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APPENDIX 15

Report On

Groundnut Seed Supply Systems in Andhra Pradesh

– An analysis of farmers' perceptions and alternative strategies

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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

Groundnut Seed Supply Systems in Andhra Pradesh
An analysis of farmers' perceptions and alternative strategies

Introduction

Majority of the Indian farmers are now finding it difficult to store seed for the next crop due to lack of storage space and problems with pests and diseases. Demand for good quality seed has therefore increased extensively. Supply of quality seeds by the various agencies is catering to just about 15 percent of the demand, due to which farmers store some of the general crop produce as seeds for their next crop. Due to this reason, farmers are unable to harvest clean, single variety crops. In the case of groundnut crop the problem is more acute. The groundnut seed market essentially supplies groundnuts stored from the previous crop as seed, most times without even verifying the purity of the varieties. This trend has led to further mixing of varieties.

Farmers in the large groundnut growing semi-arid belt of Anantapur, Chittoor, Kurnool, Cuddapah and Mahaboobnagar districts of Andhra Pradesh, (AP), South India, require huge quantities of groundnut seed in a short period of fifteen days during the beginning of the monsoon. Due to their eagerness in utilizing whatever moisture is available and the huge shortage in supply of quality seed, any type of groundnuts available in the open market or supplied / sold as seed is procured by the farmers and is sown in the field as seed. The problem is further compounded by the fact that the perpetually impoverished and debt ridden farmers of this belt most often do not have a choice but to procure the so-called 'seed' from the local traders on credit. The poor conditions of storage of this 'seed' since its production during the previous season, invariably is susceptible to diseases and has a major impact on the crop quality and yield.

Before any interventions for supply of good quality seed are undertaken, it is essential to understand the existing market mechanisms of seed production and marketing systems, organize suitable storage infrastructure, identify probable formal and informal sources of seed production and supply channels and then organize the ways and means of narrowing down the gap between 'supply and requirement'.

Purpose of the study

As part of the efforts to reduce aflatoxin contamination in groundnut production and marketing, the NR International project on 'reducing aflatoxin levels in groundnut based foods and feeds in India', funded by the DFID, UK, new aflatoxin resistant varieties of groundnut were introduced through PVS (Participatory Variety Selection) process in Anantapur, Chitoor and Mahaboobnagar districts of Andhra Pradesh. Farmers involved in the field trials have shown great interest in adopting some of the varieties due their superior performance under conditions of drought stress, increasing the possibilities of reducing the growth and spread of aflatoxin producing fungi.

In order to ensure supply of pure and quality seed for ensuring production of aflatoxin free groundnuts, it has become essential to trace out the most safe and effective channels of seed production and supply while providing the farmers with easy access to quality seed. This understanding, gains further importance due to the fact that aflatoxin reduction in groundnut has become a prerequisite for sustained production and livelihood support to the farmers of this large groundnut growing region, keeping in view the ever increasing restrictions on aflatoxin contaminated products worldwide.

The purpose of this study therefore is to identify the existing channels of seed production and supply in order to evolve strategies and methods for production, storage and supply of 'aflatoxin free – aflatoxin resistant' varieties of groundnut to the farmers. STAAD conducted this study with the participation of the men and women farmers belonging to different categories, with the help of local NGOs of the study region. The study was focused on -

1. the present situation of seed supply systems,
2. present sources and their relative accessibility to different categories of farmers
3. role of different supply agencies involved and
4. most effective methods of supplying seed

Selection of Villages and farmers groups

Villages

The study was undertaken in three locations in the predominantly groundnut-growing districts of Andhra Pradesh in December 03-January 04, South India and the information was collected from the villages where the DFID project is actively involved in the PVS field trials with the farmers. Groundnut is the predominant crop and a major source of livelihood for the farmers in these three locations. The entire process was carried out with the support and active participation of the local NGOs – Rural Development Trust (RDT)/'Accion Fraterna' (AF) in Anantapur district, 'Sahajeevan' in Pileru and Integrated Rural Development Trust (IRDT) in Mahaboobnagar district.

The PVS villages are –

1. **In Anantapur district -** West Narsapuram in Singanamala mandal, Mukundapuram in Garladinne mandal and Mallapuram in Kalyanadurgam mandal -,
2. **In Chittoor district -** three hamlets of Kavalapalli gram panchayat in Pileru mandal – Ontillu, Boddinayunidoddi and Maddelacheruvupalem, and
3. **In Mahaboobnagar district -** three villages in Balanagar mandal – Rangareddygudem, Kethireddypalli and Peddayapalli

Background information on the villages is provided in Annexure 1

Farmers groups

Focus Group Discussions were conducted with different categories of farmers as well as men and women farmers in a participatory manner. Essentially three groups from each location were taken into consideration for this purpose. It was felt that the experience, knowledge and ideas of the rich, poor and women farmers of mixed wealth categories would be appropriate enough for eliciting the required information. Information was elicited during group meetings through question-answer sessions and interactive discussions.

Based on the farm holding size, farmers were classified into two wealth categories, the rich and the poor groups. The rich farmers group essentially consisted of farmers of middle sized (5 to 10 acres) and large (above 10 acres) farm category, while the poor farmer groups consisted of small (2 to 5 acres) and marginal (less than 2 acres) farmers. Women farmers were treated as a separate group irrespective of their wealth status as most women in these villages actively work on the farm irrespective of their wealth category, and so are the major actors in implementing the technical information on the field. In Mahaboobnagar however, not all women among the rich farmers participate in farm activities.

Information on the wealth status of the farmers and their participation in self help group activities of their respective villages were obtained through local NGOs and based on the information provided by the members of the self-help groups and the NGOs, farmer groups

were selected. Care was taken in selecting the women farmer groups to ensure proper representation as they were selected irrespective of their wealth categories.

The Study

A. Seed Supply System

1 The General Scenario

An important aspect of the groundnut seed supply business is that, almost all of the seed material comes from the general crop production rather than from crops grown specifically for seed purposes, except for the small quantity produced by seed growing farmers and those supplied by seed brokers. Even this seed material does not measure up to the required seed standards.

The two government agencies that are mandated to supplying groundnut seeds to the farmers, the Andhra Pradesh State Seeds Development Corporation (APSSDC) and the AP Oil-seed Growers Federation (Oil Fed), also source the 'seed' material marketed by them from traders of groundnuts through a tendering system, with only a few quality parameters such as shelling percentage, refraction (dust, other organic and non organic matter) and moisture content. This is in sharp contrast to their general seed sourcing norms where the APSSDC organizes seed production of most other crops through their farmer networks and under established seed production norms and regulations.

Yet, generally speaking, farmers are satisfied with the 'seed' supplied by the APSSDC and the Oil Fed as the seed looks cleaner and with lesser quantity of shriveled kernel or broken pods. Seed supplied by seed brokers and seed-growing farmers also satisfies farmers' perceptions on 'seed', as they have some information on source and quality of production and the variety. It is however important to realize that almost the entire groundnut sold as seed in the study area is neither produced nor marketed under the regulations laid down under the seed acts or regulations. It is for this reason that seed available to the farmers does not actually satisfy the minimum seed quality requirements in terms of varietal purity, quality of seed, the germinating capacity, etc.

It is also essential to note that the monsoon season requirement of groundnut seed in the study region and the neighbouring districts is in the order of 3.3 to 4.0 million quintals and given the current levels of productivity needs at least 275,000 to 325,000 acres of good irrigated land for its production. With less than 200,000 acres being the entire area of summer irrigated groundnut crop in state, organizing groundnut seed production for the huge monsoon crop requirement is a colossal job.

It is especially difficult to organize production of groundnuts for seed purposes when farmers are so impoverished that they can hardly pay for the groundnuts sold in the market leave alone think of paying a premium for seed quality groundnuts. Majority of the farmers in the study region therefore try to retain as much of their crop as possible for the next year seed requirement as their financial and storage capacities permit them.

2 Sources of Seed

A complete list of the sources of seed that are available to the farmers in all the three areas of study indicate that 'seed' is available to the farmers through ten different sources.

2.1 **Farmers Own Seed from previous crop:**
An analysis of the responses given by the farmers indicates that farmer's first preference is to use their own seed grown during the previous season. However, most

farmers do not have the potential to store the previous crop for their future seed requirements due to economic constraints such as

a) non availability of cheap and long-term credit
b) the need to sell away entire crops due to repayment of loans taken for the previous crop or other cash requirements and / or
c) shortage of secure covered space to store seed material for almost 6 months
d) poor storage conditions and their lack of knowledge in controlling damage caused by pests and diseases during storage and
e) other problems like crop failures due to drought, pest and disease attacks etc.

2.2 **Seed from previous crop of Co-Farmers:**

Their most valued suppliers under such an eventuality are the co-farmers who have been able to retain a part of the crop for future seed requirements, from whom they either borrow or buy seed. Co-farmers are usually members of their extended families or other farmer friends either from within the village or the neighbouring villages. Farmers prefer to procure seed material from the co-farmers especially since they have information about the variety, the quality of crop from where the seed has come, the yield potential of the crop and other information on pest and disease history of the previous crop. Other advantages of procuring from co-farmers include lower rates and softer credit terms, deffered payments and the possibility of being able to select required seed material.

2.3 **Seed Producing Farmers:**

Few rich farmers with good irrigation sources produce groundnuts during the summer and under irrigated conditions exclusively for seed purposes of the ensuing monsoon season crop and so have the highest demand for sale on cash. Farmers prefer to procure their seeds from such seed producing farmers as they are assured of the quality of seed since most of the seed producing farmers are either usually well-known or have a reputation for producing good quality seeds. It is usual that these farmers are mostly located in the same villages where the seed is required and therefore the procuring farmers have the advantage of knowing the history of the crop from where the seed has come.

2.4 **Input Dealers:**

Dealers of Agricultural inputs procure seed through private suppliers from the stocks of the previous crop and sell to the farmers on cash / credit basis. These dealers are an important source of supply to the farmers. Farmers who have a credit line with these dealers are usually obliged to buy their seed with them as they supply pesticides and fertilizers on credit whenever required. Also, during periods of crop failure and shortage of funds, which being a usual phenomena in the study region, it is these traders on whom the farmers mostly depend upon for supply of seeds on credit basis.

2.5 **Output Traders:**

Taking advantage of the situation where groundnuts are grown by a large number of small, marginal and medium sized farmers in very small land holdings and the non-viability of taking very small quantities of produce to the market, individuals and agents of traders procure the crop from the farmers directly at the village and transport it at their cost. Due to the extensive interaction of these agents and their knowledge on market requirements farmers depend upon them not only for information on the varieties that will have good market potential and demand but also for supply of seeds. These output traders and dealers procure seed from the wholesalers and supply to the villagers. This group has therefore emerged as one of the most influential sources of supplying seed to the farmers, though the quantity supplied is next only to the co-farmer sources.

2.6 **Mediators / Brokers:**

One another category of seed suppliers include persons who act as mediators and brokers for seed traders and producers. They are a well-known source, and organize to supply the seed by first approaching the farmers, ascertaining the demand and requirement, contacting traders and large-scale producers and arrange for supply of seed and recovery of money. The seed supplied through such brokers is normally from areas out side the study region and especially from other states that are well known for the quality of seed. Most often, services of these mediators are used when the farmers require varieties that differed from the locally available varieties and those that have higher yield potentials and better market demand.

2.7 **Oil Millers / Decorticators:**

Farmers also approach the oil millers and decorticators of the groundnuts for supply of seeds at the start of the cropping season. With a commitment for supply of the crop to themselves, these oil millers and decorticators provide the seed material to the farmers mostly on credit. A portion of the groundnuts procured during the previous crop is mostly stored by these millers and decorticators, with the firm knowledge of the probable quantities of demand, and sold to the farmers as the seed.

2.8 **APSSDC / Oil Fed:**

The AP State Seeds Development Corporation (APSSDC) and the AP Oil-seed Growers Federation (Oil Fed) are the two government organizations that are a major source for supply groundnut seed to the farmers. Due to the extensive demand of growers for seeds just before the onset of the monsoon, huge quantities of seed are procured by these agencies from traders and positioned with the Agricultural department extension centers, offices and godowns of the Oil Fed and the agricultural market yards.

Farmers with the hope that seed supplied by the government agencies would be of good quality and / or those who look for subsidized seeds or those who do not have any other source of supply to depend upon are the major buyers with these agencies. These is however no choice in variety. Whatever material is supplied, farmers are obliged to grow the same.

However, though these agencies have a distinction of being questioned fairly regularly for the quality of seed supplied by them, due the extensive shortage of seed, they continue to be the largest suppliers of seed to the farmers of the study area, especially due to the subsidies provided by the government. Another important factor is the fact that the seed material supplied through the APSSDC and the Oil Fed is usually cleaned and so has better appearance than what is available in the market.

2.9 **Agri. Univ. Research Stations:**

The Acharya N. G. Ranga Agricultural University (ANGRAU) has extensive facilities for research and development in production of new varieties of groundnuts and supply of breeder and foundation seed material for further multiplication and supply of good quality seeds to the farmers. Their research stations at Anantapur, Kalahasthi, Kadiri and Jillella are well known among the farming community and are prominent sources for supply of primary seed material. Small quantities of new releases of seed and quality seed during periods of shortage are also made available to the progressive and a few needy farmers directly from these research stations.

2.10 **Other Sources:**

A few village grocers and markets will store or procure groundnuts are also a fairly dependable source of groundnut seeds for the farmers. Farmers whose seed

requirement is very small have easy access to these sources, and especially during shortages or for purchase on credit.

B. Access to Seed

While it seems that there are a large number of sources from where farmers can procure seed, accessibility of seed to the farmer is a problem that needs to be understood in detail. It is evident from the information available to us that ultimately groundnut crop is sown in very large areas in the study area. However, the problems farmers face while procuring the seed is critical in understanding how and why farmers are not in a position to produce a good crop.

1. **Farmers own seed**
   Due to the low, irregular and inconsistent rainfall, poor soils, small holdings, low input and largely traditional cultivation practices and with a majority of the crop being grown under rainfed conditions, farmers in Anantapur, Chittoor and Mahaboobnagar districts mostly harvest very small quantities of groundnut crop, which is more often ill filled, shrivelled or under developed, and hence cannot consider storing such a crop for seed purposes. With only one successful crop every three / four years, most of the poor, marginal and medium farmers normally sell away their entire crop for their financial and / or meet domestic consumption needs. In addition to this, due to lack of storage facilities and due to storage pest problems most of the farmers in the study region have lost access to their own seed from the previous crop.

2. **Seed from co-farmers**
   A few farmers, who have access to irrigation facilities produce groundnuts during summer used to help their neighbors and relatives with some seed for the monsoon crop. With growing cash indebtedness among the entire farming community the possibility of selling away their crop for cash incomes has become the order of the day. It is only a matter of chance that some farmers can spare the seed material that they have been able to retain for themselves from the previous crop. Hence access to seed available with co-farmers has become a difficult proposition for those farmers who do not have their own seed.

3. **Seed Producing Farmers**:
   The few rich farmers who grow groundnuts for seed purposes during the summer crop under irrigated conditions generally tend to sell the crop at a premium price which most poor, marginal and medium farmers are not capable of investing for their rainfed monsoon crop. Hence, a majority of these poor farmers are not in a position to access the seed.

4. **Input Dealers, Output Traders, Oil Millers and Decorticators:**
   The most important aspect that governs the terms of trade between the input dealers, output traders and processors and the farmers is that, most of the dealers prefer to supply seeds to the farmers on a barter/credit basis. Once seed is taken from the dealers under the system, farmers are bound to sell/return the produce at unfavourable terms/prices at the end of the season. This being the most convenient form of trade for the farmers and highly beneficial business strategy for the traders, accounts for very high levels of accessibility of seed for the farmers. However, a large number of farmers do not prefer this mechanism since they end up paying at an annual rate of interest of nearly 200%. It is only when farmers do not have access to cash that they resort to these seed accessing deals.

   Also, due to low yields and extended drought periods, farmers are usually entrapped in a vicious cycle of indebtedness and consequently a majority of the farmers usually lose

their credibility with this group of traders who usually provide cash and material credit to the farmers. It is therefore not an easy task for the farmers to procure groundnut seeds from these traders. These traders and processors, on their part, also run the risk of not being able to recover their investment (credit) from the small and marginal farmers, keeping in view the conditions under which these farmers grow the crop. Hence, though these dealers are in a position to provide any quantity of seed, not all farmers are in a position to have access to the seed supplied through this source, during the critical periods of their requirement.

5. **Mediators / Brokers of Seed:**
Most mediators and brokers of seed organize supply of seeds on cash basis only. Hence, it is only a very small number of medium and rich farmers who are in a position to access seed supplied through these agents. The majority of the farming community growing groundnut crop in the study region are not a position to access seed through this source.

6. **APSSDC / Oil Fed:**
Small and marginal farmers owning less than 5 acres of land are eligible to purchase seed that is supplied through these agencies since it has a subsidy component of up to 30 percent of the cost of seed. Farmers therefore tend to buy as much groundnut seed as possible from this source. While access to this seed is restricted to the poor and marginal farmers, restrictions to access that are inherent to this form of institutional supply support (long bureaucratic procedures and rules) tend to keep the seed inaccessible to these farmers.

Consequently, large quantities of the seed are cornered by the rich and influential farmers, who are generally not eligible to purchase this seed, obtain access to this seed by undertaking dubious means, as they get better material at less cost. Sometimes, eligible farmers who are not in a position to grow the crop procure the subsidized seed and sell it to the rich farmers or the traders for a profit.

Therefore, some of the poor, marginal and women farmers ‘lose’ access to the seed that is actually meant to be supplied to them through these agencies. The various factors that lead to loss of access to the subsidized seed are as follows:

- Illiteracy - illiterate Farmers generally do not have the means to know about the supply position of the subsidized seed since they do not follow the newspaper and visual media announcements by the government. They also do not know where the seed is stored and the procedures for accessing the seed.
- Lack of ready cash - as most of the small and marginal farmers are usually not in a position to pay cash for procuring the subsidized seed, they tend to exchange their rights of access to subsidized seed for credit purchase at the 1:2 post-harvest repayment ratio.
- Pledging the documents - most often the small and marginal farmers tend to hypothecate their land ownership documents with their creditors such as the banks, traders of inputs and outputs, processors, money lenders, rich farmers, etc., some of whom take advantage of the documents and procure the subsidized seed for their own use or trade.
- Lack of investment - due to shortage of funds and the inability to take a risk of growing groundnut crop small and marginal farmers tend to give away their rights of accessibility to the subsidized seeds to the rich or the capable.
- Other causes - other factors such as intimidation, foul play by seed disbursing officials, delays in supplies, supply of bad quanlity seeds, insufficient supplies and lack of transport facilities are also result in the poor farmers losing their right to access of subsidized seed.

C. Location Wise Analysis

An analysis of the information collected during the PRA exercises conducted in the three locations indicated that the seed supply systems and the patterns of accessibility to seed are in general similar in the three locations. The few differences that have been observed essentially are related to government policy, the social relationships, the economic situation and power relations, and do not have any significant impact on the overall situation of the three locations.

1. Regional Variations in Seed Supply Systems

Apart from the fact that the oil Fed and the APSSDC are not equally active in the entire groundnut producing areas of the districts in the study area, there is no variation in the groundnut seed supply mechanisms between the districts. Again, apart from the variation in the percentage of farmers who either have access to or actually procure from the various sources of seed supply, not much variation is found between the districts.

Farmers have not indicated any variation in the patterns of using own seed or by the supply systems through the mediators and brokers of seeds or through the input dealers and companies. While in the Pileru and Anantapur areas, substantial number of farmers procure the seed from co-farmers since they feel that the quality of seed is usually good, very few farmers in the Mahabubnagar area depend on this source as the quality of seed is normally not up to their expectations.

It is however interesting to note that farmers in the Pileru area, while procuring groundnut seeds from co-farmers, also have an option to procure groundnut seed in exchange for seeds / grain of other crops, and based on mutual understanding arrive at the quantities of exchange.

A substantial number of farmers of the Anantapur region and the rich farmers of Pileru area depend upon exclusive seed growing farmers for their seed supply as they find that the quality of seed supplied by these farmers is usually very good. Most poor and women farmers of the Pileru area and almost the entire farming community in Mahabubnagar do not approach such seed producing farmers since the price is usually very high. Occasionally, a few farmers of the Pileru and Mahabubnagar areas procure groundnut seeds from the general traders. Anantapur farmers on the other hand are not used to do such a practice.

The Oil Fed and the APPSSDC together are a major source of groundnut for the farmers of the study region. However both the organizations do not operate with similar intensity in the entire area. While the Oil Fed is very strong in Chittoor district (Pileru), it shares its ativity with the APSSDC in Anantapur and with a reduced presence in Mahabubnagar The APSSDC essentially concentrates its seed supply activity in Anantapur area, and operates in certain important pockets of Chittoor and Mahabubnagar districts.

Farmers of Pileru area have been procuring seed from the Oil Fed since the last five years. Even though they complain of the quality of seed and the consequent quality of yield, they continue to depend upon the Oil Fed supplies since the seed is cheaper due to the subsidies given by the government. The APSSDC is not very prominent in this area.

In Anantapur, women farmers in the study region have indicated that they procure seed from the Oil Fed through their SHG, even though the rich and the poor farmers groups have generally procure their seed from the APSSDC. The Anantapur women farmers have also indicated that the seed supplied through the Oil Fed is of good quality and cheaper and so hence prefer to procure from this source. Rich farmers stated that the seed supplied through the APSSDC is usually restricted in quantity and so they do not get sufficient quantities. The

poor and women farmers were on the other hand happy with the quantity of supplies as well as the quality of seed supplied through the APSSDC.

Rich farmers of Mahabubnagar on the other hand indicated that the APSSDC did not supply them the subsidized groundnut seed during this crop season even though subsidy was provided on seeds of other crops. Women and poor farmers stated that seed supply through the APSSDC was delayed and so most of them could not avail the subsidized seed. They had also stated that the seed was of poor quality and the supply was restricted to only two bags of 35 kgs of pods per pass book, and due to non availability of funds rich farmers had procured the seed by using the pass books of the poor farmers.

2. Variations in Access to Seeds Among the Farmer Groups and Across Regions

It was observed that, in general, all the farmers irrespective of their social group or economic status, across all the three locations have equal access to seed through all the sources in general except for the seed supplied through the APSSDC and the Oil Fed. However, the rich farmers have an edge over the poor/marginal and women farmers. The fact that an individuals socio economic situation such as being educated, having cash surplus or being aligned with local power relationships, provides additional access opportunities, does hold true. Lack of funds or easy access to low-cost credit at the sowing time tends to inhibit most small, marginal and women farmers from access to good quality seed or the subsidized seed supplied through the APSSDC and the Oil Fed.

Accessibility to the seed supplied through the APSSDC and the Oil Fed is restricted to the rich farmers due to the government policy of ensuring maximum benefit of the subsidy accruing to the poor and marginal farmers. Variations in the supply position, such as early delivery or delayed supply, by these agencies also inhibits accessibility and creates differential access situations among the farmers groups. The poor/ marginal and women farmers who are mostly cash strapped cannot take advantage of accessing the subsidized seed and so the opportunity shifts to the rich farmers who take advantage of the situation.

Conclusion

Groundnut crop requires a large quantity of seed per unit area and accounts for nearly 50% of the crop production costs when grown under rain fed conditions. A majority of the farmers in this low and highly erratic rainfall region have very small holdings and expect a very small crop. Justifiably, they are not willing to pay a high price for the seed since the failure of a crop would erode their entire savings. This anomalous situation of high demand and low price is not an encouraging situation for the groundnut seed producing industry, even though there is an extensive business potential, and so private enterprise in supply of seed is absent.

Farmers procure seed from whatever source is feasible for them to access, depending upon their cash-credit status, with no assurance for quality or required variety supplies. Though the farmers had listed ten sources through which they obtain seed including the two govt. organizations - Oil Fed and APSSDC, very few farmers can actually access good quality seed and or the variety they choose.

Demand for good quality seed is extensive but there is a huge deficit in quality seed production and supply. Though the rich farmers have easy access to good seed from the seed producing farmers and supplying mediators and brokers, there is still a shortage of quality seed and the farmers have to pay a high premium, which is not conducive to the final output / yields. Poor/marginal farmers and women farmers particularly expressed their problems in seed availability and accessibility through government officials.

Recommendation

The seed supply systems in the study region and in Andhra Pradesh overall, present a chaotic, fragmented and disorganized picture. Aflatoxin control requires interventions in such a way that seed supply systems are brought to a uniform level with some common minimum standards to ensure quality seed production. Quality seed supply should be the main aim here rather than aflatoxin free seed production per se as ensuring quality in general gradually ensures healthy seed as well. This will be a long drawn process.

In the immediate future, new groundnut varieties should enter into the seed supply systems through social organization of NGO sector and/or private enterprises. NGOs should mobilize farmers self help groups and particularly women's self help groups to produce quality seed and establish networks to supply them in larger areas. This will have a double-edged benefit – a) it will increase farmers' awareness about quality seed and b) it will enable the poor farmers to be stakeholders of the seed supply systems thus enhancing their access to quality seed considerably. Simultaneously, private enterprises should mobilize farmers at village level to produce quality seed in such a way that some niche areas/clusters of villages might emerge as seed producing zones. This process requires price incentives to ensure quality seed supply. Initially, 'niche markets' might emerge where good quality seed is available at a premium price but gradually these markets might get integrated into as the main seed supply systems.

New legislative changes are in the offing related to seed quality in India in general and in Andhra Pradesh in particular. A new seed act is expected to bring in uniformity in the seed supply as it prescribes minimum standards along with penalties for bad quality for seed delivery across the state. It is not clear at this point how the new seed industry/system emerges after these regulations. As these changes will take a long time to be put in to practice, we have no choice but to rely on the options discussed above for seed multiplication and to ensure quality seed supply.