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Impact of Technological Interventions on Doubling Farmer's Income in Hingoli District

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ABSTRACT

Hingoli district is in Marathwada region of Maharashtra state. The district has 4,24,589 ha area in *Kharif* season spread over 610 villages, however it reduces to 18,739 ha in *Rabi* Seasons with 101 villages. The major crops of the district are soybean, turmeric, cotton, pigeon pea and gram. The district suffers from various natural calamities like climate change, flood, droughts and non-seasonal rainfall, changes in temperature, urbanization, and fragmented land holding. For resolving above problems in agriculture there is need to commercialize agriculture, change is farming system, cropping pattern and adoption of allied agricultural related activities to ensure an all-round development of farming families and improving standard of living of farmers in Hingoli district. Keeping in view the above, 110 farmers were selected in nineteen villages of Kalamnuri, Aundha Nagnath and Hingoli block of the district for intervention under doubling farmer's income during 2020-2021. The data were collected using a well-structured and pretested interview schedule by covering all dimensions. The study reflected that a total of 71.82 per cent of respondents were middle aged (36 to 55 yrs), while 92.73% of respondents were male. The respondents were having middle school (41.82) % to 10th standard education levels (34.55%), 34.55 % had marginal land holding (less than 1.0 ha), 44.55 per cent had medium to high net income (Rs. 62162/-224900/-) per annum. It was noticed that income from field crop increased by 182.24% due to technological interventions with the contribution of 47.95% in additional income.

Key Words: Impact, Technological, Intervention , Farmers Income

INTRODUCTION

Agriculture is backbone and primary source of livelihood for both men and women in India. The agriculture can be considered as a system where crop is grown, and other enterprise are compatible and complementary with each other. The farming system includes all components of land such as soil, crop, livestock, water, insect, labour, and other resources. The district has 424589 ha area in *Kharif* season spread over 610 villages, however, 18739 ha in Rabi season under 101 villages. The average annual rainfall received in district is about 908 mm. The climate of region is hot and dry with temperature ranging from 11.2 °C to 41.6 °C. The district suffers from various natural calamities like climate change, flood, droughts and non-seasonal rainfall, changes in temperature, population explosion, urbanization and fragmented land holding in rural areas. The Krishi Vigyan Kendra, Hingoli is working in district to provide need-based information to farmers and to bring sustainable development. The sector specific interventions in 2016-2020 conducted by KVK Hingoli are detailed below.

Sector Specific Interventions Conducted by KVK Hingoli

Field crops

Introduction and Adoption of the integrated farming system has enhanced crop productivity in Hingoli district. KVK has introduced KDS-726 and JS-335 varieties for soybean, BDN-716 and BDN-711 for Pigeon pea, Phule Vikram and JAKI-9218 for chickpea. For management of wilt disease in chickpea was emphasized by treating them with Bio Capsules. Pheromone traps, bird perches, and pod borer pheromones are included in integrated pest management packages. Broad bed furrow method in soybean was popularized to increase yield, maintain plant population, and soil moisture.

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Table 1. List of selected villages for study.

Sr. No	Village Name	Taluka	Respondents	Sr. No.	Village Name	Taluka
1.	Kurtadi	Kalamnuri	48	11.	Yedud	Aundha Nagnath
2.	Warud	Kalamnuri	29	12.	Bhosi	Kalamnuri
3.	Baur	Kalamnuri	9	13.	Dandegaon	Kalamnuri
4.	Waranga	Kalamnuri	5	14.	Kandli	Kalamnuri
5.	Tondapur	Kalamnuri	3	15.	Dongarkada	Kalamnuri
6.	Bhategaon	Kalamnuri	2	16.	Salapur	Kalamnuri
7.	Wanjola	Hingoli	2	17.	Shenodi	Kalamnuri
8.	Ankhali	Aundha Nagnath	1	18.	Tondapur Tanda	Kalamnuri
9.	Rupur	Aundha Nagnath	1	19.	Yedshi	Kalamnuri
10	ShiradShahapur	Aundha Nagnath	1			

Table 2. Profile of Doubling Farmers' Income.

Sr. No	Variable	Category	Frequency	Per cent
1.	Age (Years)	Young (Up to35)	16	14.55
		Middle (36 - 55)	79	71.82
		Old (56 and above)	15	13.63
2.	Sex	Male	102	92.73
		Female	08	7.27
3.	Education	Primary School (I to IV Std.)	11	10.00
		Middle School (V to X th)	46	41.82
		High School (XI to XII th)	38	34.55
		Graduate (Above XII th)	15	13.63
4.	Land Holding	Marginal (<1.0 ha)	39	35.45
		Small (1-2 ha)	38	34.55
		Medium (2-4 ha)	16	14.55
		Large (>4 ha)	17	15.45
5.	Net Income 2016	Low (Up to 62161.86)	41	37.27
		Medium (62162 -224900)	49	44.55
		High (224901.86 and above)	20	18.18
6.	Net Income 2021	Low (Upto177149.69)	45	40.91
		Medium (177145 -605882)	43	39.09
		High (605883.69 and above)	22	20.00

Table 3. Level and Change in household Income.

Crops and enterprises	Net income (Rs/household at current prices)		Increase in income. (%)	Share in total. income (%)		Share in additional income (%)
	2016-17	2020-21		2016-17	2020-21	
Field crops	154036	228000	182.84	64.62	58.06	47.95
Horticulture	61091	118669	41.10	25.63	30.23	37.33
Livestock	4245	16276	204.18	1.78	4.15	7.80
Farm and non - farm enterprises	18990	29672	142.34	7.97	7.56	6.92
Overall	245605	558349	210.96	100	100	100

Horticultural Crops

For doubling of farmer's income, introduction of sequence cropping system with short duration vegetables crops was done. Similarly, conducted front line demonstrations of turmeric varieties Salem, IISR Pratibha, and Bhima Shakti of onion. Integrated Nutrient Management practice such as spray formulation "IIHR turmeric special," (micronutrient mixture) in turmeric, "vegetable special" in tomato and "banana special," integrated Pest and Diseases Management for management of rhizome fly, white grub, and rhizome rot in turmeric. Swapping out chickpea for rajma and encouraging muskmelon to be covered with crop cover was done.

Animal Husbandry

Management of animal health for improving quality & productivity of milch animals through Integrated Dairy Management was done. To overcome the problems of fodder scarcity, establishment of fodder cafeteria of improved varieties Phule Jayant, Yashwant, DHM-lucerne, berseem, Maize etc. Rearing and demonstration of improved goat breed (Osmanabadi), Cow (Gir), Poultry (Giriraj/Vanraj/Gram Priya). Encouraging farmers to adopt balanced nutrient management through enrichment of fodder, silage making and azolla.

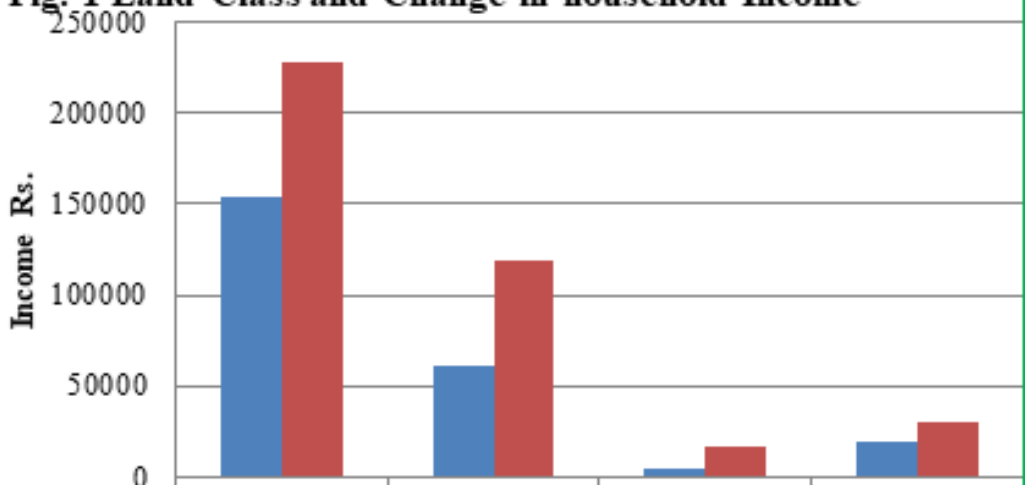
Farm and Non-Farm Enterprises

Production of soybean seeds. Encourage the self-help group in the community to get involved in activities that will generate cash and jobs, such as producing papad, making turmeric powder and preparing items made from millets. Kitchen gardening contributes to food security for households. Raise awareness and show off a solar conduction dryer for vegetables.

MATERIALS AND METHODS

The present study was conducted in Hingoli district of Marathwada region of Maharashtra. The Hingoli district comprises of 5 blocks namely Hingoli, Kalamnuri, Sengaon, Aundha Nagnath, Basmat from these Kalamnuri, Aundha Nagnath and Hingoli blocks selected purposively. Thus, 110 KVK farmers were selected from nineteen villages for the study. The data were collected using a well-structured interview schedule and analysed by using various statistical tools and methods.

Fig. 1 Land Class and Change in household Income



	1	2	3	4
Net income 2016-17	154036	61091	4245	18990
Net income 2020-21	228000	118669	16276	29672

RESULTS AND DISCUSSION

The study revealed that a total of 71.82 per cent of respondents were middle age (36 to 55 yrs), while 92.73% of respondents were male. The respondents were having middle (41.82) % to matric education levels (34.55%), 34.55 % had marginal land holding (less than 1.0 ha), 44.55 percent had medium to high net income (Rs. 62162-224900/-) per annum.

Impact on Household Income and change in household income by land class.

It was seen that technological interventions contributed 47.95% of the additional income from field crops, increasing it by 182.24%. In contrast, crop income from horticulture increased by 41.10 per cent, with a portion of additional income of 37.33%, income from animal component of 204.18%, and additional income of 7.80%. However, there was a 142.34% rise in income and a 6.92% share of additional income in farm and non-farm enterprises.

The use of varietal demonstration, adoption of integrated agricultural systems, introduction of new varieties, and the application of integrated pest management techniques in crops could be the cause. The income of farmers increased by 41.10% in horticulture crops, and their share of the additional income increased by 37.33%. On the other hand, the raising and breeding

It was revealed from Table 3. 35.45 % is share in total household of Marginal farmers (4 ha) and 14.54% Medium (2-4 ha) is share in total household income, respectively. As observed in change in household income 182.36 % in Marginal farmers followed by 172.15Medium, 166.81Small and 165.48 % change in household income of large farmers.

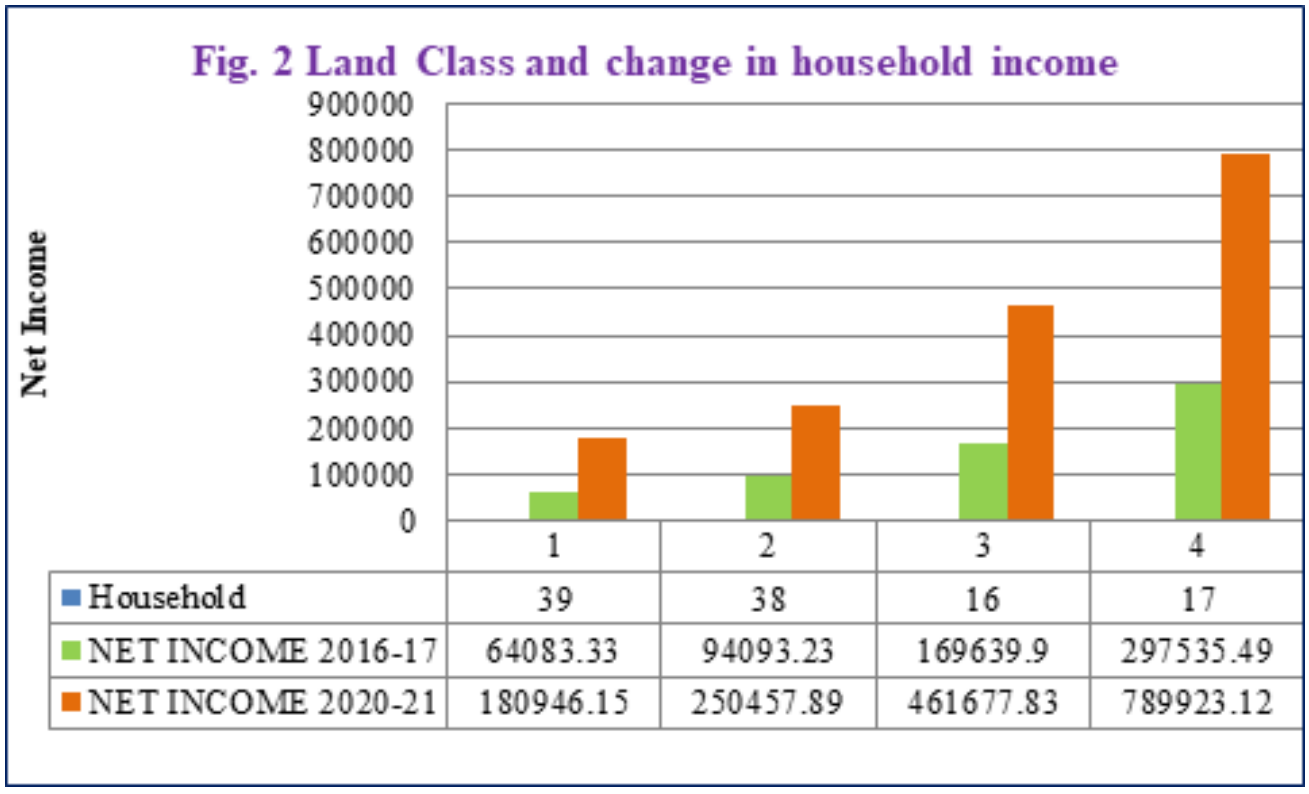
Adoption of integrated farming system helps in enhancement of productivity, employment creation, income generation and nutritional security for human and livestock. The components of system have complementarities with waste products of one hand and becoming source of food as well as energy on other hands. Thus, intervention disseminated by KVK, with active participation of farmers is economically viable, feasible, having potential to create employment opportunity and increases income of farmers.

CONCLUSION

The socioeconomic development of farmers in the Hingoli district has been significantly impacted by the minimum support

Table 4. Income level and change in household income by land class.

Land class	Households (No.)	Share in total household. (%)	Net income (Rs/household)		Change in household Income (%)
			2016-17	2020-21	
Marginal (<1.0 ha)	39	35.45	64083.33	180946.15	182.36
Small (1-2 ha)	38	34.54	94093.23	250457.89	166.81
Medium (2-4 ha)	16	14.54	169639.90	461677.83	172.15
Large (>4 ha)	17	15.45	297535.49	789923.12	165.48
Total	110	99.98	625351.96	1683005.01	169.12



price for crops, the reduction of drudgery in farm operations due to the adoption of technology, integrated pest and disease management, and frontline demonstrations conducted by Krishi Vigyan Kendra, Hingoli. Changes in cropping patterns, adoption of alternative agricultural systems and appropriate animal husbandry ensure farmers receive a considerable income for starting a new business. The overall income from various combinations is correlated with the cost of production and cultivation of various crops. Under the strict supervision of Extension Professionals, Agricultural Scientists and Subject Matter Specialists, frontline demonstrations on a variety of crops should be conducted with sufficient financial assistance from planners and policy makers.

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