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Impact of Dr. PDKV interventions in model village Chelka

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Abstract

The present study aimed to evaluate the impact of Dr.PDKV, Akola interventions in the Model Village Chelka, located in Barshitakli taluka, Akola district, Maharashtra. The research followed an ex-post facto design, which involves examining outcomes after an intervention has been implemented. All 84 households in the village were included in the study, with the head of each household acting as the respondent. Data was gathered through personal interviews using a pre-tested and structured interview schedule. The impact of the interventions was assessed by comparing the conditions before (2022-23) and after (2025-26) the interventions in terms of knowledge, annual income, yield and production. The data was analysed using suitable statistical methods.

The study findings indicate that the interventions introduced by Dr.PDKV, Akola had a positive effect on the participating farmers. There was a noticeable improvement in the average knowledge score, which increased from 39.93 to 86.25 before and after the intervention, representing an increase of (116.00%). The mean annual income also saw a substantial rise, from Rs.1, 98, 841 to Rs. 5, 41, 633 which is an increase of (172.39%).Major crops showed significant improvements in yield, with the highest increase recorded for green gram at (100.00%), followed by wheat at (60.00%), groundnut at (59.09%), pigeon pea at (57.89%) and soybean at (46.67%).The production of these crops also experienced notable growth, with green gram showing the largest increase of (263.64%), followed by pigeon pea at (121.00%), soybean at (69.48%), wheat at (28.00%) and onion at (1.65%).The interventions also encouraged crop diversification by introducing new crops such as HDPS cotton, turmeric, seed onion, chia, sesamum and summer green gram, which helped strengthen the overall farming system of the village.

The study concludes that the scientifically tailored and location-specific interventions by Dr.PDKV, Akola greatly enhanced the knowledge of the farmers, increased their farm income, improved crop yield and production, and encouraged crop diversification. The results highlight the effectiveness of the Model Village approach in enhancing agricultural productivity and improving the socio-economic conditions of farmers. These findings suggest that the Model Village approach has the potential to be replicated in other villages in the region.

Keywords: Dr. PDKV interventions, model village Chelka, impact, crops yield, crops production

1. Introduction

Agriculture is the backbone of the Indian economy and provides livelihood to a large proportion of the rural population. Increasing agricultural productivity and improving the socio-economic condition of farmers require the effective dissemination of scientific technologies and sustainable farming practices. Agricultural universities play a vital role in developing and transferring improved technologies to farmers through research, extension, and field demonstrations.

Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola has

undertaken several agricultural interventions aimed at improving agricultural productivity and rural livelihoods in the Vidarbha region of Maharashtra. As part of this initiative, the concept of the Model Village was introduced to demonstrate the effectiveness of scientific agricultural technologies under farmers' field conditions. Under this programme, one village from each district of Vidarbha region was selected for holistic rural development through the implementation of need-based and location-specific interventions. Chelka village of Barshitakli taluka in Akola district was selected as the Model Village. A Participatory

Rural Appraisal (PRA) was conducted to identify the major constraints and developmental needs of the village. Based on the findings, Dr. PDKV implemented several technological interventions related to crop production, value addition, and allied agricultural enterprises.

According to the Census of India (2011) ^[1], Chelka village has a geographical area of 212.15 ha, comprising 84 households with a total population of 327, including 169 males and 158 females, and an overall literacy rate of 79.87 per cent. Out of the total geographical area, 200.86 ha (94.67%) is cultivable land, which also constitutes the net sown area, while 6.94 ha (3.27%) is barren and uncultivable land and 4.35 ha (2.06%) is under permanent pasture and grazing land. Agriculture is the principal occupation of the village, making it suitable for the implementation and assessment of scientific agricultural interventions.

These interventions were expected to improve farmers' knowledge, increase agricultural productivity, diversify cropping systems, enhance crop yield and production, and improve farm income. Assessing the impact of such interventions is essential to understand their effectiveness and to formulate future agricultural strategies.

Although the Model Village approach provides an integrated framework for transferring scientific agricultural technologies and addressing location-specific farming needs, there is a need to assess the impact of these interventions at the village level. Changes in farmers' knowledge, annual income, crop yield, and crop production provide important indicators for assessing the effectiveness of the interventions implemented under the programme.

Therefore, the present study was undertaken to analyze the impact of Dr. PDKV Akola interventions in Model Village Chelka with special reference to changes in farmers' knowledge, annual income, crop yield, and crop production.

2. Methodology

The present study was conducted in Chelka village of Barshitakli taluka of Akola district, Maharashtra, which was adopted as a Model Village by Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola for implementing location-specific agricultural interventions. An ex-post facto research design was adopted for the study, as the interventions had already been implemented and their impact was assessed after implementation.

Chelka village in Akola district was selected purposively because it was the adopted Model Village under the Dr. PDKV programme in Akola district. The village consists of 84 households, and all the households were included in the study. The head of each household was considered as the respondent, resulting in a total sample size of 84 respondents.

Table 1: Distribution of respondents according to their knowledge level. (N=84)

Sr. No	Knowledge	Before intervention (2022-23)		After intervention (2025-26)	
		Freq	%	Freq	%
1	Low	33	39.29	05	05.95
2	Medium	45	53.57	57	67.86
3	High	06	07.14	22	26.19
Mean		39.93		86.25	
Change in%		116.00%			

Primary data were collected during 2025-26 through personal

interviews using a pre-tested structured interview schedule. The impact of Dr. PDKV interventions was assessed by comparing the before intervention (2022-23) and after intervention (2025-26) situations. The assessment was based on four indicators, namely change in knowledge, change in annual income, change in crop yield, and change in crop production.

The collected data was subsequently tabulated and analyzed using suitable statistical tools such as frequency, percentage, mean and standard deviation to interpret the findings of the study. The formula used for the study is as follows

$$\text{Change (\%)} = \frac{\text{After} - \text{Before}}{\text{Before}} \times 100$$

3. Results and Discussion

3.1. Impact of Dr. PDKV Interventions

The impact of Dr. PDKV interventions in Model Village Chelka was assessed by examining the changes in the knowledge, annual income, crop yield and crop production of the farmers before and after the implementation of the interventions.

3.1.1. Change in Knowledge

Table 1. presents that distribution of respondents according to their overall level of knowledge before and after the intervention. Most of the respondents belonged to the medium level of knowledge, which increased from 53.57 per cent before the intervention to 67.86 per cent after the intervention, while the mean knowledge score increased from 39.93 to 86.25, representing an overall increase of (116.00%). This substantial improvement in knowledge may be attributed to the combined effect of training programmes, demonstrations and personal contact with university scientists under the Model Village programme. These findings are in line with the results of ^[4, 5]

3.1.2. Change in Income

Table 2 presents the distribution of respondents according to their annual family income before and after the intervention. Before the intervention, (55.95%) of the respondents had an annual family income of up to Rs.1, 99, 000, whereas after the intervention, the largest proportion (41.67%) had an annual family income of up to Rs.3, 88, 000. The observed shift in the distribution of respondents towards higher income categories indicates an improvement in their annual family income. The mean annual family income increased from Rs 1, 98, 841 before the intervention to Rs 5, 41, 633 after the intervention, representing an overall increase of 172.39 per cent. This increase in income was accompanied by improvements in crop yield and production. Similar.

Table 2: Distribution of respondents according to the change in Income

Before Intervention (2022-23)			After Intervention (2025-26)		
Income (Rs)	Freq	%	Income (Rs)	Freq	%
Up to 199, 000	47	55.95	Up to 388, 000	35	41.67
199, 001 - 339, 000	18	21.43	388, 001 – 681, 000	16	19.05
339, 001- 478, 000	09	10.71	681, 001 – 974, 000	14	16.67
478, 001 - 617, 000	07	08.34	974, 001 – 1, 267, 000	11	13.10
Above 617, 000	03	03.57	above 1, 267, 001	08	09.51
Mean	1, 98, 841		5, 41, 633		
Change in%	172.39%				

Findings are in the line with result in ^[4]

3.1.3. Change in Crops Yield

Table 3: Crop-wise yield before (2022-23) and after (2025-26) the Interventions (qt/ha)

Sr. No.	Crops	Average Yield Before (Qt /ha)	Average Yield After (Qt /ha)	Change in (%)
Kharif				
1	Soybean	15	22	46.67
2	Pigeon pea	09.5	15	57.89
3	Cotton	17	20	17.65
4	HDPS Cotton	00	23.41	New crop
5	Turmeric	00	62	New crop
6	Black gram	05	00	Discontinued
Rabi				
7	Wheat	25	40	60.00
8	Chickpea	21	25	19.05
9	Onion	236	240	01.69
10	Seed onion	00	08.50	New crop
11	Chia	00	10	New crop
Summer				
12	Groundnut	22	35	59.09
13	Sesamum	00	10	New crop
14	Green gram	05	10	100.00

Table. 3 presents the season-wise changes in the yield of major crops cultivated in the village before and after the intervention. Among the Kharif crops, pigeon pea recorded the highest increase in yield (57.89%), followed by soybean (46.67%) and cotton (17.65%). Black grams were discontinued after the intervention. Among the Rabi crops, wheat recorded the highest increase in yield (60.00%), followed by chickpea (19.05%) and onion (1.69%). During the Summer season, green gram recorded the highest increase in yield (100.00%), followed by groundnut (59.09%). In addition, five new crops, namely HDPS cotton, turmeric, seed onion, chia and sesamum, were introduced after the intervention. The introduction of these crops indicates a shift towards crop diversification in the village, which may be attributed to the interventions implemented under the Model Village programme. These findings are in line with the results of ^[2, 3, 4, 5].

3.1.4. Change in Crops Production

Table.4. presents the season-wise changes in agricultural production of major crops cultivated in the village before and after the intervention. Among the Kharif crops, pigeon pea

recorded the highest increase in production (121.00%), followed by soybean (69.48%). Cotton production decreased from 1, 530 to 1, 380 qt; however, with the introduction of HDPS cotton, total cotton (cotton + HDPS cotton) production increased from 1, 530 to 1, 653.90 qt (8.10%). Turmeric was also introduced after the intervention with a production of 124 qt, while black gram, with a production of 30 qt before the intervention, was discontinued after the intervention. Among the Rabi crops, wheat recorded an increase in production from 1, 000 to 1, 280 qt (28.00%), followed by onion, which increased from 3, 541.65 to 3, 600 qt (1.65%). In contrast, chickpea production decreased from 1, 428 to 1, 300 qt (-8.96%). During the Summer season, green gram recorded the highest increase in production (263.64%), increasing from 27.5 to 100 qt, while groundnut production increased from 704 to 770 qt (9.38%). The increase in production of several crops and the introduction of new crops indicate improved agricultural production and crop diversification in the village, which may be attributed to the interventions implemented under the Model Village programme. These findings are in line with the results of ^[2].

Table 4: Crop-wise change in agricultural production before and after the intervention

Sr. No	Crops	Area (Ha)		Average Yield (Qt/Ha)		Production (Qt)		Change in (%)
		Before	After	Before	After	Before	After	
KHARIF								
1	Soybean	90	104	15	22	1350	2288	69.48
2	Pigeon pea	10	14	9.5	15	95	210	121
3	Cotton	90	69	17	20	1530	1380	08.10
4	HDPS Cotton	-	11.7	-	23.41	-	273.90	
Total (Cotton +HDPs Cotton)						1530	1653.9	
6	Black gram	05	-	06	-	30	-	Discontinued
7	Turmeric	-	02	-	62	-	124	New Crop
RABI								
8	Wheat	40	32	25	40	1000	1280	28
9	Chickpea	68	52	21	25	1428	1300	-8.96
10	Onion	15	15	236	240	3541.50	3600	1.65
11	Seed onion	-	6.4	-	8.5	-	54.4	New Crop
12	Chia crop	-	02	-	10	-	20	New Crop
SUMMER								
13	Sesamum	-	02	-	10	-	20	New Crop
14	Groundnut	32	22	22	35	704	770	09.38
15	Green gram	05	10	5.5	10	27.5	100	263.64

4. Conclusion

The present study indicates that the interventions implemented by Dr. Panjabrao Deshmukh Krishi Vidyapeeth (Dr. PDKV), Akola, under the Model Village programme had a positive and measurable impact on the farmers of Model Village. The interventions resulted in substantial improvement in farmers' knowledge, income, crop yield and agricultural production.

Farmer's knowledge of recommended agricultural technologies increased by 116.00 per cent, while the average annual family income increased from Rs. 1, 98, 841 before the intervention to Rs. 5, 41, 633 after the intervention, representing an increase of 172.39 per cent. Improvement in crop yield was observed across Kharif, Rabi and Summer seasons, with notable increases in green gram (100.00%), wheat (60.00%), groundnut (59.09%) and pigeon pea (57.89%). Similarly, substantial increases in crop production were observed, particularly in green gram (263.64%), pigeon pea (121.00%) and soybean (69.48%).

The introduction of HDPS cotton, turmeric, seed onion, chia and sesamum, along with improvements in the productivity of existing crops, indicates a shift towards crop diversification and improved agricultural productivity in the village. These findings revealed that the scientific and location-specific interventions implemented under the Model Village programme contributed to measurable improvements in the overall socio-economic and agricultural conditions of the farmers.

Based on the findings, the Model Village approach may be considered an effective strategy for promoting improved agricultural technologies and enhancing farm productivity at the village level. It is recommended that the approach may be replicated in other districts and talukas through coordinated efforts of Agricultural Universities, Krishi Vigyan Kendras and other developmental agencies.

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