CROP PROTECTION PROGRAMME

FARMER LED MULTIPLICATION OF ROSETTE RESISTANT GRUONDNUT VARIETEIES FOR EASTERN UGANDA

R 8105 (ZA0495)

FINAL TECHNICAL REPORT

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Executive Summary

Groundnut is a key crop in Eastern Uganda, grown for food and income. However, production has declined due to groundnut rosette disease, a major factor limiting production. The constraint was identified by a baseline survey for LIFE project implemented by AT Uganda in the same project area. Chemical control of the vector of the disease is not affordable to poor farmers and yet the risk of failure caused by the disease is very high. These factors, coupled with the high seed rate of groundnut, reduce availability of groundnut seed, thus resulting in declining production.

This promotion project was designed to enable poor farmers to overcome this problem and reverse the declining trend through promotion of farmer-led multiplication of rosette resistant varieties of groundnuts under supervision of the local leaders for increased access to new resistant varieties by the poor. This would stabilise yields and production and therefore enhance the livelihoods of the poor.

The project was mandated to achieve the following outputs and targets: Overall, annual production of groundnuts by 9,000 poor participating farmers of whom 50% should be women increased by 50% by EOP. The four outputs and their targets were:

1. 16 Extension staff, 300 community leaders (160 contact Farmers and 140 local leaders), 2000 households trained in groundnut production, storage and multiplication.
2. Sufficient seed to plant 400 acres (161.9 hectares) of new varieties obtained and multiplied by EOP.
3. Redistribution and further multiplication of selected groundnut varieties produce sufficient seed to plant at least 2500 Hectares by EOP.
4. Local leadership takes over the responsibility for planning, implementing and monitoring a pro poor strategy of planting material redistribution during the last year of the project.

Data from field reports indicates that 4 Programme staff, 16 extension staff with their 15 field assistants, 960 community leaders (PC's and PDC's from 320 groups in 16 parishes) and more than 6,000 farmers were trained in groundnut production, storage and multiplication. Foundation seed of 3 new varieties namely Serenut 2 ,3 and 4, sufficient to plant 187.5 Hectares was obtained and given to farmers to multiply.

Records from PDC registers indicate that **5217** farmers 3650 women and 1567 men) benefited directly from formal distribution. However, many received seed as gifts, payment in return for labour during harvest and through sale of the surpluses by beneficiaries. The survey conducted in September 2004 estimated that 5,910 purchased seed from beneficiaries and 7,610 got through gifts or payments in kind. The survey also indicated that sufficient seed to plant 3,275.6 hectares had been availed. Of this, 1,092 hectares was direct from the project and 2,183.6 hectares was the results of seed sales and gifts. Estimated production from 2004 alone could plant 4,725.8 hectares if all of the harvest was committed to seed. Even if only half was planted the total is more than the original target for end of project seed availability. The purpose has largely been met with the poor farmers accessing and utilising: new rosette resistant varieties, improved production practices and knowledge, resulting in increased groundnut productivity and production.

1. Background

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The Farmer-led multiplication of rosette resistant varieties of groundnuts project is a promotional project implemented in five districts in Eastern Uganda of Kumi, Pallisa,Tororo, Mbale and Sironko and covered sixteen sub-counties. The sub-counties included: Nabuyoga, Nagongera, Mazimasa, and Kachonga in Tororo District; Lyama, Kadama, Kasodo, and Butebo in Pallisa District; Kidongole, Malera, Nyero and Ngora in Kumi District; Bukhalu and Butandiga in Sironko District; And Busiu and Butiru in Mbale District. The same project area as the LIFE Project , which was focusing on improving rural livelihoods by enhancing food and income security through increased production and productivity, that was being implemented by AT Uganda Ltd at the time of the start of this project.

The demand for this project was identified in a baseline survey for the LIFE project conducted in 2000. A similar need had earlier been identified by a DFID funded needs assessment for the Teso farming system for NARO in 1998.

Groundnut is a key crop in Eastern Uganda, grown for food and income. However, production has declined due to groundnut rosette disease, a major factor limiting its production.

Poor households in the region face two serious problems in groundnut production, inadequate seed supplies and lack of cash to buy chemicals to control the vector of the groundnut rosette disease. Through farmer-led multiplication and use of disease and vector resistant varieties, both constraints can be addressed.

New rosette resistant varieties of groundnuts namely Serenut 2,3,4 were released but seed availability was limiting especially for the rural poor. The new varieties were available at prohibitive prices from research and also seed companies found it expensive to multiply and sell commercially as prices would limit sales volumes.

Another CPP project R 7445 in response to the same demand had already extensively tested the varieties multiplied in on farm trials and AT Uganda was involved in that project as a stakeholder. This project thus utilised the outputs of that earlier project

2. Project Purpose

*CPP goal- **Livelihoods of poor people improved through sustainably enhanced production and productivity of renewable natural resources**.*

*CPP purpose- **Promotion of strategies to reduce the impact of pests and stabilise yields in semi arid cereal based cropping systems for the benefit of poor people.***

Groundnuts are a key crop grown for food and income in the semi-arid cereal based cropping system in the project area. The crop is grown by almost all households. The major factor limiting production is the groundnut rosette disease transmitted by a pest. Control of the disease vector or pest is hindered by lack of cash by the poor to buy chemicals to control the pest. And also because the seed rate of groundnuts is high and the risk of failure due to rosette disease is high, there are

usually inadequate supplies of seed. It should be noted that most farmers use home saved seed and these two scenarios contribute to failure of most of the poor to continually produce quantities of groundnuts for food, seed and extra to sell for cash.

Introduction of the new groundnut varieties which are both vector and disease resistant eliminates the need for chemical control and the loses due to rosette disease thus guaranteeing good stable yields and availability of seed. This leads to stable yields and results in increased production hence sustainably enhancing production and productivity of the crop and therefore improving the livelihoods of the poor.

The project addressed the identified constraint through promotion of farmer-led multiplication of rosette resistant varieties of groundnuts under supervision of the local leaders for increased access to new resistant varieties by the poor and has produced the following outputs:

- Extension staff, local leaders and farmers trained in groundnut production, multiplication and storage;
- Foundation seed for new rosette resistant varieties obtained and multiplied by farmer group members;
- Multipliers return twice the amount of planting material received for redistribution and further multiplication;
- The process of collection, redistribution and monitoring of multiplication of seed handed over to local leadership for management.

3. Promotional Activities.

The project was implemented in the five districts of Kumi, Pallisa,Tororo, Mbale and Sironko and covered sixteen sub-counties. The sub-counties included: Nabuyoga, Nagongera, Mazimasa, and Kachonga in Tororo District; Lyama, Kadama, Kasodo, and Butebo in Pallisa District; Kidongole, Malera, Nyero and Ngora in Kumi District; Bukhalu and Butandiga in Sironko District; And Busiu and Butiru in Mbale District.

In each sub-county the project operated in two parishes and worked initially with ten farmer groups with a total membership of 4317 farmers in the 160 groups, these groups had earlier participated in seed multiplication with other crops under LIFE project. However, another 160 groups joined in the second season of 2004. The decision to work with groups and not un-organised members of the community was made based on the earlier experience of difficulty in working with a few individuals who were not in groups in the first distribution.

The project was mandated to achieve the following targets: overall, annual production of groundnuts by 9000 poor participating farmers of whom 50% should be women increased by 50% by EOP. This was to be achieved through the following four outputs:

- 16 Extension staff, 300 community leaders (160 contact Farmers and 140 local leaders), 2000 households trained in groundnut production, storage and multiplication.
- Sufficient seed to plant 400 acres (161.9 hectares) of new varieties obtained and multiplied by EOP.
- Redistribution and further multiplication of selected groundnut varieties produce sufficient seed to plant at least 2500 Hectares by EOP.

- Local leadership takes over the responsibility for planning, implementing and monitoring a pro poor strategy of planting material redistribution during the last year of the project.

4. Implementation Approach.

The model for multiplication of seed used is an approach practiced earlier with other crops in an earlier project implemented by AT Uganda with the same farmers. The approach emphasises participation of the key stakeholders in this case the beneficiary farmer groups, production committees(PC) and Parish development committees (PDC) and extension staff sub county local government authorities in planning, implementing, and monitoring project activities.

The project was implemented in collaboration with a groundnut breeder from NARO/SAARI whose role was training of trainers, provision of technical advice and contacts for access to planting material. At the field level activities with farmers were handled by the Sub-county level local government extension staff (FPR A) of the department of agriculture.

In summary the process and activities involved **are as outlined below**.

4.1. General preparatory activities:

Sensitisation of local government stakeholders from the participating districts and Sub -county was done at District level. The main purpose was to discuss and agree on the modalities to be used in implementing the project and to get feedback on the approach. In particular the following categories of people were invited and attended:

- District Agricultural officers;
- District secretaries for production (political leaders in charge of production at district level);
- Sub county chiefs;
- Chairpersons of Local council 3;
- Secretaries for production at sub-county level;
- Farmers representatives from the participating groups;
- Councillors representing women at sub county level;
- Extension Staff (FPRA) in charge of the sub counties.

After the sensitisation process a memorandum of understanding was signed with the leaders of each participating sub-county. In addition to the district level meetings, meeting were held at sub-county for all participating groups and more local leaders were invited to attend. The meetings provided an opportunity to introduce the project and to build support in the community. The basic issues included:

- *Each recipient of seed was to return twice the amount received for redistribution to other group members and the community as seed belonged to the community;*
- *Priority to receive seed given to the able poor and women;*
- *Role of PDCs in the multiplication and distribution process;*
- *And contribution of the beneficiaries in the form of labour, land, inputs for all management practices and peer monitoring.*

4.2. Training Related Issues And Activities:

Training was important to ensure that beneficiaries have access to the necessary knowledge and skills for increased productivity and seed quality in a sustainable manner.

1). The collaborating Groundnut Breeder using the groundnut production manual developed by project R 7445 did training of FPRAs as trainers on groundnut production. AT Uganda Programme staff that supervised implementation of field activities were also trained together with the FPRAs and each got a copy of the groundnut production manual. Another refresher training on seed quality and storage was done in July 2002 for all staff since the emphasis was to help farmers multiply and produce viable seed of the new varieties that were in limited quantities.

2). Training of beneficiary farmer groups was then organised at sub-county level and the trainings were facilitated by the FPRAs and each beneficiary was given a copy of the simplified production guide on groundnut production. Later refresher trainings by the PC's and PDC's using the simplified seed production guides were organised at group level at the start of each season to reinforce training under supervision of the FPRAs.

3). Sustainability of training called for building of the local capacity to train, and thus the training of PDCs and PCs *in place of contact farmers* as trainers, to continue with the training of other farmers later as the seed continued to multiply.

4). Providing the beneficiaries and staff with printed simple seed production guides as reference material for future use. This equipped them with the necessary knowledge and skills to pass on to others whenever need arose. (See copy of the guide in Appendix 3.)

5). End of season evaluations were organised and offered an excellent opportunity to reinforce learning and adoption of practices, as the forum enabled farmers to hear and learn from the experiences of their fellow farmers, apart from being able to assess and appreciate the varieties and practices promoted.

4.3. Multiplication Related Activities And Issues:

Each participating group in the sub-county was given at the start of the first season of each year, small amounts of new seed of the new varieties to multiply for subsequent distribution to the members. Increase of the small seed quantities for redistribution to all targeted beneficiaries in a short period, required whoever received seed to return more than the amount initially received. The process had to be streamlined in order to be effective as some farmers still had the notion that project things were free and did not have to be returned even for the benefit of other farmers in their own community.

The groups were facilitated to prepare seed multiplication by laws or set regulations to ensure beneficiaries pay back seed so that seed is not lost thus breaking the distribution chain. This was necessary to take care of any cases of mismanagement of crops in the field for various reasons leading to low yields and therefore failure to pay back and deliberate attempts by some not to pay back. (See Appendix 10 for checklist, which was developed by groups.) The by laws were continuously reviewed to suit emerging situations. See copy for Kachonga.

Delivery of seed by the project to individuals in groups based on distribution plans. Each sub county received new seed at the start of each year. The varieties were introduced gradually, starting with Serenut 2 in the first year, then Serenut 3 and 4 in the second and third years. The first lot of seed of each new variety was procured through the collaborating breeder, however, in

2004 additional seed was bought from the beneficiaries for distribution to other farmers. The decision was made after receiving the wrong variety in 2003 through the original arrangement.

Acknowledgement of receipt of seed and multiplication terms as contained in the agreement and by laws especially on quantities received and to be repaid was done by all beneficiaries and witnessed by PDCs for accountability and easy follow up at the time of repayment. Forms were continuously reviewed and designed for this purpose (See copies of forms used in Appendix 8a, 8b, 8c, 8d). For transparency and easy follow up distribution was done at group or public meetings. However, there were a few cases that deviated from this arrangement and contributed towards poor repayment and documentation. The process required PDCs to keep a register of all seed recipients and repayments in the groups and by individuals in the parish. The project facilitated the process by initially providing the books and training on record keeping for PCs and PDCs.

Beneficiaries were responsible for custody and storage of seed since distribution is done soon after harvest and provided land and labour to produce the crop. The beneficiaries were highly motivated to do this because after paying back the mandatory amounts the balance of the seed remained with the beneficiary and these balances were substantial as the varieties proved to be rosette resistant, drought tolerant and high yielding.

4.4. Distribution Related Activities:

As beneficiaries paid back seed then large quantities of seed would become available to pass on to other members, this also required prior preparation by the groups.

The groups were facilitated to prepare distribution plans with poverty and gender considerations in mind. Preparation of seed distribution plans i.e. plan of how multiplication should take place and the order in which new materials should spread through the group members to ensure that all have access within the shortest time possible, drawn by the groups assisted by the PCs and PDCs considering the able poor and women as priority to receive seed first was done. Priority was also given to hard working committed members to minimise the risk of loss due to poor management. This plan also helped create peer pressure among the recipients thus encouraging them to pay. (See copy of form in Appendix 8a.)

The process was supported by the use of by laws, PC and PDC participation and group peer pressure as every member looked to the group as the only opportunity and source to access seed. The clear repayment terms and procedures developed in a participatory manner and enforced, and group peer pressure a rising from community ownership of the seed also did instil the repayment culture in beneficiaries and gave control to the community. (See Appendix 10.)

4.5. Handover Related Activities:

To promote sustainability of the process of collection, redistribution and monitoring of multiplication of seed after hand over to local leadership for management, a lot of capacity building was needed and this was done through a number of activities.

1. Local leadership structures were set up at group level i.e. Production committees (PCs) comprising of at least 3 members (these substituted the contact farmers since team effort was found to be more reliable than working with individuals) to handle seed multiplication issues. Another structure at parish level i.e. Parish development committees (PDCs) to coordinate and monitor the group activities, with each group having a representation on the PDC, which also has local government representatives from the village and parish levels, especially local Councillors (LCs) and the parish chief. The last two categories were included to facilitate enforcement of by laws in case of failure to comply with instructions of the group.

2. Participatory identification and assignment of roles to the local leadership i.e. PCs and PDCs to ensure seed given out is protected and repaid for further multiplication and to ensure planned activities are completed. The roles included among others training other beneficiaries on groundnut production, monitoring management of crops in the field, facilitating identification of beneficiaries, distribution and recovery of seed for redistribution and record keeping. This was done in all participating sub counties and a final checklist was developed. (See appendices 1 and 2.)

3. Training in the areas of responsibility and seeing them implement with some supervision and lesson learning helped build their capacity to a great extent The challenge remains how to keep them motivated to carry on without further supervision.

4.6. General And Cross Cutting Activities

Pre-seasonal planning meetings were held at the beginning of each year at project, sub-county and group level to ensure completion of activities, and payment of the FPRAs was based on tasks completed. Planning and budgeting was done by the FPRAs themselves with supervision of the Programme staff and this was seen to increase their commitment. (See Appendix 6 for a sample.)

Review meetings involving all groups were held focusing on implementation of activities that contribute to project outputs and facilitated by the project staff to assess progress of the project activities and for participatory problem solving. These meetings were also used to share experiences with each group being given opportunity to share its progress and have the rest of the groups advice. This facilitated feedback and appreciation of the project. The sessions were also used to share success stories and failures. Lessons learnt were used to refine by laws and other implementation strategies. (A form was designed for this purpose. See Appendix 5.)

Joint field monitoring by PCs, PDCs and occasionally FPRAs and Programme Staff to assess field performance and adoption of crop management practices and minimise cases of false reports of crop failure. Joint monitoring of crops in the field was used to remind beneficiaries of their obligation and helped in timely identification of problems which, depending on the nature were either solved immediately for example if a garden was found to require weeding and the farmer had problems then his or her group would assist and get paid later by the farmer or if at the time of the visit a beneficiary was found not to have planted and time was running out then the seed would be given to another farmer in the group immediately in order to catch up with the

season or discussed later with all members at the joint review meetings resulting in participatory problem solving. This also helped other groups take precautionary corrective action as they learnt from each other and helped groups refine their by laws based on challenges encountered and lessons learnt from others.

End of season evaluations were undertaken to assess performance of the varieties and get a feedback on farmer's assessment of the varieties. This was done at both group and sub county level each season. This motivated others to adopt recommended practices. A form was designed to capture the seasonal evaluation information (see Appendix 9).

A competition was organised in 2003 to encourage training, multiplication, distribution and participation of the local leaders. Prizes were awarded and included peanut butter grinders and groundnut shellers. The competition helped motivate implementation of planned activities. (See Appendix 4 for marking scheme.)

A baseline survey was conducted in 2002 at the start of the project.

4.7. Impact Assessment

An impact assessment survey was conducted in September 2004 to assess the impact of the project as at that time. (See appendix 11 for report.) The survey was carried out to evaluate the achievement of the project outputs and purpose. The survey was based on a multi-stage sample from the entire project area. Sampling of sub counties, parishes, groups, and respondents was completely random. In sampling the sub counties, the number of participating sub counties in a district was considered. Two sub counties were selected in Districts with four sub-counties and one for those with two. One parish was sampled in each sub county and three groups in each parish. In each group ten members were sampled. A total of 8 sub counties, 8 parishes, 24 groups, and 240 group members were thus sampled.

A control group was also sampled including five people who were neighbours to beneficiaries sampled in each group. The neighbours were randomly selected, thus 15 were sampled in each sub county. A total of 120 non-beneficiary neighbours were picked for interview. A parish not neighbouring the participating parish in the sub county was also randomly picked from among the non-participating parishes, and 15 households were randomly picked from one village, which was also picked at random. A total of 120 non-beneficiary respondents were thus sampled from this category to test for diffusion outside of the project parishes.

Enumerators based in the parishes were identified and trained to conduct the survey. Consideration was taken to ensure both neutrality and familiarity with the local language. Development of survey questionnaires and training of the enumerators was facilitated by a biometrician from the Faculty of Agriculture at Makerere University in Kampala Uganda. The survey was conducted in the last two weeks of September 2004. Data analysis was done by a hired statistician in consultation with the Project Leader, who has considerable experience in data analysis.

5. Outputs

5.1. Output 1: Training

Sixteen extension staff, 300 community leaders (160 contact Farmers and 140 local leaders), 2000 households trained in groundnut production, storage and multiplication.

No.	Activity / Accomplishments.	2002	2003	2004	Comments
1.	Identification of beneficiary sub-counties	16	17	17	The project area did not change except one sub county of Kadama, which was divided in the second year making nine beneficiary groups to fall in another sub county of Kirika. A memorandum of understanding was signed with each sub-county.
	Kumi	4	4	4	
	Pallisa	4	5	5	
	Tororo	4	4	4	
	Mbale	2	2	2	
	Sironko	2	2	2	
2	Memorandum of under-standing signed with sub-counties.	16	0	0	This was done at the beginning of the project to ensure ownership of the activities by the sub counties for sustainability.
3	No. of FPRA & assistants trained in groundnut seed production.	16	31	0	Additional locally identified farmers were also trained as field assistants to support the FPRA. A technician Mr. Pascal Nalyongo representing the collaborating researcher conducted all trainings.
4	No. of FPRA trained in groundnut seed quality and storage.	16	0	0	A refresher on seed quality was organised to ensure viability of seed produced. AT program staff also attended this training, which was done by the collaborating breeder.
3.	No. of Project staff trained in groundnut seed production.	4	0	0	These are staff involved in supervising project activities in the field.
4.	No. of Production Committees (PCs) formed and trained in groundnut seed production.	160	0	160	A committee was formed in each group comprising of at least three members to support seed production activities at group level. Up to 960 committee members were trained as trainers. The 160 committees formed in 2004 were for new groups identified to benefit from seed collected from first groups for redistribution.

No.	Activity / Accomplishments.	2002	2003	2004	Comments
5.	No. of Parish Development Committees formed and trained in groundnut seed production.	32	0	0	Each benefiting parish has a committee with at least 10 members. Each benefiting group is represented on the PDC and the rest of the members are LCs and the parish chief, up to 78 leaders excluding PCs were trained. This committee coordinates the parish activities, registers all beneficiaries and helps enforce multiplication by laws.
6.	No. of individual beneficiaries trained in groundnut seed production.	800	2,210	>6,000	These figures are running totals. All individuals receiving seed for multiplication have to train before getting the seed. Refresher trainings were also conducted for all group members each season to promote adoption, and were done by the PCs supervised by FPRAs.
7.	No. of simple groundnut seed production guides produced and distributed to farmers trained.	0	4,000	0	All trained beneficiaries received copies.
8.	No. of detailed groundnut production manuals given to FPRAs and other trainers.	50	0	0	The NRInt CPP supplied the manuals. Copies were also given to non-participating Agricultural staff.
9.	No. of trainings conducted on seed production.	32	176	336	In the first year trainings were at sub county level. However, in the second year it decentralized to group level to increase group participation and attendance. Refresher training of the trainers i.e. PCs and PDCs preceded trainings at group level. The figures for 2004 increased because of the additional 160 groups that joined the project activities in second season 2004.

Training was important to ensure that beneficiaries have access to the necessary knowledge and skills for increased productivity and seed quality in a sustainable manner. It called for building of the local capacity to train, and thus the training of PDCs and PCs *in place of contact farmers* as trainers and providing them with printed simple seed production guides. This equipped them with the necessary knowledge and skills to pass on to others.

Training was made a pre requisite to accessing seed. This, coupled with the emphasis for quality seed, encouraged most farmers to attend the trainings including some non -group members.

Refresher trainings were conducted at planting and this helped in ensuring high adoption of correct spacing for attainment of the right plant population. End of season evaluations also offered opportunity for more learning and adoption of practices, as farmers were able to hear and learn from the experiences of their fellow farmers, apart from being able to assess and appreciate the varieties and practices promoted. (See copy of form in appendix 9.)

Having the farmers themselves take charge of these activities helped them participate and learn from the process.

5.2. Output 2: Multiplication

Sufficient seed to plant 400 acres (161.9 hectares) of new varieties obtained and multiplied by EOP.

No.	Activity	2002	2003	2004	Comments
1.	No. of varieties given out for multiplication.	2	3	3	These include Serenut 2 and 3 in the first year and Serenut 4 was added in the second and third years.
2.	No. of bags of seed in shell bought and given to farmers. Serenut 2 Serenut 3 Serenut 4	269 264 8 0	286 50+ *156 36	194 0 95 99	Twice the amount given out was returned after harvest for further redistribution to other farmers. + Groups bought additional 89 bags using matching grant funds. *Seed supplied was mixed with the wrong variety so most was flushed out.
3.	Hectares multiplied using purchased seed. Serenut 2 Serenut 3 Serenut 4	82.50 80.00 2.50 0.00	35.50 15.00 6.00 14.50	69.00 0.00 29.00 40.00	41 hectares lost as result of wrong seed. However, up to 187.5 hectares were multiplied. Farmers planted additional 27 hectares using seed bought using matching grant funds.
4.	No. of joint review meetings held.	0	32	32	Two meetings were held each growing season per sub county, and attended by all groups to assess progress of project activities with the aim of identifying and solving problems in a participatory manner.

No.	Activity	2002	2003	2004	Comments
5.	No. of joint field monitoring visits made.	16	16	16	By a team comprising of PDCs, PCs and project staff (sometimes). Each group was visited at least once a season, to assess adoption of practices, crop performance and to instil the culture of collective responsibility.
6.	No. of end of season evaluations conducted with beneficiaries.	16.00	16.00	16.00	One per season per sub county. To promote appreciation and adoption of practices.

In order for seed to multiply it required whoever received seed to return more than the amount initially received. The multiplication factor of two set seemed easy to meet and encouraged repayment by most farmers and thus expansion of seed quantities evidenced by the increased acreage from repaid seed and also quantities sold for seed.

5.3. Output 3: Distribution

Redistribution and further multiplication of selected groundnut varieties produce sufficient seed to plant at least 2500 Hectares by EOP.

No.	Activity	2002	2003	2004	Comments
1.	Number of farmers benefiting from seed provided for multiplication and from seed returned for redistribution.	350	1860	**3007**	This is based on returns or records from the PDC's. However, some records are missing due to weakness of the PDC and staff.
2.	Hectares multiplied using seed returned by beneficiaries and distributed to other farmers within groups. Serenut 2 Serenut 3 Serenut 4	0.00 0.0 0.0 0.0	160 160 *0.0 0.0	534.6 429 23.6 82.0	A total of 694.6 hectares planted. It is expected to be more as some records were missing. * Records missing.
3.	Metric tons of extra seed available and sold by beneficiaries. Serenut 2 Serenut 3 Serenut 4	0.00 0 0 N/A	39.2 36.0 1.15 2.10	58.6 43.7 2.80 12.1	All these were sold within the project area for seed. Quantities quoted are for 81%of the groups. These groups submitted reports to the project asking for assistance to market their surplus. It is clear that there was under declaration as some thought that they would be

No.	Activity	2002	2003	2004	Comments
					required to pay back more. There was also informal distribution to non-participating members of the community, which could not be quantified.

The repayment rate was average and good quantities of seed were available to go to 5,217 farmers. Thus by the end of the first season of the second year nearly all members had accessed seed, with groups having small membership already passing on extra seed to non group members.

However, there was some non-compliance on the repayment rates as there was room for flexibility in the byelaws to take care of natural hazards like in the case of extreme weather. Though weather was not good in two years out of three of the project life, the flexibility was abused in some sub counties resulting in low repayment. However the large quantities of extra seed available reflects that the crops did fairly well despite of the poor weather. There was also poor documentation in some area especially where distribution was done individually and no effective follow up was done.

However, there were cases of failure to pay back the full amounts, missing out a season, also a few cases of total loss due to extreme weather. Mixing of varieties at point of purchase also affected multiplication as such mixed seed had to be flushed out of the multiplication process. All these combined reduced the amounts of seed multiplied and thus the expected acreage and number of beneficiaries.

Introduction of more than one variety also reduced the number of beneficiaries as each beneficiary wanted to get all the varieties therefore some benefited more than once and that was not counted reduced the chance of more people getting the seed early in the life of the project.

Distribution to other groups should have started immediately in 2003 as the new varieties were introduced using half of the quantities repaid.

Some sub counties local governments and programmes have adopted the same multiplication method for groundnuts and other crops**.** Particularly Ngora, Mazimasa and Kachonga sub counties.

Some beneficiaries in the same areas are also using the same method to lend out seed to friends, neighbours, and relatives and lend get a repayment on agreed terms.

This indicates appreciation of the approach.

5.4. Output 4: Handover

Local leadership takes over the responsibility for planning, implementing and monitoring a pro poor strategy of planting material redistribution during the last year of the project.

By putting in place 32 PDCs and 320 PCs, the project helped to establish structures that would eventually continue managing the multiplication process. Training in the areas of responsibility i.e. record keeping and seeing them implement with some supervision and lesson learning helped build their capacity to a great extent. Provision of each PDC with a big A4 size a record book as a register was done to facilitate the whole process. The challenge remained how to keep them motivated to carry on without further supervision. The process was handed over.

5.5. Cross Cutting And Additional Promotional Activities

No.	Activity	Comments
	Other trainings offered to facilitate the process.	All 160 groups received the trainings.
1	Record keeping.	For 32 PDCs and at least 960 members of 320 PCs.
2	Collective marketing of produce.	All 320 groups were trained. 16 sub county marketing teams set up to help sell extra seed produced profitably.
3	Processing of peanut butter.	45 groups, 2 individuals and 8 FPRAs acquired manual groundnut grinders in the second year to introduce value addition opportunities for groundnuts.

These activities, especially training in collective marketing and setting up of marketing committees, were initiated to facilitate profitable marketing of the surplus produced. The need become more real each season as more farmers accessed seed and production went up drastically. Processing of peanut butter was also seen as one form in which groups could add value and sell the excess produced.

5.6. Monitoring and Evaluation

Periodic project progress reports were prepared and submitted to the CPP.

An impact assessment was done, and analysis of survey findings revealed that the intended project purpose has significantly been achieved. As indicated by the following:

- Training of FPRAs, local leaders and farmers was done. 93.6% of the beneficiaries i.e.3402 people were trained by the project. This is a lot more than the target of 2000 farmers. Training capacity is now well established among the local leaders and extension staff.
- Ideas from the training were widely adopted and helped to increase production and ensure seed quality.
- Local leaders i.e. Parish Development Committees (PDCs) and Group level Production Committees (PCs) were involved in the whole process of training and redistribution.
- 3 new varieties, namely Serenut 2, 3 and 4, which are resistant to groundnut rosette disease have been introduced to farmers over the 3 years of the project.
- The varieties have been evaluated by the beneficiaries and have been accepted for being rosette resistant, tolerant to drought, high yielding and good tasting among other attributes

- Seed availability for the introduced varieties has increased substantially and large quantities are being sold enabling other non- participating farmers to benefit thus disseminating the new varieties.
- Up to 17,154 people have accessed the seed through the formal project arrangements, sales and gifts by individuals. This is 8,154 more than the projected target of 9000 recipients. 3,634 beneficiaries received directly from the project, 5,910 obtained through purchase of seed from farmer multipliers and 7,610 through gifts or payments in kind.
- 52% of beneficiaries are women who are benefiting by accessing the seed and from the resultant production. Benefits are evenly spread between men and women.
- Redistribution of the varieties is continually increasing under the guidance of local leadership, but at somewhat less than anticipated rate
- Seed to plant 3,275.6 hectares has been given out. Of this distribution direct from project was sufficient to plant 1,092 hectares. An additional 2,183.6 hectares were projected to have been planted using seed from sales and gifts. The resulting total is far more than 2,500 ha total in the original target.
- Estimated production from 2004 alone can plant up to 4,725.8 hectares if all is committed to seed.
- Use of home saved is the most reliable way groundnuts farmers ensure seed availability and is being widely practices by beneficiary farmers.
- Agricultural activities are constrained by weather and socio economic factors thus the desired multiplication and repayment rates were not met fully. The project area suffered a significant drought in four of the six seasons of project implementation. This clearly demonstrated the importance of drought resistance as a characteristic of improved groundnut varieties.
- The respondents did not identify any significant negative project impacts, however the challenge of marketing the growing groundnut surplus seems to be an important emerging issue.

The project has generally achieved its purpose and contributed to improved livelihoods of the target communities through availability of reliable groundnut varieties leading to increased groundnut production contributing to increased food and income availability in the project area.

Unfortunately it was not possible to assess whether annual groundnut production by the beneficiary households had actually increased by 50% by end of project. The design of both the baseline data and the impact survey were faulty in this regard and did not provide sufficient detail to be able to specifically address this question.

5.7. Challenges.

A number of challenges were encountered. These included:

1. Drought affected yields in some cases resulting in the reduction of seed amounts repaid and slowing the coverage. Groups were encouraged to set their own policies to handle such situations.
2. Other pest and diseases requiring chemical control, especially the leaf miner, posed a challenge to these resource poor farmers. Groups have been assisted to experiment with IPM approaches.

3. Some mismanagement of the multiplication and distribution process by FPRAs and local leaders was experienced, leading to distribution of seed to people outside influence resulting in a few cases of none repayment and missing records.
4. Some farmers missed out a season due to other problems slowing the coverage and spread of seed.
5. Some farmers ate or sold seed before planting. This was especially a problem for the very poorest of the group members.
6. Poor handling of seed by some individuals, resulting in low viability and thus low production by next beneficiaries.
7. Sustaining commitment of non-group members of the PDC since the service is voluntary.
8. Enforcing by laws in the case of default especially since most group members come from the village not taken seriously, to protect own social image.
9. Sustaining participatory activities such as joint review meetings and monitoring.
10. Poor seed quality especially mixing of varieties with local one supply of wrong variety.

Most of the challenges encountered were discussed and addressed in a participatory manner during joint review meetings. Results from field monitoring also informed the decisions made at these meetings to handle issues as they arose.

However, some of the challenges were addressed immediately as they arose and the remedial efforts were then built into the planned future activities. The project learned from mistakes in the first season. Distribution procedures were discussed and streamlined. In subsequent seasons distribution was conducted in public to ensure that the right beneficiaries got seed. This practice promoted transparency and solved most of the problems.

Seed quality issues were addressed through continuous training. In addition groups imposed penalties for distributing poor quality seed. In 2004 procurement of seed was done directly from the groups to solve the problem of mixed seed purchased from outside sources that had arisen the previous year.

Repayment of seed was fostered through censoring of beneficiaries to ensure only those with potential to repay received seed. Field monitoring was undertaken and bylaws revised and enforced to cater for new challenges as they arose.

To keep PDCs operational and PDC members' motivated provision was made for them to get seed as other beneficiaries, which seemed to work. However, having the groups represented on the committee also helped because as direct beneficiaries they have a sustained interest and have become the driving force of the committee.

6. Contribution of Outputs to Developmental Impact.

The project has generally contributed to improved livelihoods of the target communities by making reliable high yielding groundnut varieties available. This has led to increased groundnut production, resulting in increased food and income in the project area and thus contributing to improved livelihoods of the poor.

From the results of joint review meetings, evaluations and also supported by the findings of the impact survey, production of groundnuts has increased as a result of the good attributes of the introduced varieties, and there are substantial quantities produced that are available for sale. Introduction and multiplication of the new groundnut varieties which are both vector and disease resistant eliminates the need for chemical control and the loses due to rosette disease thus guaranteeing good stable yields and availability of seed. The project has greatly increased access to rosette resistant varieties and ensured that the seed reaches the hands of the poor farmers. Considering that the varieties were highly rated and appreciated for being rosette resistant, tolerant to drought, high yielding among other qualities. This in the long run contributes to stable yields and results in increased production hence sustainably enhancing production and productivity of the crop and therefore improving the livelihoods of the poor who are dependent on this crop for food and income. The project has also helped further test an approach that can be effectively be replicated by others to successfully to promote dissemination of research outputs. The seed distribution mechanism put in place if managed well will ensure continued multiplication and distribution of the new improved varieties to other poor in the participating communities. However, there is need for deliberate efforts to extend similar multiplication programmes to other areas as it only through such project interventions that faster dissemination and adoption of available technologies can be achieved as evidenced by the intervention of this project. Due to lack of organised marketing structures, a need has emerged that calls for support to the farmers to enable them market the surplus production profitably if the extra production is to contribute to their economic livelihoods positively.

Some effort has been made in organising the groups to sell collectively but more time is required to guide them practically through the whole process. This will be the focus for the nine -month extension to this project funded by NRI. (**See appendix 14 for new project Logframe.)**

7. Biometricians Signature

The projects named biometrician must sign off the Final Technical Report before it is submitted to CPP. This can either be done by the projects named biometrician signing in the space provided below, or by a letter or email from the named biometrician accompanying the Final Technical Report submitted to CPP. (Please note that NR International reserves the right to retain the final quarter's payment pending NR International's receipt and approval of the Final Technical Report, duly signed by the project's biometrician)

I confirm that the biometric issues have been adequately addressed in the Final Technical Report: **Not applicable since project started before 1st August 2002**
Signature:
Name (typed): .
Position:
Date:

Appendices

Appendix 1.

Checklist For Roles Of PDC's

1. To monitor distribution and redistribution of planting material under multiplication
2. To participate in the identification of the right beneficiaries (consider the poor and women as a priority) to multiply planting material.
3. Facilitate enforcement of byelaws to ensure protection of planting materials from damage or loss.
4. Facilitate the formulation of byelaws to safe guard planting materials and ensure sustainability of the multiplication process
5. To ensure sustainability of development activities including multiplication of improved planting material.
6. To keep records of all multiplication activities
7. To mobilize farmers to participate in development activities and to access available services
8. To link groups and farmers to development programs e.g. NAADS, Private Sector input stockists etc.
9. To inform and sensitise the community on any new developments
10. Any others identified by the community
11. Evaluate the progress of the multiplication exercise

NOTE: The members of the PDC are volunteers who have willingly accepted to avail themselves to serve the community.

Appendix 2- Roles Of Production Committee

1. Mobilize farmers (group members) for timeliness of multiplication activities
2. Coordinate activities related to seed multiplication in the group.
3. Identify group members (farmers) to benefit from planting material (seed) with the approval of the whole group.
4. Train group members and other beneficiaries on seed production and storage before seed is given to them
5. Facilitate distribution and redistribution of seed to identified group members.
6. Monitor farmers during the crop production cycle in field management of the crop to ensure good yield.
7. Follow up group members and ensure seed is paid back
8. Liaise with the Parish Development Committee when need arises to enforce byelaws to recover seed from those who cause losses or fail to pay back.
9. Guide the group in evaluation of seed multiplication activities each season
10. Follow up group members who have received seed to ensure each retains seed to plant the next season.
11. Keep records of all seed multiplication activities, including all record of seed quantities replanted by group members, and sold for seed to other farmers
12. Write reports on seed multiplication issues to the PDC & Extension staff.

Appendix 3 **-FARMERS' GUIDE ON PRODUCTION OF GROUNDNUTS**

Importance
Groundnut is grown as both food and cash crop. It's a source of protein and oil. It also has the advantage of generating residual nitrogen in the soil.

Varieties: Improved varieties include Red Beauty, Igora 1, Serenut 1, Serenut 2, Serenut 3 and Serenut 4.

Suitable conditions
The best soils required are deep, well-drained sandy, sandy loam or loamy sand soils.

Rotation
A rotation of 3 years or longer usually reduce disease/weed problem.
Cereals (i.e. maize, sorghum and millet), cassava, sweet potato and sunflower are good rotational crops.

Groundnuts should not be grown after cotton, although cotton can be used in rotation after groundnuts but not immediately.

Other legumes and tomatoes should be avoided in the rotation as may cause a build up of nematodes and soil-borne diseases.

Land preparation:
Prepare land early. A smooth seed- bed is required to provide a good soil to seed contact after sowing. The good land preparation provides suitable soil conditions for rapid and uniform germination, good root penetration and growth, and steady pod development.

Fertilizer: If possible, fertilize with SSP (at a rate of 100-125kg/ha / 40-50 kg/acre) or TSP (at 80-90 kg/ha /32-36kg/acre) before planting.

Planting:
Seed selection: Pods to be shelled 1-2 weeks before sowing and only good quality seed to be selected for sowing.
Certified seed should be purchased at regular intervals, preferably every 2-3 years.

Seed dressing: Dress seed with thiram to control fungal and bacterial growth. Can be applied as a dust at 120g of thiram/100kg of seed. The dust must be uniformly mixed with the seed.

Planting time: Planting should be done as soon as there is adequate moisture in the ground and should be early in the season.

Spacing/Planting depth: Sow at 5-6 cm depth.
Recommended spacing at 45cm x 7.5-10cm for bunch type varieties (i.e.Red

Beauty) and at 45 x 10-15 cm for Semi-erect type varieties (i.e Igola 1, Serenut 1 and Serenut 2)

Weeding
Ensure good weed control. Generally, 2-3 weedings are recommended.
Early weeding is important, particularly 3-6 weeks after sowing i.e. before flowering.
At least another weeding during pegging. Weeds, make harvesting cumbersome and cause a lot of pods to remain behind in the soil.

Avoid covering the bottom of the plants with earth (Avoid earthing up plants when using hoe), as it increases diseases, reduce flowering and pod development.

It is advisable to weed by hand pulling once flowering and pegging begins
For less disturbance of any developing pods.

Herbicides can be used for control of weed. Pre emergence such as Lasso can be used before crop and weed emergence, and post –emergence i.e. spray Basagran and Fusilade Super following emergence.

Pests and Diseases:

Diseases:
Groundnut rosette disease: Symptoms are 'chlorotic' (yellow and stunted) and 'green' (green and stunted).
Control:
Early planting
Avoid wide spacing
Rosette resistant varieties
Spray with systematic insecticide against aphids if a high yielding non-resistant variety is grown. Dimethoate can be sprayed at a dosage of 50ml in 20 l of water, 14 days after crop emergence and at 10-days intervals for a total of four sprays.

Leaf spot: Early and Late leaf spot.
Early leaf spot occurs as early as 2 weeks after crop emergence. Symptom: Lesions are circular, dark brown on the upper surface with chlorotic (yellow) halos surrounding the darker lesions and a lighter shade of brown on the lower surface of the leaflets.
Late leaf spot occurs later in the season. It has nearly circular lesions which are darker than those of early leaf spot.
Control:
Crop rotation
Burying crop debris during land preparation
Early sowing.

Aphid: It transmits rosette disease and cause damage of the plant tissue when feeding.
Control: Aphid resistant varieties, Spray using dimethoate.

Harvest:
Harvest when 70% or more pods are mature. Use darker markings on inside of shell as an indicator of maturity (pods with shells turning dark brown inside i.e. pick about 3 from different plants, break them open and determine the % age of pods shell which have turning dark inside). Seed should be plump and correct colour for variety. If crop is severely defoliated (95%) or sprouting has begun, harvest straight away. Clean excess soil from pods. Wilt/dry in windrows for 3-5 days.

Post harvest:
Drying:

- Do not leave harvested groundnuts in windrows for long especially during wet weather.
- Remove as much dirt (soil) and trash from pods during drying as soon as possible.
- Drying must begin immediately after lifting to prevent moulding and spoilage.
- Dry pods on mats for a further 2-5 days.

- If A-frames or cocks used, dry for 3-4 weeks and then pick off the pods. Do not dry any further after picking.

Storage

- Before storing remove poor, damaged, shriveled, rotten or fungus-infected pods.
- Store pods in gunny bags in a cool, dry, good sanitation, pest control and well ventilated store.
- Do not store moist groundnuts.
- Store groundnuts in shell.
- Do not use plastic or poly-weave bags.

Appendix 4

Groundnut Multiplication Group Competitions Marking Scheme

District: _____ Sub-County: _____

No.		Scoring scheme	Maximum Points	1	2	3	4	5	6	7	8	9	10
1	Beneficiaries	0.5 points for each beneficiary who has received seed	10										
2	Repayment of seed	Deduct 2 points for each beneficiary who didn't pay back seed. Group earns all 20 points if it has no defaulters	20										
3	Record keeping a) New distribution b) Redistribution c) Record of defaulters d) Training e) Reports to PDC/ sharing of information f) Redistribution plan	5 points if well documented in tracking forms (complete – with date, name, source, qty, signed & witnessed) @ 1 point 5 points as above 5 points names (1), qty (1), clear recovery plan (2), action taken (1) 5 points report (3) & attendance list (2), 5 points any communication on the above earns 2 points, copies of forms 3 points 5 points - list of names 3 points, quantities 1 point, timing 1 point	30										

No.		Scoring scheme	Maximum Points	1	2	3	4	5	6	7	8	9	10
4	Multiplication byelaws	5 points – if available, 1 point Reviewed 2 points Applied 2 points	5										
5	Participation of PDCs	If visited group 1 point, visitors book 1 point, witness distribution 1.5 point, monitoring & solve problems 1.5 points	5										
6	Participation of production committee	Involved in training 3 points Involved in monitoring 3 points, involved in documentation 3 points and others 1 point	10										
7	Poverty focus	≥ 75% Poor, 5 points 60 – 74% Poor, 3 points 50 – 59% Poor, 2 points	5										
8	Women focus	≥ 50% women - 5 points 40 – 49% - 3 points < 40% - 0 points	5										
9	Multiplication initiative	1.0 point for each member who bought seed (serenut)	5										
10	Marketing of excess seed (distribution – use of excess seed)	Each person who sold some earns 0.5 of a point	5										
	Other comments												
	Total Score		**100**										
	Overall Ranking												

Summary of Prizes

Best two groups in district/zone 1 G.nut sheller each. First and second groups in each sub-county 1 Ewing Grinder

Appendix 5 Monthly Group Activity Progress/Monitoring Report

Month: _____ District: _____ Sub-County: _____

No.	Unit	Item	1	2	3	4	5	6	7	8	9	10
1	Beneficiaries	No. of beneficiaries who have received seed total _____ Women _____ Men _____										
2	Repayment of seed	No. of defaulters quantity not paid back _____										
3	Record keeping a) New distribution b) Redistribution c) Record of defaulters d) Training e) Reports to PDC/ sharing of information f) Redistribution plan	If well documented Qty & No. of benef Qty & No. of benef Qty & action to be taken No. of trainings, attend & topics Copies of reports List of names, qty & timing										
4	Multiplication byelaws	Any available Reviewed Applied										

No.	Unit	Item	1	2	3	4	5	6	7	8	9	10
5	Participation of PDCs	If visited group, witness distribution, monitoring & solve problems										
6	Participation of production committee	No of training involved _____ No of monitoring visits _____ Documentation file etc										
7	Multiplication initiative	No. of Members who bought seed (serenut) _____ Acreage planted by members _____										
8	Marketing of excess seed (distribution – use of excess seed)	No members who sold some seed in the group Marketing plan										
9	Group savings	Amount saved by group										
10	Other income generating activities (IGAs)	Types of IGAs a group has										
	Other comments											

Appendix 6 AT UGANDA LTD. Groundnut Project FPRA WORK PLAN January – December 2004

Activities	Target	Who	When	Indicator	Payment rate	Comments
Preseason duties	1	All FPRAs	January	Attendance list ,Work plan	15,000	transport refunds
Planning meeting at sub-county level	1 per sub-county	FPRA, PCs & PDCs	Early February	Attendance list & work plans (10)	20000	
Training of farmers on seed production	10 ATU groups	PDCs, PCs & FPRAs	Feb – March	Attendance list & reports	20,000	
Training of PDCs and PCs on record keeping	10 groups & 2 PDCs	FPRAs	Feb – March	Attendance list & reports	15,000	
G.nut distribution & Redistribution	10 ATU groups	PDCs & PCs	By end of Feb	Tracking filled forms	10,000	
G.nut distribution & Redistribution	10 partner groups	PDCs & PCs	By end of Feb	Filled & signed tracking forms	10,000	
Impact survey (march)	Random sample	FPRA – May switch	March	Filled questionnaires		
Training of FPRAs on collective marketing	All 16 FPRAs	Mr. Kateu Mr. Okwakol Mr. Omony	May (last week)	Attendance list & training notes	50,000	FPRAS 2 NATS, Transport refund & token to trainers.
Training of groups on collective marketing	10 groups (ATU)	FPRAs	June	Attendance list, reports & group marketing plans	20,000	
Updating of the registers & group records	10 groups & 2 parishes	PDCs, PCs & FPRAs	June	Updated PDC beneficiary registers Group beneficiary records Updated group membership registers	30,000	
Training of farmers on seed production	10 partner groups	PC & FPRA	October – November	Attendance list & reports	10,000	
Joint meeting between	4 meetings	PDCs, PCs, FPRAs	Date be fixed	Progress reports &	20,000	Each 1 SDA

Activities	Target	Who	When	Indicator	Payment rate	Comments
groups, PDCs, PCs & FPRAs		& ATU staff	by AT	attendance lists		
Joint field monitoring (PDCs, PCs & FPRAs) – Ongoing	3 Field monitoring visits	PDCs, Pcs, & FPRAs	At planting time March – April Weeding – April – May Harvesting June – July	Monitoring report	15,000	Each 1 SDA
Identification of partner groups	10 groups	PDCs, PCs & groups	August – October	Lists of partner group members (10)	10,000	
Training of farmers on seed production	10 ATU groups		November	Attendance list & reports	20,000	
End of season evaluation	10 groups	FPRA	August – September	Evaluation reports (10)	10,000	
Exchange visits	1 visit per sub-county	RC & FPRA		Visit report Updated group registers	10,000	
Special duties				Report	15,000	

Appendix 7-Guidelines for Training of Production Committees.

1. Each group to identify 3 members of the Production Committee who are capable of being trained and can train others (contact farmers)
2. Parish Development Committees to attend
3. Training to last 2 days, lunch will be provided (125,000/=) each sub-county
4. Training by FPRAs and Field Assistants
5. Topics to be covered include: -
   - basic crop husbandry practices & principles
   - layout & set up of demonstrations – theory and practical
   - recommendations on such crops as; ***G.nuts, Fingure millet, sorghum, beans, maize, cowpeas, cassava.***
6. Each sub-county to set training dates in the last week of February (funds for meals).
7. Each group then prepares a work plan for training of group members to ensure that members are trained.
8. Notes on specific crops will be provided in the 3rd week of February.

Appendix 8a -AT (Uganda) Ltd

Groundnuts Multiplication & Redistribution Register

District: _____ Sub-county: _____ Parish: _____ Village: _____

Name	Sex	Well-being category	Qty of seed taken	Sign	Next beneficiary	Sex	Well-being category
1					a)		
					b)		
					c)		
2					a)		
					b)		
					c)		
3					a)		
					b)		
					c)		

Appendix 8b -GROUNDNUTS MULTIPLICATION AGREEMENT

I _____ of _____ Village _____ Parish, _____ Sub-county, _____District, hereby acknowledge receipt of _____ Kgs of _____ variety G.nuts from AT (Uganda). I understand that the G.nuts seeds are intended for multiplication in order to assist the farmers in this District to improve their food security.

I understand and agree that:

- I am to pant and care for this G.nuts according to extension advice and protect it from damage.
- This G.nuts is to be harvested and paid back two times the quantity of seed initially received, after a period of 3-4 months for redistribution to other poor farmers, at the instruction of the FPRA
- The balance of the harvest belongs to me and may be purchased by other farmers.
- I am to keep proper records of any distribution of G.nuts so that AT (Uganda) can follow up and advise these farmers too.
- I am cooperate with the FPR extension staff in collecting any required information that will help the assessment of the performance of this new G.nuts variety.

Sex of farmer: _____ **Number** of Beneficiaries (Men: _____ Women: _____)

Well-being ranking: (*VP*=*Very poor, **P=poor, **M=**moderate, **R=**rich):* _____

Signature:_____ **Date:** _____File Number: _____

Witnessed by: _____ _____

(Chairperson Parish Development Committee **(Chairperson LCI)**

Parish

Appendix 8c. SEED MULTIPLICATION TRACKING FORM (NEW SEED DISTRIBUTION)

District: _____ _____Sub-county: _____ Parish: _____ Village: _____
Name of Farmer/Group: _____

[if group, specify total number of members in group_____ men _____ women _____

Date group received seed: ___/____/200__ Crop: _____ Varieties received_____, _____, _____

Quantity: RECEIVED by the whole group _____ (bags/Kgs/number of tubers) Quantity to be returned by multipliers_____ (bags/Kgs)

Record of Distribution of Seed

Date of Distribu-tion	Source of Seed (Specify code of supplier)	Name of Person Receiving	Sex	Well-Being Status	Village of Person Receiving	Variety Received	Quantity Received	Quantity to Be Paid back	Signature of Person Receiving	Signature of Witness (PDC)

Appendix 8d. SEED MULTIPLICATION TRACKING FORM (REDISTRIBUTION)

District: _____ **Sub-county:** _____ **Parish:** _____**Village:** _____

Name of Farmer/Group: _____ [if group, specify total number of members in group_____ men _____ women _____

Date of return of seed to group for redistribution: ___/____/200__ Crop: _____ Varieties received_____, _____, _____

Quantity: RECEIVED from multipliers returning _____(bags/Kgs) Quantity to be returned by next multipliers_____ Quantity not paid back __

Record of Distribution of Seed Returned

Date of Distribu-tion	Name of person Paying back	Name of person Receiving	Sex	Well-Being Status	Village of Person Receiving	Variety Received	Quantity Received	Quantity to Be Paid back	Signature of Person Receiving	Signature of Witness (PDC)

Appendix 9-END OF SEASON EVALUATION FORM

Name of Group: _____ Sub-county: _____ Parish: _____

	Farmer 1	Farmer 2	Farmer 3	Farmer 4	Farmer 5	Farmer 6	Farmer 7	Farmer 8
1. Quantity of seed received								
2. Variety								
3. Source of seed (new or redistribution)								
4. Planting date								
5. Spacing used								
6. Date of first weeding								
7. Date of 2nd weeding								
8. Harvest date								
9. Yield (bags, basins)								
10. Pests seen if any and control used								
11. Diseases seen if any								
12. What you did not like about variety								
13. What you like about variety								
14. Other comments								

General comments by whole group about variety (Record on back)

Appendix 10 -CHECKLIST FOR SEED MULTIPLICATION BYELAWS

Issues to consider

1.The repayment rate, which must be twice the amount initially received.

2.Training is a must before one receives seed.

3.How to deal with defaulters:

- Incase of failure to pay back due to low yields resulting from poor management of the crop, the farmer pays cash value of the expected amount of seed.
- Incase of failure to pay back due to drought the farmer may be allowed to re-multiply or pays back half of quantity expected and the rest in the next season.
- To avoid loses which may occur incase a beneficiary leaves the village or group before paying back the seed, each farmer receiving seed must have a next of kin witnessing the receipt of seed by signing.

4. Seed for multiplication should be planted within the parish for easy monitoring.

5. All seed distribution, repayment and redistribution should be at parish level meetings for transparency and accountability.

6.Seed should be distributed according to agreed distribution plans.

7.Beneficiaries should allow visits by PDC's, PC's staff and other farmers to the multiplication gardens.

8. Only quality seed will be accepted for repayment, otherwise the beneficiary pays the full cash value for the amount expected from him/her.

NB: Make sure all critical issues that affect repayment are taken care of.

Appendix 11:

Farmer Led Groundnut Multiplication in Uganda.
NR International Contract Number (ZA0494)
Implemented by AT Uganda Ltd.

DRAFT REPORT

Impact Assessment Report for Farmer Led Groundnut Multiplication in Uganda

Grace Tino, Rita Laker-Ojok, and Sarah Namisi

December 2004

This report is an output from a research project funded by the United Kingdom Department for International Development (DFID) for the benefit of developing countries. The views expressed here are not necessarily those of DFID.
Crop Protection Programme– Project R8105.

AT Uganda Ltd.
DFID CPP
SAARI

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Impact Assessment Report for Farmer Led Multiplication of Rosette Resistant Groundnut Varieties

1. Executive Summary

The project entitled **Farmer-Led Multiplication of Rosette Resistant Groundnut Varieties for Eastern Uganda is funded by the Crop Protection Programme of DFID under contract with NR International.**

This three-year project was aimed at addressing the problem of low groundnut production caused by groundnut rosette disease through provision of rosette resistant varieties to the poor households for multiplication. The Project was expected to achieve the following targets:

- *Annual production of groundnuts by 9,000 poor participating farmers of whom 50% should be women, increased by 50% by EOP;*
- *16 Extension staff, 300 community leaders (160 contact farmers and 140 local leaders),and 2000 households trained in groundnut seed production, storage and multiplication;*
- *Sufficient foundation seed to plant 400 acres (161.9 Ha) of new varieties obtained and multiplied by EOP;*
- *Redistribution and further multiplication of selected groundnut varieties produces sufficient seed to plant at least 2,500 Ha by EOP;*
- *Local leadership takes responsibility for planning, implementing, and monitoring a pro-poor strategy of planting material redistribution during the last year of the project.*

An extensive survey was conducted in September 2004 to assess the impact of the project to date. Analysis of survey findings reveals that the intended project purpose has significantly been achieved. as demonstrated by the following:

- *3 new varieties, namely Serenut 2, 3 and 4, which are resistant to groundnut rosette disease have been introduced to farmers over the 3 years of the project.*
- *The varieties have been evaluated by the beneficiaries and have been accepted for being rosette resistant, tolerant to drought, high yielding and good tasting among other attributes*
- *Seed availability for the introduced varieties has increased substantially and large quantities are being sold enabling other non participating farmers to benefit thus disseminating the new varieties.*
- *Up to 17,154 people have accessed the seed through the formal project arrangements, sales and gifts by individuals. This is 8,154 more than the projected target of 9000 recipients. 3,634 beneficiaries received directly from the project, 5,910 obtained through purchase of seed from farmer multipliers and 7,610 through gifts or payments in kind.*
- *52% of beneficiaries are women who benefiting by accessing the seed and from the resultant production. Benefits are evenly spread between men and women.*
- *Redistribution of the varieties is continually increasing under the guidance of local leadership, but at somewhat less than anticipated repayment rate*
- *Seed to plant 3,275.6 hectares has been given out. Of this distribution direct from project was sufficient to plant 1,092 hectares. An additional 2,183.6 hectares is projected to have been planted through seed sales and gifts. The resulting total is far more than 2,500 ha total in the original target.*

- ✓ *Estimated production from 2004 alone can plant up to 4,725.8 hectares if all is committed to seed.*
- ✓ *Use of home saved is the most reliable way groundnuts farmers ensure seed availability and is being widely practices by beneficiary farmers.*
- ✓ *Training of FPRAs, local leaders and farmers was done. 93.6% of the beneficiaries (3402 people)were trained by the project. This is a lot more than the target of 2000 farmers. Training capacity is now well established among the local leaders and extension staff.*
- ✓ *Ideas from the training were widely adopted and helped to increase production and ensure seed quality.*
- ✓ *Local leaders i.e. Parish Development Committees (PDCs) and Group level Production Committees (PCs) have been involved in the whole process of training and redistribution.*
- ✓ *Agricultural activities are constrained by weather and socio economic factors thus the desired multiplication and repayment rates were not met fully. The project area suffered a significant drought in four of the six seasons of project implementation. This clearly demonstrated the importance of drought resistance as a characteristic of improved groundnut varieties.*
- ✓ *The respondents did not identify any significant negative project impacts, however the challenge of marketing the growing groundnut surplus seems to be an important emerging issue.*

The project has generally achieved its purpose and contributed to improved livelihoods of the target communities through availability of reliable groundnut varieties leading to increased groundnut production contributing to increased food and income availability in the project area.

Unfortunately it was not possible to assess whether annul groundnut production by the beneficiary households had actually increased by 50% by end of project. The design of both the baseline data and the impact survey were faulty in this regard and did not provide sufficient detail to be able to specifically address this question.

2. Introduction

2.1. General Background

The project entitled "Farmer Led Multiplication of Rosette Resistant Groundnuts Varieties for Eastern Uganda" is a three-year project funded by DFID Crop Protection Programme managed by Natural Resources International (NRI) Ltd and implemented by AT Uganda Ltd. The Project was a result of a call for proposals for promotional projects to promote or apply (disseminate) research outputs of NRI Crop Protection Program. The Project operates in 5 districts of Eastern Uganda namely Kumi. Pallisa, Tororo, Mbale and Sironko.; and began on 1st February 2002 and will end on 31st March 2005.

2.2. Area Description

The project operates in sixteen (16) sub-counties. The sub-counties include: Nabuyoga, Nagongera, Mazimasa, and Kachonga in Tororo district; Lyama, Kadama, Kasodo, Butebo in Pallisa district; Kidongole, Malera, Nyero and Ngora in Kumi district; Bukhalu, Butandiga in Sironko district and Busiu and Butiru in Mbale district. In each sub-county the project operates in two parishes and with ten farmer groups with a total membership of **4217** farmers

in the 160 groups. These groups earlier participated in seed multiplication under LIFE project earlier implemented by AT Uganda Ltd.

The area falls in the montane (Mbale and Sironko) and Teso farming systems characterized by crop – livestock mixture. The dominant annual food crops include beans, Groundnuts, finger millet, cassava, sorghum and maize. However, Mbale and Sironko differ from the rest of the region in that in addition to the food crops mentioned above bananas are also grown for food and income. Cotton is a common industrial crop in the Teso systems, Sironko and lowlands of Mbale, while Arabica Coffee is the main commercial crop grown in the medium and high altitude areas of Mbale where it is intercropped with bananas.

2.3. Project Summary/Background

The baseline survey for an earlier project (LIFE Project) in the same project area identified the need to address groundnut rosette disease as a major constraint to groundnuts production, a major crop grown for food and income; thus the basis for focus on groundnuts as a crop.

Considering that groundnut seed rate is high and the risk of crop failure from rosette disease is high, lack of seed is a major reason why poor households don't grow Groundnuts, even though groundnut production is very profitable. Eastern Uganda used to produce large quantities, however, decline in production is explained by the lack of cash to buy chemicals to control rosette. Therefore rosette control through disease and vector resistance is more economical, sustainable, and appropriate, especially for resource poor farmers.
To address this situation this project promotes farmer-led multiplication of rosette resistant Groundnuts varieties by poor households under the supervision of local authorities. It is expected to increase Groundnuts production and ensure that poor people have access to new varieties through delivery of the following outputs:

- Extension staff, local authorities and farmers trained in Groundnuts production, multiplication and storage;
- Foundation seed for new rosette resistant varieties obtained and multiplied by farmers group members;
- Multipliers return double the amount of planting materials received, for redistribution and further multiplication;
- The process of collection, redistribution and monitoring of multiplied seed effectively handed over to local leadership for management.

The project design is basically that of a dissemination project and not a research project.
Lessons from previous projects indicate that farmer led multiplication of improved varieties is one way to ensure that poor but able farmers access and utilize improved varieties, practices and knowledge required for increased productivity.

2.4. Project Targets.

The Project is expected to achieve the following targets:

- Annual production of groundnuts by 9000 poor participating farmers of whom 50% should be women, increased by 50% by EOP;
- 16 Extension staff, 300 community leaders (160 contact farmers and 140 local leaders), 2000 households trained in groundnut seed production, storage and multiplication;
- Sufficient foundation seed to plant 400 acres (161.9 Ha) of new varieties obtained and multiplied by EOP;
- Redistribution and further multiplication of selected groundnut varieties produces sufficient seed to plant at least 2500 Ha by EOP;

- ❖ Local leadership takes responsibility for planning, implementing, and monitoring a pro poor strategy of planting material redistribution during the last year of the project.

2.5. Project Approach/Methodology

The model for multiplication of seed used is a replication with modifications of a project approach already practiced with other crops in an earlier project implemented by AT Uganda Ltd. (LIFE Project) with the same stakeholders. The approach emphasizes participation of key stakeholders in this case beneficiary farmer groups, Production Committees (PCs), Parish Development Committees (PDCs), Extension Staff who work as Farmer Participatory Research Assistants (FPRAs) and sub-county local government authorities in planning, implementation, monitoring and evaluating project activities.

The Process Involves;

a) Training of FPRAs as trainers on groundnuts production
b) Setting up of local leadership structures at group level i.e. PCs to handle seed multiplication issues and another structure at parish level PDCs to coordinate and monitor the groups. Each group is represented on the PDC, which also has local government representatives from the village and parish level, especially local councilors and the parish chief.
c) Participatory identification and assignment of roles to the local leadership i.e. PC and PDCs to ensure seed given out is protected and repaid for further multiplication. Their roles include among others training of beneficiaries on groundnuts production,(farmer-led extension), monitoring management of crops in the field, facilitating identification of beneficiaries, distribution and recovery of seed for redistribution, and keeping record of beneficiaries.
d) Delivery of seed by the project to individuals in groups is based on distribution plans i.e. plan of how multiplication should take place and the order in which new materials should filter through the group members to ensure that all have access within the shortest possible time. The plan is drawn up by groups assisted by PCs and PDCs considering the able poor and women as a priority to receive seed first.
e) Acknowledgement of receipt of seed and multiplication terms, especially on quantities to be paid back, is signed by all beneficiaries, and in the interest of accountability, transparency, and easy follow up, witnessed by PDCs at group/public meetings.
f) Local leaders keep a register of all receipts.
g) Beneficiaries are responsible for custody and storage of seed since distribution is done soon after harvest, and provide land and labor to produce the crop.

2.6. Survey Methodology

The survey was carried out to evaluate the achievement of the project outputs and purpose. The survey was based on a multi-stage sample from the entire project area. Sampling of sub counties, parishes, groups, and respondents was completely random. In sampling the sub counties, the number of participating sub counties in a district was considered. Two sub counties were selected in Districts with four sub-counties and one for those with two. One parish was sampled in each sub county and three groups in each parish. In each group ten members were sampled. A total of 8 sub counties, 8 parishes, 24 groups, and 240 group members were thus sampled.

A control group was also sampled including five people who were neighbors to beneficiaries sampled in each group. The neighbours were randomly selected, thus 15 were sampled in each sub county. A total of 120 non-beneficiary neighbours were thus picked for interview..

A parish not neighboring the participating parish in the sub county was randomly picked from among the non-participating parishes, and 15 households were randomly picked from one village, which was also picked at random. A total of 120 non-beneficiary respondents were thus sampled from this category to test for diffusion outside of the project parishes.

Enumerators based in the parishes were identified and trained to conduct the survey. Consideration was taken to ensure both neutrality and familiarity with the local language. Development of survey questionnaires and training of the enumerators was facilitated by a biometrician from the Faculty of Agriculture at Makerere University in Kampala Uganda. The survey was conducted in the last two weeks of September 2004. Analysis of data was done by a hired statistician, in consultation with the Project Leader, who has vast skills in data analysis.

3. Survey Findings

3.1. General Socio-Economic Information

General Socio-economic information was collected on both the beneficiaries and non-beneficiaries sampled. The following analysis presents a general background on the sample characteristics and the livelihoods strategies of people in the project area.

Distribution Of Sex Of Respondents

Table 1 Distribution of Sex of Respondents

Category	Male		Female		Total count
	Count	**%**	**Count**	**%**	
Beneficiaries	95	40	145	60	240
NB = Neighbours	66	55	54	45	120
NB = Parish	79	66	41	34	120

Findings indicate that of the respondents sampled and surveyed, 40% were male and 60% female. This was based on a random sample. However, it should be noted that the project was targeting to reach at least 50% women, and the overall project population is actually estimated to comprise about 52% female group members.
Figures for non-beneficiary parish clearly have more men. The lists used for sampling were those of household heads in the village. For non-beneficiaries neighbors, all neighboring households were listed and also picked at random.
Clearly among beneficiaries more women were represented but occurred by chance since the sampling was random. It does, however, tend to confirm the fact that the project actual reached more than 50% women.

Distribution Of Sex Of Household Head By Sex Of Respondent

Table 2a Sex of Household Head, Beneficiaries

Sex of resp	Male headed		Female headed		Total Beneficiaries
	Count	%	Count	%	
Male	94	99	1	1	95
Female	121	83	24	17	145

All resp	215	90	25	10	240

Table2b, Non beneficiaries-Neighbours

Sex of resp	Male headed		Female headed		Total Non-beneficiary Neighbours
	Count	%	Count	%	
Male	66	100	0	0	66
Female	44	81	10	19	54
All resp	110	92	10	8	120

Table 2c, Non beneficiaries- Parish

Sex of resp	Male headed		Female headed		Total Non-beneficiary Parish
	Count	%	Count	%	
Male	78	99	1	1	79
Female	33	80	8	20	41
All resp	111	93	9	8	120

Analysis of the distribution of sex of household head by sex of respondent shows that;

- For beneficiaries (table 2a), 90% of all respondents came from male-headed households and only 10% from female-headed households. 99% of male respondents came from male-headed households and only 1% from female-headed household. Meanwhile 83% of female respondents came from male-headed households and 17% from female-headed households.
- For non-beneficiary neighbors (table 2b) 92% of all respondents came from male-headed households and 8% from female-headed households. 100% of all male respondents came from male-headed households, while 81% of female respondents came from male-headed households & 19% from female-headed households.
- For non-beneficiary parish (table2c), 93% of all respondents came from male headed households; 7% from female headed households. 99% of the male respondents came from male headed household and only 1% from female headed households. 80% of female respondents came from male headed households and only 20% from female headed households.

It is clear that households in the communities in the project area are predominately male headed (92%) and few (8%) are female headed. About 81% of all females come from male-headed households and have no resources (production) of their own. so have to depend on what the head of the household offers.

Success of the project in a predominately male dominated setting is a sign of clear understanding of project by male heads or because these men are also members of the groups and group byelaws were very clear.

Distribution of Respondents by Education status

Table 3. Distribution of Education

	Beneficiaries		Non Beneficiaries	
Formal Education	Count	%	Count	%
Illiterate	39	16%	24	10%
Primary	126	53%	143	60%
Secondary	51	21%	53	22%

Tertiary	23	10%	18	8%
No information	1	0%	2	1%
	240	**100%**	**240**	**100%**

Findings indicate that 16% illiterates were reached by the project compared to the 10% proportion in the community. The largest proportion of both beneficiaries and non-beneficiaries is comprised of those that reached primary level with a slightly higher proportion among non-beneficiaries. The proportion of those who reached secondary and tertiary is almost similar for both categories.

This confirms that the composition of beneficiaries is generally representative of that of the community they live in and definitely more effort was put in reaching more poor households, the illiterate and primary categories, without leaving out the other categories. The secondary and tertiary categories play an important role and are instrumental in assisting with record keeping in the groups.

Household Composition

Table 4. Average Household Composition

Average Family composition	Beneficiary HH	Non Ben HH
part male child	0.12	0.06
part male youth	0.59	0.48
part male adult	1.37	1.22
part male elder	0.16	0.10
part female child	0.14	0.08
part female youth	0.71	0.53
part female adult	1.45	1.34
part female elder	0.08	0.10
non-part male child	1.18	1.18
non-part male youth	0.23	0.27
non-part male adult	0.17	0.11
non-part male elder	0.02	0.05
non-part female child	0.98	1.33
non-part female youth	0.27	0.26
non-part female adult	0.12	0.07
non-part female elder	0.06	0.08
Total HH	7.66	7.28

Summary composition	Beneficiary HH	Non Ben HH
Male child	1.30	1.24
male youth	0.83	0.74
Male adult	1.54	1.33
Male elder	0.18	0.15
Female child	1.13	1.42
Female youth	0.98	0.79
Female adult	1.57	1.41
female elder	0.14	0.18
Total HH	7.66	7.28
	Beneficiary HH	Non Ben HH
Male adult	1.54	1.33
Male dependents	2.30	2.14
Female Adult	1.57	1.41
Female dependents	2.25	2.39

Total HH	7.66	7.28
	Beneficiary HH	Non Ben HH
Dependency Ratio	1.46	1.65

	Beneficiary HH	Non Ben HH
Participating Adults	2.82	2.5649
Labor Equiv of Other part	0.84	0.64
Non part dependents	3.04	3.364
	6.69	6.569

Survey analysis indicates that the average size of the households in the project area is 8 (7.66 & 7.28) for both beneficiaries and non-beneficiaries, with the same proportion of males and females.

These households have on average 3 adults involved in faming activities, with low participation of children in farming activities (largely as a result of recent development in universaql primary education.) Each household has a labor force equivalent to 4 adults and on average has about 3 dependants. Generally there is low participation of children in farm work with apparently no difference between the female and male child. However, there is slightly more female labor compared to male labor. The trend is similar for both beneficiaries and non-beneficiaries though the latter group has slightly more dependants.

Apparently there is a small or low family labor force. This puts a lot of demands on the family labor at times of peak labor demand, especially during weeding and harvest. Thus requiring additional labour, which they have to hire or seek other alternatives; such as provide part of the harvest in exchange for labor. This was the case especially for groundnuts, which led to high informal distribution of the new varieties because many could not afford to pay cash for labor and workers requested payment in kind because the new varieties were highly prized.

Sources of household income

Table 5. Sources of Household Income

Sources of Income	2002						2004					
	Beneficiary			Non beneficiary			Beneficiary			Non beneficiary		
	count	%	Avg Rank	count	%	Avg Rank	count	%	Avg Rank	count	%	Avg Rank
Farming	240	100.0%	1.02	239	100%	1.03	239	99.6%	1.02	237	98.8%	1.03
Trade	26	10.8%	1.92	27	11%	1.93	26	10.8%	1.96	26	10.8%	1.96
Employment	26	10.8%	1.96	22	9%	1.91	28	11.7%	1.89	25	10.4%	1.72
Animal Rearing	10	4.2%	2.20	12	5.0%	2.25	14	5.8%	2.29	0	0.0%	-
Other Non-Farm	3	1.3%	2.00	1	0%	0.00	2	0.8%	2.00	3	1.3%	-

99.9% of households surveyed indicated farming as the major source of income including those who are involved in trade and the employed. Trade and employment come next, and are very close in rank. Unfortunately the enumerators did not make a clear distinction between formal employment and casual labour, so it is not possible to distinguish between the two in

the survey results. This is clearly a shortcoming in the data. The survey results also seem to indicate a very low involvement in non-farm income generating activities for both beneficiaries and non-beneficiaries. Practical experience however, would tend to indicate that this is likely to be more a reflection of the failure to probe adequately on the part of the enumerators, who simply accepted the response of farming as the main source of income without asking further.

Despite the weakness of the data, however, it is clear that households in the area are heavily dependent on farming for their rural livelihoods. This calls for efforts to make farming more profitable and productive if households are to earn more money. There is also need for interventions that minimize risk of crop failure to ensure stable rural incomes. High dependence on farming also has a direct effect on the availability of cash for farm inputs and farming operation and on land use and availability

Crop Contribution To Household Income

Table 6a. Cash Crop Priorities for Beneficiaries Before Project

Beneficiaries Before		Cassava	**Cotton**	**Gnuts**	**Other Legumes**	**Maize**	**Millet**	Rice	**Sorghum**	**Sweet Potato**
Kumi	total number	35	8	35	17	20	18	1	7	17
	Percent growing	58%	13%	58%	28%	33%	30%	2%	12%	28%
	Average Rank	2.0	1.4	2.0	2.9	1.3	2.2	3.0	3.7	1.8
Pallisa	total number	45	52	39	28	36	32	36	38	30
	Percent growing	75%	87%	65%	47%	60%	53%	60%	63%	50%
	Average Rank	4.3	1.8	3.8	7.0	5.2	3.6	3.2	4.0	6.5
Tororo	total number	50	11	38	29	48	48	22	26	29
	Percent growing	83%	18%	63%	48%	80%	80%	37%	43%	48%
	Average Rank	2.2	4.6	3.1	4.3	2.7	2.7	3.0	3.5	4.1
Mbale	total number	10	0	11	24	29	28	0	14	16
	Percent growing	33%	0%	37%	80%	97%	93%	0%	47%	53%
	Average Rank	3.0	0.0	4.0	2.6	1.5	2.9	0.0	3.8	4.3
Sironko	total number	6	24	24	30	29	19	0	0	5
	Percent growing	20%	80%	80%	100%	97%	63%	0%	0%	17%
	Average Rank	4.3	3.2	4.1	2.0	1.0	4.1	0.0	0.0	4.6
Overall	total number	146	95	147	128	162	145	59	85	97
	Percent growing	61%	40%	61%	53%	68%	60%	25%	35%	40%
	Average Rank	2.9	2.5	3.2	3.9	2.6	3.0	3.1	3.8	4.5
	Overall Rank	3	7	2	5	1	4	9	8	6

Table 6b. Cash Crop Priorities for Beneficiaries In 2004

Beneficiaries 2004		Cassava	**Cotton**	**Gnuts**	**Other Legumes**	**Maize**	**Millet**	Rice	**Sorghum**	**Sweet Potato**
Kumi	total number	30	1	45	12	21	12	3	4	21
	Percent growing	50%	2%	75%	20%	35%	20%	5%	7%	35%
	Average Rank	2.4	2.0	1.8	2.9	1.5	2.1	1.0	3.5	1.6
Pallisa	total number	40	44	39	27	32	30	35	39	32
	Percent growing	67%	73%	65%	45%	53%	50%	58%	65%	53%
	Average Rank	3.6	2.6	4.5	6.7	4.8	3.0	3.4	3.9	6.5
Tororo	total number	42	13	51	25	37	33	15	31	26
	Percent growing	70%	22%	85%	42%	62%	55%	25%	52%	43%
	Average Rank	2.6	4.0	2.8	4.6	3.1	2.1	3.2	3.0	4.0
Mbale	total number	10	1	27	24	22	24	0	12	13
	Percent growing	33%	3%	90%	80%	73%	80%	0%	40%	43%
	Average Rank	3.9	3.0	1.3	2.6	3.0	3.3	0.0	4.2	3.9
Sironko	total number	20	4	30	30	30	22	0	0	3
	Percent growing	67%	13%	100%	100%	100%	73%	0%	0%	10%
	Average Rank	4.4	4.5	2.9	2.1	1.0	4.3	0.0	0.0	5.0
Overall	total number	142	63	192	118	142	121	53	86	95
	Percent growing	59%	26%	80%	49%	59%	50%	22%	36%	40%
	Average Rank	3.2	3.0	2.7	3.9	2.8	2.9	3.2	3.6	4.3
	Overall Rank	2	7	1	4	2	3	8	6	5

Table 6c. Cash Crop Priorities for Non-Beneficiaries Before the Project

Non-Beneficiaries Before		**Cassava**	**Cotton**	**Gnuts**	**Other Legumes**	**Maize**	**Millet**	**Rice**	**Sorghum**	**Sweet Potato**
Kumi	total number	31	6	14	15	26	19	7	5	16
	Percent growing	52%	10%	23%	25%	43%	32%	12%	8%	27%
	Average Rank	2.0	1.2	2.1	2.4	1.5	1.9	1.1	3.0	1.3
Pallisa	total number	38	50	40	27	36	32	32	38	29
	Percent growing	63%	83%	67%	45%	60%	53%	53%	63%	48%
	Average Rank	4.1	1.9	4.0	7.2	3.9	3.5	4.4	4.2	6.4
Tororo	total number	43	13	35	34	43	43	20	24	18
	Percent growing	72%	22%	58%	57%	72%	72%	33%	40%	30%
	Average Rank	2.5	2.6	3.3	3.9	2.4	2.7	2.3	3.2	4.0
Mbale	total number	9	2	4	29	24	23	2	9	17
	Percent growing	30%	7%	13%	97%	80%	77%	7%	30%	57%
	Average Rank	4.1	3.0	3.8	1.9	1.5	3.0	3.0	4.2	4.3
Sironko	total number	13	22	15	30	30	10	0	0	3
	Percent growing	43%	73%	50%	100%	100%	33%	0%	0%	10%
	Average Rank	3.8	3.0	3.8	2.0	1.0	4.2	0.0	0.0	4.7
Overall	total number	134	93	108	135	159	127	61	76	83
	Percent growing	56%	39%	45%	56%	66%	53%	25%	32%	35%
	Average Rank	3.1	2.3	3.5	3.5	2.2	3.0	3.3	3.8	4.4
	Overall Rank	3	6	5	2	1	4	9	8	7

Table 6d. Cash Crop Priorities for Non-Beneficiaries In 2004

Non-Beneficiaries 2004		Cassava	Cotton	Gnuts	Other Legumes	Maize	Millet	Rice	Sorghum	Sweet Potato
Kumi	total number	18	1	19	18	24	11	9	1	23
	Percent growing	30%	2%	32%	30%	40%	18%	15%	2%	38%
	Average Rank	2.4	2.0	2.4	2.2	1.4	1.4	1.3	3.0	1.1
Pallisa	total number	32	32	35	27	36	32	33	33	31
	Percent growing	53%	53%	58%	45%	60%	53%	55%	55%	52%
	Average Rank	4.3	3.0	4.9	6.2	3.6	2.8	4.4	4.0	6.0
Tororo	total number	44	25	32	27	44	41	24	26	19
	Percent growing	73%	42%	53%	45%	73%	68%	40%	43%	32%
	Average Rank	2.9	3.2	3.1	3.8	2.7	3.0	2.7	3.3	4.5
Mbale	total number	9	2	6	28	20	20	2	9	19
	Percent growing	30%	7%	20%	93%	67%	67%	7%	30%	63%
	Average Rank	3.7	3.5	2.7	1.8	1.8	3.5	3.0	3.8	4.2
Sironko	total number	17	7	27	30	30	18	0	3	3
	Percent growing	57%	23%	90%	100%	100%	60%	0%	10%	10%
	Average Rank	3.9	3.9	3.1	2.0	1.0	4.3	0.0	4.7	5.0
Overall	total number	120	67	119	130	154	122	68	72	95
	Percent growing	50%	28%	50%	54%	64%	51%	28%	30%	40%
	Average Rank	3.4	3.2	3.5	3.2	3	3.1	3.4	3.7	4.1
	Overall Rank	4	9	5	2	1	3	8	7	6

Among crops grown for income i.e. cassava, cotton, groundnuts, legumes, maize, millet, rice, sorghum and sweet potato, only groundnuts clearly had a high positive overall increase of 19% of people growing it for income. The rest of the crops clearly declined.

Groundnuts also had its ranking as a source of income move from 2nd place to 1st place among beneficiaries, however it maintained at 5th place among non-beneficiaries.

The increase in groundnuts is clearly a result of project intervention, although we do note that the percentage of households growing the crop for income before this project was not the same for beneficiaries as non-beneficiaries. The difference in the starting point is believed to be the result of earlier project group demonstration activities on groundnut production. The demonstrations were supplemented by training in Farming as A Business (FAAB), which analyzed the returns to various crops and helped farmers to realize how profitable groundnut production could be.

The steady rise throughout the project area can be attributed to introduction of new varieties to the beneficiaries. However, among non-beneficiaries there was also a significant increase in numbers growing the resistant varieties in Sironko. This could be due to a slump in prices of other key crops grown (maize & beans) while groundnuts, which were a relatively new crop in the area, became more profitable.

Each district clearly has its own combination of major crops grown for income. It can be seen however, by the improved average ranking, that groundnuts is clearly gaining importance as a source of income in the project area.

Land Area Cultivated

Table 7. Average Land Area Cultivated

Area of land cultivated	Beneficiary				Non-Beneficiary			
	2001		2004		2001		2004	
	Count	%	Count	%	Count	%	Count	%
<.5 acres	1	0.4%	1	0.4%	7	2.9%	8	3.3%
.5-1 acres	15	6.3%	6	2.5%	29	12.1%	21	8.8%
1-3 acres	121	50.4%	96	40.0%	99	41.3%	104	43.3%
>3-5 acres	86	35.8%	90	37.5%	81	33.8%	72	30.0%
>5 acres	15	6.3%	44	18.3%	21	8.8%	34	14.2%
no data	2	0.8%	3	1.3%	3	1.3%	1	0.4%
Total	240	100.0%	240	100.0%	240	100.0%	240	100.0%
Overall Average	3.23 acres		3.91acres		3.24 acres		3.54 acres	

For beneficiaries the area cultivated generally increased over the life of the project for many households. The majority, however fall in the category of "1 to 3 acres" with the next largest category having "more than 3 to 5 acres". A significant proportion (12%) moved to the category of more than 5 acres, leading to a reduction in the number falling into the category of 0.5 to 1 acres. The average area cultivated increased from 3.23 acres in 2001 to 3.91 acres in 2004.

However, non-beneficiaries report a higher proportion with "less than1 acre", at 15% in 2001 with a decline to 12 % in 2004. This is on the upper side compared to 6.7% for beneficiaries. The trend for other categories is similar to that of the beneficiaries. The average land size for this group only increased from 3.24 to 3.54 acres in 2004 – a much smaller increase than for beneficiaries.

The average area cultivated indicates both labour and land limitations. This may be part of the reason for the reduction in the quantities of seed distributed per beneficiary from the original 4 basins at the start (enough to plant half acre) to between 1 to 3 basins at the end of the project. The quantities given to each beneficiary is also affected however, by the desire to make sure all group members receive in good time. There is also a difference in the relative importance attached to groundnuts as a cash crop in some areas. For example, groundnuts are less well established in Sironko and Mbale where beans and maize are the key cash crops.

Crop Contribution To Household Income In Terms Of Areas Under Crop

Table 8a. Cropping Pattern for Beneficiaries Before the Project

Beneficiaries Before		Beans	Cassava	cotton	Gnuts	Maize	Millet	Potatoes	Sorghum
Kumi	total number	10	55	9	47	25	24	18	11
	Percent growing	16.7%	91.7%	15.0%	78.3%	41.7%	40.0%	30.0%	18.3%
	Average Rank	3.4	2.2	2.1	1.9	3.0	2.3	2.8	3.8
Pallisa	total number	13	43	47	41	24	39	18	43
	Percent growing	21.7%	71.7%	78.3%	68.3%	40.0%	65.0%	30.0%	71.7%
	Average Rank	4.4	2.6	2.4	3.5	3.5	2.7	4.3	3.2
Tororo	total number	19	49	5	40	47	48	26	25
	Percent growing	31.7%	81.7%	8.3%	66.7%	78.3%	80.0%	43.3%	41.7%
	Average Rank	4.0	2.2	4.0	3.4	2.8	2.0	3.6	3.3
Mbale	total number	25	11	0	11	29	28	18	13
	Percent growing	83.3%	36.7%	0.0%	36.7%	96.7%	93.3%	60.0%	43.3%
	Average Rank	2.4	3.0	0.000	4.0	1.6	2.8	4.3	3.9
Sironko	total number	30	7	23	23	30	18	5	0
	Percent growing	100.0%	23.3%	76.7%	76.7%	100.0%	60.0%	16.7%	0.0%
	Average Rank	2.1	4.0	3.2	3.9	1.1	4.2	4.6	0.000
Overall	total number	97	165	84	162	155	157	85	92
	Percent growing	40%	69%	35%	68%	65%	65%	35%	38%
	Average Rank	3.0	2.5	2.7	3.1	2.4	2.6	3.8	3.4
	Overall Rank	4	1	6	2	3	3	6	5

Table 8b. Cropping Pattern for Beneficiaries In 2004

Beneficiaries 2004		Beans	Cassava	cotton	Gnuts	Maize	Millet	Potatoes	Sorghum
Kumi	total number	4	50	11	58	23	18	23	11
	Percent growing	6.7%	83.3%	18.3%	96.7%	38.3%	30.0%	38.3%	18.3%
	Average Rank	4.5	2.5	3.5	1.6	2.6	2.4	2.7	3.3
Pallisa	total number	11	40	39	49	22	36	27	41
	Percent growing	18.3%	66.7%	65.0%	81.7%	36.7%	60.0%	45.0%	68.3%
	Average Rank	4.6	3.0	2.5	3.6	3.5	2.4	4.0	2.5
Tororo	total number	15	42	13	56	38	37	21	26
	Percent growing	25.0%	70.0%	21.7%	93.3%	63.3%	61.7%	35.0%	43.3%
	Average Rank	4.3	2.5	3.5	2.7	2.8	2.0	3.8	3.1
Mbale	total number	28	12	1	27	24	24	14	13
	Percent growing	93.3%	40.0%	3.3%	90.0%	80.0%	80.0%	46.7%	43.3%
	Average Rank	2.6	0.000	3.0	1.1	2.9	3.4	4.4	4.2
Sironko	total number	30	19	4	30	30	22	5	1
	Percent growing	100.0%	63.3%	13.3%	100.0%	100.0%	73.3%	16.7%	3.3%
	Average Rank	2.1	4.3	4.8	3.0	1.1	4.3	4.4	5.0
Overall	total number	88	163	68	220	137	137	90	92
	Percent growing	37%	68%	28%	92%	57%	57%	38%	38%
	Average Rank	3.1	2.7	3.0	2.5	2.5	2.8	3.7	3.0
	Overall Rank	6	2	7	1	3	3	5	4

Table 8c. Cropping Pattern for Non-Beneficiaries Before the Project

Non-Beneficiaries Before		Beans	Cassava	Cotton	Gnuts	Maize	Millet	Potatoes	Sorghum
Kumi	total number	7	49	7	32	28	26	20	15
	Percent growing	11.7%	81.7%	11.7%	53.3%	46.7%	43.3%	33.3%	25.0%
	Average Rank	3.6	1.7	2.4	2.7	2.4	2.4	1.8	4.0
Pallisa	total number	3	50	44	37	28	42	18	44
	Percent growing	5.0%	83.3%	73.3%	61.7%	46.7%	70.0%	30.0%	73.3%
	Average Rank	4.7	3.3	2.6	3.0	3.1	2.2	4.2	3.1
Tororo	total number	22	43	14	35	44	43	17	20
	Percent growing	36.7%	71.7%	23.3%	58.3%	73.3%	71.7%	28.3%	33.3%
	Average Rank	3.6	2.3	3.2	3.3	2.5	2.5	3.1	3.1
Mbale	total number	29	8	2	4	28	23	19	10
	Percent growing	48.3%	13.3%	3.3%	6.7%	46.7%	38.3%	31.7%	16.7%
	Average Rank	1.8	3.8	3.0	3.8	1.5	3.3	4.4	4.1
Sironko	total number	28	13	22	16	30	11	3	0
	Percent growing	93.3%	43.3%	73.3%	53.3%	100.0%	36.7%	10.0%	0.0%
	Average Rank	2.1	3.6	3.1	0.000	0.000	0.000	0.000	0.000
Overall	total number	89	163	89	124	158	145	77	89
	Percent growing	37%	68%	37%	52%	66%	60%	32%	37%
	Average Rank	2.6	2.6	2.8	2.7	1.9	2.3	3.2	3.4
	Overall Rank	5	1	6	4	2	3	8	7

Table 8d. Cropping Pattern for Non-Beneficiaries In 2004

Non-Beneficiaries 2004		Beans	Cassava	Cotton	Gnuts	Maize	Millet	Potatoes	Sorghum
Kumi	total number	10	48	0	48	29	19	24	16
	Percent growing	16.7%	80.0%	0.0%	80.0%	48.3%	31.7%	40.0%	26.7%
	Average Rank	3.8	1.9	0.0	2.6	1.9	3.3	1.8	3.4
Pallisa	total number	10	45	0	47	30	40	14	45
	Percent growing	16.7%	75.0%	0.0%	78.3%	50.0%	66.7%	23.3%	75.0%
	Average Rank	4.7	3.1	0.0	3.4	3.1	2.0	4.1	2.8
Tororo	total number	21	42	1	33	41	37	17	21
	Percent growing	35.0%	70.0%	1.7%	55.0%	68.3%	61.7%	28.3%	35.0%
	Average Rank	3.7	2.4	4.0	3.1	2.5	2.9	3.5	2.9
Mbale	total number	28	7	0	6	25	21	19	11
	Percent growing	46.7%	11.7%	0.0%	10.0%	41.7%	35.0%	31.7%	18.3%
	Average Rank	1.8	3.6	0.0	3.3	1.5	3.4	4.2	3.9
Sironko	total number	28	16	0	25	30	20	6	2
	Percent growing	93.3%	53.3%	0.0%	83.3%	100.0%	66.7%	20.0%	6.7%
	Average Rank	2.1	3.8	0.0	0.000	0.000	0.000	0.000	0.000
Overall	total number	97	158	1	159	155	137	80	95
	Percent growing	40%	66%	0.4%	66%	65%	57%	33%	40%
	Average Rank	2.8	2.6	4.0	2.5	1.9	2.3	3.0	3.0
	Overall Rank	5	2	8	1	3	4	7	6

For both beneficiaries and non-beneficiaries overall groundnuts have assumed the 1st position in terms of area under the crop compared to other crops grown. The rest have slightly declined or remained the same.

The ranking also groundnuts improved as it declined for other crops. The ranking of area under crop for groundnuts moved from 4th to 1st place and from 2nd to 1st place among non-beneficiaries and beneficiaries respectively.

(There is apparently also a marked percentage increase for other crops promoted by AT Uganda's LIFE project. These include cassava, beans, millet, and sorghum). Groundnuts seems to have assumed more importance in Sironko and Mbale, which are predominantly maize and bean growing areas. Increased acreage devoted to a crop indicates a gain in importance for that crop, thus groundnuts is becoming more important throughout the project area.

Consumption of Groundnuts

Table 9. Changes in Staple Food Consumption for Beneficiaries and Non-beneficiaries

Staple Food Consumption	2002				2004			
	Beneficiary		Non beneficiary		Beneficiary		Non beneficiary	
Rating of Main Types of Sauce Consumed	Avg Rating	Overall Rank	Avg Rating	Overall Rank	Avg Rating	Overall Rank	Avg Rating	Overall Rank
Greens (without Gnuts)	1.71	1	1.55	1	1.85	1	1.63	1
Beans (without Gnuts)	1.87	2	1.73	2	1.93	4	1.77	2
Gnuts in combination with greens, legumes or meat	2.02	3	2.18	3	1.85	1	2.08	3
Groundnuts alone (binyewa)	2.08	4	2.25	5	1.89	3	2.13	4
Fish (without Gnuts	2.13	5	2.18	3	2.07	5	2.14	5
Meat (without Gnuts)	2.44	6	2.47	6	2.34	6	2.42	6
Chicken (without Gnuts)	2.79	7	2.86	7	2.75	7	2.80	7
Cowpeas (without Gnuts)	2.98	8	2.93	8	3.05	8	2.96	8
Green grams (without Gnuts)	3.48	9	3.47	9	3.44	9	3.44	9

Note a rating of 1= Eaten Daily, 2= Frequently (2-3 times/week) 3= Occasionally, 4=rarely or never

Findings indicate that before the project groundnuts was consumed by most households in the project area, both beneficiary and non-beneficiary. Beans and greens without groundnuts and groundnuts in combination with other foods were the main sauces.

The trend has remained the same for non-beneficiaries, however, there is an improvement on the trend for beneficiaries with increased consumption of groundnuts in combinations with other foods and also increased consumption of groundnuts alone. Beans, cowpeas, and groundnuts clearly are a major plant protein source for most households as animal protein foods are rarely eaten except for fish.

The increase consumption can be attributed to greater availability of groundnuts as a result of increased production from the improved rosette resistant and drought tolerant varieties.

3.2. Training

Training formed a major part of the multiplication process. This was necessary to ensure that knowledge and skills for high production and seed quality are imparted to the beneficiaries. Beneficiary training was conducted at various levels by the extension staff (referred in the document as Farmer Participatory Research Assistants or FPRAs), the Parish Development Committees (PDC's) and Group Production Committees (PCs).

Sources Of Information On Groundnut Production

Table 10a. Sources of Information on Groundnut Production for Beneficiaries

	FPRA		Prod Committee		PDC		Other Farmers		Brochures	
District	Count	%	Count	%	Count	%	Count	%	Count	%
Kumi	-39	65%	-17	28%	-15	25%	-7	12%	-2	3%
Pallisa	-39	65%	-22	37%	-1	2%	-12	20%	0	0%
Tororo	-56	93%	-49	82%	-46	77%	-2	3%	-3	5%
Mbale	-5	17%	-20	67%	-5	17%	0	0%	0	0%
Sironko	-16	53%	-14	47%	0	0%	0	0%	0	0%

Table 10b. Sources of Information on Groundnut Production For Non-Beneficiaries by Type of Respondent

	FPRA		Prod Committee		PDC		Other Farmers		Brochures	
District	nbn	nbp	nbn	nbp	nbn	nbp	Nbn	nbp	nbn	nbp
Kumi	20%	10%	0	0	0	0	57%	73%	0	3%
Pallisa	0	3%	3%	0	3%	0	80%	77%	0	0
Tororo	10%	7%	3%	3%	3%	3%	10%	23%	0	3%
Mbale	0	0	13%	0	7%	0	0	0	0	0
Sironko	0	0	0	0	0	0	93%	53%	0	0

(nbn= Neighbours, nbp = Parish)

Respondents were asked to identify the most important sources of information that helped them improve their groundnut production. Analysis of the data indicates that;

- ✓ FPRAs were the main source of information on groundnut production, followed by production committees (PCs) who are members of groups and then the PDCs.
- ✓ The high response given in Tororo is due to the fact that the FPRAs in the two sub-counties surveyed are not employed elsewhere and might have had more time to interact with farmers unlike in other sub-counties where FPRA s are also fulltime Government extension staff.
- ✓ The low response from Mbale is likely to be due to high level of delegation of training responsibility from the FPRA to the PDCs and PCs. Clearly production committees who play the role of contact farmers and group trainers and PDCs (local leaders) played an important role in promoting information flow on groundnut production. These are structures of local leadership that were put in place to ensure continuity of service delivery to communities in the absence of FPRAs and after project
- ✓ Low PDC participation in Pallisa and Sironko reflects the weakness of these structures in the sub counties surveyed.
- ✓ In Kumi, Pallisa and Tororo which happened to be groundnut growing areas other farmers, were another source of information. This also reflects the importance of the crop in those areas (see table 8b&8d). In such areas more information on the crop is available.
- ✓ Use of printed material is apparent low, with only 2 districts having responses indicating brochures as source of information on groundnuts. This raises questions on appropriateness of the use of the brochures, which where distributed to all beneficiaries.

This seems to indicate that community based trainers (PC) and other local leaders are an effective way of passing on information to other farmers. It also confirms that local leaders were trained and are working to ensure that others get trained.

Attendance Of Trainings By Beneficiaries

Table 11. Training Attendance by Beneficiaries and Non-Beneficiaries

Attendance by Beneficiaries

	Beneficiary		
District	Count	%	Shared Information?
Kumi	53	88%	68%
Pallisa	49	82%	48%
Tororo	59	98%	87%
Mbale	30	100%	100%
Sironko	30	100%	20%

Attendance by Non-Beneficiaries

	Neighbours		Parish	
District	Count	%	Count	%
Kumi	4	7%	3	5%
Pallisa	2	3%	0	0%
Tororo	3	5%	4	7%
Mbale	3	10%	0	0%
Sironko	0	0%	0	0%

- ✓ Table 11 above shows that beneficiary attendance of organized trainings was very high for all the districts. 93.6% of the beneficiaries attended. That might explain the high level of adoption for most recommended practices. The percentage also agrees with the adoption rates reported by the districts, with Mbale and Sironko having the highest. Using these percentages, the projected estimate is that a total of 4,066 beneficiaries were trained. This clearly exceeds the project target of training 2,000 farmers.
- ✓ Findings also a significant level of information sharing. This helps to explain the adoption rates recorded among non-beneficiaries, indicating they might have accessed information through informal contact with Beneficiary farmers.
- ✓ The analysis also shows that other farmers who are non beneficiaries had very few alternative training opportunities.

Organization of Training

Table 12. Who Organized Training?

Beneficiaries									Non-Beneficiaries									
District	FPR		Prod Committee		PDC		NAADS		FPR		Prod Committee		PDC		NAADS		Other	
	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%
Kumi	-43	72%	-12	20%	-19	32%	0	0%	-4	7%	-1	2%	-1	2%	-1	2%	-1	2%
Pallisa	-41	68%	-14	23%	-1	2%	0	0%	0	0%	-2	3%	0	0%	0	0%	0	0%
Tororo	-53	88%	-43	72%	-52	87%	-5	8%	-3	5%	-1	2%	-1	2%	-2	3%	-1	2%
Mbale	-3	10%	-13	43%	-16	53%	0	0%	0	0%	-2	7%	-1	3%	0	0%	0	0%
Sironko	-16	53%	-15	50%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%

Again the survey reveals that among beneficiaries most trainings were organized by FPRAs and others by PCs and PDCs this seems to confirm the response on source of information on table 11 and the trend is the same.

This confirms that training, took place and the role played by the FPRAs, local leaders (PDCs) and contact farmers (PCs) in training.

The indication of NAADs in Tororo is true as one of the surveyed sub-counties is also under the NAADs programme The few responses on other organisers also indicates a low presence of other actors in the project area so the project was the main source of production information and training.

For non-beneficiaries table 12 suggests that the few who attended trainings actually attended training organized by the project through FPRA, PDCs, PCs. This is possible since the trainings were not restricted to beneficiaries only. This is further supported by the almost non existence of training organized by others as indicated by the non beneficiary responses.

The low proportions attending training also might indicate that there were a few interested farmers in the communities who wanted to benefit from the project, while others or did not bother since they were not part of the lined up beneficiaries.

Table 13. Ideas from Training

	Beneficiaries		Non-beneficiaries	
New ideas from training	Count	%	Count	%
Spacing	137	57%	17	7%
Row cropping	30	13%	8	3%
Storage & drying	86	36%	12	5%
Land prep & soil fertility	60	25%	12	5%
Planting	60	25%	14	6%
Weeding	76	32%	7	3%
Site selection	36	15%	5	2%
Improved production	46	19%	4	2%
Disease & pest control	39	16%	2	1%
Test for maturity	23	10%	5	2%
Savings	7	3%	0	0%
Marketing	11	5%	1	0%
Post Harvest handling	9	4%	6	3%
Varieties	6	3%	3	1%
Others	5	2%	1	0%
No answer	3	1%	45	19%
Total	**634**	264%	**97**	40%

Analysis of responses from beneficiaries shows many responses received in the areas of site selection, land preparation, soil fertility measures, planting, weeding, spacing, row cropping, storage and drying, disease and pest control, testing for maturity, varieties and post harvest handling. Of these areas the highest response of learning is in spacing with 57%, this is confirmed by the marked difference in adoption rates for spacing reported among beneficiaries and non-beneficiaries. The training seems to have helped the beneficiaries

Proper storage, drying and weeding were the other areas frequently mentioned with 36% and 32% respectively. Land preparation, soil fertility and planting also had 25%. These are areas critical for high production of quality seed. Beneficiaries also seemed to have reflected on trainings on savings and marketing received from AT Uganda in a previous project.

Clearly more beneficiaries were exposed to training as compared to non-beneficiaries this is based on the number and nature of responses given. The ideas learnt from training relate closely to adoption rates for recommended practices presented below (see table 14). The fact

that more responses were received from beneficiaries also suggests greater exposure to the training as compared to non-beneficiaries. In summary the training must have been relevant

ADOPTION OF RECOMMENDED PRACTICES

The following table illustrates the adoption of improved production practices taught in the training.

Table 14. Adoption of Improved Production Practices

Practice	Rating	Kumi Ben	Kumi Non-ben	Pallisa Ben	Pallisa Non-ben	Tororo Ben	Tororo Non-ben	Mbale Ben	Mbale Non-ben	Sironko Ben	Sironko Non-ben
Site selection	1	98%	90%	98%	90%	93%	67%	100%	43%	100%	7%
	2	2%	3%	0%	2%	0%	3%	0%	0%	0%	77%
	3	0%	0%	0%	0%	5%	2%	0%	0%	0%	7%
Land preparation	1	98%	93%	95%	90%	97%	72%	100%	43%	100%	90%
	2	0%	0%	3%	2%	2%	0%	0%	0%	0%	0%
Timely planting	1	98%	93%	97%	90%	92%	67%	100%	43%	100%	90%
	2	0%	0%	2%	2%	3%	3%	0%	0%	0%	0%
	3	0%	0%	0%	0%	3%	2%	0%	0%	0%	0%
Spacing	1	75%	28%	82%	12%	92%	17%	100%	23%	93%	0%
	2	22%	58%	8%	10%	2%	15%	0%	0%	7%	10%
	3	2%	7%	8%	70%	5%	40%	0%	20%	0%	80%
Improved variety	1	97%	72%	83%	42%	98%	28%	100%	13%	100%	17%
	2	0%	15%	5%	3%	0%	7%	0%	0%	0%	7%
	3	0%	7%	10%	47%	0%	37%	0%	30%	0%	67%
Weed control	1	85%	73%	83%	80%	92%	47%	97%	43%	100%	90%
	2	13%	20%	15%	12%	5%	23%	0%	0%	0%	0%
	3	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%
Pest control	1	58%	65%	62%	58%	28%	37%	97%	23%	100%	0%
	2	38%	27%	17%	7%	37%	12%	0%	0%	0%	13%
	3	2%	2%	20%	27%	32%	23%	0%	20%	0%	77%
Fertilizer use	1	22%	28%	47%	5%	15%	7%	97%	20%	100%	0%
	2	27%	22%	15%	15%	23%	12%	0%	3%	0%	0%
	3	48%	43%	37%	72%	60%	53%	0%	20%	0%	90%
Timely harvest	1	92%	90%	98%	92%	92%	70%	97%	43%	100%	0%
	2	7%	3%	0%	0%	2%	2%	0%	0%	0%	83%
	3	0%	0%	0%	0%	2%	0%	0%	0%	0%	7%
Proper drying	1	97%	93%	90%	88%	92%	67%	97%	43%	100%	77%
	2	2%	0%	7%	3%	2%	3%	0%	0%	0%	0%
	3	0%	0%	0%	0%	2%	2%	0%	0%	0%	13%
Proper storage	1	88%	93%	88%	87%	92%	62%	97%	43%	100%	77%
	2	0%	0%	3%	0%	0%	5%	0%	0%	0%	3%
	3	0%	0%	0%	0%	2%	2%	0%	0%	0%	7%

Nb 1 means fully adopts /follows. 2 = not fully, follow/adopt but with modification
3 = not follow/adopt at all

Table 14 indicates a very high level of adoption for most practices by beneficiaries. For site selection, land preparation, timely planting, use of improved varieties, spacing, weed control, timely harvest, proper drying and storage it was at 75-100% with the rest of the beneficiaries adopting with slight modifications.

Except for Mbale and Sironko which had a high adoption of pests control measures and soil fertility improvement at 97 – 100%, the rest of the districts ranged from 28 – 66% for pest control, with a high level of adoption with modifications standing at 17 – 38% and non adoption at 2 – 32%. The adoption of soil fertility measures is even much lower in Kumi Pallisa and Tororo at 15 – 47%. Adoption with modification stands at 23 to 27% and non adoption standing at 37 to 60%.

The findings for non-beneficiaries generally indicate better adoption for site selection, land preparation, timely planting, weed control, proper drying and storage at between 62 to 93%. However, adoption of spacing is very low at 0 to 28%, with also a low adoption with modifications at 0 to 58% and a high level of non-adoption standing at between 7 to 80%.

Clearly full adoption of pests control measures is fairly high in Kumi, Pallisa and lower in Tororo & Mbale. The level of non-adoption is quite high. The trend is similar for soil fertility measures but with much lower adoption.

It is quite clear that for beneficiaries training in the area of spacing was useful in promoting adoption while the high use of improved varieties can be attributed to access to improved varieties supplied by the multiplication activities of the project. However, non -beneficiaries didn't have both opportunities

Where use of money is required to facilitate adoption, this is clearly low. This is clear evidence of cash limitation among rural farmers. This could be the case as most beneficiaries targeted are from the poor segment of the community. Generally it is the same for non-beneficiaries too but the adoption with modification among beneficiaries is higher suggesting that the knowledge from the training was utilized despite capital limitations.

Diffusion Of Adoption Of Recommended Production Practices

Table 15. Diffusion of Adoption of Improved Production Practices

Practice	Rating	% Beneficiaries	% Neighbours	% Parish
1. Site selection	Adopting	97.5%	81.5%	86.3%
1. Site selection	Partial	0.4%	18.5%	10.8%
2. Land preparation	Adopting	97.5%	100.0%	99.0%
2. Land preparation	Partial	1.3%	0.0%	1.0%
3. Timely planting	Adopting	96.7%	96.7%	99.0%
3. Timely planting	Partial	1.3%	2.2%	1.0%
4. Spacing	Adopting	86.3%	19.6%	22.5%
4. Spacing	Partial	8.8%	31.5%	23.5%
5. Improved variety	Adopting	94.6%	52.2%	45.1%
5. Improved variety	Partial	1.3%	9.8%	7.8%
6. Weed control	Adopting	89.6%	80.4%	84.3%
6. Weed control	Partial	8.3%	18.5%	15.7%
7. Pest control	Adopting	61.7%	55.4%	51.0%
7. Pest control	Partial	22.9%	16.3%	15.7%
8. Fertilizer use	Adopting	45.4%	16.3%	14.7%
8. Fertilizer use	Partial	16.3%	15.2%	15.7%
9. Timely harvest	Adopting	95.0%	82.6%	86.3%
9. Timely harvest	Partial	2.1%	17.4%	11.8%
10. Proper drying	Adopting	94.2%	97.8%	93.1%
10. Proper drying	Partial	2.5%	2.2%	2.0%
11. Proper storage	Adopting	91.7%	92.4%	94.1%
11. Proper storage	Partial	0.8%	1.1%	2.9%

High levels of full adoption are observed for site selection, land preparation, timely planting, weed control, timely harvest, proper drying and storage, with percentage of full adoption ranging from 80.4% to 100%. Adoption from beneficiaries is slightly higher at 89.6% to 97.56% than reported for neighbours to beneficiaries at 80.4 to 100%, and non-beneficiaries in other parish at 84.3 to 99%

However, a big variation is observed in spacing, with beneficiaries at 86.3% while neighbours are at 19.6% and non-beneficiary parish at 22.5%.

The high level among beneficiaries can be attributed to training, this is indicated by the high score given to spacing as one of the ideas learnt. However, there seems to be no diffusion to non-beneficiaries as spacing and row cropping are linked and most farmers find row cropping of closely spaced crops tedious. This was also expressed as a challenge by a few respondents (see table…).

Diffusion of improved varieties is higher for neighbours compared to those in the non-beneficiary parish This agrees with the analysis of source of varieties showing that (see table …) more neighbours were able to access the new varieties from the beneficiaries compared to non-beneficiaries in the other parish. However, the relatively high adoption for both categories is due to red beauty, a susceptible improved variety and Igola1.

Diffusion of Pest control seems likely to be very insignificant since the difference between beneficiaries and non-beneficiaries are small. The general low level compared to other

practices can be attributed to requirement for cash to implement control measures yet income is low among rural farmers .However it should be borne in mind that beneficiaries were helped by use of rosette resistant varieties. However, the issue is also expressed as a challenge in groundnut production (see table 37).

Adoption of use of soil fertility measures is lowest for both beneficiaries and all non-beneficiaries as compared to other practices, which might also indicate insignificant diffusion adoption or none at all. The reason could still be due to low incomes and need for cash if adoption is to take place.

Generally diffusion of adoption seems to be low and only in the area of use of improved seed. Since the rest cannot be directly attributed to project.

Benefits From Training

Table 15 Benefits from Training

Benefits	**Beneficiaries**		**Non-beneficiaries**	
	Count	%	Count	%
High yield	180	75%	51	21%
Increased income	58	24%	3	1%
Food security	40	17%	3	1%
Improved methods save labor	18	8%	12	5%
Better health & nutrition	7	3%	3	1%
Knowledge/skills	34	14%	18	8%
None	5	2%	5	2%
No answer	41	17%	178	74%
Total	**342**	143%	**95**	40%

Higher yields is clearly the main benefit for beneficiaries. All the other responses mentioned are directly linked to it.

Figure 1 Change in Groundnut Varieties Grown Over Time

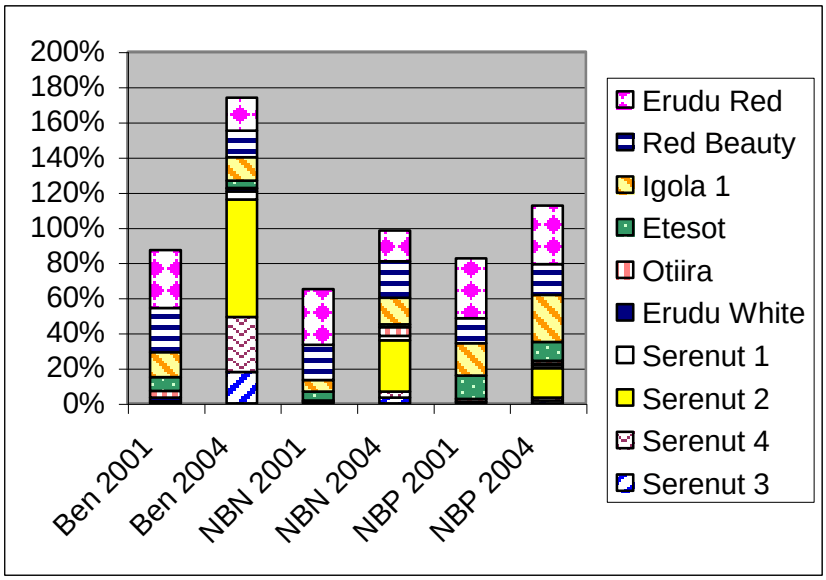


Figure 2 Sources of Seed for Beneficiaries

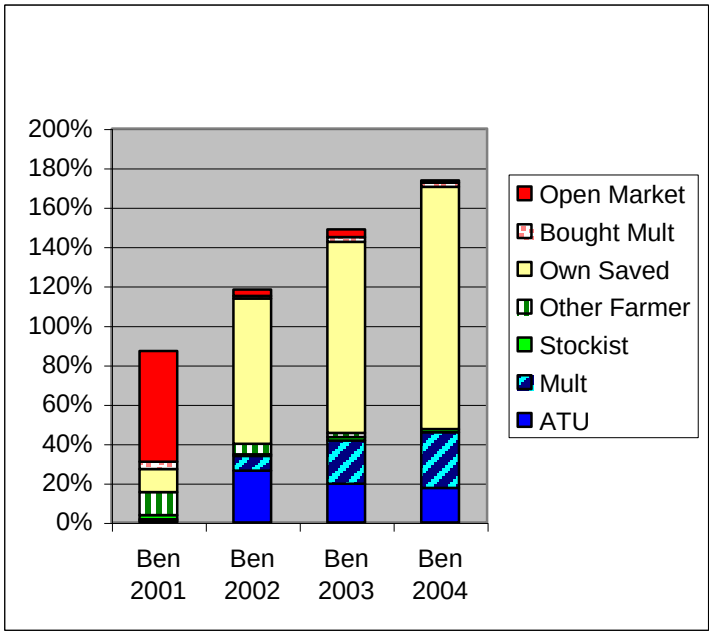
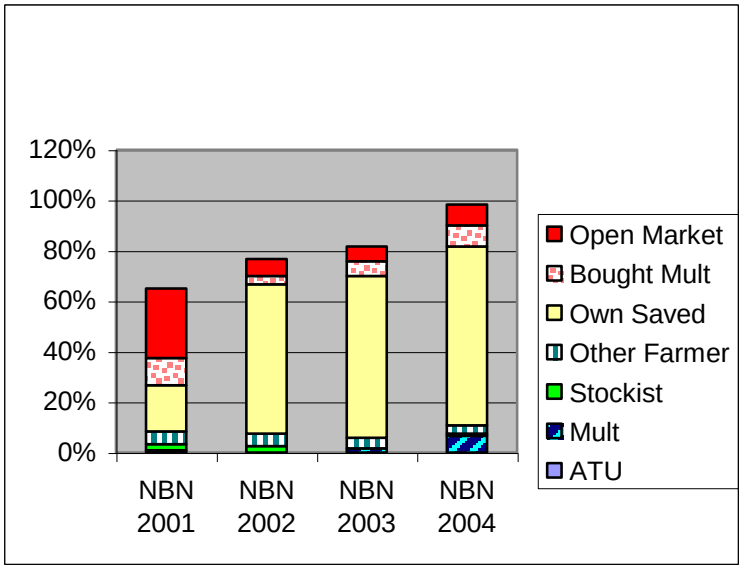


Figure 4 Sources of Seed for Non Beneficiaries in the Neighborhood



3.3. Multiplication

Small quantities of foundation seed of improved varieties resistant to rosette disease namely Serenut 2, 3, and 4 were given to beneficiaries to multiply with each having an obligation to return twice the amount of seed received for redistribution to others. This would ensure quantities increase and go round to many people.

Findings from beneficiaries (figure 1 above) indicate that before the project none of the varieties promoted by the project was being grown. The only rosette resistant variety grown was Igola1. The other varieties grown were mainly the red seeded local varieties especially Erudu Red and a susceptible improved variety Red Beauty, and some tan ones. The Project introduced Serenut 2 in 2002 and Serenut 3 and 4 in 2003 and 2004. From then the number of farmers growing them has increased dramatically. (Other varieties reported as obtained from the project were supplied in an earlier project for on farm trials.)

For sources of these varieties (figure 2 above), it is clear that Serenut 2,3 and 4 were basically introduced by the Project and deliveries were made each year right from 2002 to 2004. Other sources of seed for farmers are their own home saved seed and purchases from open market. The trend for use of home saved seed is continually rising from 13% in 2001 to 71% in 2004. This also indicates high retention of new varieties for replanting.

The number of farmers accessing seed from their groups also increased from 6% to 17.5% in 2004 showing that multiplied varieties are being redistributed. It is also clear that very few farmers buy seed from Stockists and from other farmers. A few farmers reported buying the improved varieties from ATU groups, though the numbers are still very low. This could be due to the fact that group members expected to benefit from the material given by the project.

The percentage of farmers growing Red Beauty and Erudu Red, which are susceptible to rosette, is generally declining though still high. However, Igola1 is generally stable maybe because it is resistant to rosette. The strategy here may be to ensure that both food and cash

needs are taken care of, since the red varieties are preferred for certain segments of the market.

Access to introduced varieties by beneficiaries increased from 29.5% in 2002 to 59.5% in 2004.
For non-beneficiaries (figure 3 above) by 2001 most varieties grown were not resistant to rosette disease, Red beauty and Erudu Red being the major ones. The only rosette variety was Igolal1. Serenut 2 was introduced in 2002 while Serenuts 3,and 4 were only introduced later in 2004 with only very few accessing the resistant varieties compared to the beneficiaries. *This seem to follow the pattern of multiplication by the beneficiaries, implying that the other farmers were actually getting these varieties from the beneficiaries.*

Considering the sources of seed for non-beneficiaries, most used home saved seed. The percentage increased from 24% in 2001 to 82% in 2004 slightly above 79%. There was comparatively a higher purchase of seed from multiplication farmers and other farmers at 3.6% to 4.5% maybe because they had no chance to get through the project arrangement or because they appreciated the varieties. A number of them 15% also got new varieties freely through participating groups in 2004, indicating that the spread to previously non-beneficiary farmers has begun. This trend is expected to continue as the volume of multiplication materials continues to grow.

From 2003 Serenut 2 steadily increased. There was an increasing number growing Igola1, rising from 30% in 2001 to 52% in 2004, while the rosette susceptible varieties (Red Beauty & Erudu red) declined though the number growing remained high especially for Erudu red. Non-beneficiaries neighbors have accessed more rosette resistant varieties introduced by the project as compared to those in the non-beneficiaries from another parish. Those farther from the project exhibit an increased number growing Igola1 as a strategy to minimize risk of crop failure due to Rosette.

Generally farmers have continued to grow the more marketable susceptible varieties Red Beauty & Erudu Red alongside the rosette resistant varieties to balance the demand for cash and food which is sure with rosette resistant varieties. This also confirms the findings of the variety assessment on table 16 below

The overall findings indicate that more farmers have been able to access-improved rosette resistant varieties through the project compared to other members of the same communities, who were not specifically targeted. It is also obvious that most farmers use home saved seed (and therefore promoting or emphasizing purchase through Stockists may not be the best option.) This is also justified by the high seed rate of groundnuts which necessitates a high cash investment in order to purchase certified seed each season, which most farmers cannot afford.

The large numbers buying seed from the market in the beginning might be due to very low yields that there was not enough to be spared for seed.

It seems resistance to rosette is an important criteria for selection of varieties, and therefore the reason why Igola1 is constantly grown by beneficiaries and increasingly popular among non-beneficiaries who have no easy access to other resistant varieties like Serenut 2, 3 and 4. On the other hand, the issue of color, which determines marketability of the varieties, is

another important factor which has made the number of farmers growing the susceptible red varieties remain high.

The Varieties introduced for multiplication (Serenut 2,3, and 4) have significantly multiplied and are being passed on to other farmers. Since most farmers' use home saved seed, recipients are actually retaining the new varieties and replanting them. Informal seed multiplication and distribution systems seem a faster way to enable resource poor farmers to access improved varieties since new varieties take long to reach farmers through the formal system of stockists. This is further suggested by the numbers accessing seed from the project as beneficiaries and neighbours as compared to those in the other parish who, after 3 years, have still had very limited access to the new varieties.

Variety Assessment

Table 16a Variety Assessment by Beneficiaries and Non-Beneficiaries

Beneficiaries		Likes Percentage								Dislikes percent									
Variety	Number Growing	High yielding	Rosette Resistant	Tolerate drought	Good taste	Matures early	Market-able	Good price	Other	Low Yield	Not Rosette Resistant	Not tolerant to drought	Poor taste	Late maturing	Low market	Low price	Too labour intensive	Too much weeding	Other
Serenut 2	171	95%	73%	77%	42%	11%	12%	20%	6%	3%	4%	7%	20%	29%	19%	8%	28%	9%	9%
Serenut 3	56	77%	54%	50%	52%	38%	38%	36%	4%	11%	23%	27%	9%	9%	16%	0%	41%	2%	4%
Serenut 4	75	92%	60%	61%	69%	52%	19%	11%	1%	4%	9%	12%	1%	3%	33%	29%	12%	3%	7%
Red Beauty	64	75%	19%	42%	94%	61%	64%	41%	2%	9%	81%	42%	0%	11%	0%	3%	5%	0%	0%
Erudu Red	95	44%	3%	2%	85%	63%	52%	18%	7%	20%	87%	80%	2%	5%	3%	8%	2%	1%	1%
Igola 1	58	76%	59%	74%	14%	5%	12%	12%	5%	9%	7%	3%	67%	41%	16%	9%	22%	7%	7%
Etesot	20	30%	0%	5%	95%	0%	15%	40%	0%	20%	30%	70%	0%	20%	5%	0%	30%	0%	5%

Non-Beneficiaries		Likes Percentage								Dislikes percent									
Variety	Number Growing	High yielding	Rosette Resistant	Tolerate drought	Good taste	Matures early	Market-able	Good price	Other	Low Yield	Not Rosette Resistant	Not tolerant to drought	Poor taste	Late maturing	Low market	Low price	Too labour intensive	Too much weeding	Other
Serenut 2	57	93%	86%	88%	35%	7%	19%	25%	0%	0%	2%	4%	7%	28%	12%	9%	35%	5%	0%
Red Beauty	51	73%	6%	55%	86%	67%	76%	71%	0%	10%	76%	20%	0%	2%	2%	2%	2%	0%	0%
Erudu Red	97	41%	5%	2%	88%	41%	45%	38%	3%	13%	78%	80%	2%	7%	4%	10%	3%	0%	0%
Igola 1	57	81%	72%	77%	30%	0%	19%	4%	4%	0%	4%	14%	58%	37%	11%	16%	19%	9%	0%
Etesot	29	62%	14%	14%	76%	0%	28%	41%	17%	10%	48%	62%	0%	38%	7%	3%	28%	7%	0%
Serenut 3	4	50%	75%	75%	50%	50%	25%	25%	0%	0%	25%	25%	0%	0%	25%	0%	0%	0%	0%

Considering the concerns in question i.e. yield, resistance to rosette, tolerance to drought, taste, crop duration, marketability and price, the farmer's variety assessment presented in table 16a above reveals the following.

Among beneficiaries the introduced varieties i.e. Serenut 2,3 4 and Igola1 were ranked highly for good yields, tolerance to drought and resistance to Rosette while Red Beauty and the local varieties ranked high for good taste, early maturity, marketability and good price. This agrees with the low percentage scores for the same issues when considering dislikes for each variety. (The exception is for Serenut 3 – whose mixed ratings can be attributed to the fact that initial distribution of the variety was plagued by the difficulty of getting pure seed. Some of the seed distributed was actually NOT Serenut 3 and the local variety substituted was actually quite susceptible to Rosette.)

The non-beneficiary assessment for likes follows a similar trend to that of beneficiaries. However, the percentage score for each attribute was slightly higher when considering resistance to rosette and tolerance to drought for Serenut 3, 4 and Igola1 (however there were only few respondents). A similar trend is seen for the dislikes, however, in ranking of varieties according to preference Serenut 3 & 4-ranked quite low probably because of the limited familiarity of non-beneficiaries with these new varieties.

The assessment confirms that Serenut 2 is preferred to for its high yield, tolerance to drought, and resistance to rosette; however, the marketability and good price offered for some susceptible varieties is the main reason for farmers continuing to grow them.

The findings further indicate that the Serenut 2, 3, 4 have high yields, tolerant to drought and resistance to rosette as the major positive attributes with other attributes especially crop duration (maturity period). and taste with only average scores.

The issue of being able to have a crop clearly comes out. So the farmers grow both new and old varieties to spread risks and to take care of food and cash needs. The findings also indicate acceptability and appropriateness of the varieties to beneficiaries targeted. *This also indicates that the new varieties have a high chance of being retained for multiplication and distribution in the community.*

Overall ranking of the varieties put the introduced varieties first and high on the list for preference. This implies that key concerns in choice varieties included yield, resistance to rosette and tolerance to drought. Since they did not score very high on other attributes as compared to other varieties. Red varieties certainly are seen to be more marketable which could be the major reason for growing them despite the other negative attributes.

Table16b Variety Assessment Summary

Variety	Beneficiary		Non-Ben	
	Count	Avg Rank	Count	Avg Rank
Serenut 2	171	1.46	57	1.09
Serenut 3	56	1.55	4	2.00
Serenut 4	75	1.61	6	2.67
Serenut 1	10	2.00	3	1.33
Red Beauty	64	2.17	51	1.41
Erudu Red	95	2.38	97	1.41
Igola 1	58	2.51	57	1.63
Etesot	20	2.67	29	2.00
Erudu White	4	4.00	1	2.00

Seed multiplication by beneficiaries

Analysis shows that an estimated 4,420 beneficiaries (see table 18 below) have accessed seed of all the improved varieties introduced by the Project from 2002 to first season of 2004. (The number is reduced to 3,188 if Serenut 3 is excluded due to mixing of varieties). ***52% of the beneficiaries were women and 48% men (table 30 in appendix)*** These farmers received sufficient seed to plant up to 530.4 Ha (table 17below).

Table 17 Projected total Hectares by District

District	Serenut 2	Serenut 3	Serenut 4
Kumi	3,529	174	193
Pallisa	943	343	337
Tororo	2,233	479	689
Mbale	739	26	79
Sironko	210	175	332
grand total	7,653	1,197	1,630
Hectares	387.29	60.60	82.48
Grand total ha.		530.37	

Table 18 Projected Total Beneficiaries by District

District	Serenut 2	Serenut 3	Serenut 4
Kumi	1,118	58	58
Pallisa	377	162	189
Tororo	764	225	345
Mbale	343	13	53
Sironko	210	175	332
grand total	2,812	632	976
total all varieties		4,420	

Overall the quantities given to individuals for planting varied from 1 to 3 basins depending on locations. More was given out in Kumi, Pallisa and Tororo, and less in Mbale and Sironko. The district trend for quantities received is similar to that of number of beneficiaries. However quantities vary among districts based on the average quantities given out to each individual. Kumi and Tororo gave out more seed to each beneficiary compared to Sironko, Mbale and Pallisa (see table 19).

Table 19 Overall Average Quantity Received per Beneficiary

District	Serenut 2	Serenut 3	Serenut 4
Kumi	3.16	3.00	-
Pallisa	2.50	2.13	1.79
Tororo	2.92	2.13	2.00
Mbale	2.15	-	1.50
Sironko	1.00	1.00	1.00
Total	**2.69**	**1.91**	**1.68**

In terms of quantities given out, the same proportions of the total quantities were given out to men and women. This means there was no discrimination against women as all had equal opportunity to receive the same amounts (table 30)

Table 20 Average Quantity Received by Men and Women (Basins)

Sex	Serenut 2	Serenut 3	Serenut 4
Male	2.67	2.00	1.40
Female	2.69	1.85	1.87
Total	2.69	1.91	1.68

Table 21 Estimated Total Given Out To Men And Women By Variety (Basins)

District	Serenut 2	Serenut 3	Serenut 4
Male	3,588	634	652
Female	3,853	618	986
Total	7,441	1,252	1,638

Table 18 indicates that generally more beneficiaries 2,812 have accessed Serenut 2 followed by Serenut 4, and then Serenut 3, The reason being that Serenut 2 was the first to be introduced and has multiplied for at least 3 years compared to the other two varieties which were introduced a year later and whose supply from research was more constrained. The difference between Serenut 4 and Serenut 3 is due to the loss of some seed of Serenut 3 as result of variety mixing. A*lso Serenut 3 seems not to be as drought tolerant as the other two.* The high numbers for some varieties in some districts is explained by high numbers randomly sampled by chance for those with those varieties.

However findings indicate that Tororo and Kumi Districts have had more people receiving the seed than other Districts, especially **Mbale**, with Sironko and Pallisa at almost the same level. The numbers may be low due to the many new group members sampled who reported having not yet received seed in those districts. Project groups in these areas are expanding rapidly, a demonstration of the keen interest in

it should be noted that new members joined groups because they wanted to get the new varieties through the group arrangement and also some other members left the groups after receiving seed. ***This affected the sample frame***

The analysis also indicates an estimated total seed production **[see table 22]** from the seed distributed to be 9943 bags of Serenut 2, 1141 bags of Serenut 3 and 1739 bags of Serenut 4. These give average yields per hectare of 26 bags for Serenut 2, 19 bags for Serenut 3 and 21 bags for Serenut 4.

Table 22 Estimated Total Number of Bags Produced from Seed Distributed by the Project

District	Serenut 2	Serenut 3	Serenut 4
Kumi	4,368	135	106
Pallisa	773	175	189
Tororo	2,330	479	712
Mbale	2,132	46	191
Sironko	341	306	541
grand total	9,943	1,141	1,739
total all varieties		12,824	

Table 23 Estimated Total Number Of Beneficiaries who Replanted Seed They Received for Multiplication, By District.

District	Serenut 2	Serenut 3	Serenut 4
Kumi	926	19	-
Pallisa	404	81	40
Tororo	300	180	180
Mbale	871	26	66
Sironko	332	157	52
grand total	2,832	463	339
total all varieties		3,634	

Up to 3,634 beneficiaries reported replanting the seed they received (own saved). **[Table 23 above]** This clearly indicates, that farmers have not lost the varieties given to them and up to 561.6 Ha were replanted (**see table 24 below**) and an estimated total production in MT of 318.9 of Serenut 2, 36.8 of Serenut 3 and 16.3 of Serenut 4 was realised. **[Table 25 below]**

Table 24 Projected Total Area Planted by Beneficiaries saved seed by district, 2002-2004

District	Serenut 2	Serenut 3	Serenut 4
Kumi	323	2	-
Pallisa	173	32	10
Tororo	123	61	51
Mbale	394	13	28
Sironko	112	52	13
grand total	1,124	161	102
HA	455.13	65.13	41.22
total all varieties		561	

Table 25 Projected Total Production by district (kg)

District	Serenut 2	Serenut 3	Serenut 4
Kumi	161,112	579	-
Pallisa	28,038	2,384	1,414
Tororo	18,205	9,215	5,394
Mbale	73,616	1,584	5,346
Sironko	37,990	23,056	4,192
grand total	318,961	36,817	16,346
total all varieties		372,124	

Analysis furthers shows on table 26 below that an estimated **1,092** hectares were planted using seed produced by all who received seed from the project from 2002 to 2004. This includes seed received direct from the project, and the area replanted by beneficiaries with saved seed in subsequent years.

Table 26 Projected Total Area Planted 2002-2004 from Seed Given and Replanted, by district

District	Serenut 2	Serenut 3	Serenut 4
Kumi	764.10	24.10	24.10
Pallisa	290.38	74.91	52.18
Tororo	401.74	120.80	136.72
Mbale	485.93	16.50	37.95
Sironko	138.64	74.23	54.58
grand total	2,080.78	310.55	305.54
HA	842.42	125.73	123.70
total all varieties		1,092	

In 2004 alone Project beneficiaries are estimated to have produced enough seed to plant a total of 4,726 Ha of the new varieties of groundnuts, if all the production were to be used for seed. The distribution of this production by District is shown in table 27 below.

Table 27 Total estimated production for 2004 only (kg)

District	1_ Serenut 2	2_ Serenut 3	3_ Serenut 4
Kumi	144,914	4,628	3,182
Pallisa	19,594	5,010	6,464
Tororo	29,892	9,889	15,283
Mbale	61,142	1,584	4,356
Sironko	25,676	23,580	18,340
Total	281,218	44,691	47,625
avg/ben	74.32	11.81	12.59

Area that could be planted using this seed in 2005.

Total Prod.	acres	hectares
373,534	11,672.93	4,725.88

Findings clearly indicate variations in the rate of multiplication across the districts. This is so because of the relative importance of the crop in the districts. Kumi is definitely a groundnuts growing area with higher land availability. Even in terms of the quantities of seed given out Kumi rates higher than the rest. (see table 19 above).

It is quite clear that the introduced varieties have multiplied substantially from the initial 161.9 ha provided by the project to beyond the target of 2500 ha. This has been facilitated by the guidelines on multiplication and training offered to beneficiaries.

Assessment of the varieties also indicates acceptability of the varieties especially for their resistance to rosette disease, tolerance to drought and high yields; the ,major concerns that had in the past affected the production of groundnuts so the varieties actually addressed the farmers need and thus helped in multiplication of the varieties

3.4. Distribution

The project plan was to have each beneficiary return twice the amount received for redistribution to other members of the groups and community until all benefit with time

Repayment

Findings estimate that 3,373 beneficiaries repaid seed representing 74.8% for Serenut 2, 86% for Serenut 3 and 74.4 % Serenut 4 without considering repayments for 2004 (table 28 below) which are yet to be redistributed and reported. **This is lower than the 100% expected and is explained by the following reasons for failure to pay back in full.**

Table 28 Estimated Total who Repaid by Variety

District	Serenut 2	Serenut 3	Serenut 4
Kumi	829	-	19
Pallisa	364	189	121
Tororo	345	150	210
Mbale	356	13	26
Sironko	210	192	349
grand total	2,103	544	726
Total all varieties	3,373		
proportion repaying	74.8%	86.0%	74.4%

Note that repayments for 2004 have not all been received

Reasons for Non-repayment

Beneficiaries were asked why they did not repay in full and the following responses were given;

Table 29 Reasons for Non-Repayment

Beneficiaries

Why didn't Repay in full	Count	%
Low Yield	28	54.9%
Drought	8	15.7%
Fell sick	3	5.9%
Was wrong variety	2	3.9%
Still being dried	2	3.9%
Recipients not ready	4	7.8%
Seed of poor quality	1	2.0%
Retained some for replanting	1	2.0%
Poor storage	1	2.0%
All beneficiaries had got Serenut 4	1	2.0%

51

N/A to Non-Beneficiaries.

1. The two major reason givens were low yield (54.9% and drought (15.7 %). drought could have caused the low yields. Other responses indicated like seed still being dried and recipients not ready actually indicate delayed repayment but seed was available for repayment (so they actually did not fail).
2. Likewise the response of "seed was wrong variety and seed of poor quality relate to non-repayments due to mixing of varieties indicated earlier in the report. This actually affected repayment and reduced the quantities available for redistribution and was not the fault of the beneficiary.
3. The case reporting none repayment because all members had received suggests that at the time of the survey some groups had actually given seed to all their members and were awaiting further instructions on whom to pass the seed to.
4. Very few failed to manage their fields due to sickness and thus realized low yield which affected quantities available for repayment and were allowed to replant the next season

The major issue therefore was low yields due to drought. However this seems to contradict the responses on variety assessment. The PDCs must have been a bit more lenient as yields of these varieties were good even with drought.

Repayment Rates By Gender

Repayment rates by gender are almost similar except, more men were repaying Serenut 4 compared to women, in terms of both numbers and quantities (table 30 below)

Table 30 Projected Total Repayment Gender by Variety

District	Serenut 2	Serenut 3	Serenut 4	Combined
Male	1,025	280	373	1,678
Female	1,069	292	361	1,722
Total	2,094	571	734	3,399
Male	76.4%	88.2%	80.0%	78.9%
Female	74.8%	87.5%	68.4%	75.2%
proportion repaying	75.5%	87.9%	73.9%	77.0%

Note that repayments for 2004 have not all been received

A final report on repayment will be presented once the final repayment figures for the 2004 harvest are recorded.

Informal Distribution Of Seed Through Sales And Gifts.

After repayment of seed by a beneficiary use of the balance of the seed was at the disposal of the beneficiary. Findings show that overall an estimated 2,768 beneficiaries (Table 31 below) sold surplus seed to **5,910** people (Table 32 below) presumably for seed since the varieties were highly priced (see table….) and still scarce in the communities. These quantities sold could plant 1,504.9 Ha.

Table 31 Estimated number of Beneficiaries who Sold Seed by Variety

District	Serenut 2	Serenut 3	Serenut 4
Kumi	733	-	19
Pallisa	162	-	-
Tororo	135	30	75
Mbale	898	26	26
Sironko	297	227	140
grand total	2,224	283	260
total all varieties		2,768	

Table 32 Estimated Total Number of Farmers Who Bought Seed by Variety

District	Serenut 2	Serenut 3	Serenut 4
Kumi	1,601	-	19
Pallisa	377	27	-
Tororo	315	120	150
Mbale	2,785	79	53
Sironko	140	192	52
grand total	5,217	418	274
total all varieties		5,910	

Estimated total quantity of seed sold by Variety (basins)

District	Serenut 2	Serenut 3	Serenut 4
Kumi	10,143	-	231
Pallisa	1,603	-	-
Tororo	929	45	180
Mbale	8,039	40	40
Sironko	4,192	3,039	1,258
grand total	24,905	3,124	1,708
total all varieties		29,737	

Projected income from sales by district

District	Serenut 2	Serenut 3	Serenut 4
Kumi	57,168,662	-	1,465,533
Pallisa	12,815,782	-	-
Tororo	5,623,739	434,517	1,163,711
Mbale	54,361,996	307,996	264,000
Sironko	18,588,027	13,798,667	4,279,333
grand total	148,558,206	14,541,179	7,172,577
Estimated Total sales for seed			170,271,962
avg income from sales/hh			44,998

Table 33 Estimated Number other people Given Seed as Gifts

District	Serenut 2	Serenut 3	Serenut 4
Kumi	2,140	-	116
Pallisa	579	27	81
Tororo	899	135	464
Mbale	2,548	79	53
Sironko	210	17	262
grand total	6,376	258	976

Total sales and gifts (Basins)

District	Serenut 2	Serenut 3	Serenut 4
Kumi	13,035.5	-	462.8
Pallisa	1,862.4	6.7	32.3
Tororo	1,760.5	164.8	344.6
Mbale	15,985.2	224.4	290.4
Sironko	4,419.1	3,056.7	1,502.1
grand total	37,062.8	3,452.6	2,632.3

Table 34 Estimated Total Area That Can Be Planted By This Seed by District Acres HA

District	Serenut 2	Serenut 3	Serenut 4	Total	Total
Kumi	1,629.4	-	57.9	1,687	683.11
Pallisa	232.8	0.8	4.0	238	96.23
Tororo	220.1	20.6	43.1	284	114.88
Mbale	1,998.2	28.1	36.3	2,063	835.02
Sironko	552.4	382.1	187.8	1,122	454.35
grand total	4,632.8	431.6	329.0	5,393	2,183.59

Beneficiaries also gave the new varieties to other people as gifts). An estimated **7,610** farmers received seed as gifts (Table 33 above).This includes people who demanded to be paid for their labor during harvest in terms of seed and not cash an indicator of appreciation of the varieties. The combined sales and gifts were sufficient to plant a total of 2,183.59 Ha (Table 34 above).

The gender analysis (see appendix Table **) indicates that

- ✓ men sold comparatively more seed compared to women. Women are thought to have been reserving more of what they produce probably for food and (seed).

- ✓ Gender analysis further reveals that a larger share of the surplus production was sold by Men (57.3% compared to 42.7%) for women. The main reason could be that most women consider food security as priority so they tend to keep more for food. It further indicates that more men bought seed compared to women for all the varieties, however the reason might be that it is men who go to the market to sell and buy or who could afford the highly priced seed new varieties.

- ✓ The analysis found almost no difference in prices offered by women and men for Serenut 2, however, the difference is big for Serenut 3, with women selling at a lower price. Of the 3 varieties; Serenut 2 is better price. Considering the higher quantities sold by men at similar prices to those offered by women; men therefore got more income compared to women (table **j).

- ✓ Table 30k indicates that men gave away Serenut 2 to more people (54.8 of those receiving gifts got them from men compared to 45.2% who received from women). In contrast women gave Serenut 3 to more people compared to men (34.1%). The proportions for Serenut 4 are similar.

- ✓ Table 30m clearly indicates that more seed was sold and given out as gifts by men for all varieties compared to women. However, the quantities varied for each variety. It might mean that sale or giving away of household produce by women is controlled by men since most household are mainly male headed and production resources are generally controlled by men. The other reason could be that women reserve much of their production for food while men tend to sell theirs for money.

The trend considering gender clearly shows that women are actively participating and benefiting economically and socially (by being able to contribute to household needs- food assets and income) from the seed multiplication activities and equal chances as men.

3.5. Socio-Economic Impact Of The Project.

Standard of living

Respondents were asked whether their standard of living had changed since before the project. The results are shown below.

Table 35a Change Of Standard Of Living by Gender By Category

	Beneficiaries			Non Beneficiaries (Neighbour)			Non Beneficiaries (Parish)		
Sex	Improved	Decreased	Same	Improved	Decreased	Same	Improved	Decreased	Same
Male	71.6%	10.5%	17.9%	53.0%	25.8%	21.2%	41.8%	34.2%	24.1%
Female	74.5%	9.0%	16.6%	59.3%	25.9%	14.8%	48.8%	22.0%	29.3%
Overall	73.3%	9.6%	17.1%	55.8%	25.8%	18.3%	44.2%	30.0%	25.8%

Table 35b Reasons for Change in Standard of Living

	Beneficiaries		Non-beneficiaries	
Reasons for Improvement	Count	%	Count	%
New Groundnut Varieties	16	6.7%	0	0.0%
Improved Yield	77	32.1%	48	20.0%
Improved Income	63	26.3%	59	24.6%
Better Feeding/Nutrition	56	23.3%	45	18.8%
Business/Employment opportunities	2	0.8%	6	2.5%
Reasons for Lack of Improvement	Count	%	Count	%
Low Yield	5	2.1%	38	15.8%
Poor Soils/.limited Land	6	2.5%	0	0.0%
Drought	23	9.6%	10	4.2%
Low Income	8	3.3%	23	9.6%
Many Dependents/Health Problems	13	5.4%	26	10.8%
Food Insecurity	2	0.8%	16	6.7%
Other	4	1.7%	0	0.0%
No Answer	18	7.5%	18	7.5%

A higher percentage of beneficiaries (73.3% Table 35a) report an increase in standard of living mainly attributed to improved yields, improved incomes and better nutrition. Up to 6.7% of beneficiaries attribute the increase in standard of living directly to new groundnut varieties.

In contrast, only about 50% of non-beneficiaries, reported an increased standard of living, with Neighbours (55.8%) showing more improvement than other Non-beneficiaries from the other Parish (44.2%). Generally those reporting an increased standard of living attributed it to improved income, improved yield and better nutrition, but with lower percentages compared to beneficiaries.

However 21.3% of the non-beneficiaries and 17.1% of the beneficiaries said their standard of living had decreased. The major reasons, in order of number of responses, being drought, health problems/many dependants for beneficiaries and; low yield, health problems/many dependants, low income and food insecurity for non-beneficiaries.

Benefits from project.

Table 36a Benefits from Groundnuts Multiplication

Reported Project Benefits	Beneficiaries		Benefits Reported by Non-Beneficiaries	Non Ben Neighbours		Non Ben Parish	
	count	%		count	%	count	%
Better feeding	154	64%	No Impact	65	54%	83	69%
Physical Assets	68	28%	Better quality	46	38%	28	23%
Better health	54	23%	Better Seed	31	26%	20	17%
Increased HH income	43	18%	Information Skills	10	8%	8	7%
Better Education	39	16%	More gnuts in Mkt.	6	5%	11	9%
Social Status	17	7%	Other	4	3%	3	3%
Others	2	1%					
n=240 beneficiaries, multiple answers allowed			n=120 per type of non-beneficiary. Multiple answers possible				

As shown in table 36a above, beneficiaries cited a number of benefits. The most frequent response was "better feeding" at 64 %. This agrees with the findings on consumption of groundnuts which has shown an increase in consumption of groundnuts as a protein source.
28% of Beneficiaries reported buying physical assets as a result of increased income from sales of the surplus produced. This also agrees with the high numbers that sold seed (Table 31). The nature of the assets bought however seems to indicate that there was not much to spend probably due to small quantities sold and also due to the need to use the same income for other household requirements. Income from sales helped beneficiaries to access essential household necessities and also buy livestock especially small stock i.e. poultry, pigs and goats, as well as cows. These are major sources of investment in rural areas and also a popular form of saving.

Table 36b Assets Bought

Asset summary	Count	% of those who bought assets	% of all respondents
Goats	28	23.9%	11.7%
Household Goods	25	21.4%	10.4%
Poultry	13	11.1%	5.4%
Building Materials	12	10.3%	5.0%
Pigs	10	8.5%	4.2%
Bicycle	9	7.7%	3.8%
Furniture	6	5.1%	2.5%
Inputs	5	4.3%	2.1%
Cows	4	3.4%	1.7%
Land	4	3.4%	1.7%
Scholastic Material	1	0.9%	0.4%
Total	117	100.0%	48.8%

23% indicated improved health as a benefit from the project. 18% reported increased incomes and 16% cited better education. All of these benefits involve cash expenditure therefore indicating increased availability of cash incomes as a result of the project.

However, Table 36a shows that, as expected, the benefits for non-beneficiaries (both neighbours and parish) are limited to availability of better quality seed and better seed varieties. The proportion for non- beneficiary neighbours is greater than those in the parish. This clearly indicates that the varieties are diffusing and are being appreciated for their attributes and the quality offered by the beneficiaries is good. The response to increased availability of groundnuts seems to suggest increased production of groundnuts probably as a result of the performance of the new varieties. Some non beneficiaries, both neighbours and from parish, benefited from availability of information on groundnut production. They may have attended the trainings that were organised. by the FPRA, PDCs and production committees, as indicated above.

Negative Impact Of The Project.

Responses to the question about negative impact were very few. Only 5% of all respondents answered. However more of them came from beneficiaries. Responses included:

- ✓ Frequent meetings hence limited time for other activities.
- ✓ High production with no market.(8/16 responses in Kumi)
- ✓ Local varieties have lost market (Kumi 2 neighbours and 1 from parish!)
- ✓ Limited land (groundnuts competing with other crops?).
- ✓ Failed to provide seed to all groups in time/ not all farmers received.(2 beneficiaries and 4 neighbours).
- ✓ Increased economic differences between parishes.(1 from parish).

- ✓ AT does not supply farm equipment (1 beneficiary).
- ✓ No credit schemes(! beneficiary)
- ✓ "When pigs destroyed my groundnuts, I accused the owner to LC courts and now we are not friends" (1 beneficiary)

These responses do not suggest any serious negative impact but rather imply that the project is desired by those outside and the varieties are actually superior i.e. high yielding.

Some of the following challenges were identified during the course of implementation of the project and agree with the other survey findings.

1. *Drought affected yields in some cases resulting in reduction of seed amounts repaid and slowing the coverage.*
2. *Other pests and diseases were observed especially the leaf miner. Chemical control requiring cash investment by resource poor farmers posed a challenge.*
3. *Mismanagement of the multiplication and distribution process by some FPRAs and local leaders leading to distribution of seed to people outside of group influence resulting in non repayment and missing records was observed in some cases.*
4. *Some farmers failed to plant seed at the time received. As a result, they missed out a season, due to various other problems, thus slowing the coverage and spread of seed.*
5. *Some farmers ate or sold off the seed before planting, especially the really poor group members.*
6. *Poor handling of seed by a few individuals, resulting in low viability and thus low production by next beneficiary.*
7. *Sustaining commitment of non-group members of the PDC since the service is voluntary is an ongoing challenge.*
8. *Enforcing byelaws incase of default, especially since most group members come from same village, may not be taken seriously. There are many social pressures involved.*
9. *Sustaining participatory activities such as joint review meetings and monitoring is difficult unless the project has new benefits to offer in exchange for group time.*
10. *Poor seed quality supplied by Serere, especially the mixing of Serenut 3 with local varieties.*

Challenges encountered were discussed in a participatory manner, and addressed during review meetings and field monitoring and informed decisions taken regarding appropriate solutions.

Major Challenges In Groundnut Production

When asked about the challenges of groundnut production, both beneficiaries and non-beneficiaries mentioned the following: -

Table 37 Major Challenges in Groundnut Production	Beneficiaries		Non-beneficiaries	
	Count	**%**	**Count**	**%**
Drought	153	48%	102	42%
Costly and labor Intensive	61	19%	44	18%
Pest & Diseases	54	17%	63	26%
Price Fluctuations & no market	11	3%	7	3%
lack of capital & agric chemicals	12	4%	13	5%
Limited land & poor soils	18	6%	7	3%
Costly & low access to improved varieties	2	1%	3	1%
floods, untimely planting & domestic animals	5	2%	3	1%
no knowledge/ skill in gnut production	0	0%	3	1%
Total	**316**	**100%**	**245**	**100%**

Clearly both categories considered drought a major problem (reported by 48% of beneficiaries and 42% of non-beneficiaries). This explains the high proportion or respondents that mentioned tolerance to drought as an important attribute in their preference ranking of varieties. Non beneficiary assessment was.26% compared to 17% for beneficiaries. This might be due to lower access to rosette resistant varieties for non-beneficiaries compared to beneficiaries. It also explains why resistance to rosette disease was a key factor/concern in choice of varieties for both groups, since it is linked to the issue of lack of capital and agro-chemicals.

Groundnuts being labor intensive & costly to produce is rated equally by both categories of respondents. This is likely to be aggravated by the low labor availability at household level of 4 adult equivalent only. Low levels of income make this situation worse especially since the project is targeting the poor in the community and explains why most labor is paid for in kind using part of the harvest.

The challenges of limited land and poor soils were indicated by more beneficiaries (6%) than non-beneficiaries (3%). However, this is linked to the high proportion of beneficiaries, who have realized the value of growing groundnuts but own little land. Table 7 above indicates that land is limited and this may have resulted in over cropping of land without any soil fertility remedy leading to loss of soil fertility. The low adoption of soil fertility measures is also a key factor.

The high number of responses given by beneficiaries might indicate more involvement in groundnut production, as compared to the small proportion of the non-beneficiary respondents who generally mentioned other issues.

Marketing Issues.

As production of the varieties has increased, marketing issues were considered. The survey indicates that:

(a) Point of sale for groundnuts.

Table 38a. Point Of Sale For Groundnuts

	Beneficiaries		Non Beneficiaries	
	Count	%	Count	%
1. Farm Gate	77	32%	69	29%
2. Market in Subcounty	53	22%	66	28%
3. Other Subcounty	3	1%	17	7%
4. District HQ	3	1%	7	3%
5. Outside District	65	27%	0	0%
6. Didn't sell	39	16%	81	34%
	240	**100%**	**240**	**100%**

n=240 beneficiaries, multiple answers allowed

Table 38. indicates that sales were made at farm gate, at market in sub county, other sub county, district head quarters and outside the district. Beneficiaries sold more at the farm gate (32%) compared to non-beneficiaries (29%).

Non-beneficiaries sold mainly at the market in the sub county. Most beneficiaries sold mainly at farm gate and market in sub-county and outside the district. This was probably because they were selling seed and not food as was the case for non- beneficiaries. A high proportion did not sell at all, probably because they had produced little or were still waiting for the right time to sell.

(b)Price of Groundnuts

Table 38b Average Price of Groundnuts

		Non Beneficiaries		
	Beneficiaries	Neighbours	Parish	Overall
Bag	37,286	29,370	30,733	30,088
Basin	6,362	5,300	4,575	4,817
Kg	1,581	1,260	1,367	1,329

Table 38b.shows that sales were made by the bag, basin, and the kilogram. and the beneficiaries sold at higher prices compared to the non beneficiaries. This is possibly because they sold what they produced as seed since they were selling the new varieties which others did not have. However prices for non- beneficiary neighbours were slightly lower for the bag and kilo compared to those in the parish.

(c)Mode of sale.

Table 38c How Did You Sell It

	Beneficiaries		Non Beneficiaries	
	Count	%	Count	%
As a group	17	7%	3	1%
As Individual	123	51%	155	65%
No response	100	42%	82	34%
	240	**100%**	**240**	**100%**

Most sales were done individually by both categories. However, slightly more effort was made to sell in group by beneficiaries. This probably relates to the issue raised in market access indicating that market is not readily available for new varieties.

Value Addition

Table 38d Number Who Add Value To Groundnut

	Beneficiaries		Non Beneficiaries	
	Count	%	Count	%
Yes	65	27%	57	24%
No	126	53%	102	43%
No Response	49	20%	81	34%
	240	**100%**	**240**	**100%**

Most farmers did not add value to groundnuts and the level is almost the same for beneficiaries and non beneficiaries at 27% and 24% respectively.

Table 38e How Add Value to your crops?

	Beneficiaries		Non Beneficiaries	
Means of Value Addition	Count	%	Count	%
1. Shelling	58	24%	56	23%
2. Making peanut butter	3	1%	1	0%
3. Making Flour	6	3%	2	1%
No response	173	72%	181	75%
	240	**100%**	**240**	**100%**

The major form of value addition is just shelling done by the same proportion of both beneficiaries and non beneficiaries at 24% and 23% respectively.

Market Access Problems.

Both beneficiaries and non-beneficiaries generally indicated they had no marketing problems i.e. 57% and52% respectively. A high proportion did not answer the question. Only 23% and 17% of beneficiaries and non-beneficiaries respectively indicated having market problems.

Table 38f Market Access Problems

Beneficiaries		
Market Access Problems	**Count**	**%**
No Problem/ Market readily available	56	23%
lack of proper storage	1	0%
lack of ready market	35	15%
low demand for new varieties in open market	10	4%
low prices/price fluctuation	2	1%
no organized marketing society in place	2	1%
Taxation	1	0%
Transport problems	12	5%
No Answer	121	50%
Total	240	100%

Non Beneficiaries		
Market Access Problems	**Count**	**%**
No Problem/ Market readily available	104	43%
competition for market among farmers	1	0%
frequent price fluctuation	7	3%
High demand for improved varieties	3	1%
Low demand	17	7%
low prices during harvest	5	2%
Taxation	2	1%
Transport problems	7	3%
No Answer	94	39%
Total	240	100%

Marketing problems raised by beneficiaries include : lack of market (15%), transport problem (5%), low demand for new varieties in the open market (4%).This is probably the reason for selling outside the district and at farm gate as only interested buyers seek out the varieties. And might explain the lower sales in the sub county markets by beneficiaries.

Other issues listed by both but with few responses include taxation, low prices, price fluctuations. A beneficiaries mentioned lack of organized marketing as an issue.

A PRA exercise was conducted in the 16 sub counties in the project area and revealed that marketing was considered to be a problem especially with the increasing quantities of groundnuts resulting from the increased production from the new varieties. Apparently all issues indicated by the survey were also mentioned in the PRA discussions. However one key issue that ranked high through out was lack of organised institutions to facilitate flow and use of market information along the market chain. Thus farmers felt they were not getting the right price for their groundnuts. The outcome of the exercise was setting up of sub county based marketing teams to facilitate marketing based on informed decisions from use of market information

3.6. Conclusion

This project was aimed at addressing the problem of low groundnut production. caused by groundnut rosette disease through provision of rosette resistant varieties to the poor households for multiplication

It is evident from the survey finding that the intended project purpose has significantly been achieved. In summary the following have been confirmed by the impact assessment:

- ✓ *3 new varieties namely Serenut 2, 3 and 4 which are resistant to groundnut rosette disease have been introduced to farmers over the 3 years of the project.*
- ✓ *The varieties have been evaluated by the beneficiaries and have been accepted for being rosette resistant, tolerant to drought, high yielding good tasting among other attributes*
- ✓ *Quantities of the varieties have increased substantially and large quantities are being sold enabling other non participating farmers to benefit thus disseminating the new varieties.*
- ✓ *More than 9000 people have accessed the seed through the formal project arrangements, sales and gifts by individuals .*
- ✓ *Women are benefiting by accessing the seed and from the resultant production. benefits are evenly spread between men and women.*
- ✓ *Redistribution of the varieties is continually increasing under the guidance of local leadership. but at low repayment rate*
- ✓ *Seed to plant more than 2500 ha of the varieties has been produced over time*
- ✓ *Use of home saved is the most reliable way groundnuts farmers ensure seed availability.*
- ✓ *Training of FPRAs, local leaders and farmers was done. More than 2000 farmers got trained and the local leaders have the capacity to do it*
- ✓ *Ideas from the training were highly adopted and helped in increasing production ensuring seed quality.*
- ✓ *Local leaders i.e. PDCs and PCs have been involved in the whole process*
- ✓ *Agricultural activities are constrained by weather and socio economic factors thus the desired multiplication rates could not be met*
- ✓ *The project has no critical negative impact*

4. Appendices

Sampling Instructions **A:** Beneficiaries to be interviewed

Sub-county	Parish	Group	No. of farmers interviewed
Nyero	Kalapata	1. Amee	10
		2. Ominai	10
		3. KAIFA	10
Kidongole	Kidongole	1. Airogo	10
		2. Kotolut	10
		3. Kanyamutamu	10
Kasodo	Apapa	1. Kakwenyutu	10
		2. Apapa multipurpose	10
		3. Kasnyoutu	10
Lyama	Nansanga	1. Mulimi Tagwa	10
		2. Tukola Batala	10
		3. Kyweterekera	10
Kachonga	Nabiganda	1. Babusa Hujeha	10
		2. Mbanajo	10
		3. Nanghrisas	10
Nagongera	Nangongera	1. Awanya	10
		2. Chalumba	10
		3. Genirok	10
Butiru	Bunabwana	1. Bumufuni	10
		2. Bubuyela Women	10
		3. Busirali	10
Bukhalu	Bunalwere	1. Malukhu	10
		2. Bukhalu Modern	10
		3. Bwayilira	10

B: Non-beneficiaries Neighbours.
For each group identify and interview only 5 neighbours, the total should be 15 neighbours.
C: Non-Beneficiaries from non-participating parishes

Sub-county	Parish	Village	No. of farmers
Nyero Ariet	Ariet	Ariet	15
Kidongolge	Kaena	Kacul	15
Lyajma	Tadeeri	Naluli	15
Kachonga	Namable	Nasingi A	15
Nagongera	Katejula	Poliecha	15
Butiru	Bukhofu	Bwanyama	15
Bukhalu	Buyaga	Bungasanyi	15

Procedures

1. For each group get village list of all the members/household heads write numbers on small pieces of paper corresponding with the numbers of group members/households heads.
2. Fold the pieces of paper
3. Mix them thoroughly
4. Randomly pick the required numbers of papers equivalent to the sample size (10 for beneficiaries and 15 for non-beneficiaries in non participating sub-county
5. The people to be interviewed are those whose numbers on the list are same as numbers picked randomly.
6. For non-beneficiaries, neighbours please use same procedure.
   - start by sampling 5 beneficiaries from each group whose neighbours will be sampled
   - ask the beneficiaries to list their neighbours and random sample those to be interviewed.

Appendix 2. Staple Food Consumption Patterns for Beneficiaries and Non-Beneficiaries

BENEFICIARY

2002 District	n=	Beans (without Gnuts)	Chicken (without Gnuts)	Cowpeas (without Gnuts)	Fish (without Gnuts	Gnuts in combination with greens, legumes or meat	Green grams (without Gnuts)	Greens (without Gnuts)	Groundnuts alone (binyewa)	Meat (without Gnuts)
Kumi	60	2.02	2.53	2.16	2.42	2.23	2.91	2.10	2.50	2.50
Pallisa	60	2.18	3.00	2.90	1.93	1.78	3.72	1.85	2.02	2.67
Tororo	60	1.66	2.54	3.07	1.76	2.12	3.53	1.48	1.85	1.90
Mbale	30	1.03	3.14	3.83	2.57	1.69	3.62	1.00	1.45	2.38
Sironko	30	2.17	3.07	3.80	2.23	2.23	3.93	1.83	2.43	3.03
Average Rank	240	1.87	2.79	2.98	2.13	2.02	3.48	1.71	2.08	2.44
Overall Rank		2	7	8	5	3	9	1	4	6

BENEFICIARY

2004 District	n=	Beans (without Gnuts)	Chicken (without Gnuts)	Cowpeas (without Gnuts)	Fish (without Gnuts	Gnuts in combination with greens, legumes or meat	Green grams (without Gnuts)	Greens (without Gnuts)	Groundnuts alone (binyewa)	Meat (without Gnuts)
Kumi	60	2.22	2.41	2.21	2.27	2.10	2.86	2.07	2.20	2.32
Pallisa	60	2.22	2.95	3.08	1.97	1.75	3.60	2.12	2.07	2.57
Tororo	60	1.64	2.56	3.11	1.72	2.00	3.56	1.49	1.73	1.93
Mbale	30	1.00	3.10	3.80	2.48	1.33	3.60	1.10	1.10	2.23
Sironko	30	2.30	3.07	3.83	2.17	1.80	3.86	2.37	2.00	2.87
Average Rank	240	1.93	2.75	3.05	2.07	1.85	3.44	1.85	1.89	2.34
Overall Rank		3	6	7	4	1	8	1	2	5

Note 1= daily, 2=often (1-2 per week), 3= rarely (once a month), 4=never

Q18. Stapple Food

NON BENEFICIARY

2002		Beans (without Gnuts)	Chicken (without Gnuts)	Cowpeas (without Gnuts)	Fish (without Gnuts	Gnuts in combination with greens, legumes or meat	Green grams (without Gnuts)	Greens (without Gnuts)	Groundnuts alone (binyewa)	Meat (without Gnuts)
District	n=									
Kumi	60	1.76	2.37	1.80	2.53	2.18	2.50	1.75	2.69	2.32
Pallisa	60	2.19	2.89	2.79	1.98	1.74	3.85	1.87	1.80	2.56
Tororo	60	1.61	2.75	3.21	1.86	2.32	3.71	1.38	2.19	2.29
Mbale	30	1.00	3.50	3.93	2.23	2.34	3.93	1.00	1.83	2.31
Sironko	30	1.70	3.33	3.90	2.50	2.62	3.70	1.37	2.80	3.13
Average Rank	240	1.73	2.86	2.93	2.18	2.18	3.47	1.55	2.25	2.47
Overall Rank		2	6	7	3	3	8	1	4	5

NON BENEFICIARY

2004		Beans (without Gnuts)	Chicken (without Gnuts)	Cowpeas (without Gnuts)	Fish (without Gnuts	Gnuts in combination with greens, legumes or meat	Green grams (without Gnuts)	Greens (without Gnuts)	Groundnuts alone (binyewa)	Meat (without Gnuts)
District	n=									
Kumi	60	1.73	2.27	1.77	2.46	2.14	2.43	1.83	2.59	2.27
Pallisa	60	2.19	3.08	2.98	1.96	1.78	3.85	1.87	1.93	2.59
Tororo	60	1.73	2.58	3.23	1.86	2.31	3.69	1.41	2.23	2.22
Mbale	30	1.03	3.33	3.90	2.33	2.17	3.93	1.00	1.43	2.30
Sironko	30	1.87	3.23	3.83	2.23	2.03	3.63	1.80	2.10	2.93
Average Rank	240	1.77	2.80	2.96	2.14	2.08	3.44	1.63	2.13	2.42
Overall Rank		2	7	8	5	3	9	1	4	6

Note 1= daily, 2=often (1-2 per week), 3= rarely (once a month), 4=never

GROUNDNUT IMPACT ASSESSMENT

Enumerator Instructions: Do not read the list of possible answers to farmers. Just ask the question and let them give you their reply. Then circle the relevant code number or numbers. If they give an answer that is not included, write it down under "other".

A. HOUSEHOLD AND SOCIO-ECONOMIC CHARACTERISTICS

Enumerator …….

1. Name of beneficiary farmer ……

2. Sex of Beneficiary 1=M 2=F 3. ID No. …….

4. Well being Rank 1=Wealthy 2=average 3=poor 4=very poor

5. District 1=Kumi, 2=Pallisa, 3=Tororo, 4=Mbale, 5= Sironko

6. Sub-county 11=Kidongole, 12=Malera, 13=Nyero 14=Ngora; 21=Lyama, 22=Kadama, 23=Kasodo, 24=Butebo, 31=Nabuyoga, 32=Nagongera, 33=Mazimasa, and 34=Kachonga; 41=Busiu 42=Butiru 51=Bukhalu, 52=Butandiga

7. Name of Household head_____ 8. Sex of household head 1=M 2=F

9. Age of house hold head (years) _____

10. Formal education of beneficiary (highest level attained)
1= illiterate/no formal schooling 2.= primary 3.= secondary (A or O level)
4= Tertiary anything beyond S4 / higher TTC

11.Marital status of Beneficiary
1. Single 2. Married 3. Widowed 4. Divorced/Separated

12. Household composition (**Please indicate the number of each category of household members - note *each person should be counted only once*.**)

Age group	**Total number in age group**	**Participating in farm activities all the time**		**Not directly participating in farm activities**	
		Male	**Female**	**Male**	**Female**
Above 60 yrs					
18 -60 years					
12 - 17 years					
11 or less					

13. Are you a member of ATU group? 1=Yes 2=NO

13b. If yes, Name of the group……
14. Please list your main sources of household income in order of importance. (i.e. farming, trade, employment etc)

Rank	Main source of income in 2001	Main source of income 2004
1		
2		
3		
4		
5		

15. How has the income coming from crop production changed since 2001? (tick one only).
Increased?_____ Decreased? _____ Stayed the same._____
16.What total area of land did you cultivate in year 2001 season A? …… acres;
and 2004 season A……..acres

17. List five crops in terms of area cultivated before the project and now.

List Main Crops in the order of area planted	Year 2001 (before the project)	Year 2004 (season A)
Largest		
Smallest		

18. Rank the main cash crops in order of contribution to household income. (1 is the most and 8 is the least as applicable)

	Cash crop	Rank in 2001 (before the project)	Rank in 2004 (season A).
1	Cassava		
2	Groundnuts		
3	Legumes (Green Grams / cow peas / beans)		
4	Sweet potato		
5	Maize		
6	Sorghum		
7	Millet		
8	Cotton		
9	Rice		
10			
11			

19. Think about the main foods that you consume as sauce, how frequent did the following sauces feature in your diet before 2001 and in 2004? Indicate
1= high (almost every day), 2=medium (1-2 per week) 3=low for (rarely 1/month) 4=never

	Main Sauces	How frequent in 2001	How frequent in 2004
	Meat (without g.nuts)		
	Chicken (without g.nuts)		
	Fish (without g.nuts)		
	Cowpeas (without g.nuts)		
	Beans (without g.nuts)		
	Green grams (without g.nuts)		
	Greens (without g.nuts)		
	Groundnuts alone (binyewa)		
	Gnuts in combination with greens, legumes or meat		

20. How has your standard of living changed since 2001? 1=increased 2=decreased 3=stayed the same.
21. What has brought about the change? _____

22. When did you start being a groundnut Multiplier? …Season……Year…….

B) Access to Rosette Resistant Groundnut Varieties. 23. Please indicate the variety grown and source of seed in the table below

Variety	**2001**		**2002**		**2003**		**2004**	
	Yes/No	**Source of seed**	Yes/No	**Source of seed**	**Yes/No**	**Source of seed**	**Yes/No**	**Source of seed**
1. Red Beauty								
2. Igola 1								
3. Serenut 1								
4. Serenut 2								
5. Serenut 3								
6. Serenut 4								
7. Others [specify]								
8								
9								

Codes for source of seed *1. ATU 2. ATU Group Member 3. Bought from a stockist 4. Bought from non-ATU farmer 5. Own home saved seed 6. Bought from multiplication farmers 7. Bought from the open market*

24. If you do not grow Groundnuts, WHY NOT? _____

25. For each variety grown above indicate on the table below why you like or dislike it, and give ranks (1= best liked and 9 is least liked.) start by filling columns for likes and dislikes, then rank after.

Variety	**What do you like about the variety (likes)**	**What don't you like about the variety (dislikes)**	**Rank the varieties according to preference**	**Reason for the ranking**
1. Red Beauty				
2. Igola 1				
3. Serenut 1				
4. Serenut 2				
5. Serenut 3				
6. Serenut 4				
Other specify				
7.				

Code for likes *1. High yielding. 2. Rosette Resistant 3. Tolerate drought 4. Good taste 5. Matures early 6. Marketable 7. Good price 8. Others specify* **Code for dislikes** *1. Low yield 2. Not rosette resistant 3. Not tolerant to drought 4. Poor taste 5. Late maturing 6. Low market 7. Low price 8.Too labour intensive, 9. Too much weeding, 10. Others specify*

26). ***Use of Improved/Recommended groundnut production practices (do rating before asking reason for modification or why practice is not followed)***

Practice/Principle Recommended	**Notes on recommended practice**	**Rating**	**Modification (what is being done differently)**	**Why? (Reason for modification or for not following)**
1. Site selection	Free draining soil not after legume			
2. Land preparation	Weed free, fine seed bed			
3. Timely planting	At the onset of rains, after a heavy rain			
4. Spacing	45x10cm for bunch types e.g. Serenut 3 & 4, 45x15cm for Serenut 2			
5. Improved variety	E.g. Serenut 1, 2, 3, 4, Igola1 & Red beauty			
6. Weed control	Keep garden weed free; at or after flowering do hand weeding			
7. Pest control	Spray against pests. Leaf miner			
8. Fertilizer use	Use SSP at planting 50kg/acre or use manure or rhizobia			
9. Timely harvest	Dark markings on inside of shell I.e. at maturity			
10. Proper drying	Cracks on biting or rattle on shaking or during drying don't keep indoors for more than a day without drying			
11. Proper storage	Cool, dry place, aerated containers, off the ground			

CODE FOR RATING: 1= Fully Follow, 2= Not fully followed (modified in some way), 3. Not followed at all.

27) **How did you learn about Groundnut seed growing & production** *(possible answers)*
1. From extension worker _____ 2. Production committee _____
3. Parish Development committee (PDC)_____4. Other farmers _____ 5. Brochures _____
6. Others specify (List responses mentioned by farmers._____

28) Did you attend any training on groundnut production? 1= Yes, 2= No

29) If yes, organized by who: 1.=FPRA 2.=Production Committee
3. PDC 4. NAADS 5.=HASP 6.=Other

30. If not, why not? _____
_____

31) What new ideas have you learnt from the trainings?
_____
_____
_____

32) Have you shared the information about improved groundnut production practices/principles with anyone?
1=Yes, 2=No
33 If yes, how? _____
_____
_____

34) What have you benefited by following the recommended practices of groundnuts production mentioned above?
_____
_____

35) ***Seed Multiplication and Distribution***

Variety	**Qty of seed received for multiplication (basins)**			**Amount harvested in bags**			**Qty of seed replanted (basins in shell)**			**Amounts harvested from replanted seed (bags)**		
	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004
1. Serenut 2												
2. Serenut 3												
3. Serenut 4												

36) For any year you did not replant, what happened?
_____
_____

37) For seed you bought. Specify the following:
Variety bought _____
Quantity bought _____(bags/basin/kg) *circle unit used*
Year bought _____
Price paid _____(per bag/ basin/kg) *circle unit used*

38) For each variety grown, indicate the numbers of people you gave or sold seed to (circle the units used as bags or basins)

Variety	**a) Qty repaid to group in bags/basins**			**b) No. of group members given seed from you**			**c) No. of people who bought seed from you**			**d) Total qty sold in bags/basins**			**e) Price per bag/basin sold**			**f) No. of other people given seed**			**Qty of seed given out in basins/bag**		
	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004
Serenut 2																					
Serenut 3																					
Serenut 4																					

39. What major challenges have you faced with groundnut production? _____

_____

_____

INCOME

40. Which family member makes decision about the use of the money from Groundnut sales?

1) male head of household 2) female head of household 3) both man and woman 4) other, specify _____

41) Where did you go to sell the G.nuts? 1. Farm Gate 2. Market in Subcounty 3. Other Subcounty 4. District HQ 5. Outside District 6. Didn't sell.

42). At what price did you sell it _____(per bag/ basin/ kg) circle unit used

43). How did you sell it? 1=as a group 2=or as an individual

44). Did you experience any problems with access to Market? 1= Yes 2=No

45). Explain _____

_____

46. Do you undertake any activities to add value to your groundnuts before selling? 1. Yes 2. No.

47). If so, what? 1. Shelling 2. Making peanut butter 3. Making Flour

OTHERS

48) If farmer did not payback full amount expected or repaid partly, ask why?(look at table 35 & 38 to cross check, if paid in full skip question and go to no. 51)

_____
_____

49) What action did group take?

_____
_____

50) What does the group byelaw say about such a case?

_____
_____

51. Do you think your standard of living has changed because of participation in the groundnut multiplication project? 1= Yes; 2 = No

52. If Yes, can you tell us how you have benefited? (*Ask the farmer then code – do not read list. Circle all that are mentioned.)*
(1) Increased household income; (2) better feeding for the family; (3) Gained high social status
(4) Better health care for family members; (5) better education for children; (6) bought physical assets
(7) Others specify)…….

53. Can you please list for us the physical assets (if any) you bought using the money obtained from

groundnut multiplication?

……

……

54. If you did not benefit from the groundnut multiplication project, can you please tell us why?
……
……

55. Have there been any negative or unintended results of the Project**?** (can be social, family or community relations, economic, environmental etc.) 1= Yes; 2 = No

56. If Yes, what were they? (List the changes)
_____

_____

_____

GROUNDNUT IMPACT ASSESSMENT
FOR NON-BENEFICIARIES
Enumerator Instructions: Do not read the list of possible answers to farmers. Just ask the question and let them give you their reply. Then circle the relevant code number or numbers. If they give an answer that is not included, write it down under "other".

A. HOUSEHOLD AND SOCIO-ECONOMIC CHARACTERISTICS

Enumerator……..

1. Name of Respondent farmer ……

2. Sex of Respondent 1=M 2=F 3. ID No. …….

4. Well being Rank 1=Wealthy 2=average 3=poor 4=very poor

5. District 1=Kumi, 2=Pallisa, 3=Tororo, 4=Mbale, 5= Sironko

6. Sub-county 11=Kidongole, 12=Malera, 13=Nyero 14=Ngora; 21=Lyama, 22=Kadama, 23=Kasodo, 24=Butebo, 31=Nabuyoga, 32=Nagongera, 33=Mazimasa, and 34=Kachonga; 41=Busiu 42=Butiru 51=Bukhalu, 52=Butandiga

7. Name of Household head_____ 8.Sex of household head 1=M 2=F

9. Age of household head (years) _____

10. Formal education of Respondent (highest level attained)
1= illiterate/no formal schooling 2.= primary 3.= secondary (A or O level)
4= Tertiary anything beyond S4 / higher TTC

11.Marital status of Respondent
1. Single 2. Married 3. Widowed 4. Divorced/Separated

12. Household composition (**Please indicate the number of each category of household members - note *each person should be counted only once.*)**

Age group	**Total number in age group**	**Participating in farm activities all the time**		**Not directly participating in farm activities**	
		Male	**Female**	**Male**	**Female**
Above 60 yrs					
18 –60 years					
12 - 17 years					
11 or less					

13. Are you a member of a farming group? 1=Yes 2=NO

14. Please list your main sources of household income in order of importance. (i.e. farming, trade, employment etc)

Rank	Main source of income in 2001	Main source of income 2004
1		
2		
3		

4		
5		

15. How has the income coming from crop production changed since 2001? (tick one only).
Increased? _____ Decreased? _____ Stayed the same. _____

16. What total area of land did you cultivate in year 2001 season A? …… acres;
and 2004 season A……..acres

17. List five crops in terms of area cultivated before the project and now.

List Main Crops in the order of area planted	Year 2001	Year 2004 (season A)
Largest		
Smallest		

18. Rank the main cash crops in order of contribution to household income. (1 is the most and 8 is the least.)

	Cash crop	Rank in 2001	Rank in 2004 (season A).
1	Cassava		
2	Gnuts		
3	Legumes (Green Grams / cow peas / beans)		
4	Sweet potato		
5	Maize		
6	Sorghum		
7	Millet		
8	Cotton		
9	Rice		
10			
11			

19. Think about the main foods that you consume as sauce, how frequent did the following sauces feature in your diet before 2001 and in 2004? Indicate
1= high (almost every day), 2=medium (1-2 per week) 3=low for (rarely 1/month) 4=never

	Main Sauces	How frequent in 2001	How frequent in 2004
	Meat (without gnuts)		
	Chicken (without gnuts)		
	Fish (without gnuts)		
	Cowpeas (without gnuts)		
	Beans (without gnuts)		
	Green grams (without gnuts)		
	Greens (without gnuts)		
	Groundnuts alone (binyewa)		
	Gnuts in combination with greens, legumes or meat		

20. How has your standard of living changed since 2001? 1=increased 2=decreased 3=stayed the same.
21. What has brought about the change? _____
22. When was the last time you grew g-nuts? …Season……Year……. Never _____
If never – skip to question 25.

B) Access to Rossette Resistant Groundnut Varieties. 23. Do you grow gnuts? 1. Yes 2. No

24. If yes please indicate the variety grown and source in the table below

Variety	**2001**		**2002**		**2003**		**2004**	
	Yes/No	**Source of seed**	**Yes/No**	**Source of seed**	Yes/No	**Source of seed**	**Yes/No**	**Source of seed**
1. Red Beauty								
2. Igola 1								
3. Serenut 1								
4. Serenut 2								
5. Serenut 3								
6. Serenut 4								
7. Others [specify]								
8								

Codes for source of seed *1. ATU 2. ATU Group Member 3. Bought from a stockist 4. Bought from non ATU farmer 5. Own home saved seed 6. Bought from multiplication farmers 7. Bought from the open market*

25. If you do not grow Groundnuts, WHY NOT? _____

26. For each variety grown above indicate on the table below why you like or dislike it, and give ranks (1= best liked and 9 is least liked.) fill columns for lies and dislikes, then do the ranking.

Variety	**What do you like about the variety (likes)**	**What don't you like about the variety (dislikes)**	**Rank the varieties according to preference**	**Reason for the ranking**
1. Red Beauty				
2. Igola 1				
3. Serenut 1				
4. Serenut 2				
5. Serenut 3				
6. Serenut 4				
Other specify 7.				

Code for likes *1. High yielding. 2. Rossette Resistant 3. Tolerate drought 4. Good taste 5. Matures early 6. Marketable 7. Good price 8. Others specify* **Code for dislikes** *1. Low yield 2. Not rosette resistant 3. Not tolerant to drought 4. Poor taste 5. Late maturing 6. Low market 7. Low price 8.Too labour intensive, 9. Too much weeding, 10. Others specify*

27). ***Use of Improved/Recommended groundnut production practices. (do rating before asking reason for modification or why practice is not followed)***

Practice/Principle Recommended	**Notes on recommended practice**	**Rating**	**Modification (what is being done differently)**	**Why? (reason for modification or for not following at all)**
1. Site selection	Free draining soil not after legume			
2. Land preparation	Weed free, fine seed bed			
3. Timely planting	At the onset of rains, after a heavy rain			
4. Spacing	45x10cm for bunch types e.g. Serenut 3 & 4, 45x15cm for Serenut 2			
5. Improved variety	E.g. Serenut 1, 2, 3, 4, Igola1 & Red beauty			
6. Weed control	Keep garden weed free; at or after flowering do hand weeding			
7. Pest control	Spray against pests. Leaf miner			
8. Fertilizer use	Use SSP at planting 50kg/acre or use manure or rhizobia			
9. Timely harvest	Dark markings on inside of shell I.e. at maturity			
10. Proper drying	Cracks on biting or rattle on shaking or during drying don't keep indoors for more than a day without drying			
11. Proper storage	Cool, dry place, aerated containers, off the ground			

CODE FOR RATING: 1= Fully Follow, 2= Not fully followed (modified in some way), 3. Not followed at all.

28) **How did you learn about Groundnut seed growing & production** *(possible answers)*
1. From extension worker _____ 2. Production committee _____
3. Parish Development committee (PDC)_____4. Other farmers _____ 5. Brochures _____
6. Others specify (List responses mentioned by farmers._____

29) Did you attend any training on groundnut production? 1= Yes, 2= No

30) If yes, organized by who: 1.=FPRA 2.=Production Committee
3. PDC 4. NAADS 5.=HASP 6.=Other

31. If not, why not? _____
_____

32) What new ideas have you learnt from the trainings?
_____
_____
_____

33) Have you shared the information about improved groundnut production practices/principles with anyone? 1=Yes, 2=No

34 If yes, how?
_____
_____
_____

35) What have you benefited by following the recommended practices on groundnuts production mentioned above?
_____
_____
_____
_____

36) For seed you bought. Specify the following:
Variety bought _____
Quantity bought _____(basins/bags/kg) *circle unit used*
Year bought _____
Price paid _____(basins/bags/kg) *circle unit used*

37. What major challenges have you faced with groundnut production? _____

INCOME

38. Which family member makes decision about the use of the money from Groundnut sales?

1) male head of household 2) female head of household

3) both man and woman 4) other, specify _____

39) Where do you go to sell the G.nuts? 1. Farm Gate 2. Market in Subcounty 3. Other Subcounty 4 District HQ 5. Outside District

40). At what price did you last sell it _____(per bag/basin/kg) *circle unit used.*

41). How did you sell it? 1=as a group 2=or as an individual

42). Did you experience any problems with access to Market? 1= Yes 2=No

43). Explain _____

44. Do you undertake any activities to add value to your groundnuts before selling? 1. Yes 2. No.

45). If so, what? 1. Shelling 2. Making peanut butter 3. Making Flour

OTHERS

46. Have you heard about the AT Uganda Groundnut Multiplication Project? 1=Yes 2=No

47. How have you heard about it? _____

48. What did it do

_____

_____

_____

49. Has the groundnut project had any impact on you? 1=yes 2=No

50. If Yes, can you tell us how has it affected you? (**Ask the farmer then code – do not read list. Circle all that are mentioned.)**

A. More groundnuts in the market B. More varieties/ better quality groundnuts available

C. Better groundnut seed available D. information/skills on improved groundnut production

E. Other (specify) _____

51. Have there been any negative or unintended results of the Project**?** (can be social, family or community relations, economic, environmental etc.) 1= Yes; 2 = No

52. If Yes, what were they? (List the changes) _____

Appendix 12

SEED QUALITY AND STORAGE TRAINING 19TH JULY 2002 PSPC MBALE

WHAT IS SEED?

Seed is something meant for planting. It can be in the form of true seed (e.g. groundnuts), cuttings (e.g. cassava), vegetative material (e.g. banana) etc.

QUALITY

Is a combination of factors leading to the final **quality** of seed. These include: moisture content, seed shape, colour, viability, freedom from diseases etc.

In my case, I will say that quality begins at harvesting.

HARVESTING

Timing

It is very important to harvest groundnuts at the correct time. If harvested too early, the seeds will shrink when drying which lowers the yield, oil content and **quality** of the seed. Delays in harvesting will result in poor quality seed due to mould infections and subsequent aflatoxin contamination of the seeds/pods. Late harvesting also reduces yield because higher proportions of pods are left in the ground due to the pegs being weak and the pods breaking off. If harvested late, some non-dormant varieties will begin to sprout in the filed resulting in yield losses.

Indicators for harvesting time

Leaf fall is not a good indicator of when to harvest. It is recommended that a few plants (3-5) should be pulled up and the pods removed and shelled the insides of the shells should be examined. If they majority of pods (70% upwards) have dark markings inside the shell and the seeds are plump and the correct colour for that variety, then the groundnuts are mature and ready for harvest. If the crop is severely defoliated as result of disease (only one or two leaves per branch) or if sprouting had begun, the crop should be harvested regardless of maturity. The estimated period of maturity for each variety can be used as a rough guide.

Hand lifting

Harvesting by hand only is more suitable for the erect groundnut varieties in sand, loam soils, which are well drained. When the soils is wet and heavy or very dry, it is much more difficult to pull up the whole plant without losing pods.

Hand lifting with hoe or hoe fork

By using a hoe during harvesting it is possible to lift plants out of heavy or dry soil with a reduced pods loss. Spreading varieties can also be more easily lifted. Care should betaken not to damage the pods with the hoe as damage makes the pods susceptible to fungal attack, thus reducing the quality. A hoe fork lessens the likelihood of such damage.

Cleaning
It is important to shake the plant after lifting to remove excess soil from the pods, particularly when the soil is wet or heavy. Soil stuck to pods will lengthen drying times and produce better conditions for the development of unwanted fungal growth.

DRYING
The Importance of drying
The correct drying or curing of the harvested groundnuts is very important as poor curing can help induce fungal growth (producing aflatoxin contamination) and reduce seed **quality** for consumption, marketing and germination for the following season's planting. For good storage and germination, the moisture content of the pods should be reduced to 7-8%. This may be difficult to determine locally, but it means that the pods should be well dried. There are different ways of drying the pods, some of which are better than others. It is particularly important to note that if the pods are exposed to the sun for too long the seed **quality** can deteriorate considerably and germination can be affected.

Drying in windrows
If the harvested groundnut plants are left to dry on the soil surface where they have been lifted, the pods are likely to be in contact with the soil, which can contain moisture and be at a higher temperature. This method can easily affect the **quality** of the seed, particularly if there is rain during the drying period. If filed drying is used, it is better to use windrows, where plants are laid in rows to catch the wind and dry more quickly. The drying of pods in windrows (3-5 days) should produce the required level of moisture before the pods are picked or stripped. Excessive exposure to the sun can affect the **quality** of the seed.

Drying on mats
The plants can be picked/plucked from the windrows and then laid out in a thin layer in the sun on dry ground, matting or other dry surfaces for a further 2-5 days, which would normally dry the pods to the required moisture content for storing. Pods should be covered or taken indoors during the wet weather. They can also be picked immediately after lifting and then dried in the sun as above for 6-8 days. Once again excessive exposure to the sun can affect the quality of the seed.

Drying so that the pods are shaded
Ideally pods should be dried with plenty of air circulation and in the shade. Two principal methods are used elsewhere in Africa, both of which can produce good **quality** seed with reduced levels of fungal infection. After 2-3 days of wilting in the field in windrows, the plant should be dried using one of the following methods.

(a) **Cock.** Plants are laid, with foliage, directly on the ground in a circle 1-2 meters in diameter, the pods placed towards the inner part of the circle. Layers of plants are built up, gradually reducing the diameter of the circle, as the cock gets higher, until there is a small opening left at the

top of the cock. Foliage (e.g. banana leaves) can be used to cover the top of the cock. The cock should be built on raised ground so that the lower parts do not get waterlogged if it rains during drying. Polythene should not be used for the base of the cock as this reduces drainage in the case of rain and also should not be used as cover as a build up of condensation can occur.

(b) **A-frame.** The wilted plats are gathered and stacked on an A-frame with the pods facing inwards and a way from the soil. A-frames are easy to construct using three thick poles as a base with thin poles attached to either side of the two main poles of the A-frames shelves on to which the wilted plants can be placed. The lowest shelf should be about 30cm above the ground. Excellent air circulation occurs and, if constructed properly, the drying foliage of the plants protects the pods from rainfall and thus improving the **quality** of the nuts.

In both cases the groundnuts should normally be left drying for 3 – 4 weeks before the pods are packed. After picking do not dry further by putting the pods into the sun as this could result in over-drying or a reduction in seed **quality.**

Plucking

The hand removal of pods from the plants (plucking) can be labour intensive. A simple frame of wood, built at a height convenient for plucking, covered with a stretched piece of chicken netting, can speed up the process considerably and reduce drudgery. The dried/wilted plants are held by the leaves and the roots/pods drawn across the stretched chicken wire. The pods get caught in the wire and are pulled off, dropping below the frame.

STORAGE

Requirements

It is best to store groundnuts in their shell. Good drying of the pods to 7-8% moisture content will help to ensure that the seeds remain in good conditions during storage. Never bag groundnuts for storage if the pods are still damp. Before storing, poor, damaged, shriveled, rotten, or fungus-infected pods should be removed. Whatever the storage container, it is important to ensure that the store is dry and that there is good ventilation so that the pod/seeds do not increase in moisture content, which would encourage fungal growth. Ideally the store should be cool, as this prolongs life of the pods

In bags

Bags should be made of a material, which allows the air to circulate, therefore, gunny bags are recommended. Do not use polythene or polypropylene bags as these restrict airflow and fungal growth could occur. For the same reason, do not cover bags with plastic or tarpaulin (canvas), which may also restrict ventilation and increase condensation. Bags should be stored away from the ground on wooden slats to avoid damage from dampness. If bags are stacked a gap should be left between stacks to allow ventilation. Do not stack bags more than ten bags high.

Other methods
If bags cannot be used, storage in clay pots, woven baskets, or storing loose may be used. In all cases it is important to ensure good ventilation by keeping the storage vessel off the ground and ensuring that the storage place used is dry. When storing the pods loose, a platform made of local material (e.g. bamboo) should be made to keep the pods off the ground.

Pests
When pests damage the pods/seeds, they create the conditions for the build-up of fungal infection. Insect storage pests can be controlled using Actellic Super applied as a dust to the pods before bagging.

Shelling
Shelling should be done as and when groundnut seeds are required for consumption, marketing or for planting as the storage life of the seed outside the shell is short and the **quality** can reduce rapidly. With both hand and mechanical shelling, the seeds should be checked and any discoloured, mouldy or shriveled seeds should be thrown away.

By hand
Hand shelling is labour intensive but is effective for small quantities of groundnut. It is particularly good for the selection of seed for planting the following season, as there is less damage to the seeds, thus avoiding fungal infections. The practice of putting pods into sacks and beating them to break them up is not recommended as this can produce a high level of damaged seeds, thus reducing the **quality.**

AFLATOXIN
Aflatoxin is a toxic substance produced by mould fungi (*Aspergillus flavus), which* can grow on poorly managed agricultural crops, particularly groundnuts. Aflatoxin contamination may happen during pre-harvest and post-harvest handling of the crop. Pre-harvest contamination is severe during periods of drought at the pod filling stage. Post-harvest contamination results mostly from poor drying and curing procedures. If eaten in sufficient quantities, aflatoxin can cause sickness, hepatitis and/or liver cancer. It is, therefore, extremely important to ensure good management of groundnut crops and any suspect seed should be destroyed rather than used for human or animal consumption. If groundnuts are to be sold for export no aflatoxin contamination must present. Although the practices for minimizing mould are mentioned in the different sections above, they are summarized here.

a) Harvest the crop as soon as it is mature, any delay will encourage the development of fungus.
b) Avoid damaging pods during cropping.
c) Remove soil from the pods before leaving to dry.
d) Ensure that the correct drying procedures are used and that damaged shriveled or mouldy seed.
e) Avoid pod damage by insects as this can leave the pods/seeds susceptible to fungal infection.

f) Pre-harvest contamination is sever during drought and extra care should be taken to clean the seed, especially the smaller seed.

All these lead to production of **quality** seed.

QUALITY AND MARKETING

The quality of groundnut is determined very much at the farm level. Good growing, harvesting, drying and storage on-farm (as set out above) will ensure that the pods/seeds are marketable. A buyer will in particular, be looking for (ideas shown in brackets): Varietal purity (at least 95%), low moisture content (7-8%), high shelling percentage (above 55%), low level of damaged pods/kernels (less than 17%) and no aflatoxin contamination.

Appendix 13- Farmer- Led Multiplication of Rosette Resistant Groundnut Varieties for Eastern Uganda

AT Uganda's Experience In Seed Multiplication.

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Abstract
Access to improved and appropriate technologies crucial for increased crop productivity has remained a major production constraint especially for the resource poor farmers. Farmer led verification and multiplication of improved crop varieties is one sure way to provide poor farmers with access to improved varieties, practices, knowledge and information required for increased crop productivity.

The project on farmer led multiplication of rosette resistant groundnut varieties focuses on involving the target group in most activities to ensure their participation and ownership of the process for long-term sustainability and benefit.

The approach emphasizes the participation of key stakeholders in planning, implementation, monitoring and evaluation of activities. The groups participate in preparation of seed distribution plans and set regulations to ensure seed is not lost thus breaking the distribution chain. Local leadership structures are put in place at group level (production committees) and at parish level (Parish Development Committee) with defined roles to ensure planned activities are completed. Distribution and repayment of the loaned seed is done in public to ensure accountability. Seed is given to individuals in groups as loan seed "to be repaid with seed interest" so that it multiplies until all target households access it. Groups provide peer pressure to ensure seed is repaid. Parish Development committees and Production committees trained on seed production and reinforced with simple production guides, then train other beneficiaries. Adoption is promoted through end of season evaluations, joint review meetings and field monitoring with key stakeholders for progressive problem identification and solving.

Training and direct participation has enabled farmer led multiplication and distribution process to succeed dramatically with minimal external supervision. In two years 2,210 beneficiaries from 160 groups received seed and training. In 2004 seed will be extended to new groups.

Key words
Groundnuts, rosette disease, farmer led, multiplication.

1.0 Introduction
1.1 General Background

The farmer led multiplication for rosette resistant groundnut varieties for eastern Uganda is a three year project funded by the Department For International Development (DFID) through Natural Resources International (NRI) Ltd and implemented by AT Uganda Ltd. the project was a result of call for proposals for promotional projects to promote or apply (disseminate) research outputs of NRI crop protection programme. The project operates in the five districts of eastern Uganda namely Kumi, Pallisa, Tororo, Mbale, and Sironko. The project began on the 1st February 2002 and will end on 31st march 2005.

The project area falls in the montane (Mbale and Sironko) and Teso farming systems characterized by crop-livestock mixture. The dominant annual food crops include beans, groundnuts, finger millet, cassava, sorghum and maize. However, Mbale and Sironko differ from the rest of the region in that in addition to the food crops above bananas are grown for food income. Cotton is a common industrial crop in the Teso system, Sironko and lowlands of Mbale, while Arabica coffee is the main commercial crop grown in the medium and high altitude areas of Mbale where it is intercropped with bananas.

1.2 Project Summary /Background

The baseline survey for another project in the same project area identified the need to address Groundnut rosette disease as a major constraint to groundnut production, a major crop grown for food and income; thus the basis for focus on groundnuts as a crop.

Considering that groundnut seed rate is high and the risk of crop failure from rosette disease is high, lack of seed is a major reason why poor households do not grow groundnuts, even though groundnut production is very profitable. Eastern Uganda used to produce large quantities, however, decline in production is explained by the lack of cash to buy chemicals to control rosette. Therefore rosette control through disease and vector resistance is more economical, sustainable and appropriate especially for resource poor farmers.

In view of this situation this project promotes farmer led multiplication of rosette resistant groundnut varieties for poor households under the supervision of local authorities. It will increase groundnut production and ensure poor people have access to new varieties through delivery of the following outputs:

1. Extension staff (FPRAs), local authorities and farmers trained in groundnut production, multiplication and storage;
2. Foundation seed for new rosette resistant varieties obtained and multiplied by farmer group member;
3. Multipliers return double the amount of planting material received for redistribution and further multiplication;

4. The process of collection, redistribution and monitoring of multiplied seed effectively handed over to local leadership for management.

It is dissemination and not a research project. Lessons from previous projects indicate that farmer led multiplication of improved varieties is one way to ensure that the poor but able farmers access and utilize improved varieties, practices, knowledge required for increased productivity.

2.0 Methodology/ Approach

2.1 Materials studied.

Information contained in this paper is generated from AT Uganda Ltd documents especially data and information collected during implementation of earlier projects. Documents reviewed include baseline studies, project memorandum, progress reports, end of season evaluation reports, reports of joint review meetings, and impact reports for AT Uganda LIFE project (livelihoods initiatives for eastern Uganda project).

2.2 Area Description

The project operates in the five districts listed above and covers in total sixteen sub-counties. The sub-counties include: Nabuyoga, Nagongera, Mazimasa, and Kachonga in Tororo District; Lyama, Kadama, Kasodo, and Butebo in Pallisa District; Kidongole, Malera, Nyero and Ngora in Kumi District; Bukhalu and Butandiga in Sironko District; And Busiu and Butiru in Mbale District.

In each sub-county the project operates in two parishes and works with ten farmer groups, with a total membership of 4317 farmers in the 160 groups. These groups earlier participated in seed multiplication under LIFE project.

2.3 Project Approach / Methodology

The model for multiplication of seed used is a replication with modifications of the project approach already practiced with other crops in LIFE Project, an earlier project implemented by AT Uganda Ltd with same stakeholders.

The approach emphasizes participation of key stakeholders in this case beneficiary farmer groups, Production Committees (PCs) and Parish Development Committees (PDCs), and FPRA and Sub-county local government authorities in planning, implementing, monitoring and evaluating project activities.

The process involves:

a) Training of FPRAs as trainers on groundnut production.
b) Setting up local leadership structures at group level i.e. PCs to handle seed multiplication issues and another structure at parish level I.e. PDCs to coordinate and monitor the groups. Each group is represented on the PDC, which also has local government representatives from the village and parish levels, especially local councillors (LCs) and the parish chief.

c) Participatory identification and assignment of roles to the local leadership i.e. PCs and PDCs to ensure seed given out is safe guarded and repaid for further multiplication, (the roles include among others training other beneficiaries on groundnut production i.e. farmer led extension, monitoring management of crops in the field, facilitating identification of beneficiaries, distribution and recovery of seed for redistribution and record keeping.
d) Delivery of seed by project to individuals in groups based on distribution plans i.e. plan of how multiplication should take place and the order in which new materials should filter through the group members to ensure that all have access within the shortest time possible, drawn by the groups assisted by the PCs and PDCs considering the able poor and women as priority to receive seed first.
e) Acknowledgement of receipt of seed and multiplication terms especially on quantities to be repaid by all beneficiaries and witnessed by PDCs for accountability and transparency for easy follow up at group/ public meetings.
f) Local leaders keep a register of all seed recipients.
g) Beneficiaries are responsible for custody, storage of seed since distribution is done soon after harvest and provide land and labour to produce the crop.

3.0 Results

For effective, sustainable dissemination of improved varieties to poor households interventions in training, multiplication, distribution and handover of management to the community were undertaken. The following results have so far been achieved:

No.	Activity	2002	2003	2004	Comments
1.	No. of beneficiary sub-counties	16	17	17	The project area did not change except one sub county of Kadama, which was divided in the second year making nine beneficiary groups to fall in another sub county of Kirika.
	Kumi	4	4	4	
	Pallisa	4	5	5	
	Tororo	4	4	4	
	Mbale	2	2	2	
	Sironko	2	2	2	
2.	No. of FPRA trained in groundnut seed production.	16	31	0	Additional locally identified farmers were also trained as field assistants to support the FPRA. The collaborating researcher conducted all trainings.
3.	No. of Project staff trained in groundnut seed production.	4	4	0	These are staff involved in supervising project activities in the field.
4.	No. of PCs formed and trained in groundnut seed production.	160	0	0	A committee was formed in each group comprising of at least three members to support seed production activities at group level. Up to 480 farmers were trained as trainers.

No.	Activity	2002	2003	2004	Comments
5.	No. of PDCs formed and trained in groundnut seed production.	32	0	0	Each benefiting parish has a committee with at least 10 members. Each benefiting group is represented on the PDC and the rest of the members are LCs and the parish chief, up to 78 leaders excluding PCs were trained. This committee coordinates the parish activities and helps enforce multiplication by laws.
6.	No. of individual beneficiaries trained in groundnut seed production.	800	2210	4210	These figures are running totals. All individuals receiving seed for multiplication have to train before getting the seed. Refresher trainings were also conducted for all each season to promote adoption, and were done by the PCs supervised by FPRAs.
7.	No. of simple groundnut seed production guides produced and distributed to farmers trained.	0	4000	0	All beneficiaries trained got copies.
8.	No. of groundnut production manuals given to FPRAs and other trainers.	50	0	0	The NRI CPP supplied the manuals. Copies were also given to non-participating Agricultural staff.
9.	No. of trainings conducted no seed production.	32	176	176	In the first year trainings were at sub county level. However, in the second year it decentralized to group level to increase group participation and attendance. Refresher training of the trainers i.e. PCs and PDCs preceded trainings at group level.
10.	No. of varieties given out for multiplication.	2	3	3	These include Serenut 2 and 3 in the first year and Serenut 4 was added in the second and third years.
11.	No. of bags of seed in shell bought and given to farmers. Serenut 2 Serenut 3 Serenut 4	269 264 8 0	286 50+ *156 36	194 0 95 99	Twice the amount given out was returned after harvest for further redistribution to other farmers. + Groups bought additional 89 bags using matching grant funds. *Seed supplied was mixed so most was flushed out.
12.	Hectares multiplied using purchased seed. Serenut 2 Serenut 3 Serenut 4	82.50 80.00 2.50 0.00	35.50 15.00 6.00 14.50	69.00 0.00 29.00 40.00	41 hectares lost as result of wrong seed. However, up to 187.5 hectares were multiplied. Farmers planted additional 27 hectares using seed bought using matching grant funds.

No.	Activity	2002	2003	2004	Comments
13.	Hectares multiplied using seed returned by beneficiaries and distributed to other farmers within groups.	0.00	160	377	A total of 537 hectares planted. It is expected to be more as some records were missing. * Records missing.
	Serenut 2	0.00	160	341	
	Serenut 3	0.00	*0.00	10.00	
	Serenut 4	0.00	0.00	26.00	
14.	Metric tons of extra seed available and sold by beneficiaries.	0.00	39.25	N/A	All these were sold within the project area for seed. The serenut 2 sold can plant 455 hectares.
	Serenut 2	0	36.00		There was also informal distribution to non-participating members of the community, which could not be quantified.
	Serenut 3	0	1.15		
	Serenut 4	N/A	2.10		
15.	No. of joint review meetings held.	0	32	32	Two meetings were held each growing season per sub county, and attended by all groups to assess progress of project activities with the aim of identifying and solving problems in a participatory manner.
16.	No. of joint field monitoring visits made.	16	16	16	By a team comprising of PDCs, PCs and project staff (sometimes). Each group was visited at least once a season, to assess adoption of practices, crop performance and to instil the culture of collective responsibility.
17.	No. of end of season evaluations conducted with beneficiaries.	16.00	16.00	N/A	One per season per sub county. To promote appreciation and adoption of practices.
18.	Other trainings offered to facilitate the process.				All 160 groups received the trainings.
	Record keeping.				For PDCs and PCs.
	Collective marketing of produce.				All groups and marketing committees set up, to help sell extra seed produced profitably.
	Processing of peanut butter.				45 groups, 2 individuals and 8 FPRAs acquired manual groundnut grinders in the second year to diversify marketing opportunities for groundnuts.
19.	Other achievements.				This indicates appreciation of the approach. It is mainly used in Ngora, Mazimasa and Kachonga sub counties.
	Some sub counties and programmes have adopted the same multiplication method for groundnuts and other crops.				
	Some beneficiaries are also using the same method to lend out seed to friends, neighbours, and relatives.				

4.0 Challenges

Just like in any under taking, challenges encountered and included:

1.Drought affected yields in some cases resulting in the reduction of seed amounts repaid and slowing the coverage.

2.Other pest and diseases especially the leaf miner requiring chemical control by resource poor farmers posed a challenge.

3.Some mismanagement of the multiplication and distribution process by FPRAs and local leaders leading to distribution of seed to people outside influence resulting in a few cases of none repayment and missing records.

4.Some farmers missing out a season due to other problems slowing the coverage and spread of seed.

5.Some farmers eating up or selling seed before planting especially the real poor who also happen to be group members.

6.Poor handling of seed by some individuals, resulting in low viability and thus low production by next beneficiaries.

7.Sustaining commitment of non-group members of the PDC since the service is voluntary.

8.Enforcing by laws incase of default especially since most group members come from the village not taken seriously, to protect own social image.

9.Sustaining participatory activities such as joint review meetings and monitoring.

10.Poor seed quality especially mixing of varieties with local once.
Most of the challenges encountered were discussed addressed in a participator manner during review meetings and field monitoring informed decisions made.

5.0 Discussion of results/ findings

5.1 Training

Training is important to ensure that beneficiaries have access to the necessary knowledge and skills for increased productivity and seed quality in sustainable manner. It calls for building of the local capacity to train, and thus the training of PDCs and PCs as trainers and providing them with simple seed production guides. This equipped them with the necessary knowledge and skills to pass on to others. The high number trained was achieved, as training was a pre requisite to accessing seed. This coupled with the emphasis for quality seed encouraged most farmers to attend the trainings including some

non -group members. Refresher trainings at planting helped in ensuring high adoption of correct spacing for attainment of the right plant population.
End of season evaluations also offered opportunity for more learning and adoption of practices, as farmers were able to hear and learn from the experiences of their fellow farmers, apart from being able to assess and appreciate the varieties and practices promoted.
Having the farmers themselves take charge of these activities helped them participate learn from the process.

5.2 Multiplication

Increase of seed quantities for distribution to all targeted beneficiaries in a short period, required whoever received seed to return more than the amount initially received. The multiplication factor of two was definitely easy to meet and encouraged repayment by most farmers and thus expansion of seed quantities evidenced by the increased acreage from repaid seed and also quantities sold for seed.

Clear repayment terms and procedures developed in a participatory manner and enforced, and group peer pressure a rising from community ownership of the seed also did instil the repayment culture in beneficiaries and gave control to the community.

Joint monitoring of crops in the field helped remind beneficiaries of their obligation and helped in timely identification of problems which depending on the nature were either solved immediately or discussed later with all members at the joint review meetings resulting in participatory problem solving. This also helped other groups take precautionary corrective action as they learnt from each other and helped groups refine their by laws based on challenges encountered and lessons learnt from others. However, there were cases of failure to pay back the full amounts, missing out a season, also a few cases of total loss due to extreme weather, and mixing of varieties at point of purchase also affected multiplication as such mixed seed had to be flushed out of the multiplication process. All these combined reduced the amounts of seed multiplied and thus expected acreage.

5.3 Distribution

As beneficiaries paid back seed there were quantities of seed to pass on to other members. With the process of distribution of seed to the beneficiaries already streamlined using distribution plans, the high return rate ensured that good quantities were available to serve many farmers. The process was helped by the use of by laws, PC and PDC participation and group peer pressure as every member looked to the group as the only opportunity and source to access seed. Thus by the end of the first season of the second year nearly all members had accessed seed, with groups having small membership already passing on extra seed to non group members.

5.4 Handover

Putting in place of PDCs and PCs helped set up structures that will eventually continue managing the multiplication process. Training in the areas of

responsibility and seeing them implement with some supervision and lesson learning helped build their capacity to a great extent The challenge remains to how to keep them motivated to carry on without further supervision. The process has generally already been handed over, however, the project is still providing the necessary support till the end of the project.

5.5 Challenges

Most of the challenges were addressed as they arose and got inbuilt in the planned activities and got dealt with specifically.

Streamlining distribution procedures, discussing them and carrying it out in public ensured the right beneficiaries got seed.

Seed quality issues were addressed through continuous training and also through imposing penalties for distributing poor quality seed.

Repayment of seed was fostered through censoring of beneficiaries to ensure only those with potential to repay get, field monitoring and revision of to cater for new challenges as they arose and enforcement of by laws.

To keep PDCs operational and PDC members' motivated provision was made for them to get seed as other beneficiaries, which seemed to work. However, having the groups represented on the committee helped because as direct beneficiaries they have sustained interest and have become the driving force of the committee.

6.0 Conclusion

For effective sustainable dissemination of improved varieties and practices to poor households, interventions should foster and address the critical factors of community ownership and control of processes. This can be achieved through participation of the key stakeholders through processes and structures identified by them, for collective responsibility. The process should be kept as simple as possible; participation of key stakeholders ensures capacity building, local ownership, control and better understanding of the project and thus commitment to its sustainability.

Project Logframe: R8435 (ZA0666) Commercial Incentives For Sustainable Groundnut Multiplication

Narrative Summary	Objectively verifiable indicators	Means of verification	Important assumptions
4.1. Goal			
Livelihoods of poor people improved through sustainably enhanced production and productivity of RNR	To be completed by CPP Programme Manager	To be completed by CPP	To be completed by CPP Programme Manager
4.2. Purpose			
Promotion of strategies to reduce the impact of pests and stabilize yields in semi arid cereal-based cropping systems, for benefit of poor people.	To be completed by CPP Programme Manager	To be completed by CPP	To be completed by CPP Programme Manager
4.3. Outputs			
1. Hand-Over Management of multiplication and redistribution in 16 new subcounties handed over to the local community leaders, who have been trained.	1.1 At least 16 ~~32~~ local leadership structures (1 per subcounty) created and fully responsible for multiplication and redistribution of planting material. 1.2 At least ***240 community and group leaders*** from ***80 new groups*** trained in seed production and multiplication, group development, and collective marketing.	1 PDC work plans 2 Community distribution plans and records 3 Training reports.	Local leaders will have the incentive to keep working.
2. Multiplication Foundation seed of new rosette resistant groundnut varieties procured and multiplied by farmer groups and farmers trained in seed production, multiplication, distribution management, and collective marketing	2.1. At least 70 ~~***100***~~ ***hectares*** of new improved rosette resistant varieties of groundnut (Serenut 2, 3 and 4) multiplied in ***16 new sub counties*** 2.2 At least ~~16~~ 80 additional groups trained in seed production, and group development	1. Multiplication agreements 2. PDC register records. 3. Delivery notes 4. Training reports.	Seed will be available in sufficient quantities. Extension staff will be accepted by farmers in the new parishes.
3. Market linkages: One or more Groundnut marketing Associations with Subcounty level branches established either at the regional or district level	3.1 Marketing Association launched and registered with the District by EOP 3.2 Supply Prospectus drawn up and "sold" to at least one end buyer by end of project. 3.3 At least 16 marketing centres formed, each with a centralized storage facility for ease of quality control and bulking.	1. Constitution 2. Association registration 3. Progress reports	Business partners can be found who are interested in buying groundnuts.

Activities	Inputs	Means of verification	Important assumptions
1.1 Hold mobilization meetings in new sub counties. ***1.2 Mobilize new groups of beneficiaries.*** ***1.3 Establish Parish leadership structures.*** 1.4 PDC's and ~~16~~ 80 group PC's to be trained as trainers on seed production. 1.5 ~~32~~ 16 PDC's and ~~16~~ 80 group PC's to be trained as record keepers. 1.6 Local leaders train the farmer groups under supervision of the Extension staff. 1.7 Parishes monitor field performance of seed. 1.8 Parishes hold first end of season evaluation meetings. 1.9 Community leaders witness first repayment and redistribution.	Total budget of £52,200 Including the following to AT Uganda: Staff Costs **£14,208** Overheads **£5,532** Capital Equipment **£0** Travel and Subsistence **£10,470** Miscellaneous **£22,290**	Register of new participating communities and groups PDC records Training reports Training reports and PDC Records Evaluation reports Redistribution records	Local leaders will be motivated to work without monetary pay.
2.1 Groups prepare distribution plans. 2.2 Groups prepare seed multiplication regulations (bylaws). 2.3 Review and reprint seed production guides for distribution to all new farmers 2.4 Buy additional seed from original groups and research station. 2.5 Deliver seed to PDC's for distribution to groups. 2.6 Repayment of sufficient seed to plant ~~20~~ 140 hectares collected from recipients and ready for redistribution the next season.	Farmers donate land and labour.	Distribution plans Byelaws Production guides Delivery notes Delivery notes Redistribution records	1.1Original groups will wait to sell seed to project.
3.1 Extension staff train new groups on group development and collective marketing. 3.2 Groups facilitated to come together to form a groundnut marketing Association with sub-county level branches 3.3 Simple storage facilities identified and established (one store per Sub-county) on a cost sharing basis for purposes of market bulking by end of project. 3.4 Groundnut marketing association linked to groundnut buyers and processors. Supply prospectus developed, circulated to potential buyers/investors and commercial market relationship negotiated	Technical assistance in marketing association formation Suitable Rental property identified that can be modified for the purpose. Local building materials supplied by community Technical assistance from ILO to develop and promote Supply Prospectus	Training reports Association constitution and registration Tenancy agreements Stores inspection report Prospectus Contract	Farmers sufficiently committed to invest time and resources in association management

3.5 Groups hold end of season evaluation meeting		Evaluation report	