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Impact of research and extension activities in production of chilli and turmeric in Shivamogga district of Karnataka

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Abstract
Spices in Shivamogga district in Karnataka occupy an area of 7,358 ha with the production and productivity of 56,327tonnes and 7.66 t/ha respectively. The important spices grown in the district are: ginger, turmeric, pepper, clove, chilli and nutmeg. But the productivity and processing into value added products of spices is comparatively low. By knowing the immense scope and importance authors made efforts through different extension approaches *viz*., on farm tests (OFT), front line demonstration (FLD), farmers field school (FFS), training (on and off campus, vocational, extension functionaries), seminar, method demonstration, field day, field visit, exhibition and Krishi Mela from 2009-2016 with reference to chilli and turmeric. This paper attempts to assess the impact of research and extension activities carried out in dissemination of technical knowledge in improved production technologies of chilli and turmeric. Medium to high level of adoption score was noticed in beneficiary group compared to non-beneficiary group of farmers. With respect to level of satisfaction, medium to high level of satisfaction was expressed by the farmers about research and extension activities in production of chilli and turmeric. It is concluded that there was a substantial impact on knowledge, adoption and enhanced income of the beneficiary farmers over non-beneficiary farmers in promotion of improved production and productivity of chilli and turmeric.

Keywords: Chilli, impact assessment, KVK, turmeric

Introduction
Karnataka is known for production of spices due to favorable agro-climatic condition and increasing awareness amongst the farmers. Spices in Shivamogga district occupies an area of 6,695 ha with a productivity of 7.85 t/ha. The total value of the produce is Rs. 6,539 lakhs/annum. The main spices grown in the district are: ginger, turmeric as sole/intercrop and pepper, clove, nutmeg as intercrop/mixed crop. But the productivity of spices is low compared to other states. Krishi Vigyan Kendra, Shivamogga district as its jurisdiction has played crucial role in transfer of technology with respect to spices production thereby enhancing the productivity. India has multiple public extension systems. Mainly the Indian Council of Agricultural Research (ICAR) institutes, State Agricultural Universities and State Agricultural Departments are involved in transfer of technology. The Department of Agriculture and Cooperation under the Union Ministry of Agriculture and Farmers Welfare and the provincial (state) Departments of Agriculture are primarily responsible for the transfer of technology to the farmers. National Agricultural Extension Systems worldwide including India have undergone major changes during the past two or more decades (Swanson 2008) [4]. Krishi Vigyan Kendra (KVK) an educational institution offers a very good opportunity to farmers by organizing different extension activities in developing a skilled and educated workforce. The KVKs conduct extension activities with a view to raise the level of knowledge, attitudinal changes and testing and transferring of recommended improved farm technologies so as to bridge the gap between production and productivity and also to increase self employment opportunities among the farming community (Samant and Gowda, 2003) [3]. In this study an effort has been made to assess the impact of research extension activities on chilli and turmeric Growers of Shivamogga District in Karnataka.

Methodology

Due to the scope and immense potentiality in spices production, authors made efforts through different extension approaches viz., on farm tests (OFT), front line demonstrations (FLD), farmers field school (FFS), trainings (on and off campus, vocational, extension functionaries), seminars, method demonstrations, field days, field visits, exhibitions and Krishi Melas. While conducting the OFTs, FLDs, training programmes and FFS the necessary steps for selection of site, farmers, layout of demonstration plots etc., were followed as suggested by Choudhary 1999 [1]. The comparison was made among 60 beneficiaries and 60 non-beneficiaries about knowledge of farmers and level of adoption regarding production technology of turmeric and chilli.

Results and discussion

In the present study, performance of turmeric cultivars in South Transitional Zone, knowledge of farmers, distribution of beneficiary and non-beneficiary farmers by their adoption score regarding production technology of turmeric, chilli and extent of farmer's satisfaction of extension services were studied.

A total of nine turmeric cultivars were supplied to the farmers under on-farm test to evaluate for yield, insect-pests, curcumin content and B:C (Table 1). Among the nine cultivars higher rhizome fresh weight and B:C (t/ha) were recorded in Rajapuri (43.42/ha; 3.57) and Pratibha (42.66 t/ha; 3.38) and lower fresh weight and B:C were recorded in Belgaum Local (20.57 t/ha). Higher dry weight was recorded in Salem (8.00t/ha) followed by PTS-24 (7.90 t/ha) and lower dry weight was observed in CLI-325 (4.62t/ha). With respect to insect-pests, lower incidence of shoot borer and thrips population/cm^2 incidence were recorded in Salem (8.746%, 0.00) followed by Alleppy (9.16%, 0.00). Higher curcumin content was recorded in Alleppy (5.44%) and Kadapa (5.14%). Medium to high level of knowledge and adoption of improved production techniques regarding production of turmeric and chilli were observed (Table 2, 3) compared non-beneficiary farmers. The results are in conformity with findings of Deleep *et al*., 2006 [2] and Zaheer *et al.*, 2015 [5]. Based on client satisfaction index (CSI) the research and extension services rendered showed that 32.00 per cent higher satisfaction level and 46.66 per cent medium satisfaction level among 75 selected beneficiaries (Table 4).

Table 1: Performance of turmeric cultivars under on-farm test in South Transitional Zone

Cultivars	Rhizome fresh weight (t/ha)	Per cent shoot borer incidence	Thrips population/cm^2	Per cent curcumin content	B:C
Belgaum Local	20.57	14.61	0.00	3.73	1.76
CLI-325	32.00	17.10	7.66	4.19	2.68
Bidar-4	24.00	10.55	16.00	4.08	2.04
Salem	34.13	8.76	0.00	4.84	2.84
PTS-24	39.46	10.19	0.00	5.12	3.26
Pratibha	42.66	13.50	23.50	5.03	3.38
Rajapuri	43.42	18.59	1.91	4.75	3.57
Alleppy	35.42	9.16	0.00	5.44	2.99
Kadapa	25.16	17.49	31.25	5.14	2.15

Table 2: Knowledge of farmers regarding production technology of turmeric and chilli (n=120)

S. No.	Knowledge level	Beneficiaries		Non-Beneficiaries		Total	
		F	%	F	%	F	%
1	Low (up to 17.5)	4	6.66	21	35.00	25	20.83
2	Medium (17.5-18.5)	36	60.00	34	56.66	70	58.34
3	High (more than 18.5)	20	33.34	05	8.34	25	20.83
Total		60	100	60	100	120	100

Table 3: Distribution of beneficiary and non-beneficiary farmers by their adoption score regarding production technology of turmeric and chilli (n=120)

Sl. No.	Knowledge level	Beneficiaries		Non-Beneficiaries		Total	
		F	%	F	%	F	%
1	Low adoption (up to 25.50)	0	0	24	40.00	24	20.00
2	Medium adoption (25.50-26.70)	42	70.00	34	56.66	76	63.34
3	High adoption (more than 26.70)	18	30.00	02	3.34	20	16.66
Total		60	100	60	100	120	100

Table 4: Extent of farmers satisfaction of research and extension services rendered (n=75)

Sl. No.	Satisfaction level	Number	Per cent
1	Low	13	17.33
2	Medium	38	50.67
3	High	24	32.00
Total		75	100.00

Conclusion

The present research and extension system would continue to play an important role in technology dissemination. The present study revealed that there was a significant role of extension activities in enhancing the production and productivity of spices by motivating spice growers. There was a substantial impact on knowledge, adoption level and enhanced income of the beneficiary farmers over non-beneficiary farmers.

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