FARMER SELECTION FOR NEW CROP INTRODUCTION

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INTRODUCTION

The purpose of this paper is to discuss some of the development theory issues which pertain to farmer selection for crop introduction. the second aspect of the paper is to describe how farmers were selected for purposes of introducing simsim, a drought escaping oil crop, to the farming systems of farmers in zone 5 (semi-arid) lands of Wamunyu and Masii locations, Mwala Division of Machakos District. It is expected that the paper will be useful to development workers in Kenya who constantly must struggle with the issues covered.

PHYSICAL AND BIOLOGICAL BASIS OF SMALLHOLDER FARMING SYSTEMS

The survival of small holder agriculture in Africa, as is in all developing countries, has depended on its diversity historically. A range of crops has ensured availability of food under different climatological conditions. The variability of climate has been instrumental in the adoption of the farming system. The major attributes of climate which are variable are rainfall, its amount and distribution and temperature. Under conditions of low rainfall the drought resistant crops survive, whilst under wetter conditions the water resistant crops survive as the others drown.

This farming system was closely allied to a natural ecosystem. The most prominent feature of any natural ecosystem being the plants which are the primary producers of the system. All animals in an ecosystem are either direct or indirect consumers. The biological product of the ecosystem is finally reduced to inorganic matter by decomposition by bacteria and fungi. The decomposers facilitate the circulation of inherent inorganic matter of the system. A natural ecosystem is therefore a perpetual system revolving around the inorganic matter obtained from the soil and air, converted into biological matter by plants, which form the food for animals and returned to the soil by the action of the decomposers on death of biological matter.

Commercial agriculture developed in Europe and the northern countries relies on a farming system dependent on heavy capital inputs and monoculture. This system relies on farming large tracts of land, use of heavy machinery, fertilizer, fungicides, insecticides and other chemicals. The food needs of the farm are derived from the income obtained from the farming activities.

THE PRIMACY OF FOOD SECURITY

As opposed to commercial agriculture the priority of small-holder agriculture is food security. Basically the small holder has limited amount of land on which to grow his food. Secondly, the small-holder does not have the capital to invest on his holding. The twin shortcomings determine the actions of the small holder. The inability to derive a decent income from a single crop to finance the purchase of other necessities, leads to the growing of the necessary food crops on the holding. In addition, the small holder strives to obtain a cash crop for income generation to finance his own farm produce demands.

Small-holders are therefore faced with a very complex situation to ensure that they generate enough food for consumption and cash for non farm-produce needs. The fact that they cope is an illustration of a grasp of the very complex issues involved. This is proof that small holders are not the simpletons many people have assumed them to be.

A multi-cropping system uses the primary resource of agriculture the soil, in a sustainable manner. Distribution of crops on the land may be over space or time. Nutrients from the soil are drawn at different levels in the profile and not depleted in any one layer as in monocropping. Deep rooted plants take advantage of the capillary fringe where shallow rooted plants may wilt and die. Diseases are minimised and soils are not poisoned by chemicals.

As plots continue to be subdivided and the demand for cash for school fees and other demands increase, in addition to the need for food security; the small holder has to be super efficient in land utilisation to assure survival. Small holders strive to survive through innovation. Many studies assume that smallholders are conservative. This is not so.

COMMUNITY LEADERSHIP FOR COLLECTIVE INNOVATION

Due to the stresses brought to bear on the classical farming system, small holding community has innovative, analytical communicative, realist, socially responsible individuals who are at the cutting edge of change in the community. These individuals are collectively responsible for the changes and development of a society. Basically these individuals make the bulk of the selection for new crop introductions into the community. These are not the model farmers of extension fame. They are usually ignored by those who choose and anoint model farmers since they do not hold formal and bureaucratic leadership roles in the community. They are informal leaders in their communities for they have skills and attributes desired in the community and not necessarily directed towards the other.

A community is made up of institutions composed of individuals. Institutions have their leaders whose responsibility includes facing and overcoming community difficulties. Danger normally comes from the future, rarely from the past, normally transcended and mastered. Leaders must therefore be equipped to face and cope in future dangerous situations. Selfish leaders spell doom to the community by harping to the past. Innovative leaders work towards the well being and development of the community by anticipating and solving problems.

A community is organised and led in such a manner as to allow its smooth running. Different facets of the community can therefore be employed to undertake specific functions. The members of the community know best which arm of its organisation can best perform a specific task. They better than anybody else make the best choices.

INTRODUCING EXTERNAL INPUTS FOR DEVELOPMENT THROUGH PARTICIPATION

Development theory recognises that it is necessary to introduce various external inputs for the continued development of most smallholder communities. These inputs, however, should be in agreement with the aims and aspirations of the community. All inputs must be acceptable to the community. This is the only way to avoid passive or active resistance. Acceptance results from identification by the community members, usually after being processed by their leaders, of the validity of the solutions to perceived problems. Such perception enables the various external inputs to be coupled to the community.

For ensured success all external inputs should be discussed with the community so as to allow incorporation of the inputs into the community agenda priorities. This incorporation must be the work of the community. It is not for persons external to the processes taking place in the particular community. Anthropologists understood this in a past age but development workers have not even got around to recognising this as the key to participation although may mouth the term.

Once the external inputs have been channelled into the community process, the external change agent can join the community in action planning. The development of the plan is in reality originated by the community and therefore can be seen as their creation. Interest is generated through the plans becoming the property of the community.

Community participation in the application of the solutions and plans is guaranteed as the communities' scheme of survival and development. The community involvement stems from the premise that it is an organism which

is highly adaptable in response to commands of its members.

Usually power driven interventions which are necessary for the development of a community are applied through formal bureaucratic leadership. Such interventions rely purely on external personnel to supply inputs and implement projects. The community usually provides labour for the projects. In many cases the priorities of the community and involvement of the relevant facet of the community is by passed. The intervention, as a project and not of the community, is based on a very narrow base and topples over immediately the external forces are withdrawn.

SELECTION OF FARMERS FOR INTRODUCTION OF A NEW CROP

The criteria for selection of farmers, who are to act as leaders in the introduction of a new crop to the community include the following:

KNOWLEDGE

The wealth of a community is in its knowledge. Traditional knowledge accumulated over the years contributes to conventional wisdom. Acquired knowledge is continuously being accumulated, tested and incorporated into existing community understanding.

It is not all the members of society who actively seek for knowledge or are keepers of traditional knowledge. However, those who seek and integrate the new knowledge with the existing knowledge are at the frontier of society and open new vistas for the community. They are the innovative leaders.

ANALYTICAL ABILITY

To arrive at the crops one has to grow to cater for his food and cash requirement one has to be aware of what crops are available. Careful reflection and consideration of the choices open is mandatory for setting up successful operations. The ability to analyze the advantages and disadvantages of different scenarios results in choosing the most ideal balance of crops for maximum return under prevailing situation.

Anyone blessed with this ability can constantly adjust their operation as the situation requires. They are highly adaptable to new situations and are perpetually evaluating new options. They are an asset to the community as they create models for the less gifted members of the society to follow as " me too".

INNOVATION

As a result of their analysis of situations, people innovate to adapt to the current scenarios or create new options to solve present problems. Innovation maybe in the way of performing their operations differently, introducing new varieties or diversifying their activities by introducing new crops as by other means. Whatever option is taken, however, introduces a new variable which could change the state of affairs. Those leading are the ones who always stay a jump ahead of the mass.

INDUSTRY

Attitude towards work varies from person to person. It is usually those who work hardest that prosper beyond the norm of the community. In smallholder settings, leaders are those who work and achieve.

FORESIGHT

Due to the actions of certain individuals who manipulate their situation in search of a better life, society is never static. Their actions may bear fruit in the short or long run and are usually copied by the bulk of the community population. They are the innovators and adaptors of traditional and new knowledge.

An example of foresight is the realisation that water was the limiting factor of animal production in Wamunyu by a group of farmers in the fifties. This was followed by the innovation of terracing land and building subsurface dams which has resulted in a nucleus of dairy industry in the location.

COMMUNICATION

A small holder operates in a wider community. The size of ones holding is such that adjoining land influences production on ones holding. Any innovation is therefore more meaningful if adopted by the wider society than if confined in one small plot.

It is important therefore to be able to communicate with the wider society. Discourse and dialogue between members of the society is functional in continuous fora in a community. Articulation and advocacy of ideas is a gift of but a few in any given community.

SOCIAL RESPONSIBILITY

Each member of the community has a social role in the community. The responsibility of the survival of the community however lies on the most gifted members of the community. These are the members of the society who are prime movers of ideas. They need not be formal leaders in any

particular facet of the community but are largely agents of change. Their driving force is the recognition that society and the environment is fluid and not static. The need to bring change is a challenge to the more adventurous members of the society who move communities towards development and improvement.

REALISM

The range of possibilities in any given environment is enormous. However only limited options can be tackled at any one time. The realists therefore develop minimum number of alternative strategies and choose the most favourable at the material time. Realists are not revolutionary or adventurous. They do not tolerate ad hocracy. They are systematic evaluating and observing new introductions into their farming system. This has been misunderstood as conservatism and lack of innovativeness. Changes are therefore usually sequential and rarely parallel to achieve independent evaluations. The good leaders process the changes faster then the rest of society.

ABILITY TO PRIORITISE

Implementation of change in any community is the result of situational analysis and devising plausible solutions to perceived problems. The ranking of problems according to their importance facilitates logical sequence of solutions to complex situations. The complexity of communities is beyond most members comprehension. Only a few members of the community understand fully the options open to them. This knowledge gives them power. They become leaders therefore. It is the duty of these members of the community, as recognised leaders, to set the priorities of action for the survival and development of the community.

The agenda for future actions of a community is developed continuously by the community through complex interaction of its members and leaders who possess the above attributes. Any community has its own agenda. They might however lack the means to implement their agenda at the required pace.

External interactive forces introduce into the community dimensions which diminish the communities ability to cope. These external forces compound an already complex situation. This is the basic problem of development work whose complexity, more often than not, is not even acknowledged by developmentalists.

THE SELECTION PROCESS

As a vehicle for the introduction of sim-sim in Wamunyu and Masii the dairy

farmers primary societies were chosen as target groups. Investigation had shown they were well organised small group of farmers. The Wamunyu Society had 90 registered members and the Masii Society 200.

On the first day of contact of the groups the focus was on the Wamunyu Society which is more aggressive than the Masii Society. An interview with members of the society revealed their aspirations, the considered alternatives, their concerns and priorities.

It transpired that:

1. The community had a constant discourse of ways and means of improving income from farming activities.

2. There was already a shortlist of new plants which had been considered by the community. These included castor and sunflower.

3. Cotton was not a preferred crop because of weakness of marketing and chemical overheads.

4. Any plant which could double as cattle feed would have an added advantage to this particular group.

SIM SIM INTRODUCTION

As sim-sim was introduced as a possible cash crop, the pertinent questions which arose immediately from the farmers were:

1. What are the inherent advantages.

2. Is there a market for the crop.

3. Yield and returns from the crop.

4. Cultural practices as regards to land use and labour requirement.

5. Types of soil, manure and fertilizer requirement.

6. Capital requirement in terms of chemicals for disease control.

7. How technical advice would be obtained.

8. Where to see the crop.

Sim sim had been introduced in Kitui District the preceding planting season

and was still in the field during this discussion. A delegation of two farmers each from Wamunyu and Masii was selected to visit Kitui and see the crop in the fields.

The trip to Kitui to see the crop in the field confirmed the points which had been raised in the discussions with the farmers. One crucial point was that of a possibility of yield even when the maize crop has failed. The season in question (October rains 1991) was almost a total failure of maize, but the sim-sim had survived and a crop was expected although it was planted much later than the maize crop. Thus the drought resistance of sim-sim was clearly demonstrated in the field. This is a major inherent factor of sim-sim growing in the two locations.

Other advantages of sim-sim is the production of oil for human consumption and a residue for cattle feed. Initially the production would be sold to a processing plant outside the growing area. This would inject cash in the local economy. However, if adequate crop were produced, the oil would be expressed locally and the residue would be used to make cattle feed locally. Then, in addition to improving the farmers income, it would also be instrumental in increasing local employment.

According to the local farmers the greatest resistance to the introduction of new crops in an area is marketing problems. Incidences have occurred where crops have been introduced without a proper marketing strategy leaving the farmers with a product they cannot dispose. This is tantamount to a loss of opportunity and adventurism a small-holder can ill afford. Hence the need for an assured market and a fair return for the production. The need to minimise this risk is so powerful that it might kill an enormously profitable project for the farmers due to past inappropriate crop introductions.

The concern for diseases and pests control on a crop stems from the limited capital for investment. A crop which requires large capital inputs would draw heavily on a small-holders capital. It would therefore be a high risk crop. Acceptance would therefore be naturally low.

A small holder usually depends on family labour for production. High labour requirement crop is therefore inappropriate in this circumstances. Infact labour is the reason for growing maize rather than millet and sorghum which would be technically preferable in large parts of Africa, not to speak of Masii and Wamunyu locations. The drawback of the latter crops being the need for labour to keep birds from the fields as the grains are formed.

A preferred crop would therefore be one whose labour requirements for planting, weeding, harvesting are reasonably low and well spread out. If possible a new crop labour demands should not coincide with the existing crop labour demand peaks.

A small holder major need is that of food security. As such the best developed part of the land is reserved to cater for the food demands of the household. From this arises the need to know the type of soil, manure or fertilizer requirement of any new crop. Competition of cash crops with food crops which risks food supply is thus unwelcome. Cash crops are usually planted in the poorer soils, on reclaimed land or difficult land. Any new crop has to fit into this land use strategy.

Yield and price of a cash crop are important to farmers in order to assess the potential of the crop. New crops are only tried in the fields if the farmer is convinced a crop has a potential. Initially a small piece of the land is cropped. Expansion of cropped fields depends on the actual observed yields, the returns obtained and the size of the land.

The question of technical backup for the introduction of a new crop is an important one. This is infact one of the limiting factors to the number of people who should take up a new crop due to limitation of extension staff. Failure to limit members may result in crop failure due to faulty cultural practices. For example, too close or wide planting, improper weeding, poor harvesting techniques, which would result in minimised yields. Field practices should be clearly spelled out for any new crop to minimise mistakes which will inevitable occur in the fields.

OBSERVATION AND CONCLUSIONS ON THE KITUI VISIT

When the representatives of the two societies went to Kitui, they visited different farms with differing soils, cultural practices and rainfall. Their observation from what they had seen and were told by their contemporaries in Kitui was the basis of their conclusion to enter a trial period for sim-sim in their area.

Together with the farmers representatives it was agreed that the first seasons planting would be by limited number of farmers. These farmers would be selected by the farmers themselves according to the criteria outlined above which was developed by them. The farmers fields would then act as demonstration plots and would serve to develop a local phenotype of the crop. The local seed produced would then be used for replanting in the subsequent seasons.

Success of the introduction is depended on the availability of a steady market. This factor was top priority for the majority of the farmers. The understood method of payment being cash on delivery. Delays on payment would lead to abandoning the crop.

A preparatory period was then entered into with personnel interviews to

recruit the selected farmers with initial explanation of the crop. The initial contact is used to familiarise with local conditions and assessing how best to work in a particular community and individual commitment.

The phase of the initial contact will culminate in the bringing together of the pioneers in a location. In this meeting the necessary technical input for the crop will be provided, seed distributed and all people involved in the project will meet each other. Subsequent interaction will therefore depend largely on group dynamics. The drive depending on how effective is the group which has been constituted.

DATA GENERATION

Base line data for the production of sim-sim in the Masii and Wamunyu locations will be generated through the trial plantings. The 20 farmers from Masii and 20 from Wamunyu cover the range of soils which are found in the area. The limited number of trialist has been agreed on to enable a close contact between the project implementors and the farmers.

Analysis of cultural practices like manuring or no manure applications across the range of soils would lead to determination of the most suitable soils. The time of planting is one of the factors which need to be established for maximum yield and ease of crop management. Other factors include weeding time and frequency, harvest timing for maximum, maturity while preventing losses due to pod shattering.

Experience sharing by the farmers would be encouraged to distil the cultural factors which would be most amanable to the successful growing of sim sim.

From the data generated coupled with effective seed multiplication and selection in subsequent seasons, it is envisaged that sim-sim would be effectively established in the region over a period of two years.

SELECTED TRIALIST FARMERS

WAMUNYU	MASII
1. Henry Kibwea Ngui	1. Patrick Maithya
2. Nason Muthike	2. Komu Kitavi
3. Johnson Kimeu Kavoo	3. Musyoki Musau
4. David Nzwili	4. Dominic Kitelo
5. Job Kyalaani	5. David Kyalo
6. Lawrence Ndisya Kaiu	6. Kisoloki Kyule
7. Julius Nthusi	7. Simon Kitetu Sila
8. Lydia Mutunga	8. Joseph Mbiti

9. Simon Mulandi
10. Jonathan Ngomo (Chief)
11. Jonathan Nzoka
12. John Kimotho Ndolo
13. Joseph Musembi
14. Nason Nzoka
15. Aaron Nthuku Ngula
16. Naomi Kisu
17. Shadrack Ngula
18. Matheka Ngomo
19. Musau Mulinge
20. Muia Kioko
21. Kisilu Nzioka.

9. Peter Kunga
10. Peter Kenze
11. Samuel Muindi Muthike
12. Gregory Kombo Nzioka
13. John Mauta
14. James Mutava
15. Gideon Kivinda
16. Joseph Mutua Mbunga
17. Mwaluko Mulomba
18. Kamandi Kitungu
19. Josephat Matheka
20. David N. Mbithi (Chief).

SIM-SIM PLANTING AND MANAGEMENT

Meetings held in Masii 17/3/91

Wamunyu 19/3/91

SEEDBED PREPARATION

A fine seedbed should be prepared for sim-sim due to the small size of the seed.

PLANTING - SEED HANDLING

The small size of the seed presents two major problems. One is that of delivery and two is the planting depth.

For effective delivery in the absence of a drill, it is suggested to mix the seed with sand or soil in the proportions seed : sand of 1:2. The mixture would allow for a delivery of a small number of seeds.

After delivery into a farrow or hole, the seed should be covered lightly by a branch for example.

Planting should be as soon as there is enough moisture in the soil or before the rains start.

PLANTING DISTANCES

Broadcast seed would give an uneven plant distribution and result in difficulties in weeding.

Easiest crop management is achieved through row planting. The ox-plough

can then be used for weeding.

Currently the recommended distances are 60 cm between rows and 60 cm between planting holes.

THINNING AND WEEDING

Sim-sim seed will germinate in 3.5 days and should be thinned when it is 3.6 inches tall leaving 3 plants per hole.

The crop does not tolerate weeds well and the seedbed should be weeded clean for young plants.

As the crop grows it forms a canopy smothering weeds.

HARVESTING

The crop matures in 110 days. It is harvested when the bottom pods brown and shatter the leaves fall off flowering stop and the stems turn yellow. Harvesting is by cutting the plant and tying in bundles which are stacked upright to dry. The dried crop is then threshed to release the seed.

Threshing is done on tarpaulin, plastic sheeting or cement floor for maximum seed collection.

PREFERRED SOILS

Sim-sim prefers deep well drained soils. Although it survives in poor soils, the yields are higher in the richer soils. Manuring will increase the yield. The crop does well in light sandy soils and loams but poorly in heavy clays which have a tendency to water-logging.

INTER - CROPPING

Sim-sim has been intercropped with maize and millet. In this case the crop is planted between rows of maize or millet.

BIOLOGICAL CONTROL OF PESTS AND DISEASES

The application of natural pest solutions. Plant teas could be applied to combat pests on the crop. The most common pest of the crop in Kenya is the webworm which is however of minor importance in yield loss.

Tobacco Tea

1 Kg (50 leaves) fresh tobacco leaves and boil in 10 litres (1/2 debe) of

water for 20 minutes add a small piece of soap. Spray the plant tea on the crop.

Marigold or stinging nettle

Cut fresh plant and dissolve in water for 1 - 2 days and spray.

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2. A brief report on a visit to Sesame Growing Regions of Kenya. 1987.

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RAINS IN 1992.

The recommendation for the farmers was to plant after the initial storm was passed. The farmers planted before the storm and the seed was buried. The others did not plant and missed the opportunity of planting altogether as the rains did not persist.

This state of affairs thus requires a different approach in order to ensure maximum use of available precipitation. The following scheme would therefore be deemed feasible.

1) Preparation of land during the dry spell.

2) The seed-bed for sim-sim should not have deep farrows where seed can be transported by water and buried by soil.

3) Planting on shallow farrows during the dry season or immediately after the initial storm.

Most of the land in Machakos is prepared using the ox-plough. After the usual ploughing, planting farrows are made using the plough, maize and peas seeds are then planted in these furrows.

Alternatively as one ploughs the field, planting is done concurrently. For planting of maize every third ploughing furrow is used for deposition of seed

which is covered by the soil from the ensuing furrow. For beans planting, every furrow is used for deposition of seed.

As one turns over a field however shallow furrows are made between the soil turned over when the first furrow was made and that of the ensuing the furrow. This depression made by the soil moulds between two ensuing furrows is the ideal location to deposit sim-sim seeds.

In a well ploughed seed bed planting before the onset of the rains maybe undertaken without fear of losing the seeds through burying too deep. Every second depression should be taken as a planting row.

WAMUNYU

1) JOEL MAKAU NGOME

Date of planting	**5th April**
Soil	Sandy well manured
Combination crop	Maize

Mr. Ngome substituted sim-sim for beans which he was going to plant as a companion crop to maize. He never plants a pure stand. His land was prepared after the onset of rains and the sim-sim was planted concurrently to his maize crop. He planted 1/2 kg of seed in between his maize crop.

On 9th June on a routine visit abundant flowering was observed with the earlier flowers having formed pods already.

Some of the plants are about 1 1/2 meters tall especially those adjacent to the banana row which has been planted in the cut off at the head of the farm and which therefore had most benefit from the moisture soaked in the banana row.

The sim sim was planted on top of the ridge on ploughing whereas the maize was planted in the furrow.

Mr. Ngome will have a substantial crop of maize, beans, cowpeas and sim-sim.

SIMON MULANDI

Date of planting 10th April
Soil Sandy red loam
Companion crop Maize

Although the crop was planted pretty early in the season, its delay has been due to deep burying. Its emergence was much later than it should have been and therefore did not take advantage of existing moisture for root establishment.

The crop being planted in deep furrows was devastated by the second rains on 27 April burying some of the young crop. Thus although germination was good there was a large loss. This rain further compacted the soil resulting in runoff of the maize which is the companion crop for the sim-sim there is no production expected. It was stunted at a very low level and started dying out.

Sim-sim on the farm has a height range from 60cm down to 10cm. This height range is largely dependent on the depth of burying of the seed, time taken before emergence and loss of opportune moisture use.

The crop flowered in early June but yield is likely to be low.

AARON NGULA

Date of planting 18 April
Soil Red loam sandy
Single crop planting

This crop was planted in anticipation of the onset of the rain coinciding with the weeding for the maize crop. During a normal year this would have been an ideal planting time. As it was, there was not going to be any rain for the following two weeks. Further when the rains came they were too heavy packing the ground in addition the rain lasted only two days.

With the ground having packed hard and without any further showers it was difficult to weed the crop without damage. The crop was therefore left to develop as best as it could.

Germination even in these adverse conditions was quite good. The crop was planted in holes made with a hoe in the seed bed.

At the beginning of July the crop was about 1/2 metre high with profuse flowering.

MULI KANG'ELA

Planted	**6th may**
Soil	**Black cotton**
Companion crop	**Maize**

Mr. Kang'ela planted sim-sim between maize rows after he had weeded the maize with an ox-plough. With his black cotton soil he still had substantial amount of moisture in the soil. This moisture resulted in adequate germination of the crop.

In a rather unfortunate circumstances the total crop was lost during hoe weeding carried out in the absence of Mr Kang'ela by a Mwethya which was helping his son. He was not aware of the crop having been planted by his father.

HENRY KIBWEA NGUI

Planted	**6th May**
Soil	**Red loam**
Companion crop	**Maize**

When Mr. Ngui planted his crop he had ploughed between his maize crop rows to efffect weeding, unfortunately for him no crop germinated. There was not enough moisture in the ground to effect germination. He is hopeful that the crop will germinate at the start of the next short rains

DAVID WAMBUA

Date of Planting	1 January
Soil	Sandy, pebbles
Compaion Crop	Maize

The crop was planted after the rains. There was pooor germination and the crop died out.

JONATHAN NZOKA

Date of planting	Indeterminate
Soil	Very sandy
Companion crop	Nil

Crop died out whilst small.

MASII

KISOLOKI KYULE

Date of Planting	13th April
Soil	Sandy red loam
Companion crop	nil

Germination in this farm was very good. However the heavy rains later in the month covered most of the crop which was planted in plow furrows. The furrows were made with a plough after preparing the seedbed. The seed was lightly covered.

Compacting of the soil during these extremely heavy rains has resulted in crusting hence the poor growth realised.

The surviving crop which was not buried during the rain has reached a height of 75cm and had flowered by 9/6. The early pods could be seen by this time.

Crop has slight caterpillar infestation.

KIOKO NDAMBUKI KITAKA

Date of planting	**30th march**
Soil	**Gravely loam**
Companion crop	**Maize**

This farmer buried the seed too deep as he planted with a plough together with maize. The few seeds which were not buried too deep germinated but the majority of the crop died out. The crop was not weeded when young for fear of uprooting. Subsequently the maize died out and there was little incentive to cultivate the sparsely distributed sim-sim. Eventually however the area around each crop was cultivated by hand pulling of weeds to keep the plants clear.

The crop reached a height of60cm and has a fair crop. It was attacked by a few caterpillars.

SIMON KITETU SILA

Date of planting	Unkown
Soil	Sandy loam

Companion crop Maize

Simon planted sim-sim twice. The first planting was completely covered after the first storm and the second planting suffered the same fate with few plants surviving.

Despite the non weeding the plants have quite a healthy pod developement.

A slight caterpillar infestation was observed.

Height of the crop is about 75cm with a few branches.

PATRICK MAITHYA

Date of planting 28th April
Soil Sandy loam
Companion crop None

Maithya planted his crop at two sites. The upper site had a poorer germination than the lower site. As the crop was planted during the storm time it took time to take off. However it has grown and a little crop is expected as by the beginning of July. The crop was in flower although no pods had developed as yet.

The soil was packed hard and thus it was difficult to weed for fear of damaging to the plants.

KOMU KITAVI

Date of planting Indeterminate
Soil Sandy
Companion crop Cotton

The crop was planted before the second storm rain. This affected the crop in that there was extensive erosion on the farm though well developed with terraces was overcome by the amount of water which came from up the hill. Some of the crop was uprooted and dislocated down the slope. Some of the crop was left on subsoil as the top soil was washed away. It seems that the crop on this farm was attacked by caterpillars very early on although the infestation was only slight.

A small crop is expected.

GREGORY KOMBO

Date of planting	20th April
Soil	Sandy clay
Companion Crop	None

This crop planted in a valley bottom suffered from the compaction of the soil by the second storm. It is clean weeded.

A sizeable crop is expected from this farm. However there has been a slight caterpillar infestation from early stages of development of the crop.

DAVID KYALO

Date of planting	19th April
Soil	Sand loam
Companion Crop	None

This crop is planted at a valley bottom and was partly buried by rain. The remaining crop is doing well.