

Research Article

## Impact of front line demonstrations on groundnut production technology in Guntur district of A.P.

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**SUMMARY :** The present investigation was conducted during 2010-2011. The data were collected through structured interview schedule and with available records at KVK. The results revealed that higher average pod yield and percentage increase in front line demonstration was observed and attributed to the improved variety along with technology demonstrated through front line demonstration. Economic analysis of yield performance of demonstrations revealed that on an average for the period under study, higher gross returns were recorded in demonstration with relatively higher benefit cost ratio. Further with additional cost of Rs.295/ha and Rs.459/ha in demonstration yielded additional net returns of Rs.6,423/ and Rs.14,551/ with incremental benefit cost ratio of 15.93 and 81.34 during *Kharif* and *Rabi*, respectively attributing to higher profitability and economic visibility of the demonstrations. The mean knowledge and adoption scores of beneficiaries were higher comparatively than the non-beneficiaries. It was observed that majority of beneficiaries had medium to higher knowledge and adoption of groundnut production technology promoted through front line demonstration by KVK. This might be due to the concentrated educational efforts made by KVK scientists in implementation of front line demonstrations. Training attained, information seeking behaviour, risk orientation and economic motivation characteristics of beneficiaries have exhibited positive and significant increase in knowledge and adoption of beneficiaries. The data signified strong satisfaction of farmers about the services rendered by scientists through Frontline demonstrations and in turn promoted the physical and mental active involvement of the beneficiaries, ultimately lead to increase in knowledge and adoption level of beneficiaries and higher yields and economic net returns.

**KEY WORDS:**

Front line demonstration,  
Benefit: cost ratio,  
Knowledge, Adoption

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### BACKGROUND AND OBJECTIVES

Indian agriculture has always acted as a catalyst for stronger and sustained economic growth of the country. During 2011, India had a large and diverse agriculture sector, accounting, on an average, for about 16% GDP and 10% of export earnings. India is one of the major oilseed producing countries in the world accounting about 16% of the area and 10% world oilseed production. In India oilseeds occupy nearly 14% of country's gross cropped area and contribute to 5% of the GNP and 10% of the value of the agricultural products. The oil seed scenario in India had undergone dramatic change with the initiation of TMO (technology mission on oilseeds) in 1986. The highest oil seed production was achieved by 24.75MT during 1994-95 against 11.0MT during

1986-87. This dramatic change of Indian oilseed production from a net importer to a status of self-sufficiency during early nineteen's has been popularly known as yellow revolution.

“Believing through seeing” and “learning by doing” accomplished through demonstrations helps Krishi Vigyan Kendras (KVK) in the technology integration. A front line demonstration is a concept of field demonstration evolved by ICAR during the inception of technology mission on oilseed crops and the main objective of front line demonstration is to demonstrate latest crop production technologies and its management practices in the farmers' field under different agro-climatic regions and farming situations by close supervision of the KVK staff. Prof.N.G.Ranga Krishi Vigyan Kendra, Vinayasramam, organised

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362 Front line demonstrations on groundnut in an extent area of 183 ha in the farmers' fields on groundnut crop during the period of 2000-10. The in depth study on the performance of front line demonstrations in respect of yield and economic parameter was needed for further implementation of the programme for effective results. In this context, the present investigation was planned and conducted with the following objectives.

- To study the personal, socio-economic, psychological and communication characteristics of front line demonstrations beneficiaries and non-beneficiaries.
- To ascertain knowledge and adoption of groundnut production technology and to find out the relationship with profile characteristics.
- To assess the performance of front line demonstrations on groundnut with respect to yield and economics.
- To study the satisfaction of the beneficiaries regarding services rendered through front line demonstrations.

## **RESOURCES AND METHODS**

The present investigation has been carried out during 2010-11 in the Guntur district of Andhra Pradesh. Expost facto research design was used since the variables have been already occurred. Depending upon the numbers of front line demonstrations organized in different villages, Gokarajupalem and Motupalem from Karlapalem and p.v. Palem Mandals and Tangellamudi from Pedakakani Mandal were selected, respectively based on probability purposive sampling. 16 each respondents from Tangellamudi and Gokarajupalem and 18 respondents from Motupalem on total comprising 50 respondents were selected for investigation on probability purposive sampling. Five non-beneficiaries each from Yazali of Karlapalem Mandal and Khazipet of Tenali Mandal where front line demonstrations were not organised were selected as non-beneficiaries. In the context of the present study, knowledge was operationally defined as the technical knowhow possessed by the individual groundnut cultivator about groundnut production technology. A structured schedule was developed for measuring the knowledge of the respondents about various aspects of groundnut cultivation as envisaged in the front line demonstrations. A list of 25 practices (comprising 40 items) covering the groundnut production technology was prepared with the consultation of scientists and the relevant literature. Adoption was operationalised for the purpose of present study as practicing the recommended package of practices of groundnut by the farmers. The selected practices were administrated through structured schedule to the farmers in the study for measuring the extent of adoption. The respondents were grouped into three categories by following the mean and standard deviation

method and stastically analysed.

For assessing the performance of front line demonstrations recorded data on front line demonstrations available with KVK were collected and computed. For present investigation FLDs organised 2000-01 to 2009-10 were taken into consideration. The performance of front line demonstrations in the present investigation was operationally studied on percentage of increase in yield in comparison with local check, district and state averages, net and additional returns obtained and benefit cost ratio in comparison with local check.

Satisfaction of beneficiaries for the present investigation is taken as, to react positively or negatively towards the services rendered through front line demonstration. The satisfaction of services rendered through organisation of front line demonstrations was measured based on various dimensions like technology demonstrated, training of participants, timeliness of services, provision of inputs, field visits, diagnosis and advisory services to field problems rendered, organisation of extension activities, performance of variety demonstrated and overall impact of front line demonstrations. The selected respondents were interviewed personally with the help of structured interview schedule on different dimensions of services rendered. Client satisfaction index of each respondent was calculated as developed by Kumaran and Vijayaraghavan (2005).

## **OBSERVATIONS AND ANALYSIS**

The objective wise facts and findings derived after analysing the data have been presented under the following heads.

### **Extent of knowledge of farmers on groundnut production technology:**

The information regarding knowledge level of respondents about groundnut production technology has been presented in the Table 1.

The results in Table 1 reflects that majority of beneficiaries (58%) possessed medium knowledge followed by high knowledge (28%) and low knowledge (14%) categories of respondents about improved package of practices of groundnut production technology. With regard to non-beneficiaries, majority of the respondents possessed medium to low knowledge (each 40%) regarding groundnut production technology. However, the mean knowledge scores of beneficiaries were higher comparatively with that of mean knowledge scores of non-beneficiaries.

The calculated 't' value was 4.264\*\* more than the table value and was found to be statistically significant at 0.01 level of probability. It clearly indicated that knowledge level of beneficiaries was higher than the knowledge level of non-

**Table 1: Extent of knowledge of farmers on groundnut production technology**

Sr. No.	Knowledge of farmers	Beneficiaries (n=50)		Non-beneficiaries (n=10)	
		Frequency (No.)	Percentage (%)	Frequency (No.)	Percentage (%)
1.	Low (<28)	7	14.00	04	40.00
2.	Medium (29-33)	29	58.00	04	40.00
3.	High (>34)	14	28.00	02	20.00
		50	100.00	10	100.00
		Mean 32.38	S.D.3.28	Mean 23.0	S.D. 7.0

beneficiaries. The results also depicts that cent per cent of the beneficiaries had good knowledge about high yielding varieties promoted through front line demonstration. Maximum number of beneficiaries had knowledge about recommended quantity of nitrogenous fertilizer to be applied (98%), suitable time for sowing *Kharif* groundnut (96%), recommended quantity of phosphorus fertilizer to be applied, quantity of gypsum to be applied and IPM practices- mechanical practices to be followed (each 90%). A good number of beneficiaries knew about method of sowing groundnut, straight nitrogenous fertilizer to be applied- urea, quantity of zinc to be applied as foliar spray and stage of gypsum application (each 88%). Majority of beneficiaries (86%) responded right answer about recommended quantity of potassium fertilizer to be applied, chemicals to be used for pest control, biological practices under IPM, importance and number of pheromone traps to be laid per one acre.

More than 80 per cent of beneficiaries had knowledge about recommended seed rate for one acre, suitable time of sowing *Rabi* groundnut, recommended spacing in *Kharif*, chemicals for weed control, serious disease on groundnut, tolerant varieties for pest and diseases, recommended spacing in *Rabi*, recommended quantity of FYM to be applied, use of neem formulations for pest control, crop weed competition period-number of days, moisture percentage in pods before bagging or storage and average obtainable yield during *Kharif*. This showed positive impact of frontline demonstrations on knowledge of farmers which resulted in higher adoption of improved groundnut production technology. This might be due to the concentrated efforts made by KVK scientists in implementation of frontline demonstrations.

### Adoption of farmers on improved of groundnut production technology:

Adoption of the improved groundnut production technology was the ultimate outcome of to be judged in terms of assessing the impact of the frontline demonstrations and findings are presented in Table 2.

Table 2 reveals that majority of (64%) the beneficiaries adopted improved groundnut production technology followed by higher adoption (26%). A very few low number of respondents (10%) showed lower adoption of practices. It can be concluded that a higher proportion of respondents (90%) adopted improved groundnut production technology.

With regard to the non-beneficiaries, mean adoption scores of non-beneficiaries was less than the mean adoption score of beneficiaries. In case of non-beneficiaries, majority of the respondents (60%) had medium adoption level, followed by lower adoption level (30%). Only a very few respondents (10%) had higher or good adoption of ground production technology. It can be concluded that majority of non-beneficiaries had low adoption level and majority of beneficiaries (90%) had very good adoption level. This may be due to more exposure of beneficiaries to the techniques of improved package of practices of groundnut acquired through direct laying and organization of demonstrations, participation in skill training programmes and close contact with programme officials in learning and applying the skilled techniques of groundnut crop cultivation. But in case of non-beneficiaries, the results were quite different from that of beneficiaries. It may be due to no or less exposed of non-beneficiaries to the training programmes, demonstrations, social participation, information seeking behaviour and contact with extension

**Table 2 : Extent of farmers adoption of groundnut production technology**

Sr. No.	Adoption of farmers	Beneficiaries(n=50)		Non-beneficiaries(n=10)	
		Frequency (No)	Percentage (%)	Frequency (No)	Percentage (%)
1.	Low (<10)	05	10.00	03	30.00
2.	Medium (11-13)	32	64.00	06	60.00
3.	High (>14)	13	26.00	01	10.00
		50	100.00	10	100.00
		Mean 12.48	S.D.1.606	Mean 9.3	S.D. 2.311

officials for acquiring skilled techniques of package of practices of groundnut.

The calculated 't' value 4.361\*\* was found to be statistically significant at 0.01 level of probability and statistically proved that there was a significant difference in the adoption of improved package of practices of groundnut crop between beneficiaries and non-beneficiaries. It was observed that cent per cent of beneficiaries had adopted high yielding groundnut varieties promoted through FLD. Maximum number of beneficiaries had adopted earthing up practice, plant protection measures (each 86%), use of ZnSO<sub>4</sub> soil or foliar, weeding including application of weedicides (each 84%), method of sowing seeds and gypsum application (each 82%). A high proportion of beneficiaries had adopted right time of sowing (80%), proper drying of pods for storage (78%), following IPM practices (76%), seed treatment with Rhizobium culture and fungicide (74%), following recommended spacing and irrigation of crop (each 70%). A good number of respondents followed recommended seed rate (68%), application of FYM and recommended fertilizers doses NPK (each 64%).

The findings indicate that a high proportion of beneficiaries had adopted the package of practices of groundnut crop promoted through frontline demonstrations which reflected positive impact of frontline demonstrations on higher adoption of the improved farm practices. This may be due to more exposure of beneficiaries to the skilled techniques acquired through participation in pre- and post-seasonal trainings, participation in the organization of demonstrations and more interaction with KVK scientists on improved package of practices of groundnut crop. The result indicates the concentrated educational efforts made by the KVK scientists through implementation of front line demonstrations.

#### Relationship between independent variables and dependent variables:

For assessing the nature of relationship of independent

variables with that of dependent variables *i.e.* knowledge and adoption of beneficiaries, the correlation coefficients (r) were computed, tested for their statistical significance and presented in Table 3.

It was observed that skill acquired through FLD training had brought positive and significant change in increase in knowledge level of the beneficiaries and strengthened with acquisition of technical know-how of the technology. The information seeking behaviour, individual and group contacts of beneficiaries with KVK scientists during training programmes, demonstrations and other extension activities had brought positive and significant increase in knowledge level of beneficiaries. It can be concluded that the innovativeness nature helped to more aware about scientific farming orientation and ultimately brought positive influence in the knowledge level of the beneficiaries. The risk orientation nature of beneficiaries helped to face the risk involved in practicing the new technology irrespective of its consequences and helped them to gain knowledge of the technology which ultimately resulted in positive and significant correlation.

Economic motivation *i.e.* orientation for obtaining maximum profits from farming helped the beneficiaries to seek more information through linkages with scientists and ultimately resulted in positive and significant increase in knowledge level of the beneficiaries.

It was revealed from Table 3 that the relationship between training undergone and adoption was found to be positive and significant. It can be inferred that participation in pre- and seasonal skill training programmes motivated, strengthened with acquisition of technical know-how of the technology, supported them to face risk involved in adopting technology and ultimately influenced adoption level of the beneficiaries. The information seeking behaviour and frequent contact of beneficiaries with KVK scientists and extension workers to discuss improved practices of groundnut crop has brought positive and significant increase in adoption by the beneficiaries. It also showed that innovativeness of the

**Table 3 : Relationship of profile characteristics of farmers with knowledge and adoption of groundnut production technology**

Sr. No.	Profile characteristics	Correlation coefficient with knowledge	Correlation coefficient with adoption
1.	Age	0.051 NS	0.120 NS
2.	Farming experience	0.247 NS	0.207 NS
3.	Training undergone	0.560**	0.311*
4.	Socio-economic status	-0.116NS	0.146NS
5.	Cropping intensity	-0.483**	0.270NS
6.	Information seeking behavior	0.404**	0.286*
7.	Social participation	-0.237NS	0.098NS
8.	Innovativeness	0.316*	0.324*
9.	Risk orientation	0.380**	0.406**
10.	Economic motivation	0.578**	0.339*

\* and \*\* indicate significance of values at P=0.05 and 0.01, respectively

NS=Non-significant

beneficiaries had resulted in positive and significant relationship with their adoption of groundnut crop cultivation.

With close observation of the figures presented in Table 3, revealed that the risk orientation of the beneficiaries exhibited positive and highly significant relationship with adoption of groundnut production technology. It was observed that positive and significant relationship was observed between the economic motivation and adoption level of the beneficiaries. It was obvious that economically motivated farmers were more oriented towards maximization of the profit from farming by using the improved technology. They considered farming as enterprise and through increased contacts with scientists and extension officers, acquainted the knowledge and adopted it properly.

#### **Relationship between knowledge of the FLD beneficiaries with their adoption level on Groundnut production technology:**

For the purpose of assessing the significant difference if any, between the knowledge and adoption of the groundnut production technology by the beneficiaries, correlation coefficient was applied.

The computed “r” value of knowledge level of beneficiaries with adoption of groundnut production technology was found to be positively and highly significant at 0.01 level of probability. It is universally accepted that knowledge and adoption were interrelated and both together gives better perfection of the individuals. From the results, it was concluded that beneficiaries had acquired medium to high knowledge and adoption of groundnut crop cultivation promoted through frontline demonstrations. It signifies the concentrated efforts of KVK scientists in promoting groundnut production technology through implementation of the frontline demonstrations.

#### **Performance of front line demonstrations:**

The findings in respect of the yield performance of

groundnut demonstrations are depicted in Tables 4 and 5.

The KVK has organized 178 frontline demonstrations on groundnut crop during *Kharif* in an extent area of 100 ha. The demonstrations were recorded higher average pod yield 17.34 q/ha compared to average local check yield of 13.32 q/ha and the percentage increase in the demonstration yield over local check was 28 per cent. The calculated “t” value 2.208\* was found to be statistically significant at 0.05 level of probability. The significant yield difference may be attributed to the improved variety along with technology demonstrated through FLD and its adoption by the front line demonstration beneficiaries.

It reveals that there was a wide pod yield gap between the front line demonstration average *Kharif* yields in comparison to district and state averages. The average yield for the period in the demonstration during *Kharif* was 17.34q/ha in comparison of district average of 10.10q/ha. The yield gap percentages with district yield was ranging from 30 per cent to 165 per cent, on an average during the period under study and it was recorded 76 percentage increase in yield in FLDs in comparison with the district average yield.

It was also observed that there was a wide yield gap of 2 to 5 times in respect of demonstrations with state average yield. The recorded average yield of front line demonstrations was 17.34q/ha which was 2-3 times relatively higher than the state average of 6.92q/ha for the period under study. The yield gap percentage with state average yield was 191.4 per cent in the period under study and it was ranging from 50 per cent to 422 per cent. The calculated “t” value was found to be statistically significant at 0.01 level of probability with each of district 5.11\*\* and state 6.05\*\* averages and concluded that the relatively higher yields in the demonstrations was due to the package of practices promoted through front line demonstrations which fetched them with higher yields. It indicates that the groundnut growers other than front line demonstrations with low yields were identified by low

**Table 4 : Performances and yield gap analysis of *Kharif*-demonstrations**

Year	No. organized	Area covered (ha)	Demonstration average yield(q/ha)	Local check average yield (q/ha)	% increase in yield	District average yield(q/ha)	Yield gap percentage in district yield (%)	State average yield(q/ha)	Yield gap percentage in state yield (%)
2000-01	20	12	15.05	10.70	40.6	10.90	38	10.60	43
2001-02	10	10	15.40	11.20	37.5	07.29	111	05.68	171
2002-03	19	20	11.62	08.59	26.0	08.77	33	04.26	173
2003-04	22	10	18.51	14.18	30.5	09.58	93	04.82	284
2004-05	09	05	25.38	19.90	27.0	09.59	165	07.78	226
2005-06	21	10	15.47	12.40	24.7	11.19	62	05.65	173
2006-07	31	13	15.73	13.17	19.4	09.71	62	03.01	422
2007-08	24	10	18.44	15.10	22.1	11.97	54	13.57	36
2008-09	22	10	20.54	16.44	24.9	11.97	72	06.94	195
Total/Average	178	100	17.34	13.52	28.0	10.10	76.6	6.92	191.4

**Table 5 : Performance and yield gap analyses of *Rabi*-demonstrations**

Year	No. organized	Area covered (ha)	Demonstration average yield (q/ha)	Local check average yield (q/ha)	% increase in yield	District average yield(q/ha)	Yield gap percentage in district yield (%)	State average yield(q/ha)	Yield gap percentage in state yield (%)
2000-01	10	04	28.42	22.60	25.7	22.48	26	16.36	74
2001-02	08	04	28.30	25.80	09.6	25.44	12	17.14	65
2002-03	05	10	37.70	34.60	08.9	21.53	75	13.97	178
2003-04	31	15	24.17	19.38	24.7	13.39	81	16.13	50
2004-05	14	10	43.23	31.27	38.0	25.26	71	16.57	161
2005-06	49	10	42.01	37.15	13.0	33.64	25	17.39	142
2006-07	22	10	40.93	31.85	28.5	22.52	82	18.06	127
2007-08	25	10	25.76	19.80	30.0	13.07	97	19.25	34
2008-09	10	05	34.20	25.74	33.0	24.75	38	19.28	77
2009-10	05	05	38.69	30.75	25.8	27.63	40	21.28	82
Average	184	83	34.34	27.89	23.7	22.9	54.7	17.54	99.0

knowledge of groundnut production technology, low risk bearers with negative perception of training and extension contact, social participation etc., It can be concluded that the frontline demonstrations have brought significant difference in yields of groundnut.

The data and results about yield gap analysis of *Rabi* frontline demonstrations were presented in Table 5.

KVKorganised184 front line demonstrations on groundnut crop during *Rabi* in an extent area of 83 ha. The demonstrations were recorded higher average pod yield 34.34 q/ha compared to average local check yield of 27.89 q/ha and the percentage increase in the demonstration yield over local check was 23.7 per cent. The calculated “t” value 2.161\*was found to be statistically significant at 0.05 level of probability. This can be attributed to implementation of frontline demonstrations by KVK.

The yield gap percentage with district yield was ranging from 30 per cent to 97 per cent, and on an average, it was recorded 54 percentage increase in yield in front line demonstration in comparison with the district average yield. It also indicates double the higher yield was recorded during *Rabi* in the demonstrations compared to state average. In comparison of the demonstration yields with state averages, percentage increase in yield was recorded 50-100 per cent. This might be due to the fact that the frontline demonstrations were organized on specific farming situations taking into consideration of the basic constraints.

The calculated ‘t’ was found to be statistically significant at 0.01 level of probability with each of districts and state averages. It was therefore concluded that the frontline demonstrations organized resulted in positive of bringing higher yield successfully. The successful outcome of demonstrations have shown efficacy of interventions framed and demonstrated through FLDs by KVK like introduction of

high yielding, pest and disease tolerant varieties, chemical weed control, soil test based fertilizer application, use of bio-fertilizers, following IPM and IDM. The results clearly indicated that the proven frontline demonstrations technology has to be disseminated through the state department of agriculture for increasing overall yields at district and state level. It also needed for provision of critical impacts like trap crop seed, phenomena traps, gypsum etc., which were not available to farming community in small quantities for its successful adoption and overall increase of pod yield of groundnut.

#### **Economics of front line demonstrations:**

The data regarding economic parameters of demonstrations viz., total cost of cultivation, gross returns, estimated net returns and benefit cost ratio were presented in the Table 6 and 7.

A critical look at the figures presented in Table 6 indicates good sign of economic probability of the demonstrations than in local check plots. Economic analysis of yield performance of *Kharif* demonstrations revealed that on an average for the period under study, gross returns Rs.30, 643/ha and Rs.23, 926/ha recorded in demonstration and local check plots, respectively with relatively higher benefit cost ratio of 2.54. Further on an average for the period under study, additional cost of Rs.295/ha in demonstration yielded additional net returns of Rs.6,423/ with incremental benefit cost ratio 15.93 suggesting its higher profitability and economic visibility of the demonstrations.

The estimated economics of the *Rabi* frontline demonstrations are presented in Table 7.

A close examination of the data of Table 7 reflects that the relatively higher proportion of gross returns were obtained in the demonstrations than in local check for the entire period under study and it was ranging from Rs.50,000/ha to 1,00,000/

**Table 6 : Economics of frontline demonstrations-Kharif**

Year	Demonstration				Local check				Additional in Demonstration			
	Total cost of cultivation (Rs.)	Gross returns (Rs.)	Net returns (Rs.)	B.C. ratio (Rs.)	Total cost of cultivation (Rs.)	Gross returns (Rs.)	Net returns (Rs.)	B.C. ratio (Rs.)	Total cost of cultivation (Rs.)	Gross returns (Rs.)	Net returns (Rs.)	Incremental B.C. ratio (Rs.)
2000-01	9,545	21,700	12,155	2.3	8,520	14,980	6,460	1.8	1,025	6,720	5,695	6.55
2001-02	10,050	24,360	14,310	2.4	9,455	16,800	7,345	1.8	595	7,560	6,965	12.7
2002-03	10,450	18,592	8,142	1.8	11,050	13,744	2,694	1.2	-600	4,848	5,448	9.08
2003-04	12,600	30,733	18,133	2.43	12,250	23,560	11,310	1.92	350	7,173	6,823	20.4
2004-05	10,190	40,608	30,418	3.98	9,305	31,840	22,535	3.42	885	8,768	7,883	9.7
2005-06	10,540	23,992	13,452	2.27	10,335	19,840	9,505	1.91	205	4,152	3,947	20.2
2006-07	13,150	31,470	18,320	2.39	12,962	26,350	13,388	2.03	188	5,120	4,932	27.2
2007-08	16,332	38,724	22,392	2.37	15,902	31,720	15,818	1.99	430	7,004	6,574	16.2
2008-09	15,539	45,609	30,070	2.93	15,965	36,497	20,532	2.28	-426	9112	9,538	21.4
Average	12,044	30,643	18,599	2.54	11,749	23,926	12,176	2.03	295	6,717	6,423	15.93

**Table 7 : Economics of frontline demonstrations-Rabi**

Year	Demonstration				Local check				Additional in demonstration			
	Total cost of cultivation (Rs.)	Gross returns (Rs.)	Net returns (Rs.)	B.C. ratio (Rs.)	Total cost of cultivation (Rs.)	Gross returns (Rs.)	Net returns (Rs.)	B.C. ratio (Rs.)	Total cost of cultivation (Rs.)	Gross returns (Rs.)	Net returns (Rs.)	Incremental B.C. ratio (Rs.)
2000-01	17,150	56,840	39,690	3.3	19,814	46,094	26,280	2.3	-2664	10,476	13,140	3.9
2001-02	19,050	56,600	37,550	3.0	20,200	52,711	32,511	2.6	-1150	3889	5039	3.4
2002-03	18,850	75,399	56,549	3.9	18,276	69,199	50,923	3.8	574	6200	5626	10.8
2003-04	18,434	48,350	29,916	2.6	19,230	38,760	19,530	2.0	-1096	9590	10,686	9.8
2004-05	18,754	78,052	59,298	4.1	20,035	56,459	36,424	2.8	-1281	21,593	22874	16.8
2005-06	19,369	75,624	56,255	3.9	19,560	66,876	47,316	3.4	-191	8748	8939	45.8
2006-07	25,864	90,955	65,091	3.5	25,346	70,070	44,724	2.8	518	20,885	20,367	40.3
2007-08	20,594	64,400	43,806	3.3	19,772	49,500	29,728	2.5	822	14,900	14,078	18.1
2008-09	19,107	90,216	71,109	3.7	19,272	67,902	48,630	2.5	-165	22,314	22,479	135.2
2009-10	21,707	1,08,332	86,625	5.0	21,662	86,100	64,438	4.0	42	22,232	22,281	529.3
Average	19,888	70,715	54,585	3.63	20,317	60,367	40,050	2.87	-459.1	14,083	14,551	81.34

ha per hectare in demonstration and Rs.19,000 to 64,000/ha in the local check plots. On an average, front line demonstrations recorded higher gross returns of Rs.70, 715/ ha and net returns of Rs.54, 585/ ha with higher benefit cost ratio of 3.63. Further, it was resulted additional net returns of Rs.14, 551/ha with less amount of Rs.459/ha in total cost of cultivation of the demonstration than with the local check and reflected incremental benefit cost ratio of 81.34. It can be concluded

from the results obtained that the frontline demonstrations proved its economic viability and higher net probability.

#### Satisfaction of beneficiaries regarding services rendered through front line demonstration :

The concept of satisfaction of beneficiaries for the present investigation measured as to react positively or negatively towards the services rendered through frontline

**Table 8 : Extent of satisfaction of beneficiaries about services rendered through organization of FLDs (INDEX)**

Sr. No.	Satisfaction of beneficiaries	Beneficiaries (n=50)	
		Frequency (No.)	Percentage (%)
1.	Low (<85)	07	14.00
2.	Medium (86-95)	27	54.00
3.	High (>96)	16	32.00
		50	100.00
		Mean 94.24	S.D. 3.304

demonstrations. Questions through pre-tested structured interview schedule were posed to the beneficiaries and the responses were pooled, and the results are presented in Table 8.

A close observation of figures presented in Table 8 depicts that majority (54%) of respondents expressed medium to high (32%) level of satisfaction for the extension services rendered and performance of technology demonstrated. Relatively very few respondents (14%) expressed lower level of satisfaction. It can be concluded that maximum (86%) number of respondents highly satisfied with the services rendered through FLD. The results signified the positive response of the beneficiaries towards the services rendered through FLDs. It also depicts the stronger conviction and active involvement of beneficiaries in laying the demonstrations which intern would lead to increase in knowledge level and higher adoption. This showed optimism and relevance of organization of frontline demonstrations.

All the beneficiaries (100%) expressed complete strong satisfaction regarding technical competence and fairness of scientists, demonstration of new varieties, seed development through front line demonstrations. Relatively high proportion (98%) of beneficiaries expressed strong satisfaction regarding selection of front line demonstration plots as per guidelines, clear diagnosis of pest and diseases and suggestions given and demonstration of varieties and front line demonstration technology based on farming situation by scientists. A great majority (92%) of beneficiaries were satisfied about giving complete information regarding front line demonstrations before initiation of programme to all farmers in the village. 80 per cent of beneficiaries expressed strong satisfaction and conviction about the need based skill training with technical knowhow on groundnut production technology by the scientists, provision of inputs at right time and recording the outcome of the demonstrations.

### Conclusion:

Over all previews of data signified strong satisfaction of farmers about the services rendered by scientists through front line demonstrations and in turn promoted the physical and mental active involvement of the beneficiaries, ultimately lead to increase in knowledge and adoption level of beneficiaries and higher pod yields and economic net returns. The successful outcome of demonstrations has shown efficacy of interventions framed and demonstrated through front line demonstrations by KVK. However, the budget provision to KVK has to be increased for organizing front line demonstrations in larger extent area. The administrators at district and State levels have to think and plan for better dissemination of proven frontline demonstrated technology

on larger scale through the state department of agriculture for increasing overall yields at district and State level. It also needed for provision of critical inputs like trap crop seed, pheromone traps, gypsum etc., which were not available to farming community in small quantities for its successful adoption and overall increase of pod yield of groundnut.

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