



APPENDIX 13

Report On

Farmers' Evaluation of New Groundnut Varieties in Andhra Pradesh
A Participatory Varietal Selection Program - Rainy Season of 2004
March 2005

Of the project on
Aflatoxin Contamination In Groundnut In Southern India;
Raising Awareness And Transferring
And Disseminating Technologies To Reduce Aflatoxin

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SOCIETY FOR TRANSFORMATION,
AGRICULTURE AND ALTERNATIVES IN DEVELOPMENT

Farmers' Evaluation of New Groundnut Varieties in Andhra Pradesh
A Participatory Varietal Selection Program
 During Rainy Season of 2004

The PVS trials in the second year of the project were confined to two locations only as the project team decided to drop Mahaboobnagar district from the trials. This became necessary as it was realized that the groundnut crop area was dwindling in the locations where PVS trials were held last year due to frequent droughts and farmers could grow groundnuts only in small irrigated pockets.

The rainy season trials for 2004 were conducted in Anantapur district and Pileru area of Chittoor district. The number of villages for trials was however increased to six in each of the two districts compared to the three villages each during the previous year.

The PVS process

Anantapur

In Anantapur district, apart from continuing the PVS trials in the three previous year's villages, three additional villages, which were located in a different area of the district and farther away from the old villages, were selected. While the old villages were supported by the NGO, Accion Fraternal/ RDT, which collaborated with the trials last year, the new villages were selected and supervised directly by ANGRAU itself as they are located in a different mandal (administrative unit). The old villages were Mukundapuram, Mallapuram and West Narasapur while the new villages were Pothalamarri, Gantapuram and Gummalakunta.

PVS trials were continued with the same farmers (nine) in the old villages while new farmers were selected from the three new villages. In all, eighteen farmers carried out the trials this year across six villages. In addition to this two demonstrations were held by ANGRAU in two farmers fields where all the fourteen varieties were planted for awareness promotion.

All the fourteen high yielding, aflatoxin resistant varieties that were experimented by the farmers last year were given this year also. The only exception being that no local variety was given as it was decided to compare performance with the varieties locally grown by the farmers. The seeds were distributed from the previous year's stocks preserved at ANGRAU in addition to those multiplied at ICRISAT campus.

The process was similar to that of the previous year. In the old villages, each farmer was given six varieties each while the new farmers got five different varieties each. However in each new village two farmers were given five varieties each while the third farmer got only four varieties as this completes the list of fourteen varieties in each village.

On-station trials were also repeated at Anantapur research station and Tirupati research stations (Chittoor district) of ANGRAU with all the fourteen aflatoxin resistant varieties.

Chittoor (Pileru)

Similar procedure was followed as discussed above in Pileru area also. The only exception here is that all the trials in the six villages were coordinated by the local NGO Sahajeevan under the supervision of ANGRAU. Unlike in the case of Anantapur again,

all six villages are closely located to each other. Ontillu, Bodinayana Doddi and M.C. Palem being the old villages, the new villages are Muluguravaripalli, Chigurvaripalli and Kavalapalli.

The evaluation process

Farmers' perceptions and preferences for varieties were assessed through a participatory process wherein men and women farmers expressed their specific choices for certain varieties as against the others. Evaluations were done through group participation of men and women in each village. While farmers who participated in the on-farm trials constituted the basic group expressing their experiences and observations about the varieties, other farmers of the village were also asked to participate in the discussions.

Quantitative and qualitative representative samples of each of the new varieties grown in the village were exhibited to the entire group of farmers, indicating the extent of yield achieved and the characteristic features of each of the varieties. In this manner evaluations were carried out in all twelve villages of Anantapur and Pileru areas.

While the evaluations mainly focused on specific criteria such as pod yield, outturn, fodder yield, pest and disease resistance, quality of kernel, shape and texture of kernel, marketability and any other criteria, which were predominant in the minds of the men and women farmers, were also considered. The research teams visited the villages for the assessment immediately after harvest and hence samples of groundnut pods and kernel could be displayed for comparison and evaluation along with the pods and kernel of the locally grown varieties.

While farmers of the PVS trials based their assessments with their hands-on experience during the entire season, the other farmers of the village evaluated the varieties based on their long experience with groundnut cultivation as well as their observations of the varieties during their visits to the trial fields. Evaluations related to fodder quality and yield were relied more on the variety-wise assessments of the PVS farmers as the assessments were done after harvest. Variety-wise yield assessments were done in comparison with the specific standard sample units obtained for each of the varieties.

Main findings

It was interesting to note that, while 'drought resistance' capacity of the varieties turned out to be one of the most important criterion of the farmers last year for selecting varieties, yield related parameters under a short mid-seasonal drought took the center stage this year. Based on the order of preference expressed by farmers, varieties were assigned ranks mainly to distinguish their relative choices.

Anantapur

Village-wise assessments show that only few varieties dominated the selection of the farmers, which usually did not exceed more than three varieties in each of the six villages. Overall, nine different new varieties were preferred by farmers, which they said they would like to continue with in the future. Out of these only two varieties – ICGV 94379 and ICGV 93328 topped the list of preferences with the farmers of four villages choosing the former while the latter was chosen by farmers of two villages in the first rank while ICGV 91278 with farmers of three villages choosing it in the second place also has a very high preference. Good yield, good outturn, good seed quality, good fodder, drought resistance, pest and disease resistance were the main reasons for the

farmers preferring these varieties. Interestingly these varieties did not figure in the top choices of the farmers last year.

However, three varieties – ICGV 94434, ICGV 91328 and ICGV 93305 which were highly preferred in the previous year also appeared in the selection list of farmers though at a lower order of preference. This aspect needs to be viewed with the perspective of the farmers who

have indicated their variety preferences based on the performance of the variety under the different agro-climatic situations as compared to the previous year. With about 45 to 50 days of mid-season drought, some of the varieties seemed to have performed better than last year when the drought was for a much longer period. These varieties also seemed to have performed better than the last year's top preference varieties under marginally favourable conditions as compared to that of the previous year.

Another interesting point was that the farmers chose these new varieties as against their naturalized varieties they are used to growing extensively, such as the JL 24, TMV 2 and K-134. This observation indicates that the performance of the new varieties was better and that the varietal characteristics were also better than those of their old varieties. While the localized varieties have not been far behind in yield and out turn, they seemed to have clearly failed due their low levels of resistance to drought, pest and disease. JL 24 was the only variety that figured in the preferred variety list of only one village - Pothalamarri.

Farmers also identified the varieties that they would not be interested to continue with in future. Anantapur farmers from all the villages clearly disliked ICGV-91283 as it had small size pods and low shelling percentage. This variety did not find favour with Anantapur and Chittoor farmers, but had significant preference among Mahaboobnagar farmers last year. Six other new varieties were also listed as less and/or not preferred varieties for similar reasons. Variety-wise details of the reasons for preferences and non-preferences are presented in the Tables annexed.

Pileru

Similarly, in Pileru, farmers showed an overall preference for eight varieties while tending to pick out only two varieties, as most desired - ICGV 91341 and ICGV 93305. Again, good yield, good out turn, good fodder, green and uniform coverage, fewer immature pods, and better resistant to drought, pest and diseases were described as the winning features of ICGV 91341 while small size bold pods (two seeded pods), good out turn, good oil percentage, and better drought tolerance of ICGV 93305 led the decisions. The other varieties that gained favour of the Pileru farmers include ICGV-91278, ICGV-91279 and ICGV-94434.

Three varieties, ICGV-91283, ICGV-92302 and ICGV-93328 were the least favoured by the Pileru farmers, as they did not perform to their expectations. Low yields, single seeded, two to four pods only per plant, unhealthy growth, small sized pods, low shelling percentages, drooping plants, higher leaf fall, etc were quoted as the traits that were not acceptable to them even though some of them had good fodder quality.

While indicating their non-preference for using any of the new varieties, Pileru farmers had a larger list of varieties they did not intend to try in the near future. Out of the eight varieties that were indicated, three varieties – ICGV - 91283, ICGV - 92302 and ICGV - 93328 – ranked high in the non-preferred varieties. While the case of ICGV - 91283 is

clearly established even in Anantapur, the low performance of ICGV - 92302 and ICGV - 93328 is not clearly understood. During last year observations, farmers had a higher order preference for these two varieties in Pileru and for ICGV - 93328 in Anantapur. Such anomalous situations need to be verified through the sample data obtained from the on station field tests conducted by the project scientists and with further testing.

Conclusions

Farmers were clear in what they wanted. The essential varietal characteristics that find favour with the farmers are high yields, high shelling percentages, drought resistance, resistance to pest and disease, bold seed and large quantities of palatable fodder. Other features such as colour of the kernel (pink or tan), two / three seeded, oil percentage, etc., are not very critical in determining their interests since these qualities do not play an important role either in the prices or the marketability of the crop as there various uses groundnuts are put to.

Farmers are eager to try out new varieties that can give them better yields and higher returns. Given the anomalous situation of differing performances of the varieties under different rainfall / drought stress conditions, farmers choice of preference to the varieties is likely to shift. It is therefore essential to provide to the farmers a limited range of high performance varieties suitable for a few characteristic weather change situations and market demands.

Recommendation

Men and women farmers' evaluations which are based on their perceptions regarding preferences need to be corroborated with the analysis of sample data as well, obtained from farmers' fields and the research stations for arriving at final conclusions regarding the performance of new varieties. Once again, the findings here indicate that farmers require a choice of varieties to choose from to match with their varied local conditions and demands. A classification of the varieties tested here based on their performance should help in assisting farmers at large to have a ready reckoner to make choices from.

Annexure – 1 **Anantapur District**

Table 1 :Preferred Varieties

S.No.	Variety	Reasons
Mukundapuram		
1.	ICGV-94379	Good yield, Good outturn, Seed quality is good, More no. of pods per plant, Good fodder, Drought resistant, Disease/Pest resistant and Good market.
2.	ICGV-91278	White colour seed of good quality, Good yield, Good out turn, Good fodder, Drought resistant and Disease/Pest resistant.
3.	ICGV-94434	Good yield, Good outturn, seed and pod is bold with good quality, Good fodder, Drought resistant and Disease/Pest resistant.
Mallapuram		
1.	ICGV-94379	Good yield, Good out turn, seed and pod quality is good, Good fodder, More no. of pods, Fodder remains green in colour for most of the time, Good market, Drought resistant and Disease/Pest resistant.
2.	ICGV-91328	Good yield, out turn is good, Uniform seed with good size, Fodder is good, Drought resistant and Disease/Pest resistant.
3.	ICGV-94434	Good yield, Good seed quality, size of the seed is above average, Fodder is good, Drought resistant and Disease/Pest resistant.
West Narsapur		
1.	ICGV- 93328	Good Quality seed, Good size, Good yield and out turn, bold pod, pod and seed are shining, good fodder, Drought and Disease/Pest resistant.
2.	ICGV-93305	Seed and Pod is good, good yield, Good fodder, Good out turn, Red colour seed- Good market if produced in large quantity, Drought resistant and Disease/Pest resistant.
3.	ICGV-91284	Pod is shining, seed is good, Good yield and out turn, Good fodder, More drought resistant than other varieties, Disease/Pest resistant, Favorable market.
Pothlamarri		
1.	ICGV-94379	Good yield, Good out turn, Average fodder, Good oil percentage, More no. of pods per plant, Drought resistant and Disease/Pest resistant.
2.	ICGV-91278	Good yield, Good out turn, Average fodder, Drought resistant and Disease/Pest resistant.
3.	JL-24	Good yield, Good out turn, Good fodder but not drought and Disease/Pest resistant.
Gantapuram		
1.	ICGV-94379	Good quality pod and seed, Good yield, Good out turn, Early maturity, Good Fodder, Drought resistant and Disease/Pest resistant.
2.	ICGV-91341	Good seed quality, out turn is good, visually satisfied, good market price, oil content is good, Drought resistant and Disease/Pest resistant.
3.	ICGV-91278	Good seed quality, pod is average, good fodder, Drought resistant and Disease/Pest resistant.
Gummalakunta		
1.	ICGV-93328	Good yield, Good out turn, Good seed quality, Good fodder and fodder is green in colour, Pod size is good, More no. of pods per plant, Drought resistant and Disease/Pest resistant.
2.	ICGV-91278	Good seed quality, bold seed, pod is yellowish in colour, good yield, good out turn, good fodder, More no. of pods per plant, Drought resistant, and Disease/Pest resistant.
3.	ICGV-93305	Good seed quality, Good shell and pod size with good out turn, Yield is above average, good fodder, oil content is good, Drought resistant and Disease/Pest resistant.

Table 2 :Village wise comparison of preferred varieties

S.No	Village	Rank I	Rank II	Rank III
1.	Mukundapuram	ICGV-94379	ICGV-91278	ICGV-94434
2.	Mallapuram	ICGV-94379	ICGV-91328	ICGV-94434
3.	West Narsapuram	ICGV-93328	ICGV-93305	ICGV-91284
4.	Pothlamarri	ICGV-94379	ICGV-91278	JL-24
5.	Gantapuram	ICGV-94379	ICGV-91341	ICGV-91279
6.	Gummalakunta	ICGV-93328	ICGV-91278	ICGV-93305

Table 3: Frequency of variety-wise preferences : All villages

Rank I	Rank II	Rank III
ICGV-94379 (4)	ICGV-91278 (3)	ICGV-94434 (2)
ICGV-93328 (2)	ICGV-91328 (1)	ICGV-91284 (1)
	ICGV-93305 (1)	ICGV-91279 (1)
	ICGV-91341 (1)	ICGV-93305 (1)
		JL-24 (1)

Note: The number in the bracket indicates, the number of times a variety is preferred across the villages.

Table 4 :Non-Preferred Varieties

S.No.	Variety	Reasons
Mukundapuram		
1.	ICGV-91283	Small pod, out turn failure, less seed size, bad/poor market.
2.	ICGV-91315	Poor out turn, bad seed quality, small pods and low market price.
3.	ICGV-91279	Average pod and seed, low yield, low market price and visually not satisfied.
Mallapuram		
1.	ICGV-91283	Small pods, Size of the seed is small, visually bad and bad market, viable for diseases.
2.	ICGV-91324	Small pods, Seed are spear headed less/fewer yields and low market price.
3.	ICGV-91284	Small pods, out turn are poor, viable for diseases, mostly single poded.
West Narsapur		
1.	ICGV- 91283	Small pods, size of the seed are poor, Not drought resistant, bad market.
2.	ICGV-92302	Single poded, less/fewer yield and bad out turn.
3.	ICGV-9178	Out turn failure, light in weight, seed size is small.
Pothlamarri		
1.	ICGV-91283	Small pods, poor out turn, less yield, single pod but good fodder, Drought resistant, Disease/ pest resistant.
2.	ICGV-92302	Less yield, bad /poor seed quality, average fodder, non resistant to drought and Pest/Disease compared to remaining varieties
3.	ICGV-91315	Out turn failure, small pod, Non resistant to disease/pest compared to remaining varieties
Gantapuram		
1.	ICGV-91283	Small pod, less out turn, low market price, single pod, labourers disagree to thresh manually.
2.	ICGV-91284	Bad/poor pod quality, low market price, small pods, seed quality is bad.
3.	ICGV-92302	Seed quality is bad, low price, Average yield and out turn failure.
Gummalakunta		
1.	ICGV-91283	Small poded, less yield, out turn failure, fodder size is small and early maturity.
2.	ICGV-91315	Bad out turn, small pods seed quality is poor.
3.	ICGV-91284	Single pod, Average out turn, seed quality is poor.

Table 5 :Village wise comparison of non-preferred varieties

S.No	Village	Rank I	Rank II	Rank III
1.	Mukundapuram	ICGV-91283	ICGV-91315	ICGV-91279
2.	Mallapuram	ICGV-91283	ICGV-91324	ICGV-91284
3.	West Narsapuram	ICGV-91283	ICGV-92302	ICGV-91278
4.	Pothlamarri	ICGV-91283	ICGV-92302	ICGV-91315
5.	Gantapuram	ICGV-91283	ICGV-91284	ICGV-92302
6.	Gummalakunta	ICGV-91283	ICGV-91315	ICGV-92302

Table 6 : Frequency of (non) preference for varieties

Rank I	Rank II	Rank III
ICGV-91283 (6)	ICGV-91315 (2)	ICGV-91279 (1)
	ICGV-91324 (1)	ICGV-91284 (1)
	ICGV-92302 (2)	ICGV-91278 (1)
	ICGV-91284 (1)	ICGV-91315 (1)
		ICGV-92302 (2)

Note: The number in the bracket indicates, the number of times a variety is not - preferred across the villages.

Annexure – 2 PILERU (Chittoor District)

Table 1: Preferred Varieties

S.No.	Variety	Reasons for Preference
Mullaguruvaripalli		
1	ICGV-91341	Good yield, Good out turn, Good fodder, Green uniform coverage, Less Immature pods, and Good Resistant to Drought/Pest / Diseases.
2	ICGV-93305	Small size bold pods(two seeded pods), Good out turn, Good oil percentage, and Drought Resistant.
3	ICGV-91278	Thick shells, Good out turn, Tan colour seeds, Less oil percent, and not drought Resistant.
Chiguruvatipalli		
1	ICGV-91341	Good yield, Good outturn, Red colour seed, Good fodder, and Drought Resistant.
2	ICGV-93305	Good Germination variety, Good outturn, Good fodder, good Haulms and Drought Resistant.
3	ICGV-93379	Good quality pods and seeds, Early mature variety, Good yield, Good outturn, and Good fodder
Kavali palli (Vinam Reddy palli)		
1	ICGV-91315	Bold pods, Good yield, Good fodder, and pest resistant (like Gutti kayalu).
2	ICGV-91279	Good yield, Good crop standing, white (tan) colour seed, and some times oil percent is less.
3	ICGV- 91278	Good pod filling, small size pods, white (tan) colour seed, Good outturn, if rains come get more pods (yield) in Kharif season.
B.N. Doddi		
1	ICGV-91341	Good yield, Good out turn, Good fodder, Good crop, more oil percentage, and more no. of pods, and Drought Resistant.
2	ICGV-93305	Good crop, Good quality seeds, Good out turn, Good yield, Good fodder, toll plants and drought resistant.
3	ICGV-94434	Good yield, Good out turn, plants are covered more area, no. of pegs are not filling well, more immature pods.
Ontillu		
1	ICGV- 91341	Good yield, Good fodder, Good outturn, very less small size pods, very heard shells, approve ting is very ease, and drought resistant.
2	ICGV- 93305	Good yield, Long size pods, Good out turn, toll plants and Good fodder.
3	ICGV-94434	Good crop, it is covering more area, more no of pegs but not filling well, and no more weeds comes under that area.
M.C.Palem		
1	ICGV-93305	Good pods, Good yield, Good out turn, Green crop, Drought resistant, for shelling purpose very ease, and pest /disease resistant.
2	ICGV- 91279	Medium size pods, Good yield, Good out turn, thick shells, and strong pods, and Good crop.
3	ICGV-93328	Good yield, Good out turn, Good fodder, Drought resistant, but more leaves are dropping due to other diseases.

Table 2: Village wise comparison of Preferences

S.No	Village	RANK - I	RANK - II	RANK - III
1	Mullaguruvari pall	ICGV-91341	ICGV-93305	ICGV-91278
2	Chiguruvati palli	ICGV-91341	ICGV-93305	ICGV-93379
3	Kavali palli	ICGV-91315	ICGV-91279	ICGV- 91278
4	Ontillu	ICGV-91341	ICGV-93305	ICGV-94434
5	M.C.Palem	ICGV- 91341	ICGV- 93305	ICGV-94434
6	B.N. Doddi	ICGV-93305	ICGV- 91279	ICGV-93328

Table 3: Frequency of Variety Wise Preferences – All Villages

RANK - I	RANK - II	RANK - III
ICGV-91341-(4)	ICGV-93305-(4)	ICGV-91278-(2)
ICGV-91315-(1)	ICGV-91279-(2)	ICGV-94434-(2)
ICGV-93305-(1)		ICGV-93328-(1)
		ICGV-93379-(1)

Note: The number in the bracket indicates, the number of times a variety is preferred across the villages.

Table 4: Non Preferred Varieties

S.No	Variety	Reasons for Non Preference
Mullaguruvaripalli		
1	ICGV-91283	Less yield, small plants, two seeded pods, fodder not use full for animals, and not resistant to drought, pest and diseases.
2	ICGV-91328	Very poor yield, less pods, crop also not good, very poor growth (plants not healthy) and not resistant to drought, pest and foliar diseases.
3	ICGV-92302	More single pods with bold seeds, thick and heard shells, some plants are spreading type, No healthy plants, all plants are infected with diseases.
Chiguruvatipalli		
1	ICGV-92302	Good out turn but crop is not good (small plants, single seeds per plant two to four pods only, no healthy plants, plants growth is very poor).
2	ICGV-91283	Less Yield, small size pods, small size plants and haulms also not good.
3	ICGV-91284	Tan colour seed, more immature pods, weight less pods, fodder also not good.
Kavalipalli		
1	ICGV-91328	Very less yield, small plants, all leaves are dropped due to other foliar diseases, poor pod filling, not suitable for this area.
2	ICGV-93328	Long pods, all leaves are dropped, Small leaves, tan colour, and not drought resistant.
3	ICGV-93305	Small size pods, Small leaves, Crop is not good, fodder also not good, and all leaves are dropping,
Ontillu		
1	ICGV-91283	Less yield, small size pods and plants, crop is not good all leaves are dropping.
2	ICGV-93328	Good out turn, but crop is not good (not standing), all leaves are dropping, not drought resistant.
3	ICGV-91315	Very poor yield, less pod filling (Less weight), toll plants, pod shape also not good.
M.C.Palem		
1	ICGV-92302	Very small size plant s, small size pods, poor yield, all leaves are dropping due to foliar diseases, no drought resistant.
2	ICGV-91284	Good pods, small size pods, plants are not standing due to other diseases, no drought resistance, and all leaves are dropping.
3	ICGV-91324	More no of pegs (more pods) but not matured, very poor yield, small size pods two seeded pods, plants are not standing due to like a cancer disease (plants are wilting).
B.N. Doddi		
1	ICGV-91283	Small size two seeded pods, no out turn, plants are not standing, all leaves are dropping but fodder purpose is good.
2	ICGV-93328	Crop is not good (toll plants, not growing healthy per plant two to four pods only), fodder purpose it is good.
3	ICGV-91315	Small size two to three seeded pods, no out turn, poor pod filling, oil also very less.

Table 5: Village wise comparison of Non Preferences

S.No	Village	RANK - I	RANK - II	RANK - III
1	Mullaguruvari pall	ICGV-91283	ICGV-91328	ICGV-92302
2	Chiguruvati palli	ICGV-92302	ICGV-91283	ICGV-91284
3	Kavali palli	ICGV-91328	ICGV-93328	ICGV-93305
4	Ontillu	ICGV-91283	ICGV-93328	ICGV-91315
5	M.C.Palem	ICGV-92302	ICGV-91284	ICGV-91324
6	B.N. Doddi	ICGV-91283	ICGV-93328	ICGV-91315

Table 6: Frequency of Variety Wise Non - Preferences – All Villages

RANK - I	RANK - II	RANK - III
ICGV-91283-(3)	ICGV-93328-(3)	ICGV-91315-(2)
ICGV-92302-(2)	ICGV-91283-(1)	ICGV-91284-(1)
ICGV-91328-(1)	ICGV-91284-(1)	ICGV-91324-(1)
	ICGV-91328-(1)	ICGV-92302-(1)
		ICGV-93305-(1)

Note: The number in the bracket indicates, the number of times a variety is not - preferred across the villages.