

**October
2013**

**Training report on Integrated
Pest Management & Sustainable
crop production for Empowered
Voices Community Members in
Nalutuntu Sub-county, Mubende
District, Uganda.**

Nakalanda Julie Matovu

Juls Consults – Agribusiness & Sustainable development

0772/0701 63 66 88

17th – 19th October 2013

TRAINING WORKSHOP REPORT ON INTEGRATED PEST MANAGEMENT & SUSTAINABLE CROP PRODUCTION FOR EMPOWERED VOICES COMMUNITY MEMBERS IN NALUTUNTU SUB-COUNTY, MUBENDE DISTRICT.

Background

The training was prepared, based on a prior needs assessment during a consultative participatory rural appraisal session that was held in August 2013 at Kyakatebe B, Nalutuntu, in which several community development needs were indentified and prioritized. During the needs assessment, it became apparent that the community, which is largely a farming community, but more specifically involved in cultivation of food crops especially beans, matooke and other staples completely lacks services in agriculture extension. This was further affirmed during the two-day bean project monitoring visit in which it was established that there is non-selective and non-systematic use of agro-chemicals within the entire community. Farmers were using all sorts of agro-chemicals with no protective gear whatsoever, thus endangering their lives and the entire eco-system. The community seems to be convinced that they cannot raise their crop without chemicals yet they expressed their fear that the agro-chemicals are becoming less and less effective except with increased dosage, which turns out to be very costly [let alone the unknown danger to the environment]. After some online and telephone discussions with Kaley & Lene, and Peninah, Empowered Voices (EV) requested Nakalanda Julie Matovu of Juls Consults to prepare for and conduct a training workshop to address this immediate need of filling the knowledge (and skills) gap for EV community members. This formed the basis for the training workshop design.

2.0 Design

The course content and flow of the topics covered was sequentially aligned starting with general topics such as Introduction to Community Development, Food Security at household and level to engage participants and enable them appreciate the challenges that they are currently facing and the potential they possess to address such challenges. More specific topics followed suit to stimulate the cognitive abilities of the participants in view of the subject matter to encourage positive change. The training methodology used was largely demonstrative during classroom and practical sessions to enable the participants acquire the basic knowledge in form of principles and practices to manage their agricultural projects at household and group levels. Although the time schedule for the training was limited to only two and half days, every effort was made to conduct the training in a participatory, practical, intriguingly, interactive and comprehensive approach to maximize knowledge and skills transfer to participants.

3.0 Purpose and goal

The purpose of the training was to enable participants appreciate their fields and cropping systems as part of bigger whole where a diversity of organisms (crops, other plants, pollinator insects, pests, predators, birds, animals, micro-organisms), other naturally existing elements such as rocks, water, soil, air, and human activity co-exist, interact and depend on each other and how they can harness these relationships to achieve sustainable crop production.

Training Objectives

1. To introduce to participants the concept of community development and the poverty challenge, relate them to their current situations and generate workable solutions.
2. To introduce to participants the concept of food security, and their role in achieving food security at household and group levels.
3. To equip participants with knowledge and skills in the management of the selected crop enterprises based on Good Agricultural Practices.
4. To introduce to participants the concept of Integrated Pest Management as an aspect of sustainable crop production.

4.0 Organizational arrangement

a) Venue and meals

The training venue was at a local church in Kyakatebe. EV members used the funds availed to them from Kaley and Lene through Julie to erect a shelter with seats where all participants could easily fit and be able to follow the proceedings and participate as would be required. Meals were also prepared in the vicinity of the training venue for easy coordination and access.

b) Time schedule and activity breakdown

During the three days of the training workshop, the pre-designed program was adopted in terms of content but not time. Given the fact that the area has a water shortage, participants requested to begin the sessions from 10:00am onwards and break off at 4:00pm daily to give time allowance for other domestic chores including morning gardening, fetching water and cooking for their families. This was agreed upon at the beginning of the workshop. Day one morning hours 10:00 – 11:00am were used to establish the working norms of the workshop, self-introductions, registration of participants, election of workshop leaders, discussion of participants' expectations and fears and review of workshop training

content. 11:00 - 12:00pm was used to cover the first topic of Introduction to Community Development, Food Security at Household & Group level. Most of the time was spent on discussing the Poverty Problem tree and the Solution Tree. This was done in a participatory manner where members were allowed to make their contributions of the branches and roots for each tree respectively. This was able to give participants an insight on how to deal with problem solving in their day-to-day lives. The next session (12:00 – 12:30pm) was for the Official opening of the workshop. The training sessions resumed with Introduction to Soils, Soil fertility management, Soil and water conservation until 2:30pm when lunch was served. After lunch sessions were opened with energisers and songs to keep participants awake and also for fun to make the training workshop enjoyable for all. The after lunch session was a wrap up of the day's activity and discussions for the following day's activity.

Day two also started at 10:00am with a recognisable quorum. Members continued to arrive as the sessions proceeded. Morning session was mainly theory and the afternoon was for practical sessions. The training mode was a good mix of brainstorming sessions, guided discussions of the theoretical contents while the practical sessions were practical demonstrations which targeted all participants since they were divided in five working teams representing each village. These carried on with completing each practical exercise under the workshop leadership with guidance from the Trainer.

At the end of the practical sessions participants re-convened and wrote down action plans at village level for the next three months.

c) Facilitators

Julie Nakalanda Matovu was the Principle Facilitator all throughout the training workshop.

The workshop leaders were guided through to carry out recap sessions, to keep general order, welfare of participants and time keeping among others. EV leadership was responsible for all the logistical requirements, mobilization of participants, training materials, venues and meals. The training was facilitated in the local language – Luganda all throughout.

d) Official Opening

This was presided over by the area Vice Chairperson of Kyaketebe cell . He represented the Chairperson, who was away on official duties. He urged participants to be attentive and each of one of them to have at least a new lesson to take home and also be able to put it in practice.



Fig.1 Official opening

Fig.2 EV officials in logistical preps

Fig.3 Workshop Leadership

Training proceedings:

5.1 Theory sessions:

TOPIC ONE: INTRODUCTION TO COMMUNITY DEVELOPMENT, FOOD SECURITY AT HOUSEHOLD & GROUP LEVEL

The key learning objectives were:

- 1.1 To enable participants understand what is meant by Rural Development in relation to what they have.
- 1.2 To enable participants understand the factor affecting development in rural areas.
- 1.3 To enable participants understand what poverty is, its root causes and suggest solution for its eradication.

A brainstorming session was done and participants listed the characteristics of rural areas and common problems of this particular community. The major problems that were mentioned were theft and abject poverty.

Understanding poverty & its root causes:

A problem tree was developed in a participatory approach and some of the root causes were also identified. Similarly a solution tree was also generated and some of the solutions to the problems that were mentioned included: attending training workshops and practicing what is learnt, listening to educative radio programs, timely planting, having quality products as shown in the figures below:

- Factors contributing to loss of soil fertility and those that can be used to minimize the loss were also discussed. The factors were pointed out respectively

Factors contributing to soil fertility loss	How to minimize soil fertility loss
<ul style="list-style-type: none"> - Continuous bush burning - Indiscriminate cutting of trees - Killing beneficial soil organism - Improper farming practices, especially on slopes - Mono-cropping systems - Foreign matters such as polythene bags in the soil - Excessive use of synthetic agro-chemicals - Overstocking 	<ul style="list-style-type: none"> - Through tree planting and appropriate location of different tree types on the farm - Carry out crop rotation - Mulching - Practising mixed cropping systems - Avoid excessive use of agro-chemicals - Avoid bush burning - Adding manure to the soil - Using soil & water conservation methods - Appropriate stocking

During this session, participants confessed that all the factors contributing to soil fertility loss are endemic in the area, but prior to the training, they were unable to consider them as serious causes of soil infertility.

- **Methods used in replenishing soil fertility:**

The following methods were discussed and practically done and the steps followed were also noted.

Compost making & application, Basket composting/kitchen gardens, Trench composting, Sunken basket compost, sources of farm yard manures and their field application, liquid manures: Animal dung liquid manure, animal urine liquid manure, plant teas, green manure

- Methods used in Soil & water conservation: Contour farming, Fanya Jju & Fanya Chini, contour strip cropping, contour ridge, terracing, Diversion channels/cut off drainage, double digging

Overview of agro-forestry for soil & water conservation

- Soil & water conservation
 - Contour farming
 - Construction and using A frame
 - Fanya Jju & Fanya Chini
 - Contour strip cropping
 - Contour ridge
 - Terracing
 - Diversion channels/cut off drainage
- Practical sessions of GAPS in
 - Banana management

An Overview of Good Agricultural Practices in Crop Management

- **Good start with “Good Seed”**

Participants were introduced to what a good seed is for both seed and vegetative reproduction. Details for the selected crops; maize, beans, cassava, yellow yams, bananas and vegetables were discussed. Participants were also guided on how to select and store own-farm seed, prevention of transfer of soil-borne diseases when acquiring vegetative seed from one farm to another and how to choose a reliable agricultural/farm store for good seed.

- **Good start with proper soil management**

Participants were introduced to principles of organic farming in compost manuring, use of plant teas, liquid manure, green mulching and soil conservation structures. Soil as a living medium with living organisms, air, water, nutrients and how to maintain appropriate soil structure and texture for plant growth. The danger in using agro-chemicals to kill off stubborn weeds was also discussed with the risk of killing off all organisms it brings, thus leaving a “dead soil”, and the subsequent need of artificial fertilizers which are expensive and destructive to the environment at large.

- **Timely planting.**

The challenge of climate change was discussed. Members were introduced to the concepts of climate change and how they could be contributing to the problem through unsustainable use of energy such as firewood or charcoal without replacement of trees in time, space and volumes to match the lost biomass. Members were trained on how set up their own weather calendars to follow local climate patterns and predict future trends within their localities. It was also discussed that with proper soil management, the fields will maintain soil moisture and tap available rainfall to enable timely planting.



Fig.6. An illustration of making local weather records

Fig.7 An Energizer session

- **Maintenance of biodiversity on the farm**

Participants were introduced to the importance of maintaining biodiversity – various forms in which life is manifested, such as trees, shrubs, grasses, legumes and herbaceous plants, insects, birds, water organisms, earthworms, crustaceans, animals and humans. These were discussed as components of the food chain and the relationships they have to improve soil fertility, recycle nutrients and control pest populations and diseases to maintain a healthy farm. Animals provide manure to the soil to rejuvenate its fertility; earthworms which feed in the soil and produce ready nutrients to the soil and improve soil structure, other micro organisms which help in the break down of natural manure into humus; how big trees carry out nutrient recycling to benefit other crops. How to control negative effect of over-shading and out- competing crops by trees through branch and root pruning and strategically locating them on the farm for maximum benefit, to include other uses such as wind breaking. Intercropping; planting different crops with different feeding requirements and root systems and canopies to effectively utilise soil nutrients, space and mutual benefits. Use of repellants such as onions (which have a very strong scent) intercropped with cabbages to control pests. The strong scent repel/confuse the pest and they keep away, thus controlling their populations.

- **Timely weeding**

The concept of weeds competing with grown crops for the same nutrients, harbouring crop pests and how to benefit from green manure by burying herbaceous residues of weeds in the ground when weeding, or used in compost or plant teas. The danger of allowing weeds to flower and produce seed was also discussed.

- **Integrated Pest Management** using natural methods and on-farm made pesticides

The basic principle of balancing the pest-host and environment in which they exist was discussed. The danger of using non-selective agro-chemicals was discussed and how it disrupts this balance (Pest-Host-Environment) when it kills off all organisms, including those useful to plants. Examples of useful insects such lady birds, praying mantis, which feed on plant pests especially those that are soft bodied, such as aphids, cut worms and caterpillars to control their populations on the farm; and *parasitoids* such as wasps which complete part of their life cycle in another organisms by destroying it. These pick worms or caterpillars, introduce then to their nests and lay their eggs in them. On hatching, the eggs start feeding on the worms/caterpillar content until they mature into adult wasps. In this way, they control cut worm and caterpillar populations. So it is important to have them on our farms and protect them from dangers such as agro-chemicals. The use of Napia grass in the control of maize stalk borer was also discussed. The concept of crop rotation and how it controls pest and disease and allows proper use of nutrients in

the soil was also covered. Under this point, the idea of integrated farming where both animals and crops are raised on the same farm was also discussed, pointing out how animals provide manure to crops and how crops provide feed to animals. It was also discussed that when crops have natural manures e.g. those from plant and animal origin such as plant teas, liquid manure and compost manures, from which nutrients are released into the soil and its surroundings slowly for easy access by the crops throughout the growing season, unlike the artificial fertilizers, which are usually very water soluble and are easily leached or transformed into other compounds if not used immediately. Natural manures also maintain high crop vigour all through out the growing period, which enables them withstand pest attack and out compete weeds. **Scouting**, which refers to constant visiting and monitoring of fields to check for nutrient deficiencies in crops, pest attacks and disease outbreaks among other issues to effectively carry out control measures well in time.

- **Timely harvesting**

The practice of timely harvesting was also covered and its advantages such as control of pests and waste were highlighted.

- **Post-harvest handling for both harvested crops and the fields**

The need and procedure of proper post harvesting were discussed under this Good Agricultural Practices (GAPs). Use of clean drying material, careful and proper storage to control pests and how drying reduces water content that would otherwise lead to spoilage. The need to immediately plough back plant residues and plant green mulches whenever possible was also emphasized as a measure to control pests and diseases, maintain soil moisture, fertility and allow timely planting.

- **Packaging and storage of seed/grain crops such as beans and maize.**

Participants were introduced to simple methods of packaging seeds for food, e.g. in sealed polythene rolls after milling into flour in packs of one or two kilos for easy storage and managed consumption throughout the period when food would be scarce. How seeds can be stored using natural methods or selling off some and keeping the money for seed in the next season.

5.2 Practical sessions: Crop management principles and practices

5.2.1: Banana management and soil conservation structures

- Banana management to control pests such as banana weevils, diseases such as BBT – Banana Bacterial Wilt was carried out during the practical sessions.
- Determining which plants to thin out during rejuvenation of a banana plantation.
- Intercropping with other crops and trees for maximum benefit.
- How to add manure to a banana plantation.



Fig 8 Banana management demo

fig 9 & Fig.10. Soil Conservation structures

- How to control losses due to strong winds through determining direction of wind, effective manuring to enhance the root system of the banana plant to get strong and withstand the wind, how to plant a young sucker to avert the wind effect and how to carry out half-leaf pruning to control wind.
- Establishment of soil conservation structures in a crop field to harvest water and control soil erosion. Soil structures are dug along selected contours across the garden. Grass bands such as Napier grass, Kikuyu grass, Tithonia or pasparum are planted to control soil erosion. Other uses for these crops such as feeding animals, trapping weed seeds and use in soil fertility (green mulching, plant teas) for Tithonia were also highlighted.



Fig 11. Plant teas for manure & pest control



Fig 12. Animal dung liquid manure & pest control.

5.2.3 Sack gardening

- Sack gardening for yellow yam
- Sack gardening for vegetable crops

Note: Participants were cautioned that for any root tubers such as carrots, Cassava or yams add one part of sand to improve soil structure for better root penetration BUT no stones should be added since they will disrupt root formation where the food is stored.

5.2.4 Formulation of natural pesticides

- Using liquid manures
- Using plant and other natural remedies

6.0 Discussion and response to current bean project challenges

Three selected locations of members in the bean project were discussed and specific remedies were identified to support the member rectify the problems on their fields

7:0 Action plan for way forward

These were developed at village level as reflected in the attachment herewith.

8.0 Official closure

The third day was a combination of the official inauguration of Empowered Voices and closure of the workshop. Several dignitaries in the production department from the technical and political lines at the district were present. They received the EV association warmly, and urged members to be always objective and focus on development issues.

9.0 Annexes to the report:

1. List of participants
2. Photos of training sessions
3. Village Action plans
4. Accountability documents