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APPENDIX 10

Report On

Participatory Varietal Selection of Improved Aflatoxin Resistant Groundnut Varieties in South India

Farmers and Traders Evaluations of Varieties in Three Locations of Andhra Pradesh; 2003-04 Rainy Season

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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

Participatory Varietal Selection of Improved Aflatoxin Resistant Groundnut Varieties in South India

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Background

As a part of the efforts to reduce aflatoxin contamination in groundnut production and marketing, the project team initiated a participatory varietal selection (PVS) process in major groundnut growing areas of Andhra Pradesh. The process started with the on-farm trials of fourteen aflatoxin resistant groundnut varieties developed at ICRISAT and a localized variety TMV-2 along with them. ANGRAU, University of Reading and ICRISAT facilitated the technology transfer, while STAAD facilitated the socio-economic processes. The entire PVS process was carried out with the support and active participation of local NGOs – Rural Development Trust (RDT)/'Accion Fraterna' (AF) in Anantapur district, 'Sahajeevan' in Pileru and Integrated Rural Development Trust (IRDT) in Mahaboobnagar district.

PVS process was introduced as a continuation of Phase I activities of the project in Anantapur and Chittoor (Pileru) districts while Mahaboobnagar district was added to these two in Phase II. All these three districts are major groundnut growing areas where groundnut is predominantly grown under rainfed conditions. However, since last three years, all these areas experienced prolonged droughts due to which groundnut crop suffered severe yield losses and the farmers' livelihoods severely affected.

The purpose of this study as a part of the PVS process was to evaluate the field performance of the varieties at the farmer level and to ascertain the perceptions and assessment of

1. farmers and traders/processors on the performance of these varieties as against their local varieties under local conditions and to
2. facilitate participatory selection of varieties most acceptable to the farmers based on their perceptions of performance of the varieties best suited to the local conditions

Selection of Locations and Villages

Three villages were selected in each district thus making a total of nine villages from the three districts. These villages were selected randomly by the concerned NGOs based on their familiarity with the villages and recent experiences with the farmers. The salient features of farming systems of the nine villages are presented in Table 1.

Villages of Anantapur

The three villages selected for the PVS are located in three different mandals, West Narasapur in Singanamala mandal, Mukundapuram in Garladenni mandal and Mallapurm in Kalyanadurgam mandal. The villages are located at about 7, 12 and 3 kms from their respective mandal headquarters. While all the three villages have red soil, soils of West Narasapur contain large quantities of medium to large sized gravel and small sized stones. Most of the wells, bore wells and tanks that provide irrigation to small patches of farmlands of these villages have dried up due to the prolonged drought. While a large number of watershed development practices are being undertaken in these three villages, water resource status of Mukundapuram however is slightly better as a larger number of open wells and bore wells are still working due to the effects of better water shed management practices followed in this village. Though farmers grow a variety

of crops, Groundnut crop is the main source of livelihood in these villages, providing valuable cash income, food supplement and precious fodder for the cattle that produce milk and work on the fields. The main distinguishing features between the villages are follows.

West Narasapuram:
A majority of the farmers in this village hold over five acres. They mostly grow rain fed crops - groundnut, horse gram, sorghum, paddy, sunflower, fodder crops (recently started with the help of RDT) and sweet orange under controlled irrigation. Out of a total 1900 acres of cultivated land, irrigation is available only for 400 acres. Irrigation sources are moderate, and the volumes of irrigation are also low. Farmers sometimes use sprinklers for groundnut crop and drip system for sweet orange depending upon their financial status. About 200 acres of the irrigated land is used for orchard cultivation and out of the rest, paddy and vegetables take up a major share leaving a little to groundnut. The village has poor grade red gravelly soil. Though the extant of cultivated land per capita is higher in this village compared to the other two villages, the number of open wells & bore wells and other water bodies are comparatively very few. Due to three years of continuous drought most of these scarce water bodies had also dried up, forcing the farmers to sell off their precious few resources including large numbers of cattle.

Mukundapuram:
Farmers here grow groundnut, sweet orange (horticulture) and paddy. The main sources of livelihood however are groundnut and more recently sweet orange. Though the per capita cultivated land is low in this village, water resources for irrigation are marginally better in this village as compared to the other two villages, providing irrigation potential to larger areas. With about 1025 wells, bores wells and tanks (much higher than those available in the other two villages) almost all of the horticultural crops - sweet orange and vegetables - are grown under irrigated conditions here. The village has red soils with little or no gravel. Animal population with about 1300 milch and 500 draught animals are very high as compared to the other villages. The villagers use threshers and sprinkler irrigation for groundnut crop. Drip irrigation systems are also used for horticulture crops. The villagers extensively participate in the watershed development activities, one of the main reasons for the higher availability of water resources.

Mallapuram:
Farmers of this village grow groundnut, sunflower, pigeon pea, paddy and sorghum. Groundnut is the main livelihood source of the village. With just about 116 wells and bore wells and no irrigation tanks near by, the village presents features very similar to West Narsapur village in most respects. With increased activity of the villagers in the watershed activities recently, larger areas of land have been diverted to orchard cultivation such as tamarind, sapota and mango. Participation of women in watershed activities in large numbers is an interesting feature of this village.

Villages of Pileru (Chittoor district)

Pileru is a mandal in Chittoor district. PVS process was initiated only in this mandal of this district with the help of 'SAHAJEEVAN', a local NGO that is actively involved with the development processes in this area. The three villages selected are Ontillu, Bodinayunidoddi and Maddelacheruvupalem and are located between 10 to 13 kms from the mandal head quarters. The three villages are hamlets under Kavalapalli the major gram panchayat.

The three villages have different types of soil, Ontillu has gravelly type soil, Bodinayunidoddi has black cotton soil and Maddelacheruvupalem has red and black acidic soils. The main crops grown in these villages are groundnut, sorghum, pigeon pea, sunflower, finger millet, sugarcane, horse gram, cowpea, paddy and vegetables. The main source of livelihood in these three villages is the groundnut crop. Dairy activity is the second main livelihood activity in these villages. Water resources in these villages are very limited, with an irrigation tank and a few open wells and bore wells each. When water is available in the tanks, farmers with lands under tank irrigation generally grow paddy and vegetables. Due to three years of drought, the tanks and quite a number of open wells and bore wells have dried up. The main distinguishing features between the villages are follows:

Ontillu:
The main crops cultivated in this village are groundnut while sorghum, cowpea, pigeon pea, horse gram as inter crops to groundnut and paddy as a sole crop. Groundnut constitutes the main source of livelihood for the farmers in this village. The irrigation sources for agriculture are very few as compared to the other villages. The number of

tanks, bores and wells are only 4. The village has gravelly soils. The livestock population is low in this village as it has 75 milch animals (cows) and only six draught animals. The second main source of livelihood for the farmers is dairy activity. Many farmers hire/use tractors for agriculture because the number of draught animals in the village are very less.

Boddinayunidoddi:
The main crops grown in this village are groundnut, cowpea, fingermillet (ragi), vegetables, paddy and tomato. Groundnut is the main livelihood source of the farming communities. The irrigation facilities for agriculture are less so, the dependence on rain-fed based agriculture is high. The main soils types are black cotton soil. The number of milch animals are around 100 and draught animals 40. Dairy activity constitutes the second main livelihood activity in this village. A good number of jersey cows form their livestock in this village. Though the village has large area of land, the cultivated area is less due to lack of rains. This is the smallest village among the three.

Meddalachervupalem:
The cropping pattern consists of groundnut, sunflower, sugarcane, paddy, vegetables and tomato. Groundnut is the main livelihood source of the village. The irrigation sources are more than the other two villages. The village has red, black and acetic soils. Dairy animals dominate the livestock as like the other two villages, dairy activity constitutes their second main source of livelihood. Farmers in this village are considering to replace groundnut with sunflower and other short duration crops in the next rainy season if rains fail them.

Villages of Mahaboobnagar

The three villages selected are Kethireddypalli, Rangareddygudem and Peddaya palli of Balanagar mandal and are located within 3 Kms from the mandal head quarters. These villages are selected randomly by the NGO based on its previous experience and familiarity with the villages. While a few tandas (small hamlets) are attached to Kethireddypalli and Rangareddygudem villages, Peddayapalli is a single independent village.

All the three villages have similar types of soil, consisting of mainly black, red, and red sandy loam soils. Water resources in these villages are limited, and due to the recent drought quite a few bore wells and tanks had further dried up. The main crops grown in these villages are maize, sorghum, pigeon pea, groundnut, castor, paddy, sunflower, sesamum and vegetables.

Kethireddypalli
Paddy crop dominates the cropping pattern in this village due to the existence of a large lake under which provides irrigation to about 100 acres. Though the village has around 300 bore wells, five smaller tanks and a few open wells, water for crops is currently available from only 17 bore wells. Groundnut crop was cultivated extensively till about four years ago, but now only a few farmers grow the crop.

Rangareddygudem
Among the three villages, Rangareddygudem has the largest population. Though cultivation is extensive, the number of tanks, wells and bores are fewer as compared to the other three villages. It seems that a larger number of bore wells are in good water supplying condition as compared to the ones in Kethireddypalli village. Sorghum and maize are the main crops grown in this village while a few farmers grow groundnut crop under irrigated conditions particularly in the post rainy / rabi season every year.

Peddayapalli
This is a small village and comparatively has lesser cultivated land than the other three villages. The number of bore wells, open wells and tanks are also very few and hence dependence on rain-fed dry-land crops is high. Sorghum, maize, pigeonpea are the main rain fed crops cultivated while some farmers grow groundnut as an inter crop with horse gram, pigeonpea and cowpea.

The PVS Process

The PVS process started with the introduction of 14 aflatoxin resistant groundnut varieties and TMV – 2, a local popular variety. These new varieties that are yet to be released were to be test cultivated as per the farmers' current management practices. The 14 varieties were distributed randomly among the selected farmers in each of the three villages in each of the study areas, at

the rate of five varieties per farmer, without an option for choice. No variety was produced by two farmers in the same village. For undertaking the on-farm trials, the farmers were provided with required seed, fertilizer, pesticide and gypsum free of cost and the cost of labor for operations such as weeding, spraying etc. was reimbursed.

This process was repeated in each of the three study areas – Pileru area of Chittoor district, Anantapur and Mahaboobnagar districts in Andhra Pradesh. The three villages from each district were selected for the PVS process with the help of local NGOs. Three farmers were selected from each village thus making a total of nine farmers from each district and 27 farmers altogether.

A pre harvest assessment was carried out earlier (two weeks before harvest) in Mahabubnagar and Pileru areas. This exercise was undertaken as part of farmers' field days where other farmers of the villages concerned and neighboring villages were also given an opportunity to observe the crops. The field days were also aimed at building up awareness about aflatoxin problem among the villagers in general. Similar exercise could not be carried out in Anantapur district as the crop was badly affected due to the severe drought.

Post harvest evaluation of new groundnut varieties

Evaluations of all the fourteen aflatoxin resistant groundnut varieties along with a local variety TMV 2 were carried out with the farmers immediately after harvest in all the three areas - Pileru, Anantapur and Mahaboobnagar areas - where PVS process was initiated. Depending upon crop maturity stages and the joint decisions of farmers and ANGRAU staff to harvest the crop, assessments were carried out simultaneously along with harvest in the PVS farmers' fields. All the evaluations were carried out with the support and active participation of the concerned local NGO partners in each region – Sahajeevan at Pileru, RDT/Accion Fraterna in Anantapur district and IRDT in Mahaboobnagar district. STAAD facilitated the evaluation process with farmers and traders / processors.

The evaluations were carried out with all those farmers who participated in the on-farm participatory varietal trials and with other groundnut growers of the villages where PVS trials were held as well as other groundnut farmers of the neighboring villages. Both the men and women farmers evaluated the new varieties, but the participation of women was less as compared to men.

Freshly harvested plants of all the fifteen varieties were collected from the three farmers of each village and plants of all these 15 varieties with pods intact on the plant were displayed to each of the farmer. Every individual farmer respondent was then asked to carefully study every variety for the characteristics that strike them most appropriate for selection as a potential crop that would best suit their crop production methods and then select the varieties in order of their preference and explain the reasons for their selection and preference. The display and evaluations were done on individual observation / discussion basis to avoid influences or superimposition of each other's ideas.

Including the PVS farmers, 68 farmers participated in the evaluations from Pileru area out of which 48 of them were men and 15 were women. In Anantapur, 56 men farmers participated in the assessment while women farmers were only seven. In the Mahaboobnagar area, 56 men farmers and three women farmers participated in the evaluation process. Women turned out in lesser numbers, as they were all busy with groundnut harvest activities in Pileru and Anantapur

areas. Women farmers in Mahaboobnagar area were reluctant to participate in the evaluations, as most of them had lost familiarity with groundnut production activities during the recent past.

Due to prolonged drought conditions, majority of the farmers in and around the Mahaboobnagar study area stopped growing groundnuts in the rainy season though many continue to grow the crop in the post rainy season. Due to this reason, some of the farmers were not confident of their assessments of the rain-fed crop grown under the PVS trials and therefore the results from Mahaboobnagar area should be interpreted cautiously keeping farmers' "out of touch" perceptions in mind.

Local traders and processors, in addition to the farmers, from each of the three study areas were also given an opportunity to evaluate all the fifteen varieties for the characteristics most suitable for higher prices in the trading and processing circles. These evaluations were carried out independent of farmers' evaluations. The number of traders and processors interviewed was highest in Pileru followed by Anantapur and the least in Mahaboobnagar. But overall, in terms of numbers the traders/ processors were greatly outnumbered by the farmers. Similar to farmer evaluations, trader / processor perceptions were also assessed on individual discussion basis.

PVS farmers' preferences

A total of 27 farmers participated in the PVS process and experimented with 14 new aflatoxin varieties of groundnut besides a local variety (TMV 2) on their farms. Each of them was given the opportunity to observe the performance of all the 15 varieties throughout the crop season irrespective of which farmer had grown which variety. Finally, at harvest time, the PVS farmers were asked to evaluate the new varieties for further adoption. Of the 27 PVS farmers, 21 farmers were available at the time of interviews, while the six others could not attend the harvest activities due to personal exigencies.

Interestingly, none of the farmers, in all the three locations preferred to select or evaluate more than 3 or 4 varieties in each case, irrespective of whether they had cultivated the variety or not. The ideal range of choice for adoption by each of the farmers was between 2 and 3 varieties, with a majority opting for only two varieties. This is despite the fact that they were not inclined to reject or disapprove of any variety as such. The varieties selected and the reasons for their selection are listed in Table 2.

The results of the PVS farmer evaluation of varieties in each of the locations shown in Table 2 is as follows –

In Anantapur, farmer's selection was widely differing from each other. In all farmers had selected seven varieties out of the fifteen and all the selected varieties were among the new varieties. Of these seven, five varieties, ICGV 94434, ICGV 91317, ICGV 91328, ICGV 91278 and ICGV 92302 were picked up by more than one farmer. Though ICGV 91278 was selected by three of the six farmers it was always rated only second by all the three farmers, while ICGV 94434 and ICGV 91317 were rated first, by two farmers each. While ICGV 91328 was rated first by one and second by another farmer, ICGV 92302 was rated second by one and third by the second farmer.

Though the situation was similar in Pileru area as well, farmers here had selected ten varieties out of the fifteen that also includes the local TMV 2. ICGV 94434 turned out to be the most popular variety with 6 out of the 7 farmers opting a first choice and the 7th farmer giving it a second preference. This was followed by ICGV 93328, (4 farmers - one first and 3 seconds). ICGV

91324 with one first choice and two second choices, ICGV 91341 with one second choice and two third choices and ICGV 91278 with three third choices could be put in the order of 3,4 and 5 respectively, with 3 farmers choosing each of these varieties. Only one farmer each picked up the other five varieties, including the local TMV - 2.

Mahaboobnagar area is no different from the other two areas regarding the variation of choices. Farmers here preferred six of the new varieties besides the local TMV 2. Here again, each farmer diferred from the others in their choices of varieties. However, the number of varieties that were chosen by more than one farmer is limited to only three in this area – ICGV 94434, ICGV 92302 and ICGV 91324. ICGV 94434 with three first and two seconds is rated in the first position with ICGV 92302 with all three selections being only firsts and ICGV 91324 with one second and one third taking the second and third positions respectively.

Groundnut growers' evaluation

One of the most interesting observations that has emerged out of this study is that the cumulative perceptions of the PVS and non PVS farmers (hereafter referred to as 'General Farmers') has resulted in all the fourteen, yet to be released, aflatoxin resistant varieties passing through the farmer selection process, even though the PVS farmers by themselves were not in consonance with this trend. Men and women farmers from within the PVS villages and other neighboring villages were also invited to evaluate the varieties individually in all the three locations.

None of the fourteen varieties had been rejected outright by the groundnut growers from the surrounding villages. The common farmer has generally expressed satisfaction about the better performance of all new varieties compared to most of the existing varieties in the study areas. Interestingly, TMV-2, the most popular localized variety, which is grown extensively in the study areas, also figured in the preferences of the farmers prominently.

However, perceptions of farmers pertaining to the levels of performance of these varieties differed from location to location, farmer to farmer and among men and women and hence their preferences for different varieties was varied and for specific reasons. Their preferences basically reflected the suitability of these varieties in their locations (farming systems), their crop management practices and the perceived market preferences for these varieties in the respective regions. A location wise analysis of farmers' responses, when asked to state their preference for or rejection of varieties in their perceived order of importance and to explain their criteria for the choice and the reasons for according higher importance, showed that all fifteen varieties appeared in the selection lists in Pileru and Anantapur areas. Only two varieties, ICGV 91328 and ICGV 93328 were completely left out of the selection by farmers of Mahaboobnagar area. See Table 3.

Interestingly women farmers from all three locations defined their choice much more clearly as they cumulatively selected fewer varieties than their male counterparts. Women from Pileru area selected eleven varieties, Anantapur area nine and Mahaboobnagar only five. Another interesting point is that women farmers from both Pileru and Antantapur areas included the local variety TMV-2 also in their selection.

Farmers' order of preference for each of these varieties with the reasons for their selection is presented location wise in Table 3 –

Farmers' choice in Anantapur

In the Anantapur area, farmers mostly preferred to choose only two varieties as their individual choices, all the varieties ultimately found favour with the farmers under the first, second or third

preferences, with ICGV 94434 topping the selection list as the first preferred variety. This was followed by ICGV 91278 and ICGV 93305 and the rest trailed behind them. But if we look at the overall selection, irrespective of the order of preference, ICGV 91278 emerged at the top (with 23 choices) followed by ICGV 94434 (20) and ICGV 93305 (12).

While the general trend of choices matches the choices of the male farmers, it is pertinent to note that the few women farmers who evaluated the varieties differed in their views. ICGV 91315, ICGV 91317 and ICGV 91328 topped women's selection list in that order, while these varieties were lower down at 8, 9 and 10 places in male farmers' choices (Table 5)

Farmers' choice in Pileru

Pileru farmers' on the other hand preferred to choose upto three varieties (as presented in Table 3 in the order of their preference). ICGV 91279 emerged as the top choice with highest first preference scores followed by ICGV 94434. Next in order were ICGV 91284 and ICGV 91324. Further down in the order were, ICGV 90302,ICGV 91328, ICGV 93328, ICGV 91341, ICGV 93305, TMV-2 and the others. Looking at the total scores (frequencies given in Table 4), irrespective of the order of choice, we however find that the farmers' preference was for ICGV 91279, ICGV 94434, ICGV 91284 and TMV 2, and in that order.

Women farmers' in the Pileru area were different from their counterparts in Anantapur area. Here women were in near agreement with the male farmers in according top selection choice to ICGV 91279 variety and exchanging the third and fourth choices between TMV 2 and ICGV 91284. However, they have preferred ICGV 91341 in the second position and relegated sixth position to the highly scoring ICGV 94434 (second place) among the men farmers (Table 5).

Farmers' choice in Mahaboobnagar

Similar to the trends in the other two areas, ICGV 94434 turned out to be the best of choices of the Mahaboobnagar farmers. The top choices are ICGV 93305, ICGV 92302, ICGV 91283, ICGV 91341, ICGV 91315 and TMV 2 that scored well on the selection list of farmers (Table 3). An interesting feature of the selection process in this area was that two varieties – ICGV 91328 and ICGV 93328 failed to figure in the selection list. Comparing the choices irrespective of the order of preference, we find that ICGV 92302 has slipped position to the fifth place in the total scores while all others retain places (Table 4).

Women farmers once again showed that their preferences are different from those of the male farmers. ICGV 91317, ICGV 91324 and ICGV 92302 appeared on the topside of their list which were way below the selection list of men farmers (Table 5). Moreover, while ICGV 93305 and ICGV 91341 were on the higher preference list of men farmers, they did not appear on the selection list of women at all. However, it is important to note that very few women farmers participated in the assessment exercises, and the results stated here may not be reflecting the true perceptions of the women farmers of the area in general.

Top selections

A comparison of all fifteen varieties in all three locations put together shows that only ICGV 94434 has emerged as a clear top choice of all the farmers (the PVS farmers and the general farmers included) in all the three study areas. Though the seeds are red coloured (a trait not generally accepted in Anantapur and Mahaboobnagar areas exept for oil yields), its capacity to resist drought that prevailed in all three areas besides its pod yield, haulm yield, higher pod filling, firm seeds and higher shelling percentage seemed to have greatly attracted farmers interest.

It is interesting to note that a cumulative count of the number of times a choice was made against each variety indicates that ICGV 91279 and TMV-2 are a distant second and third choice respectively. However, looking at the location specific scenario, we find that ICGV 91279 has emerged as a top choice only among the general farmers of Pileru area while the PVS farmers of Pileru and both groups in the other two areas not being very inclined to this variety. Similarly, TMV 2 showed a much lower choice in the location specific scenario.

Location wise, we find that the preferences of the general farmers differed from the views of the PVS farmers except for the ICGV 94434. It is important however, to realize that a range of varieties needs to be provided to the farmers for further testing and final acceptance of varieties. It is also important to give sufficient merit to the impressions of the PVS farmers while deciding on the varieties that need to be selected for further trials. A combined list of location wise farmers' "top three preferences" among the varieties tested is as follows:

Anantapur

- PVS Farmers - ICGV-94434, ICGV-91317 and ICGV-91328
- General farmers - ICGV-94434, ICGV-91278 and ICGV-93305

So we have a total of 5 varieties that include - ICGV-94434, ICGV-91317, ICGV-91328, ICGV-91278 and ICGV-93305

Pileru

- PVS Farmers - ICGV-94434, ICGV-93328 and ICGV-91324
- General Farmers - ICGV-91279, ICGV-94434 and ICGV-91284

So we have a total of 5 varieties that include ICGV-94434, ICGV-91279, ICGV-91284, ICGV-93328 and ICGV-91324

Mahaboobnagar

- PVS Farmers - ICGV-94434, ICGV-92302 and ICGV-91324
- General Farmers - ICGV-94434, ICGV-93305 and ICGV-92302

So we have a total of 4 varieties that include ICGV-94434, ICGV-92302, ICGV-91324 and ICGV-93305.

On the whole we have 10 varieties in the top selections for all the three locations combined.
1 - ICGV-91278, 2 - ICGV-91279, 3 - ICGV-91284, 4 - ICGV-91317, 5 - ICGV-91328, 6 - ICGV-93305, 7 - ICGV-92302, 8 - ICGV-93328, 9 - ICGV-94434, 10 - ICGV-91324

Adding the top three choices of women farmers separately to this list, we find that women farmer from each of the areas chose as follows -

Anantapur	ICGV-91315, ICGV-91317 and ICGV-91328
Pileru	ICGV-91279, ICGV-91341 and TMV-2
Mahbubnagar	ICGV-91317, ICGV-91324 and ICGV-92302

Except for ICGV-91315, ICGV-91341 and the local TMV-2 all the other varieties have already being selected by other groups, we have a total of 12 ICRISAT varieties for further testing. It should be noted that TMV-2 is not an aflatoxin resistant variety.

However, it is possible to reduce the number of varieties to be tested in the subsequent periods of the project depending upon the decision concerning the type of farmers groups to be more relied upon. The PVS farmer groups have not only based their choices and preferences on the final

observations after harvest but have had the opportunity to monitor the various aspects of plant characteristics such as drought and pest resistance etc, while they were growing the crops themselves. The general farmer groups on the other hand have only visited the fields maybe once or at the most twice before, but mostly based their observations on the crop quality after harvest. Choices of women farmers – who, to start with, were very few in number - also come under the second type of varietal selectors.

In case there can be an option to chose between the groups for arriving at a final list of varieties that have to be tested further, the different lists of varieties for all locations combine could be as follows:

All three locations put together, PVS farmers' list will have only six varieties for further testing, which include ICGV-94434, ICGV-91317, ICGV-91328, ICGV-93328, ICGV-91324 and ICGV-92302 varieties. The general farmers groups' list will have a different set of six varieties that include ICGV-94434, ICGV-91278, ICGV-93305, ICGV-91279, ICGV-91284 and ICGV-92302. Only two varieties are common to these two lists - ICGV-94434 and ICGV-92302.

Why they chose what they chose

Farmers' mainly based their selection of the new varieties on their ability to adapt to their local conditions while fulfilling the marketing requirements. Due to this, though some varieties may have had most of the characteristics that the farmers would ideally like to have, they would not have figured in the top selection lists if they had not fared well under certain local conditions. Farmers of the Pileru area, gave higher preference to red coloured three seeded pods as they believed that they fetch better price in the market due to their high oil content and drought resistance capacities, most other highly desirable characteristics were not considered by them.

Farmers from Anantapur on the other hand liked two seeded tan/whitish seed colored varieties as they have good resemblance to local varieties they generally use and with better performance. Similar is the case with Mahaboobnagar farmers whose selection was significantly influenced by the appearance of the new varieties as compared to their local varieties and whether they performed any better than their local varieties, especially the ability to withstand drought. Irrespective of the location, the primary concern of all farmers was about the drought resistance capacities of the new varieties besides higher yields.

Women farmers selection criteria are also largely in line with that of men in all the three locations. However, their order of preferences were different from those of their male conterparts in their respective locations because women's selection criteria included additional characteristics like taste of groundnuts, quantity, quality and usefulness of the foliage as fodder, identically sized pods, etc.

The selection criteria in general were related to the use and consumption patterns of groundnuts and the related market demands in a given region. For example if a farmer is linked up to traders that deal with oil, for any of their financial / marketing requirements, then the oil content criteria gains importance. On the other hand if they are sold for seed purpose or for confectionery then varieties with tan/white color gain importance. The market preference in general seems to favour red seeds in Pileru area while tan/white seeds scored better in Anantapur and Mahaboobnagar areas. A list of the evaluation criteria that have been generally followed by the farmers in evaluating the new varieties may be summed up as following –

- yield
- outturn or shelling percentage
- oil content
- good seed quality
- drought resistance
- pest and disease resistance
- level of pod filling/ firm seeds /strong pods
- number of pegs
- number of immature pods/small pods
- colour of the seed
- size of the pod – equal size, big or long
- number of seeds in pod
- thin shell
- good plant standing
- higher germination percentage
- suitability to their existing soils
- size of the plant/foliage/fodder yield
- quality of the foliage
- market value

Some Interesting Observations Of Farmers During Evaluations – What They Actually Said.

Farmers evaluations of new varieties reflected their overall needs and concerns about growing different groundnut varieties in their farming systems. Their general observations are thus summed up below -

Anantapur

a) West Narasapur:

- 20 years ago we were growing "Teega Kaya" (spreading type), now we are growing locally available bunch varieties.
- 'Teega kaya' was not useful for consumption purpose, it is not good for health.
- All ICGV varieties are better than the local varieties, these varieties gave almost double yield than the local variety
- We require good out turn, good pod filling and shining pods (attractive colour) as these are good for commercial purpose and fetch higher prices
- ICGV – 91114 is the best variety that was introduced to us earlier. These new varieties introduced under this program are no better than that variety.
- "Nitrogen" content is high in the improved varieties (Greater nodulation?)
- TMV 2 has shown drought resistance characteristics, and since two years it is giving higher yields (one farmer's opinion, for next season he is willing to continue growing this variety)
- During drought, large farmers face larger problems than the small farmers, because we don't get sufficient seed in time. Small farmers requirements being smaller, they manage to get sufficient seed for their needs.
- Destruction of crop by wild boars is becoming a major problem – like to shift crops - other than G Nuts.

b) Mukundapuram:

- ICGV varieties are far better than the local variety, this time we will replace local variety with these varieties
- We prefer JL type pods (bold type) and shining seed (red or white colour does not matter)
- With seed replacement we will get higher yields

c) Mallapuram:

- The improved varieties yield is far better than the local variety
- Red seed is not good for commercial purpose, but its yield is more so we will sell this variety to Karnataka traders - farmers in Karnataka will get higher rates for this variety.
- Next season, most of us are going to replace groundnut with sunflower

Pileru

a) Ontillu:
- Improved varieties yield is higher than the local varieties
- Red colour and three seeded pods are good for commercial purpose.
- Shining and strong pods with good filling varieties are preferable here

b) Bodinayunidoddi:
- We prefer thin shell, strong and good filling pods
- Soils here are not as good as M.C. Palem soils for g nut cultivation
- We have soil born diseases (Necrosis is highly prevalent here). Give us resistant varieties that are suitable to our lands

c) Maddalachervupalem:
- Thin shell with inside black color, good pod filling, high outturn and oil content type are preferred by us.
- According to Agriculture department's advice we are replacing groundnut with sunflower, because in the last three years we did not get a single good yield in groundnut crop due to drought
- We prefer seed replacement every year, but this time we did not get good quality seeds

Mahaboobnagar:

a) Kethireddypalli:
- Groundnut crop has been forgotten for some time here, but some of us who are not groundnut growers at present are showing interest in growing ground nut in the next season
- All the varieties are good, but we are liking the red color three seeded pod variety better

b) Peddayapalli:
- The white color two seeded pods, are more suitable to our lands
- The small plant types give good yield, long stemmed varieties give less yields

c) Rangareddyguda:
- Two seeded white and three seeded red color pods are good for commercial purposes
- We want varieties suitable for growing in both the seasons – rainy and summer irrigated
- We want deep rooted and drought resistance varieties

Traders and Processors' evaluations

As expected, the assessments of most of the local traders and processors were conditioned by market demands and their respective forward linkages in groundnut marketing. It was a welcome trend when traders and processors in the study area were sufficiently enthusiastic about new varieties and especially aflatoxin resistant varieties. Anantapur and Mahaboobnagar traders deal with the marketing of HPS (hand picked selection) grade groundnut, which requires grading of shelled groundnuts. Consequently they were interested in the ability of the new varieties to cater to the needs of exports and domestic consumer markets besides their potential in the seed markets. Mahaboobnagar traders claimed that they have export markets for even the lower grade kernels especially to Middle Eastern countries, Malaysia and Indonesia to feed the pigeons around holy places like Mosques. The Pileru traders' selection on the other hand was focused mostly on the oil content of the varieties as well as their potential as seed. Location wise preferences of traders and the reasons for selecting certain varieties were given in Table 6.

Anantapur traders chose four new varieties as their first preference and a fifth as their second preference while continuing to trade in TMV-2. Pileru traders picked up a huge list of six new varieties as their first choice and another five as their second choice. The main reason why such large number of varieties figured in the list is due to the fact that traders here were not uniform in their choice of varieties and their order of preferences. There were wide variations in the criteria adopted for selection of the varieties. Finally, the Mahaboobnagar traders let the steam down by selecting only one new variety each as their first and second preferences. They claimed that ICGV- 93305 and ICGV-91284 are the only varieties among those under test that best suit the Telangana region.

Though the traders of Anantapur area chose five new varieties as their best choices for market adoption, it was discouraging to realize that, in a location-wise comparison of traders' choice with that of the farmers', only one variety - ICGV-91278 - matched the best choices of both groups. The other first choice varieties of the traders in this area appeared at the bottom of the farmers selection list. Worst of all, ICGV-94434 which was considered to be one of the most important varieties by farmers did not appear in the selection list of traders at all.

Similarly, of the 11 varieties selected by Pileru traders, only three varieties (ICGV-91284, ICGV-91324 and ICGV-93328) listed in the first priority category appeared in the farmers' selection list for the area. It was finally gratifying to note that Pileru traders had chosen the farmers most favoured variety – the ICGV-94434 – at least in their second, third and fourth preferences if not the first. Another interesting feature of the Pileru traders' selection list is the fact that four varieties most preferred for cultivation by the Ananthapur farmers figure in their top priority lists. These varieties are ICGV-91278, ICGV-91317, ICGV-93305 and ICGV-94434.

The traders from Mahabubnagar area were much more vociferous about their requirements and had a clear idea about what they were looking for, as their wish list is much simpler. Though ICGV 94434 that topped the selection list of farmers from this area did not figure in the traders selection list, ICGV 93305, the only top priority of the traders here did figure on the upper side of farmers selection lists.

Another interesting feature of the traders' selection lists indicates that they were more in consonance with the general farmers groups rather than the PVS farmer groups in that the majority of choices of the traders were similar to the choices of the general farmers. ICGV-91278, ICGV-91284 and ICGV-93305 are the preferred varieties among the general farmers in their respective areas while ICGV-93328 and ICGV-91324 are the preferred varieties of PVS farmers in Pileru area.

Discussions with traders in all three areas revealed their selection process and their areas of trade in general. Information pertaining to trade and pricing factors in the groundnut market obtained from the traders of each of the study area are presented here briefly -

Anantapur

- Best quality G Nuts - 280 Kg pods when shelled should give 240 kgs kernels
- Medium quality - 320 Kg pods gives 240 kg
- TMV 2 – is normally medium grade with out turn at 240kg or marginally above per -320 kgs of pods
- Poor quality crop gives an out turn of 240 kg kernels per 360 kg pods or more
- HPS grade - 100gms pods should give at least 76 gms of kernel – 76 to 82 is the range for HPS grades.
- Grading at the market is done mainly for HPS market
- Immature / undeveloped Kernels sell at Rs.20/- Kg
- Rejects from the HPS grading are purchased for oil crushing at Rs. 1600 to 1700 per quintal
- Red seed is preferred only for oil purpose / crushing only
- Price of groundnut is determined based on Shelling %, moisture content and oil content. These three criteria are carefully tested for. Special lab equipment is now being used to identify moisture and oil content percentage accurately.
- Crushing groundnuts for oil drastically decreased since 5 years
- Traders are interested in supporting aflatoxin resistant varieties and providing technical support to the farmers at their cost in order to boost farmers outputs which may bring back the farmers into cultivating groundnuts which is currently not very fetching to the farmers
- Rabi groundnut crop is more suitable for export
- Trader like the flat seeds (inside), fully filled seeds
- They give less preference to red color seed

Pileru:

- Only 5 - 10 % difference between all varieties in terms of outturn
- Out turn is generally higher for all new varieties compared to present market varieties.
- All these are better than local variety, out turn is more
- Red seeds commercially high price, as they generally have high oil content
- Storage pest is a major problem now. Insects make small hole in the pods and nothing is left inside in 60 days of storage.
- Drought resistance is important, red seeds can resist better
- Change in variety might improve crop yields in the area.
- ICGV 91317 appear good but pods are hollow and weight less, low price, Rs.560 / 570 bag. Given irrigation it will perform better than ICGV 94434

Mahaboobnagar

- Trade is mostly for kernels rather than oil – 80% of g nuts are purchased by Chennai and Mumbai traders for HPS business and for export to Indonesia and Malaysia
- Presently traders in AP are dependant on HPS groundnut trade to the extant of 80 % of the produce.
- Karif crop: Yield is less, out turn is less and so price is less.
- Rabi: Out turn is high so price is high.
- Maize and castor have replaced kharif groundnut
- They buy from market and grade groundnuts into A,B and C
- A grade has a 70 – 80 count (ie 70 to 80 seeds per ounce) (one count = 28.5 gms) B: 80 – 90 count
  These two grades are exported to Chennai and Mumbai
  C : 140 – 160 count, this referred as "Kalyani", - exported as feed for pigeons Indonesia, Malaysia, Singapore and Arab countries
- If A grade sells for Rs. 2000/-, then B sells for Rs.1950/-, and C Rs. 1900/-
- Rs.50/- difference between each count.
- Arrivals in Jedcherla market is less but quality is superior
- Feb – 1st arrivals from summer crop at Jedcherla market
- Mehabubnagar market – volume of trader high but quality is low

Discussion and Conclusions

The PVS process and the subsequent evaluation of the performance of aflatoxin resistance varieties had highlighted one aspect clearly – that is farmers are starved of opportunities to choose varieties depending on the need of the situation. At present they are forced to contend with very few varieties. Their experimentation with fourteen new varieties came as a fresh breath of life to them. Their evaluations clearly showed that none of the varieties were rejected outright but instead preferences were given to some depending on the varied needs of the farmers in different groundnut producing areas. Their general opinion is that all new varieties had generally performed better as compared to the varieties they grow in their regions.

Similar is the case with traders. They expressed that new varieties are necessary to these areas as the yields from the existing varieties are rapidly falling, forcing them to reduce their scales of operation. Their evaluations were much more pointed, which resulted in selection of only those varieties that fit into their marketing activities locally as well as the outward linkages. Realizing the quality of crop provided to them for assessment and the conditions of cropping during the period, the general opinion of the traders was that most of the varieties shown to them have the potential to perform much better if they could be provided with even marginally higher moisture supply compared to the acute drought conditions prevalent during the season.

If we take PVS farmers experience alone in each location, it shows that their final selection was narrowed down to fewer varieties only. In Anantapur eight varieties were left out of their selection out of 15 varieties – ICGV 91324, ICGV 91279, TMV 2, ICGV 93328, ICGV 91283, ICGV 91284, ICGV 91315 and ICGV 93305 were left out of the selection. Pileru farmers left five varieties out of their selection – ICGV 91283, ICGV 91315, ICGV 91317, ICGV 93305 and

ICGV 94379. The Mahaboobnagar farmers left out eight varieties out of the 15 – ICGV 91278, ICGV 91284, ICGV 91315, ICGV 91328, ICGV 91341, ICGV 93305, ICGV 93328 and ICGV 94379

It is essential to realize that the PVS farmers had watched the performance of all the new varieties throughout the cropping season very closely, that too in a year of acute drought. Their evaluations may be more valuable than those of the combined general farmer group. But we also have to note here that three PVS farmers each from Anantapur and Mahabubnagar districts were not available at the time of evaluations. We are not in a position to state whether a few more varieties might have been added to the selection lists if these six farmers were also available.

The combined evaluations of PVS farmers and the other groundnut growers gave us a choice to decide upon, whether we should consider only those varieties which were chosen as the first preference of all farmers or we should take into account all those varieties selected by farmers irrespective of the order of preference given to them. It has to depend upon the decision whether to narrow down the number of varieties for next year PVS or continue to give a wider choice to farmers to try them out for one more year. If we take only first preferences into consideration, ICGV 91279, ICGV 94434, ICGV 91284 and ICGV 91324 stood out prominently in farmers selection in Pileru. It is ICGV 94434 followed by ICGV 91278, ICGV 93305, ICGV 91284 and ICGV 91315 were scored by more number of farmers as first choice in Anantapur district. Once again it is ICGV 94434 at Mahaboobnagar district that scored maximum as first preference choice, the other three varieties being ICGV 93305, ICGV 92302 and ICGV 91283. Some more varieties were chosen under first preference other than the ones mentioned here but they were all selected by less than five farmers per variety.

The gender wise analysis was limited by the fact that fewer women participated in the evaluations. However, analysis shows that women's selection in all three locations was much narrower than the men as fewer varieties figured in their selection list. Barring a few coincidences their order of choice (based on the number of women preferring a variety) was different as compared to men. Women mostly preferred ICGV 91279 followed by ICGV 91341 and TMV 2 in Pileru, ICGV 91315, ICGV 91317 and ICGV 91328 in Anantapur and ICGV 91317, ICGV 91324, ICGV 92302, ICGV 94434 and ICGV 91278 in Mahaboobnagar. Since, among the 27 PVS farmers, only one woman farmer was involved in the PVS process, PVS farmers' assessment seems to reflect the views of only men farmers. In view of this situation, we have to go out of the purview of the PVS to understand women's preference and use this information while shortlisting varieties for next year trials.

One striking feature of this entire analysis is the fact that location to location differences in the selection was prominent. Hence location wise preferences have to be taken seriously for short listing varieties for PVS process next year. Decision making under these circumstances may become difficult for the research team as none of the varieties were rejected. But what is important here is making location specific targeting of those varieties that were preferred most in a particular location. This will not only simplify the dissemination process but also make it easy for the researchers to multiply only the required seed in each location.

On the contrary, it would be extremely beneficial to the farmers if we can provide them with a wide choice of as many varieties as possible to chose from, till such time that they themselves arrive at a shorter list through the normal selection processes of sustained field performance and market demands. This would be especially true keeping in mind the varied potential of the varieties to different field level micro agro-climatic situations and the levels of confidence reposed by the farming as well as the trading communities of the areas under study.

Recommendation

The evaluations point out that it is difficult to eliminate some varieties at this point as all fourteen varieties have been preferred at one location or the other. The area wise differences in selections clearly indicate the location specificity of choices, but not the performance potential of the varieties vis-à-vis the locations. Hence, we suggest that the selection of varieties for next year trials are based on the evaluations of each location. While doing so, three aspects need be taken into consideration for each location – PVS farmers selection, traders selection and women farmers selection.

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Table: 1 Salient Features of the Farming systems of the villages selected for PVS process in Pileru, Anantapur and Mahaboobnagar districts

Sl.no	Name of the Village/ location	No.of House holds	Popula-tion size	Cultivated land In acres	No,of wells, bore wells, tanks	Type of soil	Crops grown	Main crops Of livelihood	Live stock/large ruminants	
									Milch	Draught
Anantapur										
1.	West Narasa puram	108	518	1900	53	Gravelly	Groundnut, sweet orange, pigeon pea, paddy, horse gram, sunflower Sorghum	Groundnut	125	275
2.	Mukunda puram	248	2000	2000	1025	Red soil	Groundnut, Sweet orange, paddy	Groundnut, Orange	1300	500
3.	Malla Puram	226	1340	1250	116	Red soil	Groundnut, sunflower, pigeon pea, paddy, Sorghum	Groundnut	210	184
Pileru										
1.	Ontillu	73	400	200	4	Gravelly	Groundnut, sorghum, cowpea, pigeon pea, Horse gram, Paddy	Groundnut	75	6
2.	Bodi Nayuni Doddi	30	200	100	5	Black cotton soil	Groundnut, tomato, cowpea, Ragi, vegetables, paddy	Groundnut	100	40
3.	Maddela cheruvu palem	100	500	200	9	Red, black and acetic soils	Groundnut, sunflower, sugar-cane, paddy, tomato, vegetables	Groundnut	130	8
Mahaboobnagar										
1.	Kethireddy palli	600	---	400	300 (17 working)	Red, sandy red, loam soil, black soil	Maize, sorghum, pigeonpea, groundnut, caster, paddy, sunflower.	sorghum, castor, paddy, pigeonpea	150	175
2.	Ranga reddy gudem	700	----	600	23 (all working)	Black soil, red, red loam	sorghum, pigeonpea, maize, castor, sunflower, paddy and groundnut	Sorghum maize, paddy groundnut	100	200
3.	Peddaya palli	98	----	250	7 (all working)	Red, sandy red, red loam, black	Caster, maize, sunflower, paddy , pigeonpea, sorghum, sesamum, hosegram, groundnut	Sorghum, maize, hosegarm, piegeonpea,	50	120

Table2 : PVS Farmers preference for aflatoxin resistant groundnut varieties and reasons-Three locations

S. No	Name of the farmer	Selected varieties	Reasons
Anantapur			
1.	G. Pedda Muneappa	ICGV- 94379[1] ICGV- 92302[2]	1. Pods and haulms are long, good pod filling, pest resistance 2. Pod quality, filling and out turn are good but small size pods & plants
2.	G. Chinna Muneappa	ICGV – 91328[1] ICGV – 91278[2]	1. Yield, out turn and haulms are good, small size pods, long rooting. 2. Bold pods, out turn and yield is good, non resistant to disease and pest, long haulms
3.	Krishna Reddy	ICGV – 91317[1] ICGV – 91278[2]	1. Out turn, and pod filling is good but less yield 2. Good yield , bold pods and good out turn
4.	T. Hanumantha Reddy	ICGV – 94434[1] ICGV – 91278[2]	1. Long red seed, good out turn, drought resistance 2. White seed, quality, yield and out turn is good
5.	G. Sanjeevulu	ICGV – 91317[1] ICGV – 91341[2] ICGV – 92302[3]	1. Quality, pod filling and plants are good, white seed, less disease 2. Three seed with red color, good pod filling, few immature pods, green plants 3. Bold seed, pod filling and seed is good, green plants
6.	H. Narayana	---	Not available
7	G. Lingamma	ICGV – 91328 ICGV – 94434	1. Red seed, good out turn, but taste and oil content are less 2. Small size pods, long haulms, drought resistance, out turn, fodder, quality and pod size are good
8.	Beldaru Murali	---	Not available
9.	Beldaru lakshmanna	---	Not available
Pileru			
10.	Ameenuddin	ICGV- 93328[1] ICGV- 92302[2] ICGV- 91341[3]	1. Good pods, good pod filing and drought resistance 2. Small haulms, good pod filling 3. Crop yield is good but more immature pods
11.	G. Mallaiah Naidu	ICGV-94434[1] ICGV-91324[2]	1. Good pod filling, big pods, good out turn 2. Size is slightly small, pod yield, pod filling good, good out turn, good shelling %
12.	G. Narasimhulu Naidu	ICGV -94434[1] ICGV -93328[2] ICGV -91278[3]	1. Drought resistance, Seeds, pod filling, yield and out turn are good, good for commercial purpose 2. Pod filling, out rate and oil content are good and drought resistance 3. Long pods, good pod filling and drought resistance
13.	B. Nagaraja	ICGV- 94434[1] ICGV- 93328[2]	1. Good pod filling, less immature pods, drought resistance and good haulms 2. Good filled pods drought resistance, small haulms but less yield.
14.	Y. Amarnath	ICGV- 94434[1] ICGV- 93328[2] ICGV -91341[3]	1. Pod size (long), pod filling and out turn good drought resistance, better than local 2. Two seeded pods, out turn, oil content and pod filling are good 3. Long pods, good pod filling, and drought resistance.
15.	C. Amrutha Naidu	ICGV- 94434[1] ICGV -91324[2]	1. Same size pods, pod yield and out turn is good, less immature pods, drought resistance 2. Good, but more immature pods, growth is not uniform
16.	P. Subba Naidu	ICGV- 94434[1] ICGV- 91341[2]	1.Drought resistance, Good pod filling, good fodder yield (thick foliage) 2. Drought resistance, Good pod filling, less yield
17.	P. Narasimhulu Naidu	ICGV-91324[1] ICGV-94434[2] ICGV-91278[3]	1. Good pod filling but less yield 2. Good yield, filling is not as good as 1. 3. Yield is very less, but less drought resistance, with rain yield will be very high
18.	D. Chinna Mallaiah	ICGV- 91328[1] ICGV -91284[2] ICGV -91279[3] TMV 2[4]	1. Good out turn, good quality but small pods 2. Good pods, filling and fodder, out turn is also good 3. Good pod quality, less immature pods 4. Small seeds, good filling, good foliage and disease resistance, more immature pods
Mahaboobnagar			
19.	E. Lakshmaiah	ICGV – 94434[1] ICGV – 91324[2]	1. Bold pods, less foliar disease, good pod yield, 2. Strong pods, good pod filing, yield is slightly less due to drought, disease resistant
20.	J. Megha Naik	ICGV-94434[1] ICGV – 91283[2] ICGV-91324[3] TMV 2[4]	1. Good pod filling, long pods, drought resistance, good quality 2. Long pods, less immature pods, drought resistance 3. Small size bold pods, more disease 4. Small size pods and small plant, drought resistance
21.	Y. Rami Reddy	ICGV – 92302[1]	1. Crop establishment is good, sustains weed, resistance to drought, pest and disease resistance
22.	Satyam Goud	ICGV – 92302[1] ICGV – 94434[2]	1. Small size pods with bold seed, good pod filling, drought resistance 2. Long pods, Good pod quality, few immature pods
23.	Venkataramulu	---	Not attended
24.	B. Ramachandraiah	ICGV – 94434[1]	1. Good pod filling, more yield, long pods
25.	Venkataiah	----	Not attended
26.	Janardhan	----	Not attended
27.	L. Malla Reddy	ICGV – 92302[1] ICGV – 94434[2] ICGV – 91279[3] ICGV – 91317[4]	1. Bold pods, good pod filling, and green plants, more pegs, good quality pods 2. Long pods and red seeded 3. Long and small pods, good pod filling, more disease 4. Small size plants, less yield, good pod filling, more disease

Note: 1. Each number in reasons column correspond to each selected variety
2. The superscript numbers in the varieties column denote the order of preference for the variety by each of the farmers.

Table 3: Groundnut Farmers' order of preferences for new groundnut varieties: Location wise Analysis.

S. No	Variety	Order of Preference (No. of frequencies)			Reasons
		First	Second	Third	
Pileru					
1.	**ICGV-91278**	1	3	3	Yield is vary high, good out turn, oil content is good, good quality, good haulms, three seeded pods but less yield, more pegs, less drought resistance, it gives high yield when good rains
2.	**ICGV-91279**	23	5	3	Drought and pest resistance, good out turn, pod filling and yield is good, fodder yield is good (thick foliage), red colour seed, less immature pods long pods, good plant standing, filling is not as good as other varieties, big pods but less yield
3.	**ICGV-91283**	0	0	2	Good yield, good out turn, drought resistance, good pod filling.
4.	**ICGV-91284**	7	6	4	Good pod filling, same size pods, small pods out turn is good, pods are good, drought resistance, good foliage, less immature pods, hybrid seed, good oil content, more pegs
5.	**ICGV-91315**	1	3	1	Small size pods, good yield, good quality, seed quality is good, out turn is good, good foliage, long pods with good pod filling, good plant standing with less yield
6.	**ICGV-91317**	0	4	0	Long pods, good out turn but more immature pods. It gives more yield, in irrigated conditions
7.	**ICGV-91324**	5	4	1	Good pod filling, good out turn, drought resistance, crop yield is good but small pods, growth is not in uniform, haulms are good, more immature pods, not drought resistance
8.	**ICGV-91328**	3	3	5	Good pod filling, high yield, good out turn, crop standing is good, small and long pods with good pod filling, drought resistance, good quality, good fodder, white colour seed, but more immature pods
9.	**ICGV-91341**	2	4	3	Long pods with red seed, good pod filling, out turn is good and high yielding, drought resistance, less yield, more immature pods, they said that this variety is not suitable to this soil
10.	**ICGV-92302**	4	2	3	Good pod yield, but small haulms, good pod filling, drought resistance, bold seed, good foliage, more immature pods, pod filling is good but less yield
11.	**ICGV-93305**	2	1	0	Good pod maturity, good pod filling, out turn is good, more pods, drought resistance, pest resistance
12.	**ICGV-93328**	3	4	4	Good pod filling, drought resistance, good oil content, small pods, not drought resistance, less yield, better crop standing but more immature pods
13.	**ICGV-94379**	0	2	1	Good pod filling but less out turn, long pods with red seed, good foliage, more immature pods, less yield
14.	**ICGV-94434**	13	5	2	Drought and pest resistance, good out turn, pod filling and yield is good, fodder yield is good (thick foliage), red colour seed, ,less immature pods long pods, good plant standing, filling is not as good as other varieties, big pods but less yield
15.	**TMV 2**	1	7	5	Equal size pods, haulms are good, good pod filling but small size pods, good out turn, drought resistance, good foliage, good crop standing, good taste, less immature pods
Anantapur					
1.	**ICGV-91278**	10	13	0	Good quality, pod size is good, high yield, white seed, pod colour is shining, bold seed, commercially good, medium out turn, good fodder, drought resistance, long pods with long seed, it gives more yield under irrigated conditions
2.	**ICGV-91279**	1	2	0	Tan colour, good seed pods, pods also good, good out turn, it looks like local variety, good haulms but small, drought resistance,
3.	**ICGV-91283**	1	3	0	Small pods, good out turn, strong pods, good yield but less growth, drought resistance, like TMV2, average out turn,
4.	**ICGV-91284**	5	1	2	Good yield, and good out turn, drought resistance, small pods, good oil content, good quality, good kernel size, it is small in size comparatively local variety, more immature pods
5.	**ICGV-91315**	5	2	0	Good growth, good out turn , drought resistance, small pods, good oil content, good quality, good kernel size, small haulms, more immature pods
6.	**ICGV-91317**	4	3	0	Quality of seed, haulms, pod filling and out turn are good, white seed, green plants, long pods, less disease, less immature pods but less yield
7.	**ICGV-91324**	2	0	0	Fungus resistance, good yield, oil content also good, good pod filling, pods like kadiri – 3
8.	**ICGV-91328**	2	2	0	Small and long size pods, good pod yielding, good plants, drought resistance, pod quality, oil content and fodder is good, but more pest
9.	**ICGV-91341**	1	3	2	90% good yield, good out turn (75%), two and three seeded pods, red seed, good pod filling, few immature pods but not good haulms
10.	**ICGV-92302**	0	1	1	Small size pods, good pod filling, good quality seed, good out turn, small plants
11.	**ICGV-93305**	7	3	2	Thin shell, pod filling, out turn, and haulms are good, no immature pods, commercially it is good, growth is like the local variety, good yield because of nitrate, less fodder, red seed, more pegs
12.	**ICGV-93328**	4	1	0	Good out turn, good yield, good pod filling, big pods, white seed, good quality
13.	**ICGV-94379**	2	1	3	Good pods, long size pods, pod filling is good, pest and drought resistance, bold pods, but not good out turn, less yield, less immature pods, small plants, it looks like 93305,
14.	**ICGV-94434**	16	4	0	Bold seed comparatively local, good crop, good germination, good maturity, good pod filling, seed quality is good, good oil content, yield and out turn is good, drought resistance, red colour seed
15.	**TMV 2**	3	3	0	Good yield but some immature pods, medium size pods, good seed drought resistance, good fodder, pest resistance, good out turn, good haulms, strong pods but less yield.

Table 3: - continued

S. No	Variety	First	Second	Third	Reasons
Mahaboobnagar					
1.	**ICGV-91278**	1	1	1	Good crop, strong pods, good yield, medium size pods, more disease, small size haulms
2.	**ICGV-91279**	0	0	1	Good pod filling, long plants, long and small pods, but more disease
3.	**ICGV-91283**	5	5	1	Strong and long pods, less immature pods, good yield, drought resistance, small size plants, more disease, good out turn and bold pods
4.	**ICGV-91284**	0	1	2	Small size pods, yielding and pod filling is good, more disease, small size plants, more immature pods
5.	**ICGV-91315**	3	5	2	Strong pods, good pod filling, good yield, strong kernels, less immature pods, more foliar disease and drought resistance.
6.	**ICGV-91317**	2	3	2	Small size pods, good pod filing, less yield, disease and drought resistance, tall plants, good market value, small size bold pods, more immature pods, more disease
7.	**ICGV-91324**	1	1	2	Small size pods, good pod filling, less disease resistance, tall plants, more immature pods, small and bold pods
8.	**ICGV-91328**	0	0	0	Nil
9.	**ICGV-91341**	3	6	3	Long and small size pods, yield and haulms are good, good pod filling ,drought resistance, more immature pods, more disease
10.	**ICGV-92302**	6	4	2	Small size pods, bold seed, pod filling and yield is good, disease resistance, crop establishment is good, good kernel quality, small haulms, more immature pods
11.	**ICGV-93305**	9	3	2	Pod filling and yield is good, small and long size pods, disease and drought resistance, good kernels
12.	**ICGV-93328**	0	0	0	Nil
13.	**ICGV-94379**	1	2	1	Good yield, good crop, strong kernel but small pods, more immature pods
14.	**ICGV-94434**	23	7	1	Yield, quality, haulms, foliage and out turn are good, long and strong pods, drought resistance, good kernel, less immature pods, not drought resistance, red colour seed
15.	**TMV 2**	2	7	1	Good yield, strong pods, long and small pods, red colour seed, good pod filling, drought resistance, more disease.

Note: 1. The numbers in the table denote frequencies of farmers who chose the corresponding variety under first, second or third preferences. The frequencies beyond third preference are not mentioned here.
2. Table includes PVS farmers and other neighboring groundnut farmers that participated in the evaluation.
3. Reasons mentioned against each variety are the combined responses of farmers for that variety

Table 4: Location wise selection of new groundnut varieties by groundnut farmers: in descending order of frequencies

S.no	Pileru	Anantapur	Mahaboobnagar
1.	ICGV-91279 (32)	ICGV-91278 (23)	ICGV-94434 (31)
2.	ICGV-94434 (22)	ICGV-94434 (20)	ICGV-93305 (14)
3.	ICGV-91284 (20)	ICGV-93305 (12)	ICGV-91283 (13)
4.	TMV 2 (18)	ICGV-91284 (8)	ICGV-91341 (13)
5.	ICGV-91328 (13)	ICGV-91315 (7)	ICGV-92302 (12)
6.	ICGV-93328 (11)	ICGV-91317 (7)	ICGV-91315 (11)
7.	ICGV-91324 (10)	ICGV-91341 (6)	TMV 2 (11)
8.	ICGV-91341 (9)	ICGV-94379 (6)	ICGV- 91317 (8)
9.	ICGV-92302 (9)	TMV 2 (6)	ICGV-91324 (4)
10.	ICGV-91278 (7)	ICGV-93328 (5)	ICGV-94379 (4)
11.	ICGV-91315 (6)	ICGV-91283 (4)	ICGV-91278 (3)
12.	ICGV-91317 (4)	ICGV-91328 (4)	ICGV-91284 (3)
13.	ICGV-93305 (3)	ICGV-91279 (3)	ICGV-91279 (1)
14.	ICGV-94379 (3)	ICGV-91324 (2)	ICGV-91328 (--)
15.	ICGV-91283 (2)	ICGV-92302 (2)	ICGV-93328 (--)

Table 5 : Gender wise analysis of selection of new groundnut varieties in descending order of frequerncies- Three locations

S.No	Variety	Men	Variety	Women
Pileru				
1.	ICGV 91279	23	ICGV 91279	9
2.	ICGV 94434	20	ICGV 91341	3
3.	ICGV 91284	18	TMV 2	3
4.	TMV 2	15	ICGV 91284	2
5.	ICGV 91328	12	ICGV 92302	2
6.	ICGV 93328	11	ICGV 94434	2
7.	ICGV 91324	9	ICGV 91278	1
8.	ICGV 92302	7	ICGV 91324	1
9.	ICGV 91278	6	ICGV 91328	1
10.	ICGV 91315	6	ICGV 93305	1
11.	ICGV 91341	6	ICGV 94379	1
12.	ICGV 91317	4	ICGV 91283	0
13.	ICGV 91283	2	ICGV 91315	0
14.	ICGV 93305	2	ICGV 91317	0
15.	ICGV 94379	2	ICGV 93328	0
Anantapur				
1.	ICGV 91278	22	ICGV 91315	2
2.	ICGV 94434	19	ICGV 91317	2
3.	ICGV 93305	12	ICGV91328	2
4.	ICGV 91284	7	ICGV 91278	1
5.	ICGV 94379	6	ICGV 91284	1
6.	ICGV 91341	6	ICGV 91324	1
7.	TMV 2	5	ICGV 94434	1
8.	ICGV 91315	5	TMV 2	1
9.	ICGV 91317	5	ICGV 91279	0
10.	ICGV 93328	5	ICGV 91283	0
11.	ICGV 91283	4	ICGV 91341	0
12.	ICGV91279	3	ICGV 92302	0
13.	ICGV 91328	2	ICGV 93305	0
14.	ICGV 92302	2	ICGV93328	0
15.	ICGV 91324	1	ICGV 94379	0
Mahaboobnagar				
1.	ICGV 94434	30	ICGV 91317	1
2.	ICGV 93305	14	ICGV91324	1
3.	ICGV 91341	13	ICGV 92302	1
4.	ICGV 91283	13	ICGV 94434	1
5.	ICGV 91315	11	ICGV 91278	1
6.	ICGV 92302	11	ICGV 91279	0
7..	TMV 2	10	ICGV 91283	0
8.	ICGV 91317	7	ICGV 91284	0
9.	ICGV 94379	4	ICGV 91315	0
10.	ICGV91278	3	ICGV 91328	0
11.	ICGV 91284	3	ICGV 91341	0
12.	ICGV 91324	3	ICGV 93305	0
13.	ICGV 91279	1	ICGV 93328	0
14.	ICGV 91328	0	ICGV 94379	0
15.	ICGV 93328	0	TMV 2	0

Table 6: Location wise selection of new groundnut varieties by traders/processors in order of preference

S. No	District/ location	Varieties				Reasons
		Order of Preference				
		First	Second	Third	Fourth	
1.	Ananta pur	ICGV -91278 ICGV- 91279, ICGV–93328, TMV 2, ICGV– 91324	ICGV-91283	ICGV-91284	ICGV-92302	• Good out turn (Rs. 700/- bag) • Outturn good though pods are small (below Rs.700/- bag) • Oil percentage is very high 90%, Rs. 1800 – 1900 per quintal pods, • Quality is good. Oil content good, • Oil content is very high • Good seed, good appearance, good for export, good out turn, Rs. 1800/- quintal pods may fetch • Seed color full white, out turn and weight are good, shelling 70 %
2.	Pileru	ICGV –91278 ICGV –91284 ICGV –91324 ICGV –92302 ICGV –93328 ICGV –94379	ICGV –91284 ICGV –91317 ICGV –93305 ICGV –94434 ICGV –91283	ICGV-94434 ICGV-91315 ICGV-91317 ICGV-93305	ICGV-91315 ICGV-92302 ICGV-94434 ICGV-94379 ICGV-91341 ICGV-91279 ICGV-91328	• Kalahasti traders prefer as seed, good out turn, shelling is 70%. • White seed, small pods, good filled pods, weighs more because of out turn, thin shell, more price, and drought resistance very good. Suitable to Pileru area, shelling 72%- 74%. Price Rs.600/ bag • Good yield, but drought resistance is less, 15 pods/plant. • As a seed for sale it will be excellent, good pod yield, oil content is good. • Good for consumption & oil purpose. • Red seed pods, three seeded pods, shelling 74%, good out turn, with water, it will do much better yield, it will increase 40 pods per plant. Rs. 650/- per bag (40 kg).
3.	Mahaboob nagar	ICGV-93305	ICGV-91284	TMV 2	Nil	• Good appearance, hence inside will be good, thin shell, Rs.50 will be higher – pods Rs. 1700/- per quintal • Good appearance, Rs. 50 /- less than ICGV 93305. • Most suitable – referred as “gunguru“ in this area Rs. 1400- 1500/ quintal because this produce is “C” class quality in Telangana, suitable for export.