

CEDESOTA

ANNUAL PROGRESS REPORT FOR CONSERVATION AGRICULTURE PILOT PROJECT IN KANDASHE AND MAKIBA VILLAGES



COVERING SEPTEMBER 2022 – JULY 2023

1. INTRODUCTION

The first forms of conservation agriculture practiced were characterized by opening a hole in the soil with a hand hoe, mixing with organic fertilizers and sowing seeds in the hole in a given specifications. The seeds are maize mixed with beans and sunflower. This way of farming was done with accordance of conservation agriculture principles.

Initially these farmers were ploughing their farms. The plough became popular because it improved the soil's physical properties and contributing to weed control. However, through training provided by CEDESOTA on conservation agriculture technologies, targeted farmers started to realize the negative environmental consequences related to the use of the plough such as high rates of soil erosion, high energy demand in ploughing and reduced soil organic matter content. The 50 farmers in Kandashe and 50 Makiba villages have adopted the CA technology to address the negative consequences of ploughing, particularly soil erosion. Development of conservation agriculture has started in the two villages this year and expected to spread all over the wards and district. Conservation agriculture takes many forms and can be practiced by smallholder-farmers using a hand hoe as well as by highly mechanized big farms.

Conservation agriculture is based on three major principles:

- (i) Continuous minimum mechanical soil disturbance (minimum tillage)
- (ii) Permanent organic soil cover (surface mulching)
- (iii) Diversification of crop species grown in sequences and/or associations, for instance maize and beans, maize and sunflower etc.

Maize is the dominant crop in the farming system in these agro-ecological zones.

2. PART “A” PROGRESS REPORT FOR CONSERVATION AGRICULTURE PILOT PROJECT AS FROM MARCH TO APRIL, 2023

Some positive effects have been observed through “Promoting Agroecology and Resilience to Climate Change among Small-Scale Farmers Project in Makiba and Kandashe villages of Meru District”.

Farmers have started to use conservation agriculture (CA) technologies and there is a positive performance from the seeding stage up to now at flowering stage in both areas of the project. This was observed during monitoring by CEDESOTA in the month of May 2023 found that the crops are growing well (*See Figure 2 -6 below*).

So far, much has been achieved with regard to tillage methods knowing that reduced tillage contributes to increased soil carbon content in the soils. The size of the basins promoted by CEDESOTA to farmers is 15 cm wide, 35 cm long and 20 cm deep seeded with 4 - 5 seeds per basin (*See figure 1 & 4*). The distance between pits is 35cm and between lines is 90cm. The practice required pitting and mixing organic fertilizers and wait rains to sow. Others combined seeds and fertilizers in the already made pits/basins as basal dressing. The actual sowing activity was done in mid-March after receiving the first rains. The second fertilization was done as top - dressing at knee high stage and above of maize. Maize is the dominant crop in these agro-ecological zones (*See figures 2 – 6*). Farmers produce maize for own consumption and the surplus is sold. Other crops grown with maize include soyabean, cowpea and sunflower. The weather and the soil moisture today are still good to keep crops growing to maturity- in the month of May and June.

Farmers are using slashes and herbicides to control weeds and pesticides to kill maize and beans pests. Involvement of village leaders in the farmer groups has been the best incentive for easy coordination with district agricultural personnels in case of extension advice to farmers.

In its monitoring exercise, CEDESOTA furthermore addressed the issue of maize dominance in the farming system by emphasizing when upscaling of the project to mix with crops like cowpea, pigeon pea, sunflower, cassava and sweet potato in the farming system. Improved rotation may reduce the pressure from pest and diseases and nitrogen fixation crops will in addition provide nitrogen. Cassava and sweet potato will give a yield also in dry years and can resist dry spells. A harvest of cassava and sweet potato is also available during the time of the year when there is food shortage. These crops can therefore have a vital role in improving food security.

Non-CA farmers also have tried to apply CA principles though to lesser extent. They continue to plough, but they have diversified their production and practice more crop rotation. This shows that the non-CA farmers have also benefited from CA trainings.



Figure 1: The picture indicates pitting in one of farm in Makiba village ready for direct seeding. This picture was taken in the month of January, 2023.



Figure 2: The first picture indicates a five weeks-sown maize farm belong to Mr. Elias Nasari, members of Farmer Group in Kandashe village. The second on the right is two months sown-maize farm belong to Mr. Elisante Pallangyo also member of Farmer Groups in Kandashe village.



Figure 3: The picture indicates two months sown- maize farm belong to Mr. Elisante Pallangyo also member of Farmer Groups in Kandashe village.



Figure 4: A maize farm intercropped with sunflower in Makiba village planted in the first week of April following conservation agriculture principles.



Figure 5: The picture indicates a basin with 4 maize plants raised from 4 seeds in Mr. Neemia Kisinda farm of Kandashe village as shown in figure 3 & 4 above. The average seeds per basin /hole is 4 – 5 seeds for maize.

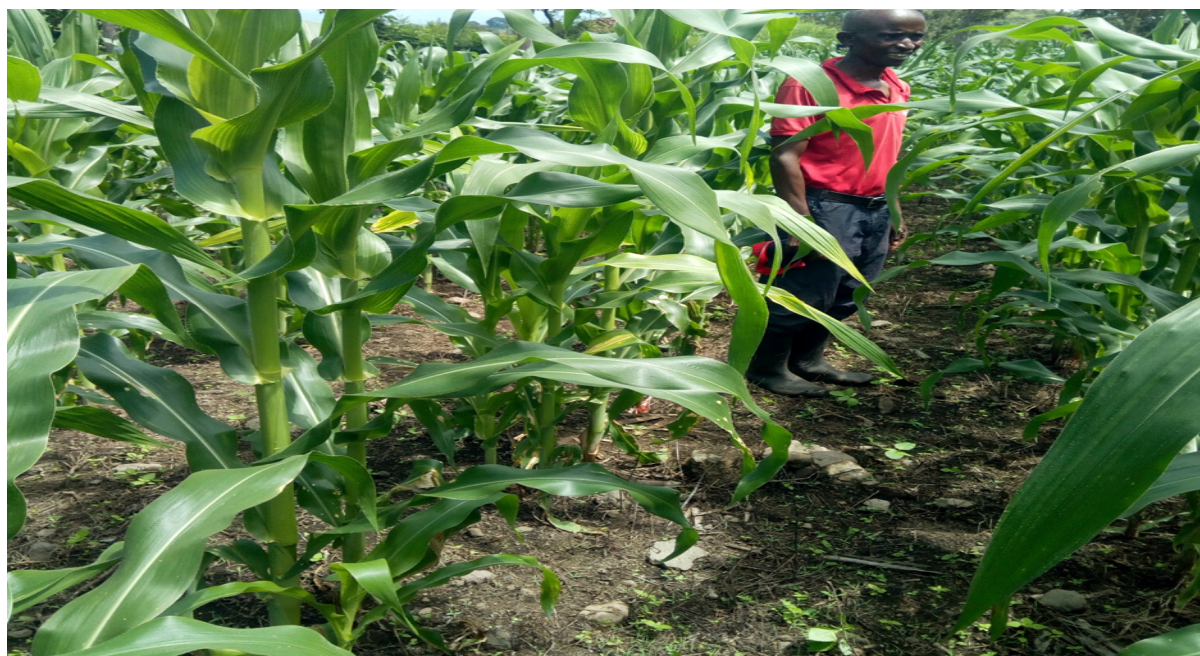


Figure 6: Mr. Neemia Kisinda's maize farm planted on 23/3/2023 with cow dung manure. He sowed 4-5 seeds per basin and distance between lines of 90cm.



Figure 7: The picture indicates maize farm sown with indigenous seeds on 24th March 2023. The farm belong to Mr. Harold Mafie, the member of Farmer group.

General Remarks

- Field visits were made through out the two villages before, during and after direct seeding. Also, post-planting period.
- Despite the delay of rains, situation of crops is good as depicted by the pictures above.
- Crops planted are mainly maize both indigenous and short-term hybrids, sunflower and beans.
- There is high possibility of other people to join the group. This is signaled by some individuals who also adopted the practice despite the fact that are not yet members of the farmer groups.
- To fight the weeds farmers were told to establish a soil cover by planting cover crops or leaving crop residues in the field after harvesting.
- Field observations showed that there are considerable differences in the condition of planted crops and labor demand both within Conservation Agriculture (CA) systems and between different cultivation methods. Crops planted with CA principles looks healthier than those of conventional agriculture.

**PART “B” PROGRESS REPORT FOR CONSERVATION AGRICULTURE PILOT
PROJECT (PROJECT STATUS) AS OF JUNE, AND JULY 2023**

Farmers in Kandashe and Makiba villages have continued to service their farm crops which are now at maturity though at different stages as indicated in *figure 8 – 13 below*. For Makiba village, farmers are supplementing rains by irrigation which also does not reach all famers due to the nature of land terrains. Farms represented by *figure 8 – 10* are all under irrigation in Mkaiba village. The maize species / varieties planted both in Mkaiba and Kandashe Villages are mixed including the indigenous and hybrids seeds. The common hybrids are Aminika, Tumbili, DK, Pundamlia, Meru Seeds etc. The cover crops are mainly beans. Sunflower was also sown using conservation agriculture technics (*See figure 10*).



Figure 8: Standing from left is Mr. Daimu Mbada the owner of the maize farm and right is the chairman of farmer group in Makiba village. His farm is 5 acre all planted with maize, AMINIKA Hybrid. The standing maize crop is 2.5 months about to mature(kukomaa). The left and right pictures are just same farm.



Figure 9: Mr. Selemani (Sheikh), the chairman for farm group in Makiba Villge in his maize farm planted by using conservation agriculture technics. The lot is 2.5 months approaching maturity. This farm is 3.5 acres in total planted with Tumbili hybrid on the left farm (2.5 acres) and Aminika Hybrid Variety on the farm in the rights picture (1 acre).



Figure 10: Sunflower in a one-acre plot planted by using conservation agriculture technics. The farm belongs to Mr. Daimu Mbada (Farmer Group Member) in Makiba Village.



Figure 11: The picture is Mr. Elisante Pallangyo's maize farm in Kandashe village planted with Aminika Hybrid seeds mixed with indigenous maize variety.



Figure 12: The picture indicates a two and a half-month's maize farm with mulching as one of the principles of conservation agriculture. This farm belongs to Mr. Clement Nasari in Kandashe Village. The dead grasses were left as soil cover (mulching) to increase organic matter and in-soil water conservation.



Figure 13: Mr. Neemia Kisinda's three-maize farms. He applied all principles of conservation agriculture from land preparation, direct seed sowing and manuring. Also, he used some herbicides and pesticides. Neemia is a resident of Kandashe Village.

3. DELIVERABLES

Specific Objectives 1: To strengthen awareness, knowledge and technical capacity in the adoption of agroecology and CSA practices and build resilient to the adverse effects of climate change in Kandashe and Makiba villages in Meru district.

Deliverables:

- 100 small scale farmers in the villages, local government officials, traditional leaders and NGOs are aware of agroecology and CA practices and climate change adaptation and mitigation
- 100 contact farmers received follow up trainings
- Quality indigenous maize seeds (1000 kgs) secured and distributed to 100 contact farmers and maize crops at green maturity stage.
- Documented technical report

Specific Objectives 2: To contribute to effective information dissemination on agroecology, CSA practices and resilience to climate change impacts through local radios by enhancing adoption capacity of small-scale farmers in Meru district.

Deliverables: Kicheko Radio FM Station broadcasted one (1) radio program broadcast to raise people's awareness on agroecology and CA practices and on the benefits of indigenous seeds.

4. PROGRESS RESULTS FOR CA PROJECT IN KANDASHE AND MAKIBA VILLAGES

Many positive effects have been observed through “Promoting Agroecology and Resilience to Climate Change among Small-Scale Farmers Project in Makiba and Kandashe villages of Meru District”. Farmers have started to use conservation agriculture (CA) technologies and there is a positive performance from the seeding stage through flowering stage to maturity stage in the two villages. This was observed during monitoring exercise by CEDESOTA. Conservation agriculture in the project areas was done basing on the principle of (1) minimum mechanical soil disturbance (2) retention of crop residues and soil cover plants (beans). So far, much has been achieved with regard to tillage methods knowing that reduced tillage contributes to increased soil carbon content in the soils. The size of the basins promoted was 15 cm wide, 35 cm long and 20 cm deep seeded with 4 - 6 seeds per basin (**See figure 5**). The practice required pitting and mixing organic fertilizers and wait rains to seed. Others combined seeds and fertilizers in the already made pits/basins as basal dressing and then applied later as top- dressing at knee high stage and above of maize. The average area under CA basins is 1.5 acres. Farmers have successfully used slashes and herbicides to control weeds and pesticides to kill maize and beans pests. Involvement of village leaders in the farmer groups has been the best incentive for easy coordination with district agricultural personnels in case of advice to farmers. Farmers have started showing the signs of reducing use of traction animals and opt more in CA principles. In its monitoring exercise, CEDESOTA furthermore addressed the issue of maize dominance in the farming system by emphasizing when upscaling of the project to use or mix with crops like cowpea, pigeon pea, cassava and sweet potato in the farming system. Improved rotation may reduce the pressure from pest and diseases and nitrogen fixation crops will in addition provide nitrogen. Cassava and sweet potato will give a yield also in dry years and can resist dry spells. A harvest of cassava and sweet potato is also available during the time of the year when there is food shortage. These crops can therefore have a vital role in improving food security. Non-CA farmers (those who are not in the farm groups) also have tried to apply CA principles though to lesser extent. They continued to plough, and then pitting to make basins with specifications. This shows that the non-CA farmers have foreseen the benefits of CA technics.

5. SUSTAINABILITY OF THE PROJECT

A true test of the sustainability of the project can only be undertaken some few months after harvesting. However, it is likely that some of the results that have been seen during the crop growing stage, project will have a lasting effect on agriculture in the project areas. One of the changes that will have a persistent effect is the minimum tilling of land with pitting basins. The impact on the tillage system could also be a lasting effect. We believe that many smallholders will continue to establish small plots with basins around their homestead for food security reason. We also anticipate people will grow into ripping in large farms but will also dependent on the

availability of rippers and herbicides for weed control. To enhance sustainability at the household level, we strongly feel that more extension materials such as leaflets into local languages and increasing their availability to CA and non-CA farmers could enhance the competence of individual farmers in sustainable agronomic practices.