Bengal, Orissa, Bihar, Maharashtra and Assam. In Uttar Pradesh during 2014 area, production and productivity of Cauliflower was reported 10.15mha, 222.62 million tonnes and 21.9 tonnes/ha, respectively. In district Varanasi, area, production and productivity of Cauliflower were reported 356 ha, 7223 tonnes and 20 tonnes/ha, respectively (Anonymous 2015). Fresh Cauliflower is an excellent source of vitamins, its 100gm provide about 48.2mg or 80% daily recommended value vitamin-C is a proven antioxidant that helps to fight against harmful free radical. It contains good amount of many vitamin-B complex group of vitamins, such as floats pantothenic acid (vitamin B_1) niacin (B_3), as well as, vitamin K. These vitamins are in the sense that body requires them from external source to replenish. Further it is good source of minerals, such as, Mn is used in the body as co-factor for the antioxidant enzyme. (Anonymous 2016).

Method and material

Methodological aspect of study on Economics of Cauliflower cultivation has been discussed under the following four heads. Sampling technique, 2. Collection of data and method of enquiry, 3.Period of enquiry and 4. Analytical tools

Sampling Technique

Multistage stratified purposive cum random sampling technique was used for the selection of District, Block, Villages and Respondents (Cauliflower grower).

Selection of District: In the first stage Varanasi District of Utter Pradesh was selected purposively because of large amount of vegetable trading takes place in Varanasi.

Selection of Block

There were 8 Blocks in Varanasi district *i. e.* (i) Arajiline (ii) Baragaon (iii) Chiraigaon (iv) Harhua (v) Cholapur (vi) KashiVidyapith (vii) Pindara (viii) Sewapuri

Out of 8 Blocks of Varanasi District 1 block namely Chiraigaon was selected purposively where Cauliflower grower are in large numbers.

Selection of villages

Out of 94 villages of selected block 5 Villages namely Bariyasanpur, Gaurakala, Rustampur, Chiraigaon and Umarahan were selected purposively where maximum number of farmers grow Cauliflower on large scale.

Selection of farmers/grower

A separate list of Cauliflower growers of selected villages was prepared along-with their size of holdingobtained from record (Khasara and Khatauni) available at Tehsil level and further it was grouped into three categories *i.e.*(I) Marginal farmer, (II) Small farmer(IV) Medium farmer. At last 100 respondents were selected following the proportionate random sampling technique.

Collection of Data and Method of Enquiry

Primary Data: The primary data on production aspects were collected on well prepared schedule by survey method. Frequent visits were done by the investigator to the selected respondents and required data were recorded by personal interview. Accuracy of the data were assured through cross-checking.

Secondary Data: The secondary information was compiled from the published report at Block, Tehsil and District offices. Period of Enquiry: The data were collected to the main-season crop of the 2016-2017.

Analytical tools: The data collected from the sample cultivators were analyzed and estimated with certain statistical techniques which are mentioned below.

Average: The simplest and important measures of average which have been used into statistical analysis was the weighted average. The formula used to estimate the weighted average is:

$$W.A. = \frac{\Sigma W i X i}{\Sigma W i}$$

Where,

W. A. = Weighted average
X_i = Variable
W_i = Weights

Result and Discussion

Constraints faced by the sample farmers and suggestion to overcome them:

The major problem faced by the farmers of study area is presented in table a. it is depicted from the table that lack of technical knowledge and skill was realized by the sample farms at Istrank as it found the maximum score *i.e.*217 followed by problem of management, financial problems and miscellaneous problems which were assigned II, III and IV rank against the score of 153, 81 and 41 respectively suggestion to improve the cultivation of cauliflower cultivation included that:- Technical knowledge and skill of the farmers should be improved time to time through different extension activities. Management problems can be solve it the farmers decision taking capacity and crop planning skill can be developed with various programs. Financial problem which was realized at IIIrd rank can be solved it bank can support the farmers as per their need and time. Problems of risk and uncertainty can also be solved the knowledge of farm management can be extend to farmers working in the field.

Table 1: Constraints/problem on different size group of sample farms.

S.N.	Particular	Size group of farms			Total	Ranks
		Marginal	Small	Medium		
A.	Technical problem	88 (40.55)	75 (34.56)	54 (24.88)	217 (100)	I
B.	Management problem	65 (42.48)	50 (32.67)	38 (24.83)	153 (100)	II
C.	Financial Problem	29 (35.80)	24 (29.62)	28 (34.56)	81 (100)	III
D.	Miscellaneous problem	17 (41.46)	15 (36.58)	9 (21.95)	41 (100)	IV

(Figure in parentheses indicate the percentage)

Conclusion

Cauliflower is the one of the most important winter vegetable in India. It is grown for its tender heads or curd. India is second largest producer of the cauliflower in the world after China. It is a labour and capital intensive short duration cop which generate the better possibilities for income and employment to the farm family. Different constraints faced by the cauliflower growers of the study area include the problems of technical knowledge at (I rank) followed by management problem (II rank) and financial problem (III rank) and miscellaneous problem including risk & uncertainty at last (IV rank). Suggestions to solve the constraints faced by the problems were: (1) Improve the knowledge and skill through various extension programme. (2) Develop the decision taking power and sound planning capacity in farmers. (3) Financial institution should support the farmers to provide credit when they need. At last if is concluded that properly supported with knowledge and skill and financial facilities cauliflower can continue offer the better net profit to the farmers of study area. As this area is nearly situated to the holy city Varanasi. Where the demand of green/fresh vegetables always persist in the hotels far tourist and dense

population of city.

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