

Pack 109, Item 4

Type: Script

August 2018

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**Conservation agriculture: High yields, low production costs, and improved soil fertility**

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**Notes to broadcaster**

Conservation agriculture, or CA, aims to produce high yields and reduce production costs, while maintaining and improving soil fertility and conserving water.

Conservation agriculture is based on three principles or practices:

1.  Little or no tillage so that the soil is not disturbed. The only ways the farmer works with the soil are through ripping\* or subsoiling\*, making planting lines, planting through mulch, or making planting holes with a hoe.

2. Keeping the soil covered as much as possible by using crop residues and materials from fodder, tree, and grass species as mulch or growing cover crops to protect the soil from rain and wind erosion, improve soil fertility, and limit weed growth throughout the year.

3.  Crop rotation and intercropping or crop association. Crop rotation involves growing different types of cropsin the same field one after another. Crop rotation breaks the cycle of pests, diseases, and weeds and results in higher yields and maintenance or improvement of soil fertility. Intercropping or crop association also increases biodiversity in the field, and helps manage pests, diseases, and weeds.

This script shows how small-scale farmers can get higher yields by practicing conservation agriculture. Grace Kariuki, a farmer in central Kenya, is practicing conservation agriculture and her yield has increased. She explains how she has been able to improve her yields by practicing CA.

Stephan Lutz is a program consultant with World Renew Kenya who has been working with small-scale farmers in Kenya for more than 15 years. In this script, he explains what conservation agriculture is and how small-scale farmers in semi-arid areas can benefit from it.

This script is based on actual interviews. You could use this script as inspiration to research and write a script on a similar topic in your area. Or you might choose to produce this script on your station, using voice actors to represent the speakers. If so, please make sure to tell your audience at the beginning of the program that the voices are those of actors, not the original people involved in the interviews.

Sig tune up then UNDER

You could also use this script as research material or as inspiration for creating your own programming on the benefits of practicing conservation agriculture. Talk to farmers, agricultural officers, and other experts. You might ask them:

* What is the history of conservation agriculture in the area?
* What is the attitude towards conservation agriculture in their area in the past few years?
* What benefits do farmers who practice conservation agriculture realize?
* What challenges do farmers practicing conservation agriculture face?

Apart from speaking directly to farmers and other experts, you could use these questions as the basis for a phone-in or text-in program.

The estimated running time for this item, with signature tune, intro, and extro, is 15 minutes.

**Host:**Hello and welcome to *Farmer to Farmer*. In our program today, we talk about conservation agriculture in Kenya.

Did you know that conservation agriculture is a method of farming that produces high crop yields while reducing farming costs, maintaining soil fertility, and conserving water? It has three basic principles. Stay tuned and we will tell you exactly how the basic principles of conservation agriculture work.

We shall be hearing from Mr***.*** Stephan Lutz, a program consultant with World Renew Kenya. Later on, we shall hear from a farmer in central Kenya who is successfully practicing conservation agriculture.

Signature tune up and out under HOST

**Host:**Conservation agriculture, also known as CA, is not a new method of farming. In fact, it has been practiced in Africa for many years. Stephan Lutz is a program consultant with World Renew Kenya and is very passionate about conservation agriculture. He has been working with small-scale farmers in Kenya for more than 15 years. I spoke to him about conservation agriculture and he started by saying that CA is not a new concept.

**STEPHAN LUTZ:** Conservation agriculture is not new. It has been around since the 1970s and is known by different names. For example, in the faith background, it is known as farming God’s way, and in the United Nations, it might be known as climate-smart agriculture—and there are many other names. Simply, conservation agriculture is a method of conserving the soil and the water in the soil, so that, with time, this improves soil fertility and structure.

**Host:** What differentiates CA from the conventional method of farming?

**STEPHAN LUTZ:** CA is founded on three basic principles. One: minimum tillage of land, so disturbing the soil as little as possible. If possible, the farmer plants directly into the soil without ploughing. The second is to keep the soil covered as much as possible with organic matter. Mulch, cover crops, or crop residues should be left on the soil surface to protect it from erosion and limit weed growth. In conventional farming, farmers remove and burn crop residues or mix them into the soil with a hoe, leaving the soil bare. The soil is then easily washed away by rain, or blown away by the wind. The third principle is crop rotation and crop association. Crop association includes intercropping, relay cropping, and strip cropping. This helps reduce pests, controls tiny, damaging worms called nematodes in the soil, and increases biodiversity.

We also add a fourth component which may not strictly speaking be part of CA, but is important, and that is growing trees. Trees add mulch materials, fix nitrogen in the soil, and are a source of medicine, nutritious fruits and other foods, firewood, and provide income for the farmer.

**Host:**What challenges have you seen introducing CA tofarmers who have been involved in conventional farming?

**STEPHAN LUTZ:** The greatest challenges I have seen are cultural challenges. For many years, African farmers have always tilled their land, so telling them to do minimum tillage or no tillage at all is a big change and some may be skeptical. The other challenge is in the area of burning. Farmers in Africa are used to burning residues after harvest instead of bringing them back into the field. These are things they are used to from the days of their forefathers, so telling them to change can bring resistance.

**Host:**So how do you deal with these cultural challenges?

**STEPHAN LUTZ:** We ask them to start small. Maybe start on a test patch of land about 20 metres by 20 metres where they can practice CA. In the past two or three years, the rains have been very unpredictable in Kenya. But farmers who have tested CA have been able to harvest something from their test plot, though not much from the bigger farm where they were practising conventional agriculture. So many of them have decided to go full on CA after seeing the results. And this attracted neighbouring farmers to start conservation agriculture.

**Host:**What are the other challenges besides the cultural ones?

**STEPHAN LUTZ:** One big challenge for CA is pests. For example, black beans, commonly known as *njahi*, are commonly grown in central Kenya, but they attract a lot of pests and farmers spray a lot of pesticides. On the other hand, they are saving on fertilizer costs because they’re using mulch. which decomposes into available nutrients for the soil. So they need less chemical fertilizer, which has become quite expensive in Kenya, especially for small-scale farmers.

Another big challenge is unavailability of mulching material. Because the rain is unpredictable, farmers may have little organic matter to use as mulch—and this also has to be shared with livestock. It’s challenging for a farmer with one-half to one acre of land to have continuous mulching material, especially in semi-arid areas. And that’s why growing trees is important.

**Host:**How are farmers overcoming the challenges of not having enough mulch?

**STEPHAN LUTZ:** We are encouraging farmers to grow trees, especially those that have slow-decomposing leaves like the mango tree, which can also provide fruit for consumption and for sale. Another good tree is *Grevillea robusta*, or silky oak. Its roots go very deep, so it does not compete with crops for water, unlike the eucalyptus which takes up all the water in the soil, though it grows very fast and is good for firewood.

**Host:**So, is conservation agriculture the answer to getting greater yields for small-scale farmers?

**STEPHAN LUTZ:** Conservation agriculture is not the solution for all farming problems. It is one solution to mitigating climate change, but it is not a silver bullet. In fact, it is best for semi-arid areas where rainfall is between 500 and 800 millimetres, and also in areas where there is erratic rainfall and where farmers are transitioning from pastoralist to settled farming. It’s a great option for small-scale farmers who are living in semi-arid areas and cannot afford to do irrigation and to purchase chemical fertilizer.

Signature tune up and out under HOST

**Host:** You are listening to the *Farmer to Farmer* program and we are learning about conservation agriculture or CA in Kenya. We have just heard from Mr. Stephan Lutz, a program consultant with World Renew Kenya. After a short break, we shall hear from a farmer who is practising conservation agriculture on her farm.

Music up, hold for a minute and out under host

**Host:** Grace Kariuki is a woman who farms in Mwireri village in central Kenya’s Laikipia County. She started conservation agriculture in 2014 on her two-acre farm, and has seen a great change in her yields. I visited her on her farm in Mwireri, where she was drying harvested maize.

**Host:**Hallo, Grace, how are you?

**GRACE KARIUKI:** I am fine; you are welcome! Sorry I am a bit busy putting out the maize to dry.

**Host:**No problem, Grace, we can talk as you continue with your work. Is this maize from your farm?

**GRACE KARIUKI:** Yes, this is maize that I grew on a part of my farm. I have two acres on which I have maize, beans, and avocadoes.

**HOST:** Looks like you got quite a good harvest from your maize crop.

**GRACE KARIUKI:** Yes, since I started conservation agriculture, I have seen quite a change. Three years ago, I could only harvest one 90-kg bag of maize from my farm. With those yields, I could hardly make ends meet. My husband and I were totally reliant on our grown children for everything. I was almost giving up until I learnt about conservation agriculture from one of the NGOs.

**HOST:** How many bags of maize did you get then and how many are you harvesting now?

**GRACE KARIUKI:** Before, I could only harvest one bag on one acre. When I started conservation agriculture, I first got about two bags, and now I can harvest up to seven or eight bags on one acre if the rains are good. And I also have less costs with CA.

**HOST:** How do you spend less?

**GRACE KARIUKI:** First, I do not hire people to till my land. I prepare my farm using a diesel-operated hand-ripping tool which I hold in my hands and drag through the soil to rip furrows, and this takes less time. I also do not spend as much money as I used to on watering my plants. I used to hire women to bring me water every day. But now that I am covering my soil with last season’s crop residues and my beans provide cover for the soil, I don’t water my crops as much. This has given me time to get involved in other income-generating activities.

**HOST:** What about pests? Are they a problem?

**GRACE KARIUKI:** That is one of my biggest challenges actually. That and lack of rainfall.

**Host:**So how have you overcome these challenges?

**GRACE KARIUKI:** We spray pesticides when the pests are too much. But for the rain, we have now learnt to harvest rainwater in dams, and we use it to irrigate our crops if the rains fail.

**Host:**Have you had neighbours or friends who also got interested in conservation agriculture?

**GRACE KARIUKI:** Yes, very much. When we went for training, I was the only woman who attended and changed the way I was farming. I was very skeptical, but with time I realized it is a good way to farm. My neighbours noticed that my maize yield not only increased, but even the maize cob itself was bigger. They asked me why my crops were doing well even though we were farming in the same area. I was able to show them how conservation agriculture works. The women are now very happy because the time they would have spent on tilling is spent doing other things.

**Host:**How has the switch to conservation agriculture changed your life?

**GRACE KARIUKI:** I can speak for myself and other women in Mwireri village who are practicing conservation agriculture. In the past, my husband and I were basically fully reliant on our children to take care of our daily needs. Now we are independent. We buy food, fertilizer, diabetes drugs for my husband, pay our bills, and even have a little to save. Other women told me they are able to pay their children’s school fees, pay their bills, and still have some money to start the next season. It’s a good method of farming for those in dry areas, especially for women.

**HOST:** That was Grace Kariuki, a farmer from Mwireri village in central Kenya’s Laikipia County.

In the *Farmer to Farmer program* today, we learned about conservation agriculture and heard from Mr***.*** Stephan Lutz, a program consultant with World Renew Kenya. We heard that conservation agriculture is a farming method that produces high yields and reduces production costs, while maintaining and improving soil fertility and conserving water. It is based on three principles: little or no tillage so that the soil is not disturbed, keeping the soil covered with mulch or cover crops to protect it from rain and wind erosion, and practicing crop rotation by planting different crops after each other in the same field in order to reduce soil erosion, and increase soil fertility and crop yield.

Farmer Grace Kariuki also explained how she gets higher yields from her farm since she switched to conservation agriculture.

Join us again for another interesting edition of the *Farmer to Farmer program.*

**Acknowledgements**

Contributed by: Winnie Onyimbo, Trans World Radio Kenya

Reviewed by: John Kimathi Kirima, Conservation Agriculture Technical Specialist – Kenya, Scaling up Conservation Agriculture in East Africa program, Canadian Foodgrains Bank

**Sources of information**

Interviews with:

Grace Kariuki, conservation agriculture farmer in Laikipia County, Kenya.

Stephan Lutz, program consultant with World Renew Kenya.

Interviews conducted on November 29 and December 8, 2017

**Definitions:**

Ripping: Using a narrow plough-like tool that creates a narrow furrow without turning the soil over,

Subsoiling: A subsoiler is a type of tillage tool that’s used to break up compacted soil. It generally penetrates about 24 inches (60 cm) into the soil and can therefore break up hardpans.

*This work was created with the support of Canadian Foodgrains Bank as part of the project, “Conservation Agriculture for building resilience, a climate smart agriculture approach.” This work is funded by the Government of Canada, through Global Affairs Canada, www.international.gc.ca.*