

SUCCESS STORY-IX

Farmers Participatory Varietal Selection in Groundnut: Where Farmer is a Breeder

1) Title

**FARMERS PARTICIPATORY VARIETAL SELECTION IN GROUNDNUT:
WHERE FARMER IS A BREEDER**

2) Category : Agriculture

3) Challenge

Groundnut is one of the major oilseed crop of Hyderabad-Karnataka region occupying an area of 0.90 lakh hectares. The groundnut area in Karnataka significantly declined nearly by half in last two decades along with low productivity of 907 kg ha⁻¹ as compared to the national average about 1750 kg ha⁻¹ in 2013-14. Even though 42% of groundnut area is under rain fed and contributes only 21% of total production. This stagnated productivity is cause of serious concern in the state warranting immediate interventions to increase the productivity of the crop to arrest further decline in groundnut area. Hence, this RKVY project was intervened to identify the key problem in groundnut production and to solve those particular constraints.



BACKGROUND:

Groundnut production system suffering from many problem like lower yields, destructive pest and diseases, un assured rainfall, labour intensive, unstable market price and more importantly old varieties in cultivation and non availability of improved quality seeds. The predominant variety was TMV-2; an obsolete variety released in 1940 and occupied 85% of groundnut area in the state. The productivity of TMV 2 was very low and susceptible for disease and pest infestation. Hence there is a immediate need to replace old cultivars with new improved varieties. With this particular view project was implemented.

OBJECTIVES:

1. Introduction of new varieties in the farmers' field with concomitant large-scale replacement of the old variety (TMV-2).
2. Popularization of promising varieties among the groundnut growers and all stakeholders by conducting intensive trainings, field days and seed multiplication

IMPORTANCE:

Replacement of old cultivars with newly improved high yielding varieties will increase yield levels intern provides economic stability to farmers. These improved varieties also carries novel characters like disease and pest resistance, hence they also reduce burden of cost of cultivation.

PROGRAMME ACTIVITIES:

The project was implemented through Farmers Participatory Varietal Selection (FPVS). It is one of the plant breeding approach in recent days which gaining importance among the Scientist/Farming community for rapid spread and adoptability of improved cultivars to the Farming community.

STEPS TAKEN TOWARDS OBJECTIVES:

Based on the knowledge of groundnut production constraints the researcher, identified key problems and chosen 10 groundnut varieties from various research institutes across India to address those identified problems. Initially, the groundnut growing belts of Hyderabad Karnataka region were identified and beneficiary farmers were selected in co-ordination with the different KVKs, Agriculture Extension Education Units and Agriculture Research Stations.

GOALS OF THE PROJECT:

- Implementation of project in groundnut growing district of Hyderabad-Karnataka region.
- Organization of training programme for farmers to educate about project
- Distribution of critical inputs on time
- Regular field visits and monitoring
- Collection of feedback from farmers at regular interval
- Organization of field days
- Training and awareness programme for partners of the project like market vendors, oils millers and various government officials

METHODOLOGY FOLLOWED:

The project was implemented by adopting **Mother-baby** method. In this method based on the availability of seeds 11 beneficiary farmers were selected from each village. Among the 11 members one farmer was selected to carryout Mother trail, which consist of all the 10 varieties under evaluation and rest of the 10 farmers carried out Baby trails, which means each will evaluate two varieties in paired comparison passion (*i.e.* 1+2, 2+3....10+1). Thus in each village there will be one Mother trail and 10 baby trails. The successful implementation of project was made by regular field visits to the FPVS trails of farmers during various stages of crop growth and provided necessary assistance to farmers in time. Beneficiary farmers were provided with a “kit” which include pesticides, gypsum and more importantly essential micronutrients like Boron, Zinc, Mgso₄ which were often neglected by farmer in their routine husbandry practices As it is a integrative approach it involves researcher, market players, oil millers, extension workers, policy makers and more importantly farmers to select and evaluate genotypes under evaluation. The final evaluation and selection of genotypes was based on the score and feedback from farmers and other partner agencies. The scoring and evaluation related parameters were collected during regular field visits and in large scale by conducting field days using a pro-forma prepared by the scientist/researcher. It consists of personal information of farmer or any person, their choice of variety with reasons and their opinion about Farmers Participatory Varietal Selection Approach.

List of genotypes distributed

Sl. No	Variety name	Special features
1	Kadiri-9	High oil content, Drought tolerant
2	ICGV-00351	High oil content, Drought tolerant
3	Dharani	Drought tolerant suitable to rain fed areas.
4	Kadiri Haritandra	Drought tolerant, Moderately resistant to foliar diseases
5	TG-37A	Bold seeded, Smooth pods, High harvest index
6	TPG-41	Table purpose, Large seeded,
7	TG-51	High yield
8	TMV-2	Susceptible to pest and diseases, Low yielder.
9	G2-52	Resistant to Late leaf spot and Rust diseases,
10	GPBD-5	Resistant to leaf spots and rust

5) Key Results

The outcome of the project was really encouraging. Farmers were very happy with their chance to select the best one among 10 different cultivars based on their traits of interest, Revealed that some of the cultivars showed higher yields and resistance to pest and diseases as compare to their local variety (TMV-2). Farmer were very keen in their choice, as groundnut is dual purpose crop, farmer is not only looking for yield and also for quality and quantity of haulm. The varieties like Kadiri-9, GPBD-5, G2-52, Dharani and ICGV-00351, were out yielded 30-40% higher yields than local variety coupled with resistance to pest and diseases. These results suggest that selecting a variety (s) with their traits of interest, definitely helps in increase their farm income. The newly selected cultivars were high yielder coupled with desirable traits contributes to reduce the cost of cultivation as they were resistant to many biotic and biotic stresses and in turn increases the net profit. By observing the encouraging results and participation from the partners helps in and act as a boon to generate the interest in groundnut growing farmers, to stabilize the groundnut production and productivity of the state.

6) Impact

BEHAVIOR CHANGES

- Farmers came to know the importance of improved varieties in cultivation.
- They made strong determination to go for high yielding varieties.
- They only chosen their choice among the varieties because results were in front of them.

DIFFERENCE MADE

- Higher yields of new varieties definitely increased their farm income.
- Low pest and disease incidence reduced the cost of cultivation
- High quality fodder due to less incidence of diseases and pests

QUANTITATIVE AND QUALITATIVE DATA

Mean performance of genotypes for pod yield under FPVS trials at different location (kg/ha) (Kharif-2015-16)

Genotypes	Pooled
Kadiri-9	1492.64
ICGV-00351	1481.04
Dharani	1330.63
Kadiri Haritandra	1322.03
TG-37A	1345.34
TPG-41	1386.96
TG-51	1233.06
TMV-2	1267.21
G2-52	1370.50
GPBD-5	1572.75

Mean performance of genotypes for pod yield under FPVS trials at different location (kg/ha) (Rabi/summer-2015-16)

Genotypes	Pooled
Kadiri-9	1588
ICGV-00351	1693
Dharani	1478
Kadiri Haritandra	1454
TG-37A	1550
TPG-41	1504
TG-51	1430
TMV-2	1406
G2-52	1476
GPBD-5	1649

Overall Farmer preference towards genotypes

Sl.No	Genotypes	Percent preference
1	Kadiri-9	22.70
2	ICGV-00351	11.64
3	Dharani	14.94
4	Kadiri Haritandra	4.60
5	TG-37A	5.89
6	TPG-41	5.03
7	TG-51	2.87
8	TMV-2	8.48
9	G2-52	8.33
10	GPBD-5	15.52

8) Supporting Quotes and Images

- Success was measured based on the preferences given by the farmers towards genotypes
- Preferences given by the groundnut traders and oil millers also considered
- Final selection of variety based on yield and preference of all the partners of project.



On-Farm training for farmers



Field visits



Field days

7) Lessons Learned

Among those many feedback from farmers, **Shri Kuruvatti Ravikumar**, a progressive farmer, *shresta krishika awardee* and one of the beneficiary farmer under FPVS project, who carried out mother trails expressed his feedback as depicted below. “We are cultivating groundnut crop since many years, but gradual decrease in groundnut yields and susceptibility of crop to many diseases and pests made me to “re-think” about groundnut cultivation. This problem may be attributed to age old variety of groundnut (TMV-2). The yield potentiality of cultivar is very poor and become susceptible to all the important groundnut pest and diseases. However, we were not ready to leave groundnut cultivation because of its dual purpose nature, as a part of solution we were looking for replacement of old cultivars with improved one. Unfortunately we failed to found the any improved cultivar in the state, as we are purchasing seed only from *Raita samaparka Kendra (RSK)* on subsidy basis and from local markets. Fortunately one day we were introduced to FPVS project of UAS Raichur and it made us my hopes alive. I am very thankful to UAS Raichur and principal investigator of this project for their efforts towards farming community. I was very happy when I was selected to conduct mother trail (MT), because all the 10 improved varieties will be in my field. I felt it’s a great opportunity for me as well as to the other farmers or partners to select a variety(s) of our desired traits. I felt this is a very successful programme as 100 of farmers were educated and trained in their villages about the improve production practices. Regarding FPVS project, I feel it is the express way to reach and spread new improved varieties to farmers and it will definitely creates interest in farmers to cultivate groundnut in the future also.

9) Additional Information

Contact Person:
Dr. Hasan Khan
Scientist (Plant Breeding)
AICRP-G, MARS,
UAS, Raichur-584 104
E-mail: hasangpb@gmail.com

10) Checklist

No.	Question to consider	Yes	No
1	Is the story interesting to the target audience of the project/activity report?	√	
2	Does the story explain what new insights the project brings? What is the main lesson learned from this story? Does the story describe a key insight on what works and what doesn't and something that future project could build on	√	
3	Does the story describe the outcomes the project produced and the people who are benefitting? What changes—in skills, knowledge, attitude, practice, or policy—has the project brought, and who is benefitting from these changes?	√	
4	Does the story make a compelling point that people will remember? Does the story show how the project makes a difference to improving livelihoods and lessening poverty?	√	
5	Does the story provide an interesting fact that people will remember? For example, how much yields increased, how many hectares of land could become more productive from this innovation or technology?	√	
6	Does the story explain what kind of impact this innovation or technology could have if scaled up?	√	
7	Does the story show which partners contributed and how?	√	
8	Does the story include quotes from Stakeholders or beneficiaries?	√	
9	Have I provided links to other media (journal articles, website news, newsletter, blogs, annual reports of other Programme/ project) that also feature this story?	√	
10	Have I provided the contact details of people who can provide more information?	√	

11. Contact person

Dr. Hasan Khan

Scientist (Plant Breeding)

AICRP on Groundnut

Main Agricultural Research Station

University of Agricultural Sciences,

Raichur- 584 104, Karnataka

Email id: hasangpb@gmail.com

Mob: 9844735051