



Vegetables nutritional security & gap analysis of cauliflower

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Abstract

Cauliflower is the main vegetable in winter season in U.P. Curd or hypertropic branches is edible portion. Cauliflower is rich source of Protein, Calcium, vitamin A and Vitamin C, used in preparation of Curry, Soup, Pickles, Biryani and Pakora etc. Majority of farmers grow cauliflower during rabi season. Therefore, to popularize rabi season cauliflower among farmers. The survey was conducted by Krishi Vigyan Kendra at the farmer's field of villages viz. Phulwapatti, Padri peperpati, Dalip nagar, Gopal garh, Vishunpura, Andhya, Prithvipur, Karmaini, Bodha patti, Purena katia, Dhuria Kot, Piperaghat & Persaun during the Kharif season from 2014-15 to 2017-18 in district Kushinagar of Uttar Pradesh lies in North Eastern Plain Zone. During four years of study, an area of 11.0 ha was covered under front line demonstration with active participation of total 135 farmers. Result indicated that Cauliflower variety madhuri gave higher yield i.e., 223.6 q/ha in comparison to farmer's practice (171.4 q/ha) and provided net return of Rs. 270208.75 with the B:C ratio of 6.03 against farmer's practice i.e., 206243 with the B:C ratio of 3.65. Thus it may be concluded that the yield and returns in cauliflower crop increased substantially with the improved variety and agro technique.

Keywords: Vegetables nutrition, gap analysis, Cauliflower, Rabi, Hybrid madhuri

Introduction

The varied agro climatic diversity in India resulted into growing all types of temperate, sub tropical and tropical vegetables (Singh *et al* 2010) [2]. Among the temperate vegetables grown in rabi season, Cauliflower is an important vegetable crop, cultivated for medium size, compact and snow white curd. Cauliflower is rich source of Protein, Calcium, Vitamin A and Vitamin C, used in preparation of Curry, Soup, Pickles, Biryani and Pakora etc. Majority of farmers grow cauliflower during rabi season, which is always less remunerative because during rabi season, market are flooded with rabi cauliflower which result in poor market price. On the contrary kharif (off season) cauliflower fetches higher returns from the market as the off-season cauliflower have a definite market advantage and provide assured better returns to the farmers. According to Thakur (1994) [3], "Off-season vegetable production and marketing is the most profitable farm business giving very high production and income to farmers per unit area of land". Therefore to popularize hybrid madhuri cauliflower among farmers, Survey on hybrid Cauliflower was carried out by Krishi Vigyan Kendra during 2014-15 to 2016-17.

Methodology

The present study was conducted to investigate the costs involved and returns obtained from the cultivation of hybrid Cauliflower and to compare the performance of Cauliflower variety with the local variety of farmer in the district Kushinagar. The survey were conducted by Krishi Vigyan

Kendra at the farmer's field of villages viz. Phulwapatti, Padri peperpati, Dalip nagar, Gopal garh, Vishunpura, Andhya, Prithvipur, Karmaini, Bodha patti, Purena katia, Dhuria Kot, Piperaghat & Persaun during the season from 2014-15 to 2017-18 in district Kushinagar of Uttar Pradesh lies in North Eastern Plain Zone. During four years of study, an area of 25.0 ha was covered under survey with active participation of total 135 farmers (Table 1)

Table 1: Detail of survey conducted during 2014-2018

S. No.	Year	No. of Farmer	No. of village	Area(ha)
1.	2014-15	11	2	2.0
2.	2015-16	50	6	10.0
3.	2016-17	45	7	11.0
4.	2017-18	29	3	2.0
Total		135	18	25.0

Before conducting survey, a list of farmers was prepared from group meeting and specific skill training was imparted to the selected farmers regarding different aspects of cultivation. Cauliflower variety madhuri was surveyed on total area of 25.0 ha. Similarly, equal numbers of control plots were also laid. In surveying emphasis was given on use of improved agronomical practices including proper seed rate, seed treatment, balanced fertigation etc. The data were collected from both hybrid plots as well as plots of farmers using their traditional practices. Finally the extension gap, technology gap along with the benefit cost ratio were worked out.

Table 2: Details of package of practices followed under FLD Vs. Farmer Practice

Particulars	Hybrid madhuri	Farmer's Practice
Farming Situation	Irrigated	Irrigated
Variety	Sabore Agrim	Local
Time of Sowing	Second week of July	last week of July to August
Seed treatment with fungicide	2.5 g/kg seed	-
Method of Sowing	Raised Bed	Flat bed

Nutrient management	FYM@30 tonnes/ha	20 tonnes/ha
Fertilizer Dose	N:P:K 150:80:60	N:P:K 120:60:40
Weed management	Two manual weeding	One manual weeding
Plant Protection	Neem based insecticide and Neemastra	Agro Chemical

Result and Discussion

The data given in table -3 revealed that the maximum yield was recorded (229.5 q/ha) during 2015-16 and minimum yield was recorded in year 2017-18 (215.8q/ha) under

selected plots and the mean curd yield was recorded 223.6 q/ha under selected plot which was higher over Farmer Practice (171.41 q/ha). Selected pots showed an average of 28.64 % increase in yield over farmer practice

Table 3: Productivity, technology gap and extension gap in Cauliflower under survey Vs Farmer Practice

Year	Average Yield(q/ha)			% Increase in Yield over FP	Technology Gap(q/ha)	Extension Gap(q/ha)
	Potential Yield	Demonstration	Farmer Practice			
2014-15	240	223.5	198.6	25.37	16.5	24.90
2015-16	240	229.5	202.5	33.33	10.5	27.00
2016-17	240	225.6	190.45	15.59	14.4	35.15
2017-18	240	215.8	145.63	32.52	24.2	70.17
Mean	240	223.6	171.41	28.64	16.4	39.31

The result clearly indicated the positive effects of survey with improved package of practice over the existing farmer's practice towards enhancing the yield of hybrid Cauliflower in Kushinagar District with its positive effect on yield attributes (Table-4)

Table 4: Yield attributing parameters under FLD Vs Farmer Practice

Result	Plant height	panicle length	Curd Diameter	Curd Weight	Plant Weight
FLD	86.5 cm.	8.25	15.30 cm	540g	960 g.
FP	78.5cm.	72.55	17.52 cm	445 g.	780 g.

Technology gap and extension gap

Table-3 revealed that there was 16.4q/ha technology gap which might be due to the dissimilarity in soil fertility status as well as weather conditions prevailing in the district. The extension gap was observed 39.31q/ha which emphasizes the need to educate the farmers through various means for

adoption of improved agricultural production technique to minimize the extension gap.

Economics

Data presented in table- 5; indicating the economical analysis of cauliflower under hybrid production and farmer's practice. It is clear from the table that the variety madhuri for rabi season is beneficial. By investing Rs., 51285 net return of Rs. 270208.8 with the B:C ratio of 6.03 can be obtained where as the local varieties and farmer practice provided net return of Rs. 206243 with the B:C Ratio of 3.65. The highest net return was recorded during 2015-16 i.e Rs. 301035 whereas the lowest net return was recorded during 2014-15. Benefit & Cost ratio was observed highest during 2016-17 while the lowest B: C ratio was found during 2014-15. Venkattakumar *et al.* 2010 ^[4] reported higher net return and B: C ratio in the demonstration due to improved technologies compared to the farmer's practice. The findings of the studies are also in agreement with Bala *et al* 2011 ^[1].

Table 5: Economics of Cauliflower under hybrid Vs Farmer Practice

Year	Gross Cost(Rs./ha)		Gross Return(Rs./ha)		Net Return(Rs./ha)		B:C Ratio	
	FLD	FP	FLD	FP	FLD	FP	FLD	FP
2014-15	53125	53125	268200	238320	215075	185195	5.04	4.48
2015-16	54690	54690	355725	313875	301035	259185	5.50	4.73
2016-17	48625	48625	338400	257107	289775	209547	6.95	5.40
2017-18	48700	47400	323700	218445	275000	171045	6.64	4.60:1
Mean	51285	50960	321506.3	256936.8	270208.8	206243	6.03	3.65

Conclusion

Thus it may be concluded that the yield and returns in cauliflower crop increased substantially with the improved variety and recommended production technique. The study has suggested that to promote this enterprise, areas for hybrid vegetable cultivation need to be identified and efforts to tap improved irrigation potential in those areas should be enhanced. Education of farmers for scientific management of crops and provision of improved tools for efficient use of labour have also been suggested to lower production costs and make the vegetable cultivation more beneficial to farmers, particularly to the small and marginal farmers.

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