

## **Effectiveness of Grass-root Level Unit in Extension Delivery Services in Karnataka**

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### **ABSTRACT**

Timely and relevant access to information and input by farmers is necessary to improve agricultural productivity. A demand driven extension system at the grass-root level called Raitha Samparka Kendras (RSKs) was established in Karnataka in the year 2000 replacing the earlier Training and Visit system (T&V). The study was conducted to analyse the effectiveness of the extension services provided by RSKs in terms of its outreach to the farmers and its impact on their agricultural production. Six RSKs of Gadag district of North Karnataka comprising of six Agricultural Officers (AO), 25 Assistant Agricultural Officers (AAO) and 90 beneficiary farmers were selected. The study revealed that RSKs covered wide geographical area and the ratio of extension personnel to farm families was high (1:1406). It was found that majority (85.56%) of the farmers' preferred to consult progressive farmers for agricultural information. No significant association was found between farmers' frequency of contact with their location from RSK as well as with their size of landholding. However, there was a significant association between the farmers' land holding and extension participation. A significant impact was observed on yield of important crops after attaining the services from RSKs. Most of the farmers were primarily using RSK just as government retail outlet to buy subsidized agro-inputs rather than for attaining technical agriculture information.

**Keywords:** Farmers' coverage, consultancy, frequency of contact, information, input, impact

### **INTRODUCTION**

The Indian agriculture is a practice of traditional knowledge blended with new scientific knowledge. Today, the farmers are increasingly looking for frequent interactions with various information sources to address the the emerging information requirement. The challenge is to improve the accessibility of farmers to information and its relevance in the agricultural development (Sharma, 2002). The 2003 National Sample Survey office (NSSO) survey showed that 60 per cent of farmers in India had not accessed any source of information on modern technology to assist in their farming practices in the past year. The coverage and relevance of information provided to farmers through the agricultural extension system is therefore questionable. While this may be partly due to inadequate contact by the services, which need to reach a large and complex farming community, inappropriate or poor-quality information could also be a key hindrance to farmers' use of extension services. Adoption of innovations depends largely on effective information and input dissemination using appropriate teaching methods and is adequately and timely accessed by farmers (Saravanan,2007). Extension delivery

services: Shekhar et.al. 2013 revealed that effectiveness of paid extension service provided useful insights into four components that make up the effectiveness index

Agriculture in Karnataka is in the process of modernization in many phases. The major constraint for many of the farmers was to visit the agricultural offices which were located at taluka level (block level) with a radius of 25 to 50 km and during these visits; they attained only information on farm technologies but not important critical inputs such as seeds, fertilizers, insecticides, etc. (Raghupathi,2011). Further, the approach followed under T&V system which included visiting villages by extension personnel to provide information was not well received as it was not demand driven. In view of the aforementioned gaps, the government of Karnataka started a new demand driven extension approach called Raitha Samparka Kendras (RSKs) at the grass-root level (Hobli level) in the year 2000 under Raitha Mitra Yojane replacing the earlier T&V system. There are 745 RSKs located at Hobli level (sub-block) functioning in the state with the objective to provide update information on crop production practices, crop production option and market trends, to facilitate on site provision of agricultural inputs like seeds, bio-fertilizers, micro-nutrients, etc. This paper

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endeavours to understand the effectiveness of the extension services provided by the grass-root level extension unit, RSKs - their farmers' coverage and accessibility of information and input, impact and farmers' consultancy behaviour. The information seeking behaviour of the farmers is a reflection of the way RSKs are being used by the farmers and to know if the RSKs are serving the intended purposes.

### METHODOLOGY

The study was conducted in Gadag district in the year 2013-14 in which three taluks (blocks) viz. Gadag, Mundargi and Ron comprising of total six RSKs (2 from Gadag, 1 from Mundargi and 3 from Ron) were selected using purposive sampling technique which included both rain-fed and irrigated area. Six Agricultural Officers (AOs), twenty-five Assistant Agricultural Officers (AAOs) and 90 beneficiary farmers were selected from the identified RSKs by simple random sampling method. Three different schedules were developed and used for collecting data. The data thus generated were analysed and presented by using averages, frequencies, chi-square and t-test. The coverage of extension services was measured considering the ratio of the extension personnel (AOs & AAOs) with the farm families, villages, etc. The ratios were worked out as below:-

$$\text{E.P to village ratio} = \frac{\text{No. of villages under a RSK}}{\text{No. of extension personnel filled in the RSK (AO+AAO)}}$$

$$\text{E.P to cultivatable area ratio} = \frac{\text{Total cultivatable area (irrigated + rain-fed)}}{\text{No. of extension personnel filled in the RSK (AO+AAO)}}$$

$$\text{E.P to farm families ratio} = \frac{\text{Total no. of farm families}}{\text{No. of extension personnel filled in the RSK (AO+AAO)}}$$

### RESULTS AND DISCUSSION

#### Extent of coverage of villages, area and farm families by RSK

The result in table 1 depicts the extent of coverage of RSKs in disseminating information and input delivery. It can be seen from table 1 that the average number of villages under the RSKs was 29 with a minimum of 23 and a maximum of 34 villages. One RSK has to cover on an average 12,622 farm families. The average irrigated area under the RSKs was 42,303.6 ha and an average rain-fed area of 66,544.9 ha was covered. Further, the average number of extension personnel available in RSKs which included both Agricultural Officer (AO) and Assistant Agricultural Officer (AAO) was nine. The villages within an average distance of 20 km were covered by the RSKs with a minimum and maximum distance of 6 km and 42

km respectively. Thus, the RSKs covered wide geographical area and with the present status of extension personnel, RSK is finding it difficult to fulfil their responsibility of information and input delivery, to reach all farm families.

**Table 1: Extent of coverage of farm families by RSK**

Particulars	Extent of coverage		
	Average	Minimum	Maximum
Village	29	23	34
<b>Farm families</b>			
(a) Small farmers	2729	1894	3565
(b) Medium farmers	6237	5135	7206
(c) Big farmers	3696	1769	6982
<b>Total</b>		12,662	
<b>Area (ha)</b>			
(a) Irrigated	42,303.6	39,661.1	48,248.5
(b) Rain-fed	66,544.9	48,549.5	80,568.5
<b>Total</b>		1,08,848.5	
Extension Personnel	9	6	10
Distance coverage (km)	20	6	42

#### Coverage ratio of extension personnel to farm families

The T&V system which was introduced by Benor in 1978 in South Asia indicated that the appropriate ratio of extension personnel to farm families should be 1:200 in hilly areas, 1:400 in wet lands and 1:800 in dry land area (Shinde, 1990). However, as indicated in table 2, the ratio of extension personnel under RSKs to the village, area and farm families was 1:5, 1:6047ha and 1:1406 respectively. The existing coverage ratio is double the criteria fixed and resulted in an overburdened on the extension personnel and lower reach. There is a need to review this present extension delivery mechanism and make necessary changes. Further, the involvement of the extension personnel in other extension activities like input supply, the extension personnel failed to fulfil the objectives of RSK *i.e.*; to provide update agricultural technical information to farmers timely. There is an urgent need to give less importance to input supply function and emphasise farmers with technical information.

**Table 2: Coverage ratio by extension personnel (EP) to the farm families**

Particulars	n=25	
	Ratio	
EP:Village	1:5	
EP:Area	1:6047ha	
EP:Farm families	1:1406	

#### Profile characteristics of the farmers

The result in table 3 revealed that a higher proportion of the farmers were medium farmers (38.89%), followed by small farmers (35.56%) and big farmers (25.56%). It was observed that more number of farmers had high level of extension participation (42.22%) while, 20 per cent and 37.78 per cent farmers had medium level and low level of

extension participation respectively. The farmers' mass media exposure level varied with 38.89 per cent farmers in medium level of mass media exposure while 35.56 per cent and 25.56 per cent farmers were under low and high level of mass media exposure. Over fifty percent of the farmers had medium and high level of research-extension linkage while 17.78 per cent had low level of research-extension linkage. Further, 57.78 per cent of the farmers were located at a distance of less than 11.85km from the RSK centre, while 42.22 per cent of the farmers resided far from the RSK centre. It could be observed that more than half of the farmers had medium and low extension participation which may be due to lack of awareness about extension activities conducted in the area. The low level of mass media exposure could be due to lack of awareness of agricultural programmes and farm magazines.

**Table 3: Profile characteristics of the farmers**

<b>n=90</b>		
<b>Characteristics</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Landholding</b>		
(a) Small Farmers(<2 ha)	32	35.56
(b) Medium Farmers (2-4ha)	35	38.89
(c) Big Farmers (>4ha)	23	25.56
<b>Extension Activities</b>		
(a) Low (<2.7)	34	37.78
(b) Medium (2.7-4.2)	18	20.00
(c) High (>4.2)	38	42.22
<b>Mean</b>		3.5
<b>SD</b>		1.7
<b>Media Exposure</b>		
(a) Low (<3)	32	35.56
(b) Medium (3-5)	35	38.89
(c) High (>5)	23	25.56
<b>Mean</b>		4.26
<b>SD</b>		1.85
<b>Research-Extension- farmer linkage</b>		
(a) Low (<4)	16	17.78
(b) Medium (4-6)	38	42.22
(c) High (>6)	36	40.00
<b>Mean</b>		5.18
<b>SD</b>		2.89
<b>Location from RSK</b>		
(a) Near distance(<6.83km)	34	37.78
(b) Moderate distance (6.83-11.85km)	18	20.00
(c) Far distance (>11.85 km)	38	42.22
<b>Mean</b>		9.34
<b>SD</b>		5.9

**Information source consultancy pattern by farmers**

With respect to information source consultancy by the farmers, it was found in table 4 that majority (85.56%) of the farmers' first preference for agricultural information was informal sources such as progressive farmers followed by KVK (70%), neighbours (70%), RSK (61.11%), Directorate of Agriculture (37.78%) and ADA/SMS (15.55%), which they contacted as and when required. However, during season, RSKs (37.78%) were mostly contacted by the farmers while the other sources

were hardly contacted during the off season. Farmers usually opt for easily approachable sources like the 'Progressive Farmers', though the information from these sources may not be of latest one. As many farmers nowadays also possess mobile phones, the information seeking behaviour of farmer has changed. The RSK and staff take advantage of this new development and establish regular contact with them. Similar findings were also observed in the findings of Adhiguru et al. (2009).

**Table 4: Information source consultancy pattern by farmers n=90**

<b>Sources</b>	<b>Frequency</b>			
	<b>Bi-monthly</b>	<b>Season</b>	<b>When required</b>	<b>Never</b>
<b>Formal sources</b>				
RSK	1 (1.11)	34 (37.78)	55 (61.11)	0
ADA/SMS	0	0	14 (15.55)	76 (84.44)
Directorate of Agri.	0	1 (1.11)	34 (37.78)	55 (61.11)
KVK/UAS scientists	0	6 (6.67)	63 (70.0)	21 (23.33)
<b>Informal sources</b>				
Neighbours	0	0	63 (70.0)	27 (30.0)
Progressive farmers	0	1 (1.11)	77 (85.56)	12 (13.33)

**Association of location of farmers with their frequency of contact with RSK and extension participation**

The results in table 5 revealed those farmers (61.76%) who were located at near distance to RSK, contacted RSK when required, 35.29 per cent during season and 2.94 per cent at bi-monthly. One-third (33.33%) of the farmers and 66.67 per cent of the farmers of moderate distance contacted RSK 'during season' and 'when required' respectively. Further, among the farmers located at far distance from the RSK, 57.89 per cent and 42.10 per cent of farmers visited RSK, 'when required' and 'during season' respectively. No significant association was found between the location of farmers from RSK and their frequency of contact with RSK. Further, the results depicted that the farmers located near to RSK had low extension participation (38.24%), while 50 per cent farmers located at moderate distance and 47.37 per cent farmers of far distance had medium level of participation. There was no significant association between extension participation and the location of the farmers.

Though the RSKs are located at Hobli level (sub-block) to cater to the needs of the farmers with maximum of 20km distance from the village, the farmers located closer to the RSK did not visit frequently than those located at far distance. It can be inferred that the distance of RSKs neither encourage nor defer their visit.

**Table 5: Association between location of farmers with their frequency of contact with RSK and extension participation**

Particulars	Category	Distance from RSK			$\chi^2$
		Near distance	Moderate distance	Far distance	
		(<6.83km) n <sub>1</sub> =34	(6.83- 11.85km) n <sub>2</sub> =18	(>11.85km) n <sub>3</sub> =38	
Frequency of contact	Bi-monthly	1 (2.94)	0	0	1.651NS
	Season	12 (35.29)	6 (33.33)	16 (42.10)	
	When Required	21 (61.76)	12 (66.67)	22 (57.89)	
Extension participation	Low participation (<2.7)	13 (38.24)	5 (27.78)	8 (21.05)	3.499NS
	Medium participation (2.7-4.2)	11 (32.35)	9 (50)	18 (47.37)	
	High participation (>4.2)	10 (29.41)	4 (22.22)	12 (31.58)	

\*(Figures in parenthesis indicate percentage)

#### Association of farmers' category and their frequency of contact with RSK and extension participation

The results of table 6 revealed that 53.13 per cent, 60 per cent and 73.91 per cent small, medium and big farmers contacted RSK when required. During season, small (43.75%), medium (40%) and big (26.08%) farmers contacted RSK, while only 3.13 per cent of the small farmers visited RSK bi-monthly. There was no significant association between the farmers' land holding and their frequency of contact with RSK. Irrespective of the farmers' size of landholding, the RSKs were visited frequently by the farmers belonging to the different categories. This may be due to the subsidies given by the RSKs for the inputs or there was no biasness among the farmers pertaining services from the RSK.

Further, it can be observed from table 6 that small farmers (53.13%) had low level of participation, medium farmers (57.14%) had medium level of participation and big farmers (56.52%) had high level of participation. There was a significant association between the farmers' land holding and their level of participation in extension activities. The level of participation in extension activities increased with increase in farm size which may be due to higher awareness among the medium and big farmers. The farmers with larger size of land holding had more cropped area and practice intensive cultivation hence, they were found to have taken an interest in different extension activities like trainings, meetings, demonstration, etc and could understand the importance of an organisation like RSKs. However, it is necessary for RSK to motivate small farmers to take advantage of different extension activities.

**Table 6: Association of farmers' category with extent of contact and extension participation**

Particulars	Category	Farmer category			$\chi^2$
		Small	Medium	Big	
		(<2 ha) n <sub>1</sub> =32	(2-4 ha) n <sub>2</sub> =35	(>4ha) n <sub>3</sub> =23	
Frequency of contact	Bi-monthly	1 (3.13)	0	0	3.950NS
	Season	14 (43.75)	14 (40)	6 (26.08)	
	When Required	17 (53.13)	21 (60)	17 (73.91)	
Extension participation	Low participation (<2.7)	17 (53.13)	8 (22.86)	1 (4.35)	23.32**
	Medium participation (2.7-4.2)	9 (28.13)	20 (57.14)	9 (39.13)	
	High participation (>4.2)	6 (18.75)	7 (20)	13 (56.52)	

\*(Figures in parenthesis indicate percentage)  
(\*\*p<0.01 level of significance)

#### Impact of information and input delivery by RSK on farmers' yield

The data in table 7 highlight that the RSK had positive impact on the yield level (q/ha) of the farmers who consulted RSK for information and inputs related to crops like cotton, groundnut, jowar and maize. The increase in percentage in yield level of cotton was observed to the extent of 30.71 per cent, for groundnut it was 14.20 per cent and for jowar and maize, an increase of 12.56 per cent and 16.85 per cent was observed. There was significant difference in the crop yield of the farmers before and after contacting RSK at 5 degree level and 1 degree level of probability.

The adoption of the agricultural extension recommendations by farmers is one variable which indicates the effectiveness of extension delivery. If adequate delivery activities are conducted with adequate materials and personnel, then a high adoption can be expected. From the results it can be inferred that the farmers who adopted the recommendations of the RSKs were benefitted with an increase in their yield, which implies that the RSKs were successful in moulding the challenges of few farmers although only half of the farmers were benefitted. As discussed earlier one of the important benefits realised through this new system (RSK) is easy access to inputs at subsidised rate. These improved inputs had definitely had a bearing on the yield as observed by results. However, mere use of these new inputs without understanding and application of principle may give short term gains which might lead in to increase cost of production. Hence, there is need to provide complete information on improve crop production practices to ensure judicious use of inputs.

**Table7: Impact of information and input delivery by RSK on farmer's yield (q/ha)**

Crop	Frequency	Mean Yield (q/ha)		% increase in yield	t-value
		Before	After		
Cotton	55 (61.11)	14.0	18.3	30.71	7.532**
Groundnut	20 (22.22)	16.9	19.3	14.20	5.035**
Jowar	25 (27.78)	19.9	22.4	12.56	3.415**
Maize	21 (23.33)	35.6	41.6	16.85	4.141**

(Figures in parenthesis indicate percentage)(\*p≤0.05level of significance,  
\*\*p≤0.01level of significance)

### CONCLUSION

The RSKs were established at the grass-root level with the primary objective to provide technical and update information related to agriculture and to provide agricultural inputs. The significant impact on the yield of the beneficiary farmers indicates the effectiveness of RSKs in extension delivery services especially in the supply of inputs. However, the wide coverage area and high ratio of extension personnel to farmer is hampering the functioning of RSK. Thus, there is a need to reduce the beneficiary coverage ratio for effective transfer of technology. The input supply function which over shadowed the information demand, need to be reduced or shifted to village local institution such as farmers service societies.

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