CONSERVATION AGRICULTURE TRAINING COURSE

TRAINING PROCEEDINGS

TRAINING HELD AT CROP TRAINING CENTRE (CTC)
YEI, SOUTH SUDAN
23RD – 27TH JULY 2012
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1. DAY I: 23rd JULY 2012

1.1 COURSE PARTICIPANTS

The CA training course was held in South Sudan at Yei Crop Training Centre (CTC) from 23rd – 27th July 2012, attended by 36 participants; 34 from the Republic of South Sudan (29 Male; 5 Female) and 2 from Zambia (All Female) (see summary in table 1 below)

Table 1: Summary of CA Training Participants

<table>
<thead>
<tr>
<th>Sponsoring Organisation</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 FAO, South Sudan</td>
<td>4</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>2 World Relief</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>3 Goal</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4 HARD</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5 UMCOR</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>5 Concern World Wide</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>6 Caritas</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>7 World Vision Zambia</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>7</strong></td>
<td><strong>29</strong></td>
<td><strong>36</strong></td>
</tr>
</tbody>
</table>

1.2 COURSE OBJECTIVES AND EXPECTED OUTPUTS

The general objective of the course was to contribute and building the desired capacity and ability of agricultural extension and research staff from NGOs, Government institutions and private sector in the development and promotion of conservation agriculture (CA) technologies, thereby enhancing their ability to respond to farmers/environmental concerns.

Five specific objectives guided the training:

(i) To enhance understanding of the principles of Conservation Agriculture (CA) as the new way to farm;
(ii) To provide practical knowledge and skills in the application of CA practices for different socioeconomic and agro-ecological environments to enable them to respond competently to farmers’ need;
(iii) To provide the participants with approaches and methodologies for enhanced documentation and wide scale adoption of profitable CA; and
(iv) To strengthen the competency of the participants to facilitate learning of CA to CA support staff.

It was anticipated that at the end of the course the participants would be able to:

(i) explain and demonstrate to others the concept and principles of CA and applications of the same;
(ii) guide farmers and other stake holders in analyzing and determining solutions to problems in sustainable use of soil and water in farming;
(iii) plan and facilitate farmer-based trials and demonstrations for development/or adaptation of CA technologies;
(iv) develop learning facilitation materials and work plans for implementation of identified field activities; and
(v) Be provided with relevant CA materials, and Monitoring and Evaluation tools.

The training was facilitated by resource persons from ACT and well seasoned Consultants.

1.3 OPENING REMARKS

Isaac Bazugba, Rural institutional/ Capacity Building Specialist, Sudan Productive Capacity Recovery Programme (SPCRP) was the Master of Ceremonies. The function commenced at 9.30 am with two denominational prayers, one
Christian offered by Melisa Mwanza and a second one Islamic by Juma Sabuni. The MC welcomed the CTC Principal who gave background of the CTC, including its motto, ‘Do not allow hunger to become your neighbour.’ He said that the Training Centre offered short courses to farmers of 1 week or 1 month duration that also included training in communication skills. CTC also offered a 3 months course for administration and a 9 months certificate course for extension service workers. Emphasis during training was put on practicals.

The CTC Principal further provided the following as guidelines for the participants:

- Do not leave lights on in the room;
- Avoid using unauthorised appliances;
- Use all facilities with caution;
- Garbage to be disposed with care;
- Caution with alcohol; and
- That food was expensive food at the centre, thus meant for survival and not for sustainability.

Thereafter, an Overview of the training from FAO-SCPCRP was given by Mr. Bazugba. He indicated that the project was designed to operate in only 5 states of the South Sudan Republic covering 14 counties out of 28 counties. He pointed out that Northern Bahr al Ghazal was not represented because the state did not have qualified persons to send for training. Mr. Bazugba also gave a short note that the link of South Sudan and CA dates back to 2009. He spoke on the linkage between CTC, ACT, FAO and MOA mentioning that ACT was available to provide the technical backstopping if need be. On partnership and synergies Mr. Bazugba said that there were plans by ACT to initiate partnership with the Republic of South Sudan when the government endorses.

Dr. Simon Lugandu, on behalf of ACT, thanked the guest of honour and all the participants for accepting to embrace CA as one of the agricultural practices in the South Sudan Republic that needed be promoted. He mentioned of the existence of ACT sub regional offices in West Africa ( Ouagadougou, Burkina Faso), Southern Africa (Harare, Zimbabwe) and East and Horn of Africa (Dar-es-Salaam, Tanzania) besides the head office in Nairobi, Kenya. Dr. Lugandu requested the participants to work together with ACT to make sure CA takes up well. He reported that ACT had signed MOUs with some governments or agencies in efforts to collaborate and promote CA. Dr. Lugandu appealed to the Government of South Sudan via the Director General for Agriculture that ACT goes into further discussion to push the entering into formal relationships through a MOU. Thereafter, the Chief Guest was presented with CA training materials.

The Government of South Sudan’s Director of Training remarked that gender balance had remained one of the challenges facing various trainings. He mentioned also that the need for trainings such as CA was due to missing skills and knowledge in agricultural components. The Director observed the need for skills in environmental impact assessment and the need to give considerations on how to conserve the environment and do agriculture. He acknowledged the efforts by the ACT team as it realised there is something that is needed in South Sudan to improve agriculture advising the trainees to be serious and make use of the 5 day training. The Director talked about the need
for them to change their attitudes and in turn impact it on the people of South Sudan. He noted the essence of CA to be included in South Sudan curriculum for the schools.

The opening ceremony was finally followed by an excerpt of the Speech by the Chief Guest, Mr. John Chuol, Director General, Agriculture Production and Extension, Ministry of Agriculture and Forestry who welcomed all guests present. He mentioned that he started discussions with ACT since 2009 and visited CA activities through a study tour to Kenya and Tanzania where he saw the advantages of CA. There was plan for Mr. Chuol to participate in World Congress on Conservation Agriculture (WCCA) that was held in Brisbane; however, due to some technicalities he was not able to attend the meeting. He reminded participants that some of the trainees were already practicing CA without their knowledge. The Director General shared his worries about the applications for tractors for conventional mechanised agriculture and impacts on forests. He urged participants for the need to introduce CA due to the benefits it gives to farmers and the environment. Through the government’s programme of training 513 per year of extension workers, he anticipated that after 5 years some changes may occur in terms of attitude towards agriculture. The Director General urged participants to sensitise their farmers to stop seeing agriculture as a part time job but as a full time job. He challenged extension workers to define who is a farmer. According to him, a farmer is one who is engaged on the farm for 8 hours a day and 12 months a year, demonstrating that farming is not a part time job. Mr. Chuol reiterated in his speech that Yei can plant crops as many as 4 times a year, but this is not the current situation. He urged the participants to train their farmers to make use of simple techniques for water harvesting to support irrigation development, encouraging farmers through the participants to use such techniques instead of waiting for the rains. The Chief Guest advised extension workers that South Sudan cannot depend on aid forever, or ‘currently eating from Uganda, Kenya and Ethiopia.’

Five points were emphasised in the speech:

- There was need of good technology – CA was such a technology, that needed research support, and that would help farmers move away from traditional agriculture;
- Need for a good Extension system, with strong Extension workers that can change the attitudes of South Sudan farmers;
- Establish SMEs to assist with loans to farmers especially the youth – challenging the youths to go into agriculture rather than sending applications for jobs;
- Irrigation development rather than depending on the rains – drip irrigation can minimise the use of water; and
- Value chain development - JICA was going to provide training on rice and irrigation. Curriculum will be developed for farmers to get inputs, traders to create jobs, millers, and distributors to be part of the agricultural value chain that will also engage participation of banks.

The Chief Guest then officially declared the training open.

1.4 TRAINING METHODOLOGIES

1.4.1 RULES AND COMMITTEES

Participatory approaches were employed during the training course. Participants established some ground rules that were to be observed by all participants during the training sessions. These included:

- Time keeper – Melissa Mwanza;
- Language – English;
- Mobile phones – off or silence mode;
- Random movement – quietly;
- Respect each other;
- One workshop at a time;
- Active participation;
- Energisers; and
- Story telling.
Committees were also formed to help give summary of the day’s events; visualize a daily assessment on topics of the day in a creative way; share any area of concern that deserved the attention of facilitators/participants; and organise for energizers. The committees were also responsible for reporting regarding participants’ welfare. Five committees were created each responsible for reporting on the day’s issues.

1.4.2 ADULT LEARNING PRINCIPLES

Adult learning principles were also discussed so as to create the correct learning atmosphere. It was highlighted that adult learners had the following characteristics:

1. **Adults have experience**: Sharing of experiences should be encouraged.
2. **Learn in atmosphere of active involvement and participation**: Active participation should be encouraged – minimize long presentations.
3. **Learn when content is close to their own task**: Real world approach should be encouraged.
4. **Have strong power of reasoning and observation**: Memorizing should be minimized.
5. **They are voluntary learners**: Have a right to know why topic is important to learn.
6. **Have a sense of personal dignity**: They must be treated with respect at all times.
7. **Remember 20% of what they hear, 40% of what they see, and 80% of what they discover**: Encourage demonstrations and practicals - learning by doing.

1.4.3 METHODS EMPLOYED

Different methods were employed during the training, mainly group exercises, group plenary presentations, plenary presentations & discussions; field based practical exercises, guided exposure to CA equipment, and hands-on use and adjustments. The course programme is herewith annexed.

1.5 PARTICIPANTS’ EXPECTATIONS

Participants were requested to enumerate their interests, what should or should not happen during the training and any topics they would wish to be covered during the training. The following were the groups of responses from participants.

Interest
- Openness in explanation
- Detailed interpersonal introductions by participants
- Certificates
- T-Shirts, cap,
- CA manuals
Agriculture based rural development
Crop production
In future join conservation agriculture organisation as facilitator
Helping the poor community with agribusiness knowledge

What Should Happen
- Interactive training session
- Teaching should happen in this workshop on CA
- Active participation by all participants
- Expert delivery of the course content
- Relevant examples and case studies to be given
- Entrepreneur development ability
- Time management should be observed
- Involve more practical’s/field visit one cannot forget what they see
- Practical work in the field for this CA in Yei
- Time management
- No talking while facilitator is explaining things
- Enjoy the course

What should not happen during the course
- Unnecessary movement
- Phone calls
- Lots of theoretical technical materials
- Failure to engage participants in learning
- Smoking and alcohol
- Interruption due to sickness
- Fighting

What topics to be included in the training:
- Sustainability of Agriculture
- Practices on CA techniques
- Soil and water Conservation
- Selection of good crop
- Pest and disease control
- Crop diversification
- Soil fertility tree use
- HIV/AIDS
- Monitoring and evaluation

1.6 UNDERSTANDING PERCEPTIONS OF PARTICIPANTS ABOUT CA

To begin with the training participants were asked to tell what did they perceive or understand about conservation agriculture and the course. The responses varied among participants but provided a snapshot of the skills and knowledge the trainees had before the training. The perceptions were also very useful in ensuring facilitators address the key knowledge gaps. The responses were:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation Agriculture is a farming practice that involves minimum land tillage, cover crops, trees and soil fertility</td>
<td>5</td>
</tr>
<tr>
<td>Extension to farmers to improve food production and increasing our production</td>
<td>5</td>
</tr>
<tr>
<td>Conservation Agriculture is the way of farming where land /water is not degraded, polluted</td>
<td>2</td>
</tr>
<tr>
<td>It is a process of cultivating the soil and retain its fertility</td>
<td>2</td>
</tr>
<tr>
<td>Conservation Agriculture is the agricultural sustainability of soil</td>
<td>2</td>
</tr>
<tr>
<td>Conservation Agriculture is the new method of transforming agriculture to the farmers</td>
<td>2</td>
</tr>
<tr>
<td>Conservation Agriculture is the turning of soil upside down so that is gain more fertilisation</td>
<td>2</td>
</tr>
<tr>
<td>Conservation agriculture is the old system of agriculture but it has not been done here in South Sudan</td>
<td>2</td>
</tr>
</tbody>
</table>
Conservation Agriculture refers to the conservation of all factors required for higher output/production.

Conservation Agriculture refers to the farming techniques of utilizing the soil to produce crops and rear animals adequately without destroying the soil for the future use.

Conservation Agriculture is farming in acceptable way.

CA is the study of appropriate technology by which teaches of modern farming of agriculture.

CA is the process of planting trees and looking after them.

Dealing with the environment water and soil management.

CA is to convey all agriculture methods to save your food.

It is a process of growing crop and production to attend as a business.

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1.7 PLENARY PRESENTATIONS & DISCUSSION TOPICS

<table>
<thead>
<tr>
<th>Topic</th>
<th>Methodology</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is CA and why CA? Background, historical perspectives, rationale, benefits, challenges</td>
<td>Plenary presentations &amp; discussions</td>
<td>Herbert Mwanza</td>
</tr>
<tr>
<td>CA Concepts and principles I: Soil cover</td>
<td>Plenary presentations and discussions</td>
<td>Simon Lugandu</td>
</tr>
<tr>
<td>CA Concepts and principles II: Minimum Soil Disturbance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CA Concepts and principles III: Crop rotations and Associations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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2. DAY II: 24TH JULY 2012

2.1 COMMITTEE REPORT

The day started by receiving Day 1 Committee. Recap of the previous day was covered including definition of CA, concepts and principles of CA. The perceptions of what CA is were improved through knowledge that CA refers farming practices or principles which entail minimum soil disturbance, soil cover through mulching and cover crop and crop rotations.

The committee reported on the welfare issues after day one. There were two dining halls, one for the resident students (25) and the other for the other students (11) and the ACT staff. The problem was about the quality and composition of food served in the two dining halls. The following was lacking – fruit, meat, soft drinks etc; however, the administration handled it maturely and there was no more problems until the course participants departed CTC.

2.2 SITUATION OR COPING STRATEGIES ANALYSIS

Situational Analysis through Plenary, discussions, exercises and presentations was undertaken. The guiding questions are indicated in the following box.

**Situation Analysis Exercise**

- Working in country teams carryout a Situation analysis and Identification of problem/s, issues/challenges.
  - Situation analysis: what are the central factors/issues in the life of a typical household/community in the area: Highlighting
    - physical (geographical location, roads, rivers, other physical land marks)
    - climate (rainfall patterns/duration/character, temp)
    - people (settlement, size, culture-traditions, occupations including pass-time, etc…)
    - agriculture (crops, livestock, fields, implements, farming patterns; etc…)
    - external inputs/interventions (development programmes, extension/research programmes; agricultural inputs, labour; interaction with urban centre/s; markets)
    - survival strategies
    - etc…. 
ii. Problem analysis

- Comparing the status (performance/role/importance) of agriculture “today” to 20 – 30 years ago, list/explain the factors that (i) have not changed, (ii) have declined (iii) have increased/are better
- Develop a chart illustrating how agricultural performance is relating to social problems/issues such as poverty, food insecurity, HIV-aids, etc…
- list in priority order factors (constraints/opportunities) limiting agricultural production-productivity in your area
- for the first factor on your priority list identify (i) causes of the problems and causes of causes (ii) effects of the problem (problem trees analysis)

Each group presented the findings of the situation analysis

2.2.1 GROUP I: UNITY STATE

**Climate: One Season**
- Rainfall starts in May
- Planting time in May
- Harvesting time in October
- Season Ends between October and November

**Agriculture:** Maize, Ground nuts, Sorghum, Beans, Simum and Vegetables

**Livestock:** Cattle, Goats and Sheep

**Extension Input** – Seed, Tools, Labour, No fertilizer

**Survival Strategies**
- Fishing
- Charcoal burning
- Selling Cows
- Collecting cater lily from the river
- Cutting trees and selling timber

**Problem Analysis**
- Lack of mulching techniques
- Traditional planning is on going
- Poor support vegetable planting
- Lack of crop rotation
- Food insecurity
- Anger, floods, war and lack of tools.

2.2.2 GROUP II: CENTRAL EQUATORIA STATE

**Physical Features:** Hills and Mountains e.g. Jebel Kojur, Longa-mere, Jebel Bungu, Jebel Ladu, Kenyi, Poki, Korobe, Renu and Mere,

**Forests:** Loka, Kegulu, Kejiku

**Valleys:** Kanya Valley

**Swamps:** Several Swamps spread in most counties

**Vegetation** – More tropical

**Climate** – Two Seasons Dry and Rain Season

**Rainfall patterns** – Annual from March to December with changes in frequency

**Characteristics of Rain Patterns** - Not well distributed, Reliable Average 1500 – 1800 mm

**Temperatures** – They vary from season to season and in locations, Range Average 31 – 42 °c

**Inhabitants** - Nilotics

**Linguistically**
- Bari
- Pojulu
- Munder
- Kakua
- Koka
- Lugbara
- Kaliko/Logo
- Other migrants

**Settlements:** Small Homesteads of both nuclear sizes, linea (along road sides) static

**Culture:**
- Believers
- Polygamous
- Customs and traditional norms which governs their behaviour

**Occupation:** Agro pastoralist, Keep small number of animals, Depend largely on farming (subsistence), Fishermen (fish mongers), Local Logging (lumbering etc), and Businessmen (local and International)

**Agriculture:** Maize, Ground nuts, Rice, Millet, Beans, Sisim, Sorghum, Cassava, Bananas, Mangoes, avocados, lemons, Guava, Pawpaws, Irish potatoes etc

**Livestock:** Goats, Cows, Sheep, Chicken, Ducks, Guinea Fowls, Pigs, Rabbits

**Field Size:** Average field sizes are 1-2 hectares

**Agriculture Implements:** Hoes, axes, machetes (*panga*), traditional ones

**Farming Patterns:** Mixed farming, Mono culture, Inter cropping, Agro forestry, Back yard farming (kitchen gardens horticulture)

**External Inputs:** Seeds, Implements/tools, limited extension service delivery CTS, YARC, Kegulu, Juba University, Goli

**Related Social Problems/Issues**
- Food insecurity courses
- High Rate of divorce
- Less labour
- High rate of malnutrition
- High rate of death
- HIV
  - Less labour
    - Less performance
    - Frequent death
    - Lack of capital

**SURVIVAL STRATEGIES**

<table>
<thead>
<tr>
<th>Small scales business</th>
<th>Boda boda</th>
<th>Domestic Labour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casual workers</td>
<td>Formal employment</td>
<td></td>
</tr>
<tr>
<td>Burning charcoal/firewood</td>
<td>Poaching</td>
<td></td>
</tr>
</tbody>
</table>

**PROBLEM ANALYSIS**

**Unchanged**
- Subsistence farming
- Use of manual labour
- Acreage remain the same
- Small number of family member involved
- Attitude towards agriculture

**Declined Factors**
- Labour Force
- Interest/attitude
- Acreage

**Better Factors**
- Institutional Development
- NGOs, Research/Training Centres, Government/internal Interventions

**Agricultural Inputs**
- Labour (Manual), Capital, Tools.

**Labour**
- Family Based, Communal based (Oyaa)
- Negligible size of mechanization through use of oxen, tractors.

**Market/Urban Places**
- Several potential market scattered all over (local/internals)
- Urban Centres
Priorities List

**Capital (major factor)**
- Financial Institutions ready to deliver financial services/credit with minimum interest rates.
- Labour
- Rural urban migration has resulted in reduced labour force
- Expensiveness of labour services
- Attitude of people

**Infrastructure**
- Poor road net work linking farmers to market places in both rural and urban
- Cost of transportation is very high

**Land Tenure**
- Communal owned
- Land grabbing by conmen
- Land fragmentation

### 2.2.3 GROUP III: LAKES & WARRAP STATES

**Challenges facing farmers**

<table>
<thead>
<tr>
<th>Poor climatic conditions</th>
<th>Insecurity/tribal conflicts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of skilled labour</td>
<td>Uncontrolled grazing of cattle</td>
</tr>
<tr>
<td>Poor methods of farming</td>
<td>Lack of varieties</td>
</tr>
</tbody>
</table>

**Geographical Location & Physical Features**
- Both lakes & Warrap are situated in central part of South Sudan
- One main road connecting ten states of South Sudan. Season Rivers, Exceptions of Kiir & Shambe) Permanent Rivers. Both Lakes & Warrap are flat land.
- They receive little rainfall throughout the year. The duration of rains last of 6 months with constant temperature of 37 degrees centigrade.
- The residents live in communal groups (rural settlements)

**Culture**
- Initiation ceremony e.g. Removal of lower teeth and marking of forehead. Agro-pastoralists. Harvest festivals/ceremonies

**Agricultural Crops**
- Millet, ground nuts, sesame, beans and cassava, pumpkin and okra
- Livestock
- Cattle, goats, sheep, poultry and apiculture

**Local farm implements**
- Maloda
- These counties receive seeds, and tools from UN/FAO/WINROCK International

**PROBLEM ANALYSIS**
- Traditional farming e.g. Local tools, Ox plough and tractors
- Drought
- Shortage of labour
- Pests and disease
- Agricultural tools/equipment
- Lack of willingness of individuals
- Insecurity (tribal conflicts)
- Drought brought about by cutting down trees on large scale on land.
- Extension agriculture resulting into desertification thus causing low crop yields
2.2.4 GROUP IV: WESTERN AND NORTHERN BAHR EL GHAZAL STATES

SITUATION ANALYSIS

Physical factors

Geographical Location
- NW part of South Sudan. Borders CA republic and republic of Sudan
- Road Network highway from the area. There are poorly developed feeder road
- Rail network – The only area with railway line from Khartoum to Wau
- There are two main airports
- Rivers – many tributaries of the Nile traverse the area.
- Topography – Most areas are flat lands prone to flooding in Wet Season. Agro ecological zones – western flood plains and ironstone plateau
- There are low laying swampy areas as toucs.

Climate
- Temperatures and humid – ranging from 35 – 40 0C in dry season and falls to about 30 0 C in wet season.
- Rainfall – unimodal ranging from 1000 – 2000 mm p.a. starts from early May and October. Poorly distributed with long dry spells

Inhabitants
- Majority are Nilotic agro pastoralist and some bantu agriculturalists.

Cultures
- Communal with strong kinship ties. Occupations – pastoralism, crop farming, fishing, hunting and gather, petty trade and formal employment.

Agriculture
- Crops – sorghum, maize, groundnuts, simsim, beans, peas, cassava, okra and other local vegetables and rice.
- Livestock (Local breeds) cattle, goats, sheep and chicken
- Farms – smallholder – subsistence farms few commercial rice farms
- Implements – local hoses, ox and tractor drawn ploughs
- Farming system – Slash and burn shuffling system, settled farming.

External Interventions –

<table>
<thead>
<tr>
<th>Rice Scheme development in Nbg</th>
<th>Markets – limited market access especially for farmers and pastoralists due to lack of infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerous development interventions by NGOs</td>
<td>High demand for agricultural produce in urban centres. Region is an importer of food</td>
</tr>
<tr>
<td>Agricultural inputs – local seeds, livestock manure, imported implements. No organised system of input supply</td>
<td>Labour in short supply mainly provided by the old people in rural areas</td>
</tr>
</tbody>
</table>

Survival Strategies
- Consumption of wild food
- Kinship support
- Reduction in six and number of meals
- Disposal of livestock
- Migration to other areas

Problem Analysis

Factors which have not changed
- Agricultural production system
- Livestock keeping system
- Cultural issues e.g. marriage

Factors/things which have declined
- Amount of rainfall
- Fish stocks in rivers
- Change from permanent to seasonal

What have increased?

<table>
<thead>
<tr>
<th>Livestock numbers</th>
<th>Access to markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road network</td>
<td>Access to information and development</td>
</tr>
<tr>
<td>Security</td>
<td></td>
</tr>
</tbody>
</table>
### Improvement in Agricultural Performance

<table>
<thead>
<tr>
<th>Increase in food security</th>
<th>Increase in incomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvement in nutrition status</td>
<td>Reduction in HIV infections</td>
</tr>
<tr>
<td>Generally, reduction in poverty</td>
<td></td>
</tr>
</tbody>
</table>

### Factors limiting agricultural productivity

<table>
<thead>
<tr>
<th>Limited access to appropriate technology</th>
<th>Limited access to farm inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor attitude towards farming</td>
<td>Week government extension system</td>
</tr>
<tr>
<td>Traditional systems of production</td>
<td></td>
</tr>
</tbody>
</table>

---

#### 2.2.5 GROUP V: WESTERN EQUATORIA

**Physical aspects**

**Environment**: weather, land, poor road network, rivers, and steams, mountains;  
**Location**: Greenbelt zone (fertile land)  
**Climate**: Rainfall average 1500 – 2000 mm Rainfall duration of 9 months abundant rainfall  
Temperatures: 24 - 32°C  
**People Settlement**: villages or bomas (300 – 500 HHs) size  
Culture Traditions: mixture of cultures (different tribes, different beliefs)  
**Occupation**: ¾ of the people are farmers, self employment/government  
**Pass-time**: People visit their friends/relatives telling stories at night, watching football, knitting (for women)  
**Agriculture**: Crops grown: cereal crops, root crops, leafy crops, fruits, groundnuts, forestry, **palm trees**  
**Livestock**: Cattle, shots and poultry  
**Fields**: No precise size of the field  
Farming patterns: subsistence and commercial farming
Farm implements: Hoes, Machetes (*panga*) slashers and axes, tractors and ox ploughs

**External Inputs - Improved seeds ad use of tractors**

**Development programmes** (capacity building, training for farmers or farmer groups FFS, e.g. Milling Machines

**Agriculture Input:** Seeds and tools

Extension/Research: Extension workers train the farmers, farm demo plots, forms FFS, NGOs, e.g., FARM, and AAH are carrying the research.

Labour: Manual and machineries, ox plough.

Interactions with urban Centres: the Farmers interact with the urban centres through chairpersons of their group or extension agent.

**Market:** The chairpersons of Associations or cooperatives search for the market to sell their produce

**Survival Strategies:** Cultivating, livestock keeping, poultry, casual work, collection of wild fruits

**Problem Analysis**

**Performance Comparison:** 20 – 30 years ago

- Agriculture productivity was low. Less land cultivated, traditional way of farming
- Today: high productivity modern farming, use of tractors or ox plough improved seeds

**Importance:** Important for tool for fighting hunger. Income generating in commercial agriculture

**Factors That Have Not Changed**
- Intercropping, Seed broad casting, manual labour

**Factors that have increased**
- Production is very high. Farmers are able to grow vegetables all the year round.
- Improved on farming as a business

<table>
<thead>
<tr>
<th>Climatic factors</th>
<th>Inadequate agricultural inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of storage facilities</td>
<td></td>
</tr>
<tr>
<td>Lack of processing equipments</td>
<td></td>
</tr>
</tbody>
</table>

**2.2.6 SITUATION ANALYSIS GROUPS COMPETITION**

A competition was designed for the presentations on situation analysis. The criteria used and marks allocated included
- Completeness of the Task (10)
- Visual presentation (10)
- Presentation style (10)
- Time (5)

**Results**

- Central equatorial group – Marks 48
- Western and Northern states – Marks 53
- Western Equatorial – Marks 56
- Warrap – Marks 47
- Unity state – Marks 45

**Winners:** Western and Northern states – Marks 53 & Western Equatorial – Marks 56

Awards: CA Manual, Case study books – Ghana, Tanzania, Kenya and Zambia; South Sudan Pounds 100 for each group (100 by ACT and 100 by Facilitator Chuma)

**2.2.7 PLENARY PRESENTATIONS & DISCUSSION TOPICS**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Methodology</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil Health Soil characteristics &amp; properties</td>
<td>Plenary presentations &amp; discussions</td>
<td>Edward Chuma</td>
</tr>
<tr>
<td>Erosion and water infiltration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soil characteristics &amp; properties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erosion and water infiltration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3. DAY III: 25TH JULY 2012

3.1 COMMITTEE REPORT

The committee for 24th July presented on what was learnt and the welfare. The following main areas were learnt:
- Importance of soil health
- Basic soil
- Fertility and management

Welfare
- Time management was good
- One sick person got hard to locate health service

Issues
- Mind set change is necessary to adopt CA

3.2 PLENARY PRESENTATIONS & DISCUSSION TOPICS

<table>
<thead>
<tr>
<th>Topic</th>
<th>Methodology</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical Demonstration of erosion processes and infiltration Run-off trays etc</td>
<td>Field based practical Exercises</td>
<td>Edward Chuma</td>
</tr>
<tr>
<td>Livestock integration in conservation agriculture</td>
<td>Plenary presentations, discussions</td>
<td>Herbert Mwanza</td>
</tr>
<tr>
<td>Weed, pest &amp; disease management and control in CA systems</td>
<td>Plenary presentations, discussions</td>
<td>Elley Mbise</td>
</tr>
<tr>
<td>Social economic aspects of CA</td>
<td>Presentation, Group exercise and presentations</td>
<td>Simon Lugandu</td>
</tr>
</tbody>
</table>

Photos: Left - Facilitator Edward Chuma demonstrating erosion processes using the soil erosion run off trays; Right – Sample infiltration run off trays. The run off trays are of three types one with soil cover (centre), bare soil (right) and soil with ridges (left). The soil with mulch (soil cover) experienced lowest soil erosion as compared to bare soil. The effect of covering the soil was demonstrated to students to see the difference between covered or uncovered soils.

3.3 GROUP PRESENTATION ON WEED, PEST AND DISEASE MANAGEMENT

The results of discussion from the groups were posted and presented as follows:

1. What are Weeds?
   - Weeds are crops, trees, shrubs or any other vegetation that grows in an unwanted area

   Examples
   - Most of the time weeds compete with our crops for foods, light and field space
   - Most unwanted weeds are those that belong to the same family group with our main crop. Like maize and grass or rice and grass

2. What Are the Characteristics of Weeds?
   - Weeds grow on their own (without planting them)
Weeds are homes for pests and diseases that attack crops.
- Weeds take away light, water and food from the crops.
- Weeds control the space for crops by pushing the crops out of their living space.
- Weeds are drought resistant.
- Weeds take short time to establish.
- Some weeds are poisonous to both plants and animals.
- Weeds is defined as an unwanted plant/grass in the field.

3. Why Do we Control weeds?
1. Increase crop Yield
2. We control weeds to avoid competition with crops for; Water/minerals, Nutrients, Sunlight.
3. To avoid disease/pests which are caused by weeds.
4. Enough space for crop to grow.
5. Good yield is realised when crops are well weeded.

4. What is the traditional way of controlling weeds?
- Removing the weed under the crops using local maloda hand pull.
- Use of herbicides.
- Slashing.
- Cover crops.
- Soil over mulch.
- Grazing animals.
- Up rooting.
- Tilling.
- Crop rotation.
- Intercropping.

5. What are the two approaches for weed control?
- a) prevention b) control.

Prior to controlling weeds, it’s better to understand:
- The type of weed – This is whether, it’s annual or perennial weed.
- The growth habit: Weed differ in growth, others are fast growing and causing great loss to crop yield.
- Root Systems.

6. How does ca control weeds?
- Crop Spacing.
- Use of Cover Crops (black peas).
- Use of mulch.
- Soil Cover.
- Early Planting.
- Herbicides.
- Crop Rotations.
- Intercropping.

7. Integrated weed control options
- Crops Rotation.
- Using Chemicals/herbicides.
- Mulching.
- Crops cover.
- Early Planting.

8. What are the challenges of herbicide use?
The challenges of herbicide used are as follows:
- Some herbicides are non selective to crops, and livestock.
- Herbicide are poisonous when misused.
- Herbicides are not available in some lock markets.
- Herbicides are expensive.

10. When and How to control the Weeds.
- Slash weed immediately after the harvest and during the dry seasons to prevent them from producing seed
- Before you plant, slash any plant (weed cover crop left over from the previous crops) in the field
- Dig planning pit with a hoe or open or planning furrows with a ripper or sub soiler
- After the first rains have fallen, allow seeds to re-grow or new weeds to emerge and wait about 2 week until they are growing then apply herbicide and this will kill all emerging weeds before planting

3.4 PARTICIPANTS UNDERSTANDING ON SOCIAL ECONOMIC ASPECTS OF CA

Participants were requested to tell their understanding or perceptions on socioeconomics aspects of CA
- Economic access to people
- How to manage resources e.g. money
- Manage something
- Help people to get income
- Income generation activities
- Social life/ livelihoods
- Participation of groups
- Management of resources
- Activities that can rise income

3.5 GROUP EXERCISE ON COST BENEFIT ANALYSIS

Participants were divided into four groups and required to undertake cost benefit analysis and comparison between Conservation agriculture (CA) and Conventional practice (CP), based on the following given data.

<table>
<thead>
<tr>
<th>Variable</th>
<th>CA</th>
<th>CP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize yield (kgs)</td>
<td>1780</td>
<td>368</td>
</tr>
<tr>
<td>Gross revenue ($/ha) @ $0.40/kg</td>
<td>a</td>
<td>B</td>
</tr>
<tr>
<td>Total labour days</td>
<td>148.27</td>
<td>68.61</td>
</tr>
<tr>
<td>Total labour costs @ $0.88/PD</td>
<td>c</td>
<td>d</td>
</tr>
<tr>
<td>Herbicide cost (1lit @ $25/lit)</td>
<td>e</td>
<td></td>
</tr>
<tr>
<td>Other costs</td>
<td>44.08</td>
<td>31.4</td>
</tr>
<tr>
<td>Total Variable Costs</td>
<td>f</td>
<td>G</td>
</tr>
<tr>
<td>Gross Margin ($/ha)</td>
<td>h</td>
<td>i</td>
</tr>
<tr>
<td>Costs per kg</td>
<td>j</td>
<td>K</td>
</tr>
<tr>
<td>Returns to labour ($/PD)</td>
<td>l</td>
<td>M</td>
</tr>
</tbody>
</table>

4. DAY IV: 26TH JULY 2012

4.1 COMMITTEE REPORT

Committee report was given mainly covering:
What we learnt yesterday
- Practical Demonstration of erosion processes and infiltration Run-off trays etc
- Field based practical exercises
- Practical sessions
- Weed control
- Crop livestock integration
- Socioeconomics of CA

Welfare
- Tea and lunch OK
- Separation on meals between FAO/CTC and other participants from NGOs resolved
### 4.2 PLENARY PRESENTATIONS & DISCUSSION AND FIELD PRACTICAL TOPICS

<table>
<thead>
<tr>
<th>Topic</th>
<th>Methodology</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation Agriculture Equipment (Manual, animal and tractors based systems)</td>
<td>Plenary presentations, discussions</td>
<td>Elley Mbise</td>
</tr>
<tr>
<td>Field Practical’s: CA in animal traction systems; harnessing animals for ripping and direct seeding; CA equipment showcase</td>
<td>Field practical’s</td>
<td>Elley Mbise</td>
</tr>
<tr>
<td>CA and Agroforestry</td>
<td>Plenary presentations, discussions</td>
<td>Simon Lugandu</td>
</tr>
<tr>
<td>CA Equipment Manufacturing and hire-service provision</td>
<td>Plenary presentations, discussions</td>
<td>Herbert Mwanza</td>
</tr>
<tr>
<td>Extension Approaches for CA Farmer field school</td>
<td>Plenary presentations, discussions</td>
<td>Simon Lugandu</td>
</tr>
<tr>
<td>Extension Approaches for CA Study circle</td>
<td>Plenary presentations, discussions,</td>
<td>Herbert Mwanza</td>
</tr>
</tbody>
</table>

CA in Tractor based Systems practicals were not covered due to unavailability of equipments in Yei, South Sudan

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**5. DAY V: 27TH JULY 2012**

### 5.1 COMMITTEE REPORT

Committee report was presented on:

**What we learnt yesterday**

- FFS – how to monitor, communicate, encourage, partner, mediate
- Study circles
- CA = classroom, it is about learning
- CA implements/ equipments
- Soil health
- Climate change
- Practical’s on how the tools are used
- Farmers who visited and brought in the cattle were also interested in CA
- Agroforestry

**Welfare**
- Meals including tea and lunch were good

### 5.2 PLENARY PRESENTATIONS & DISCUSSION TOPICS

<table>
<thead>
<tr>
<th>Topic</th>
<th>Methodology</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring and Evaluation of CA programmes</td>
<td>Plenary presentations, discussions</td>
<td>Simon Lugandu</td>
</tr>
<tr>
<td>Guidelines on Preparation of Country Action Plans</td>
<td>Plenary presentations, discussions</td>
<td>Herbert Mwanza</td>
</tr>
</tbody>
</table>

**GUIDELINES FOR COUNTRY/ AREA ACTION PLANS - GROUP WORK**

Considering the knowledge and skills you have acquired from this course and in line with Ministry of Agriculture’s target programmes and your organisation experiences, develop an action plan for implementation in your area for 2012/2013:

1. Brain storm, identify and list the **CA technology options** that you think would be feasible in your area giving due consideration to power sources and weed control options and give some points to justify your reasoning:
2. Which of these options are you going to **implement** with farmers in your area taking into consideration the programme activities?
3. With **whom** (other partners, collaborators) and **when** (time schedule) will you implement these activities?
4. What **resources** (inputs) will be required to implement these activities and when will you source these resources?
5. What further technical back-up would you require to achieve these activities?
6. Summarize the above issues as suggested in the table below.
7. Draw up an action plan for CA implementation - indicate (at least) the following.

### [LOCATION] CONSERVATION AGRICULTURE ACTION PLAN

1. List of CA technology options

<table>
<thead>
<tr>
<th>Feasible CA options</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Action plan for CA implementation

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Lead organisation</th>
<th>With whom (partners/players)</th>
<th>When? (time schedule)</th>
<th>With What? (resources required)</th>
<th>Technical back-up</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5.3 GROUP PRESENTATIONS ON CONSERVATION AGRICULTURE ACTION PLANS

5.3.1 WESTERN BAHR EL GHAZAL, NORTHERN BAHR EL GHAZAL, WARRAP STATES AND HARD.

Duration of the plan: August 2012 – July 2013.

1. List of CA Technology options.

<table>
<thead>
<tr>
<th>Feasible CA options</th>
<th>Justification.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Crop rotation.</strong></td>
<td></td>
</tr>
<tr>
<td>- Rotation of legumes and cereals to suppress <em>Striga</em> weed.</td>
<td><em>Striga</em> weed is one of the major constraints to sorghum production and it is usually occurs in fields where there is continuous mono-cropping of sorghum</td>
</tr>
<tr>
<td>- Relay planting with legumes as under growth.</td>
<td>The relay crops will help control weeds which are a major problem to farmers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Zero/Minimum tillage.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Trials on minimum soil disturbance through the introduction of rippers.</td>
<td>Farmers already have mould board ploughs and it will be easier to introduce rippers.</td>
</tr>
<tr>
<td>- Direct planting with the organic matter left in the fields.</td>
<td>Farmers do direct planting but they gather and burn organic matter and crop residues. Therefore, direct planting with organic matter would be a good entry point.</td>
</tr>
<tr>
<td>- Introduction of planting basins.</td>
<td>Delays in planting because of tilling of land or waiting for ox-ploughs usually leads to reduction in yields</td>
</tr>
<tr>
<td>- Early planting</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Soil cover.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Use of cover crops e.g. cow peas, pumpkins and trials on the use of other types of cover crops.</td>
<td>Some of the cover crops are planted but farmers do not know correct combination and their value to the main crop.</td>
</tr>
<tr>
<td>- Mulching and organic matter.</td>
<td>There a common practice where farmers weed and throw away the weeds and burn the organic matter.</td>
</tr>
</tbody>
</table>

2. Action plan for CA implementation.

<table>
<thead>
<tr>
<th>Objective</th>
<th>Activities</th>
<th>Lead organization</th>
<th>With whom(partner/s/players)</th>
<th>When?(time schedule)</th>
<th>With what resources required?</th>
<th>Where? (area operation)</th>
<th>Technical back-up</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective 1:</strong> To improve the level of knowledge and awareness on CA in our areas</td>
<td>1. Organize for briefing sessions for colleagues and partners.</td>
<td>HARD and Ministry of Agriculture/FAO</td>
<td>Ministries of Agriculture and Animal Resources, farmers groups and other</td>
<td>By September 2012.</td>
<td>Funds. HR. Equipment. Transport. Communication.</td>
<td>Western Bahr Ghazal state – Jur River County.</td>
<td>FAO and ACT.</td>
<td></td>
</tr>
</tbody>
</table>
of operation targeting farmers and other partners.

3. Providing information on sources of CA information and equipment.
4. Awareness raising targeting farmers e.g. farmer groups, FGD & public meetings, demonstration.


**Definition of conservation agriculture**

CA is a form of sustainable agriculture that combines different practices and approaches that among other things leads to; reduction in farm labour input, improvement and regeneration soil fertility, improvement in biodiversity and eventually improved agricultural production and productivity. CA is anchored on three core principles which are:

- Zero/minimum tillage.
- Crop rotation, and;
- Soil cover.

The practice of CA vary based on farmers circumstances but is most effective when the three principles overlap.
5.3.2 MOA WESTERN EQUATORIA STATE, UMCOR & CAFOD

**Definition of Conservation Agriculture**
Conservation agriculture refers to sustainable farming system those results in to high crop yield productivity, high profit less labour through the practice of minimum soil disturbance, soil cover and crop rotation hence maintaining soil fertility and conserving the environment for future use.

**CA technology options**

<table>
<thead>
<tr>
<th>Feasible option</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Soil tillage or no soil disturbance.</td>
<td>Most of the farmers use farm tools which does expose the soil to negative results like erosion etc.</td>
</tr>
<tr>
<td>Soil cover by use of cover crops and mulches</td>
<td>Numerous cover crops such as cowpeas, pumpkins, green grams and presence of mulching materials.</td>
</tr>
<tr>
<td>Herbicides</td>
<td></td>
</tr>
</tbody>
</table>

**Action plan 2012/2013**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Activities</th>
<th>Lead organization</th>
<th>With whom(partner s)</th>
<th>When Time schedule 2012-2013</th>
<th>Where</th>
<th>Technical backup</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>To create awareness and form five (6) Demo. Plots of 70m by 60m</td>
<td>1. Mobilization, identification of five CA farmers groups</td>
<td>Ministry of agriculture (MOA)</td>
<td>CAFOD UMCOR FAO</td>
<td>August 2012</td>
<td>WES Mundri east 1 Yambio 1 Ezo-1 CE Yei-2 Juba 1</td>
<td>Needs for CA service providers. E.g., Extensionist, Funds from Government</td>
<td>Extension agents &amp; farmers are available to run the implementation of conservation agriculture</td>
</tr>
<tr>
<td></td>
<td>Demonstration site selection &amp; establishment</td>
<td>Ministry of agriculture (MOA)</td>
<td>CAFOD UMCOR FAO</td>
<td>August 2012</td>
<td>WES Mundri east 1 Yambio 1 Ezo-1 CE Yei-2 Juba 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>On farm training of farmer on CA</td>
<td>Ministry of agriculture (MOA)</td>
<td>CAFOD UMCOR FAO</td>
<td>September 2012</td>
<td>WES Mundri east 1 Yambio 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To know the short comings, failure and progress of CA</td>
<td>PM&amp;E</td>
<td>Ministry of agriculture (MOA)</td>
<td>CAFOD UMCOR FAO</td>
<td>Sept - Dec.2012</td>
<td>WES Mundri east 1 Yambio 1 Ezo-1 CE Yei-2 Juba 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To retrain farmers on CA technology</td>
<td>Farmers refresher training on CA</td>
<td>Ministry of agriculture (MOA)</td>
<td>CAFOD UMCOR FAO</td>
<td>Feb. 2013</td>
<td>WES Mundri east 1 Yambio 1 Ezo-1 CE Yei-2 Juba 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To train farmer on how to do crop rotation in CA</td>
<td>Conducting CA demonstration</td>
<td>Ministry of agriculture (MOA)</td>
<td>CAFOD UMCOR FAO</td>
<td>March to April 2013</td>
<td>WES Mundri east 1 Yambio 1 Ezo-1 CE Yei-2 Juba 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM&amp;E</td>
<td></td>
<td>CAFOD UMCOR FAO</td>
<td></td>
<td></td>
<td>WES Mundri east 1 Yambio 1 Ezo-1 CE Yei-2 Juba 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 5.3.3 LAKES & UNITY STATES

<table>
<thead>
<tr>
<th>Area</th>
<th>Feasible CA Options</th>
<th>Justifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lakes &amp; Unity States</td>
<td>No tillage system (Ox-plough)</td>
<td>- Ox-plough is disturbing the soil.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- it’s encouraging soil erosion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- its lead to oxidation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective</th>
<th>Activities</th>
<th>Lead Organization</th>
<th>With whom (partners &amp; Players)</th>
<th>When? (time schedule)</th>
<th>With what? (resources required)</th>
<th>Technical back-up</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>To strengthen the farmer to achieve a valuable agri. system</td>
<td>Awareness of farmers</td>
<td>State, Ministry of Agric.</td>
<td>FAO, DDR, BRAC, ACROSS &amp; CEFA</td>
<td>1st Nov. 2012</td>
<td>-Funds</td>
<td>-Extension officers - FAO Staff</td>
<td></td>
</tr>
</tbody>
</table>

Identification & mobilization of farmers

Training of farmers

Farmers Meeting

Site selection

Establishment of farmers’ field school.
### List of CA Technology Options (Feasible Options)

<table>
<thead>
<tr>
<th>Feasible Options</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover Crops</td>
<td>Easy for farmers to adopt it because they are already doing it and will save them the labour of weeding since weeds will be suppressed by the cover crops</td>
</tr>
<tr>
<td>Crop Rotations</td>
<td>To help the farmers break the circle of weeds, pests and diseases. Some rotation crops grown like legumes help with nitrogen fixation in the soil hence if a heavy feeder like maize was grown in an area, the next farming season, a legume can be planted in that area to retain the Nutrients and oxygen.</td>
</tr>
<tr>
<td>Planting in Basins</td>
<td>It is one way of promoting minimum tillage and the basins are permanent hence the farmer will not need to dig basins all the time. In addition, our families have an average of 7 HH members who can contribute to labour when digging the basins.</td>
</tr>
<tr>
<td>Agroforestry</td>
<td>The trees will help with Soil fertility through their roots, biomass transfer, Fodder for livestock, fruits, fuel and fencing material and house construction.</td>
</tr>
<tr>
<td>Intercropping</td>
<td>Cover crop, hence covers the soil surface between our intended crop and return reducing the effect of evaporation of water. They also reduce the effect of direct heat to our soils and if you interplant with certain crops, it is a source of food or income.</td>
</tr>
</tbody>
</table>

### ACTION PLAN PROJECT: FOOD SECURITY AND LIVELIHOOD

<table>
<thead>
<tr>
<th>Objective</th>
<th>Activities</th>
<th>Lead organization</th>
<th>With Whom</th>
<th>When</th>
<th>Resources</th>
<th>Technical Back up</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To increase Food Security and conserve the environment through the practices of Conservation Agriculture</td>
<td>1.1. Conduct Awareness meeting on Conservation Agriculture</td>
<td>GOAL, WVZ, Min Of Agric, Concern W.W</td>
<td>Organization staff, State ministries of Agric, district stakeholders, Local leaders, Farmers and youth.</td>
<td>1st-30th August, 2012</td>
<td>Stationery, Food beverages, Transport, Visual aid for CA</td>
<td>Extension Officers, Community Development workers, Senior inspector</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2. Demo Plot Establishments</td>
<td>GOAL, WVZ, Min Of Agric</td>
<td>Organization staff, State ministries of Agric, district</td>
<td>Jan 2013, September, 2012</td>
<td>Land, Water, Seeds, Fertilizers, Irrigation tools,</td>
<td>Extension Officers, Community Development</td>
<td></td>
</tr>
</tbody>
</table>

---

**5.3.4 WARRAP STATE, NORTHERN BAHR AL GHAZEL. CENTRAL AND NOTHERN ZAMBIA**

<table>
<thead>
<tr>
<th>Member Name</th>
<th>Organization</th>
<th>Country</th>
<th>Area of Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Adiang Atem</td>
<td>Min. of Agric</td>
<td>South Sudan</td>
<td>Warrap State, Twic County</td>
</tr>
<tr>
<td>Angelina Johns Shoul</td>
<td>Min. Of Agric</td>
<td>Southern Sudan</td>
<td>Warrap State, Abyei</td>
</tr>
<tr>
<td>Piok Deng Mayol</td>
<td>GOAL</td>
<td>South Sudan</td>
<td>Warrap State, Abyei</td>
</tr>
<tr>
<td>William Mawien Matiok</td>
<td>Concern World Wide</td>
<td>South Sudan</td>
<td>Northern Bahr al Ghazel, Awiel West County</td>
</tr>
<tr>
<td>Abraham Aguek yel</td>
<td>GOAL</td>
<td>South Sudan</td>
<td>Warrap state, Twic County</td>
</tr>
<tr>
<td>Rita Nankamba</td>
<td>WVZ</td>
<td>Zambia</td>
<td>Northern Zambia, Kasama</td>
</tr>
<tr>
<td>Melissa Mwanza</td>
<td>WVZ</td>
<td>Zambia</td>
<td>Central Zambia, Chongwe</td>
</tr>
<tr>
<td></td>
<td>Concern W.W</td>
<td>stakeholders, Local leaders, Farmers and youth.</td>
<td>October, 2012 planting tools. Harvesting tools, workers, Senior inspector</td>
</tr>
<tr>
<td>---</td>
<td>-------------</td>
<td>------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1.3.</td>
<td>Field day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4.</td>
<td>Training of interested farmers in CA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Monitoring and Evaluation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6.</td>
<td>Registration of Farmers</td>
<td></td>
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</tr>
</tbody>
</table>
5.4 SUMMARY OF IDENTIFIED ISSUES IN CA

According to the discussion lessons learnt and discussion during the course the following were the issues that are critical in the implementation or promotion of CA. Critical assessment of the issues is deemed necessary to ensure CA is adopted.

- Chemicals applications - application knowledge
- Tools/equipments/implements – availability and costs
- Likely unwillingness of uninformed farmers and practitioners to adopt CA
- Unavailability of resources (or projects) to support the implementation of CA
- Pests and diseases control strategies and methods
- How does CA influence local livelihood systems
- Policy and legal framework – do they support CA?

5.5 COURSE EVALUATION

Generally the training received positive perception from the participants. Course evaluation showed that majority felt that accommodation arrangements at CTC, entertainment during the training period and food services during the training (meals and snacks) received a medium score on a scale of 1 to 5, one being the lowest and 5 the highest (best) score. The highest score was on transport from participant origin to the meeting venue and books and materials. The rest of the indicators receive high score.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Response</th>
<th>No response</th>
<th>Median</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>Transport from your country to the meeting venue</td>
<td>35</td>
<td>2</td>
<td>5</td>
<td>Highest score</td>
</tr>
<tr>
<td>Accommodation arrangements at CTC</td>
<td>32</td>
<td>5</td>
<td>3</td>
<td>Medium score</td>
</tr>
<tr>
<td>Entertainment during the training period</td>
<td>34</td>
<td>3</td>
<td>3</td>
<td>Medium score</td>
</tr>
<tr>
<td>Training Venue</td>
<td>37</td>
<td>0</td>
<td>4</td>
<td>High score</td>
</tr>
<tr>
<td>Food services during the training (meals and snacks)</td>
<td>36</td>
<td>1</td>
<td>3</td>
<td>Medium score</td>
</tr>
<tr>
<td>Did the course content cover your expectations?</td>
<td>35</td>
<td>2</td>
<td>4</td>
<td>High score</td>
</tr>
<tr>
<td>Rate the presentation methodology</td>
<td>35</td>
<td>2</td>
<td>4</td>
<td>High score</td>
</tr>
<tr>
<td>Quality of session facilitations</td>
<td>36</td>
<td>1</td>
<td>4</td>
<td>High score</td>
</tr>
<tr>
<td>Facilitators</td>
<td>35</td>
<td>2</td>
<td>4</td>
<td>High score</td>
</tr>
</tbody>
</table>
Books and materials 36 1 5 Highest score
Technical content 35 2 4 High score
Were your questions answered satisfactorily? 35 2 4 High score
Timeliness & overall logistics of course sessions 37 0 4 High score
Logistics of field day 35 2 4 High score

The other important comments given by participants about the course were:

- ACT has to organise TOT in CA for South Sudan
- Technical support and backstopping is required to follow up the implementation of the action plans
- Participants were satisfied differently in the course contents, specifying specific topics
- Duration of the course is short
- Late disbursement of fees by employers disappointed some participants. Some payments were just confirmed when the course had started
- Trained participants require to be facilitators in South Sudan
- More trainings have to be organised in SS
- Peace prevailed during the training
- Organisers should know their participants before delivering the course
- More field practical’s were recommended
- Trainees be supported with CA equipments
- All NGOs in SS be encouraged to promote CA
- Northern part of SS should be considered for CA training, a training centre may open soon
- Monitoring plan need be in place after the training
- Need more knowledge on how to use CA equipments
- More resources be mobilised for more CA trainings

5.6 CLOSING REMARKS

The Master of Ceremonies Isaac Bazugba introduced the presiding guests. The ACT representative informed that ACT had donated library books, training materials and action plans for all the participating counties to guide the participants. The students’ representative gave a vote of thanks on behalf of the learners. The FAO representative informed that FAO had sponsored 36 participants to the training course who represented 18 counties of the Republic of South Sudan. He acknowledged the presence of 2 participants form Zambia. He remarked the training was the first ever of its kind in the Republic of South Sudan and hope ACT would include South Sudan in their regular calendar of activities. All learners who had attended the course were given an automatic membership into the ACT membership database. The Yei Crop Training Centre was also given and automatic institutional membership. The Principal of Yei CTC expressed satisfaction with the training course and had noticed that the learners’ attitude had changed within the 5 days; they were no longer shy and had become more interactive. The Principal, on behalf of Yei CTC, accepted the invitation into the ACT membership.
EXCERPTS OF SPEECH BY THE GUEST OF HONOUR

His Excellence Juma David Augustine remarked that Yei was a fundamental zone in agriculture leadership in the country. The county is going to be restored as South Sudan’s food back as it was before the war. He applauded FAO’s sponsorship for some of the students. He also invited the students to visit his office to let him know more about CA.

The main challenge was to adopt a healthy type of agriculture. The District Commissioner’s dream is to make Yei CTC into a fully fledge University. The county is host to all the tribes of South Sudan and the country determined the way for SPLM. It is the food from Yei County that sustained the SPLM forces on the frontline. The remarked that he was the country’s youngest commissioners and challenged the young generation that they had a task to prove that young people can be good leaders.

He noted that it was important of Conservation Agriculture to get the political backing in order to ensure that farmers are encourage to practice CA. This way the CA message can always be disseminated at every public gathering. The DC informed ACT that it has his support. There were many organisations in Yei County supporting agriculture. They insist on supporting 1 small scale farmer per organisation which was questionable and asked them to them to be realistic. There should be tangible results e.g. a farmer reporting that he/she used to cultivate one acre and since the support the acreage under cultivation had increased to 5.

The learners were reminded that the certificates were a symbol of the work they had done and show that they are worth owning it. He once again asked them to visit him as his office to empower him on CA so that may provide a slot on CA messages during barazas. He said it was his duty to convince the area residents to adopt Conservation Agriculture. ACT & FAO had brought together 30% of country’s states to the training. He informed that if ACT could prepare a satisfactory document on CA, he could try and find away to get it to the state assembly for discussion and approval as an agricultural government policy.

The DC gave his personal contacts:

His Excellence Juma David Augustine
Commissioner
Republic of South Sudan
Central Equatorial State
Yei River County
Tel:+211 955021393
+211 977121070
+211 924046121
Email: jummaug@yahoo.com
Skype: juma.david.augustine1

6. CONCLUSION

The Training course in South Sudan was unique and requiring early follow ups to the trainees to build confidence. All trainees needed to be coached to establish their own CA plots as part of their action plans as part of following up their muted global action plans.
7. ANNEXES

7.1 ANNEX I: CONSERVATION AGRICULTURE TRAINING PROGRAMME

CTC- Yei, South Sudan, 23rd – 27th July 2012

<table>
<thead>
<tr>
<th>Date – Time</th>
<th>08:00-08:30</th>
<th>08:30-10:30</th>
<th>10:30-11:00</th>
<th>11:00-13:00</th>
<th>13:00-14:00</th>
<th>14:00-15:30</th>
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<tr>
<td>23/7/12</td>
<td>Participants Registration</td>
<td>Setting the scene</td>
<td>B</td>
<td>What is CA and why CA?</td>
<td>CA Concepts and principles I: Soil cover</td>
<td>B</td>
<td>CA Concepts and principles II: Minimum Soil Disturbance</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Introductions; logistics; participants’ expectations; course objectives and workshop processes including committees</td>
<td></td>
<td>Background, historical perspectives, rationale, benefits, challenges</td>
<td>Plenary presentations and discussions</td>
<td></td>
<td>Manual; animal traction &amp; tractor based systems</td>
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<tr>
<td></td>
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<td>Official opening</td>
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<tr>
<td>DAY 2</td>
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<td></td>
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</tr>
<tr>
<td>24/7/12</td>
<td>Committee reports</td>
<td>Situational Analysis/ Coping Strategies</td>
<td>R</td>
<td>Situational Analysis/ Coping Strategies</td>
<td>Soil Health</td>
<td>R</td>
<td>Soil Health</td>
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</tr>
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<td></td>
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<td>Plenary, discussions, exercises</td>
<td></td>
<td>Plenary, discussions, exercises</td>
<td>Soil characteristics &amp; properties</td>
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<td>Soil characteristics &amp; properties</td>
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<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>• Erosion and water infiltration</td>
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<td>Erosion and water infiltration</td>
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<tr>
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<td></td>
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<td></td>
<td>Plenary presentations, discussions</td>
<td></td>
<td>Plenary presentations, discussions</td>
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</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Plenary, discussions, exercises</td>
<td></td>
<td>Plenary, discussions, exercises</td>
<td></td>
</tr>
<tr>
<td>Date – Time</td>
<td>08:00-08:30</td>
<td>08:30-10:30</td>
<td>10:30-11:00</td>
<td>11:00-13:00</td>
<td>13:00-14:00</td>
<td>14:00-15:30</td>
<td>15:30-15:45</td>
<td>15:45-17:30</td>
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</tr>
</tbody>
</table>
| **DAY 3** 25/7/12 | Committee reports | Practical Demonstration of erosion processes and infiltration Run-off trays etc.  
*Field based practical Exercises* | E | Livestock integration in conservation agriculture | U | Weed, pest & disease management and control in CA systems  
timeliness; manual and chemical options; strategic control  
*Plenary presentations, discussions* | E | Social economic aspects of CA  
Group work and presentations |
| **DAY 4** 26/7/12 | Committee reports | Conservation Agriculture Equipment  
Field Practicals: CA in animal traction systems (harnessing animals for ripping and direct seeding  
• CA equipment showcase  
*Guided exposure to CA equipment, hands-on use and adjustments* | A | Field practicals: CA techniques in manual systems  
laying, digging basins  
• jab planting  
• dibbling; manual weed control  
Field practicals: CA in Tractor based Systems  
• tractor sub soilers, rippers and direct seeders  
• Tractor sprayers | N | CA and Climate Change  
CA and Agroforestry  
*Plenary, discussions, exercises* | A | CA Equipment Manufacturing and hire-service provision  
Extension Approaches for CA  
Farmer field school  
Study circle; |
<table>
<thead>
<tr>
<th>Date – Time</th>
<th>08:00-08:30</th>
<th>08:30-10:30</th>
<th>10:30-11:00</th>
<th>11:00-13:00</th>
<th>13:00-14:00</th>
<th>14:00-15:30</th>
<th>15:30-15:45</th>
<th>15:45-17:30</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAY 5 27/7/12</td>
<td>Committee reports</td>
<td>Monitoring and Evaluation of CA programmes Guidelines on Preparation of Country Action Plans</td>
<td>K</td>
<td>Action planning Feasible CA options; Plans for implementation Exercises visualized on flip charts</td>
<td>C</td>
<td>Way forward: Group presentations of Country/Individual Action plans Summary of identified critical issues in CA</td>
<td>K</td>
<td>Course evaluation Closure</td>
</tr>
</tbody>
</table>
7.2 ANNEX 2: LIST OF PARTICIPANTS

NATIONAL CONSERVATION AGRICULTURE TRAINING COURSE
AT CROP TRAINING CENTRE YEI – SOUTH SUDAN 23RD - 27TH JULY 2012

<table>
<thead>
<tr>
<th>NO.</th>
<th>NAME</th>
<th>ORGANIZATION</th>
<th>POSITION</th>
<th>E-MAIL</th>
<th>TEL CONTACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Karlo Juma</td>
<td>Malododo</td>
<td>Extension Worker</td>
<td><a href="mailto:Karlo.juma20@gmail.com">Karlo.juma20@gmail.com</a></td>
<td>0955732838</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FAO, SPCRP</td>
<td></td>
<td></td>
<td>912554245</td>
</tr>
<tr>
<td>2</td>
<td>Garang Mawien</td>
<td>FAO, SPCRP</td>
<td>Extension Worker</td>
<td></td>
<td>0956026313</td>
</tr>
<tr>
<td>3</td>
<td>Melissa Mwanza</td>
<td>World Vision Zambia</td>
<td>Comy Dev. Worker</td>
<td><a href="mailto:mandymwanza@yahoo.com">mandymwanza@yahoo.com</a></td>
<td>+260977876606</td>
</tr>
<tr>
<td>4</td>
<td>Piok Deng Mayol</td>
<td>GOAL</td>
<td>Agric. Officer</td>
<td><a href="mailto:Piokda@yahoo.uk">Piokda@yahoo.uk</a></td>
<td>+211912127490</td>
</tr>
<tr>
<td>5</td>
<td>Abraham Meen Jierah</td>
<td>FAO</td>
<td>Extension Worker</td>
<td><a href="mailto:meenjierah@yahoo.com">meenjierah@yahoo.com</a></td>
<td>+211 955664155</td>
</tr>
<tr>
<td>6</td>
<td>Lual Wol Akoo</td>
<td>FAO</td>
<td>Extension Worker</td>
<td></td>
<td>+211 956174551</td>
</tr>
<tr>
<td>7</td>
<td>Michael Maloch</td>
<td>FAO</td>
<td>Extension Worker</td>
<td><a href="mailto:michaelmaloch@yahoo.com">michaelmaloch@yahoo.com</a></td>
<td>+211955609842</td>
</tr>
<tr>
<td>8</td>
<td>Morris Yasona Yambio</td>
<td>FAO</td>
<td>Extension Officer</td>
<td></td>
<td>+211 911631142</td>
</tr>
<tr>
<td>9</td>
<td>Kiir Kiir Thiep</td>
<td>FAO</td>
<td>Extension Worker</td>
<td><a href="mailto:kiirkirdit@rocketmail.com">kiirkirdit@rocketmail.com</a></td>
<td>+211955498711</td>
</tr>
<tr>
<td>10</td>
<td>John Adiang Atem</td>
<td>GOAL</td>
<td>Senior Inspector</td>
<td></td>
<td>+211911736260</td>
</tr>
<tr>
<td>11</td>
<td>Mangeste Thou Aguot</td>
<td>FAO</td>
<td>Extension Officer</td>
<td><a href="mailto:mangestitou@yahoo.com">mangestitou@yahoo.com</a></td>
<td>+211954032001</td>
</tr>
<tr>
<td>12</td>
<td>Paul Zangabai</td>
<td>CAFOD-SLP-CDTY</td>
<td>Field Ext. Officer</td>
<td></td>
<td>+211955794114/918446120</td>
</tr>
<tr>
<td>13</td>
<td>Agany Kuol Nyeng</td>
<td>FAO</td>
<td>Tax Officer</td>
<td></td>
<td>+211954032001/954032001</td>
</tr>
<tr>
<td>14</td>
<td>Angelina Johng Shoul</td>
<td>GOAL</td>
<td>Extension Officer</td>
<td></td>
<td>+211 918254138/21014888</td>
</tr>
<tr>
<td>15</td>
<td>Abraham Mapuor Mawut</td>
<td>MAF/FAO</td>
<td>Extension Office</td>
<td><a href="mailto:mapourabraham@yahoo.com">mapourabraham@yahoo.com</a></td>
<td>+211955991171/924878648</td>
</tr>
<tr>
<td>16</td>
<td>Chol Marou Manok</td>
<td>FAO</td>
<td>Extension Officer</td>
<td><a href="mailto:cholmaroumanok@yahoo.com">cholmaroumanok@yahoo.com</a></td>
<td>+21195900769</td>
</tr>
<tr>
<td>17</td>
<td>Asib Peter</td>
<td>UMCOR</td>
<td>Food Sec. Project Assistant</td>
<td><a href="mailto:Project_yei@umcor-sundan.org">Project_yei@umcor-sundan.org</a></td>
<td>+211955311407/977252677</td>
</tr>
<tr>
<td>18</td>
<td>Joy Mora Warikozi</td>
<td>SPCRP</td>
<td>Extension Worker</td>
<td></td>
<td>+211911167186/911167146</td>
</tr>
<tr>
<td>19</td>
<td>William Mawien Matiok</td>
<td>Concern World Wide</td>
<td>Asst. Agric.Project Officer</td>
<td><a href="mailto:mawienmatiok@yahoo.com">mawienmatiok@yahoo.com</a></td>
<td>+211914555775</td>
</tr>
<tr>
<td>20</td>
<td>Lilian T. Kpiosa</td>
<td>SPCRP</td>
<td>Extension Officer</td>
<td></td>
<td>+211955397927</td>
</tr>
<tr>
<td>21</td>
<td>John Garang Ujieok</td>
<td>SPCRP</td>
<td>Extension Officer</td>
<td></td>
<td>+21155327413</td>
</tr>
<tr>
<td>22</td>
<td>Abraham Aguek</td>
<td>GOAL</td>
<td>Agric. Extension officer</td>
<td><a href="mailto:aguekabraham@yahoo.co.uk">aguekabraham@yahoo.co.uk</a></td>
<td>+211912645870</td>
</tr>
<tr>
<td>23</td>
<td>Nurgent Lamu Paul</td>
<td>SPCRP</td>
<td>Extension Worker</td>
<td></td>
<td>+211928289319</td>
</tr>
<tr>
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**Resource/Support Group**

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<tr>
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<th>Contact Details</th>
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<tr>
<td>37</td>
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1. Mangesto Thou Aguot  
2. Evans Owino  
3. Agany Kuol Nyeng  
4. Abraham Andrea  
5. Garang Mawien Chan  
6. John Garang Ajiek
19. Paul Zangabai Gabriels Manok
20. Joy Mora Warikozi
21. Nurgent Lamua Paul
22. Abraham Mapuor Mawut
23. Karlo Juma Maidodo
24. Chol Marou Manok
25. James Gany Pathot
26. Michael Tap Kuom
27. Gabriel Kel Par
28. James Gathuak Guk
29. Simon Mapuok Dabuol
30. Rita Nankamba
31. John Adiang Atem
32. Melissa Mwanza
33. Abraham Aguek Yel
34. William Akuel
35. Piok deng Mayol
36. Angelina Johng