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RESEARCH PAPER

Yield gap in groundnut production in northern transition zone of Karnataka

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Abstract **:** The study was carried out in the northern transition zone of Karnatka comprising of the districts Dharwad, Belgaum, Haveri and Gadag in the year 2009-2010. Ninety respondents were selected from the study area by simple random sampling method. The yield gap was found to be 23.96 per cent between the research station and demonstrator farmers field. Moreover a gap of 59.15 per cent was found between the demonstrator and fellow farmers yield. There was a highly significant difference in comparison of the mean yields between the demonstrator and fellow farmers. The major technical problem perceived by the respondents was inadequate guidance regarding improved technology which was expressed by 23.33 per cent of the demonstrator farmers and 95.00 per cent of the fellow farmers. As many as 76.67 and 96.67 per cent of demonstrator and fellow farmers, respectively expressed high cost of chemicals and fertilizers as the major problem related to input. For demonstrator farmers, the major financial problem was the complex, lengthy and rigid procedure of bank finance (76.67%) whereas for fellow farmers it was inadequate guidance on credit availability (91.67%). Price fluctuation was the main marketing problem as expressed by both the demonstrators (86.67%) and fellow (93.33%) farmers. The general problems faced by the respondents were lack of information about government schemes and subsidies.

Key Words **:** Yield gap, Demonstrator farmers, Fellow farmers

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INTRODUCTION

There is technology breakthrough in the field of agriculture in India which has resulted in increasing productivity, yet there are ample observations to show that not even 25 per cent of the available technology is adopted in the farmers' field. Even though large scale verification trials and demonstrations are conducted to promote the spread of crop production technology, there still exist adoption gaps which leads to lower yields.

India occupies the first place in acreage and second in production of groundnut in the world. In India, groundnut is grown over an area of 6.41 million hectares with total production of 9.36 million tonnes. It is one of the major oilseed crops grown in Karnataka covering an area of 0.76 million hectares and production of 0.38 million tonnes (Anonymous, 2008). The yield of groundnut in farmers' field is 900kg/ha as against the potential yield of 3000kg/ha. This is a clear indication of the fact that though India has competent agricultural research and extension systems, yet the adoption of technologies by farmers are far from satisfactory. In this direction, an attempt has been made to study the adoption gap in groundnut production in northern transition zone of Karnataka with the following objectives: to assess the yield gap on demonstration field, to assess the gap in adoption of individual recommended cultivation practices of groundnut, comparison of means of yield between demonstrator and fellow farmers and yield gap between demonstrations and fellow farmers field.

MATERIALS AND METHODS

The study was conducted in northern transition zone of

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Karnataka.

Keeping the frontline demonstrations conducted in the year 2008-2009 as the criterion, the taluks selected were *viz.,* Dharwad, Hubli, Kalaghatagi and Kundagol taluks under Dharwad district, Ron and Shirahatti taluks under Gadag district, Savanur taluk under Haveri district and Bailhongal taluk under Belgaum district. All the villages under the selected taluks where frontline demonstrations were laid in the year 2008-2009 for groundnut *Kharif* were selected for the study. All the farmers who had laid the frontline demonstration in the study area were selected for the study *i.e*, 30 demonstrator farmers. Five villages where more number of frontline demonstrations, were conducted were selected. Twelve respondents from each of the five villages were selected at random to form a sample of sixty fellow farmers. Thus a total of ninety farmers formed the sample of the study.

Yield gap was operationalised as the difference between potential yield and actual farm yield with respect to groundnut production technology. The potential yield according to the information procured from the K.V.K, Saidapur was 27.5 q/ha. The yield of the groundnut *Kharif* on the growers' field in the year 2008-2009 was taken as the actual farm yield. Yield gap was measured using the yield gap index expressed in percentage.

$$\text{Index of yield gap} = \frac{\text{Potential yield} - \text{Actual yield}}{\text{Potential yield}} \times 100$$

The data collected were scored, tabulated and analyzed by using frequency, percentage, mean, standard deviation.

RESULTS AND DISCUSSION

The results of the present study alongwith relevant discussion have been presented as under:

Yield gap on demonstration field:

A perusal of Table 1 indicates that the average yield of the demonstrator farmers was 20.91 quintal/ha as against the potential yield of 27.5 q/ha. The gap in their yields was found to be 6.59 q/ha. A gap of 23.96 per cent existed between the yields at the research station and demonstration field. The full potential of the crop thus remains untapped even though there is technology explosion in this fast changing world.

Table 1: Yield gap on demonstration fields (n=30)

Potential yield (q/h)	Average yield at the demonstration field (q/h)	Yield gap I (q./h.)	Yield gap I in percentage
27.5	20.91	6.59	23.96

The reason accountable for this is the partial or non adoption of certain recommended package of practices like the application of copper sulphate, phosphorus solubilising bacteria, lime sulphate, vermicompost and *Rhizobium* even on the demonstration fields (Table 2). This calls for monitoring of frontline demonstrations so that the potential farm yield of the crops can be realized.

Gap in adoption of individual recommended cultivation practices of groundnut:

Table 2 furnishes the adoption of recommended cultivation practices by the respondents.

It is clearly indicated in the Table 2 that there was cent per cent adoption gap in application of copper sulphate among the demonstrator farmers. Ninety per cent of the demonstrator farmers did not apply phosphorus solubilising bacteria and lime sulphate. Adoption gap was also found in cases of practices like application of vermicompost (66.67%) and *Rhizobium* (66.67%) among the demonstrator famers.

The Table 2 also brings to light that among the fellow farmers there was cent per cent adoption gap in practices like application of *Rhizobium*, phosphorus solubilising bacteria, lime sulphate and copper sulphate. None of the fellow farmers used control measures for pests like Spodoptera and diseases like damping off, fungal neck rot and leaf spot. In addition to those, 96.67 per cent of the fellow farmers did not apply vermicompost nor used control measure for Red Headed Caterpillar. Gypsum was not applied by 90.00 per cent, Leaf roller was not controlled by 81.67 per cent and seed treatment was not followed by 80.00 per cent of the fellow farmers.

The reason for non-adoption of nutrients as per recommendation was because of non-availability at the time of need, high cost, and inadequate guidance regarding nutrient management.

In comparison between the demonstrator and fellow farmers in nutrient application, it was found that the fellow farmers were much behind the demonstrator farmers because of low educational status and aversion to the use of chemicals. Some opined that use of any fertilizer would cause soil deterioration.

A huge percentage of the fellow farmers did not use any measures for the control of pest and diseases because of reasons like unawareness of the right chemicals, high cost of chemicals, negligible losses caused by the pests and diseases. The fellow farmers also opined that the fodder becomes poisonous and no longer fit for the consumption by the cattle after the use of chemicals.

The low usage of seed treatment practice among the fellow farmers could be attributed to the fact that they ignored the practice since the visible impact of the seed treatment was not instant. The findings are in conformity with the study of Siddarmaiah and Goud (1991).

Yield gap between demonstrations and fellow farmers field:

A close observation of Table 3 showed that there was

Table 2 : Gap in adoption of individual recommended cultivation practises of groundnut (n=90)

Sr. No.	Recommended practice	Demonstrator farmers (n=30)		Fellow farmers (n=60)	
		Adoption gap		Adoption gap	
		No.	%	No.	%
1.	Variety	0	0.00	2	3.33
2.	Seed rate	1	3.33	28	46.67
3.	Seed treatment	0	0.00	48	80.00
4.	Sowing time	0	0.00	16	26.67
5.	Spacing	1	3.33	26	43.33
6.	Nutrient management (per ha)				
	Application of FYM(7.5 tonnes)	0	0.00	26	43.33
	Vermicompost (1 ton)	20	66.67	58	96.67
	Rhizobium (2.5 kg)	20	66.67	60	100.00
	N:P:K(25:50:25 kg)	3	10	38	63.33
	Phosphorus solubilising bacteria	27	90.00	60	100.00
	Gypsum(500 kg)	9	30.00	54	90.00
	Lime sulphate(25kg)	27	90.00	60	100.00
	Copper sulphate(25kg)	30	100.00	60	100.00
7.	Plant protection measures				
	Pests				
	Leaf roller	1	3.33	49	81.67
	Spodoptera	0	0.00	60	100.00
	Red headed caterpillar	12	40.00	58	96.67
	Diseases				
	Damping off	11	36.67	60	100.00
	Fungal neck rot	16	53.33	60	100.00
	Leaf spot	16	53.33	60	100.00

Table 3 : Yield gap between demonstrations and fellow farmers fields (n=90)

Average yield at the demonstration field (n=30) (q/h)	Average yield at the fellow farmers field (n=60)(q/h)	Yield gap II (q/h)	Yield gap II in percentage
20.91	8.54	12.37	59.15

59.15 per cent yield gap between demonstrator and fellow farmers. The yield of fellow farmers was 8.54 q/ha while that of the demonstrator was 20.91 q/ha. Thus, there existed a gap of 12.37 q/ha between the demonstrator and fellow farmers.

This existence of yield gap was because the fellow farmers failed to adopt recommendations for important practices like application of *Rhizobium*, phosphorus solubilising bacteria, lime sulphate, vermicompost, gypsum and copper sulphate, use of control measures for pests like Spodoptera, Red headed caterpillar and leaf roller and diseases like damping off, fungal neck rot and leaf spot. Moreover they did not follow seed treatment (Table 2).

Comparison of means of yield between demonstrator and fellow farmers:

A perusal of Table 4 enlightens us on the fact that in comparison of the mean yields between the demonstrator and fellow farmers, a significant difference was noticed (calculated t value of 32.12). This indicates that yield of the demonstrator farmers were remarkably higher than the fellow farmers.

Table 4 : Comparison of means of yield between the demonstrator and fellow farmers (n=90)

Average yield at the demonstration field (n=30) (q/h)	Average yield at the fellow farmers field (n=60) (q/h)	t calculated value
20.91	8.54	32.12**

The differences in the yields between the fellow and demonstrator farmers can be certainly attributed to reasons like non adoption of important package of practices by the fellow farmers. More exposure to the skilled techniques, greater motivation due to frequent extension contact, greater tendency to seek information and close monitoring under the extension personnel, higher educational status, more

cosmopoliteness and more prone to innovation among the demonstrator farmers as compared to the fellow farmers certainly supports above finding. This finding is in line with the study done by Rao and Prasad (1994).

Conclusion:

The study indicated a wide difference in the yields of the demonstrator and fellow farmers which implies that there is a huge scope to increase the yield of groundnut at the farmers' field by adopting the recommended package of practices. Cent per cent of the demonstrator farmers had not adopted some important practices resulting in yield gap even on demonstration field. This calls for intensification of efforts by the extension agencies. Moreover, frontline demonstrations needs to be popularized among the farming communities as it plays a pivotal role in bridging the gap between the available technologies at one end and their application for increased production on the other.

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