



## The promise of Conservation Agriculture

### Why Conservation Agriculture?

According to the Food and Agriculture Organization (FAO) of the United Nations, tillage methods used by most farmers today are a major cause of soil erosion and desertification on many agricultural lands. As a result, farmers and scientists have been working to find alternatives to conventional tillage - ways to farm that cause less soil disturbance, and therefore reduce erosion. Conservation Agriculture is an alternative to conventional tillage that attempts to reverse the process of soil degradation.

The main practices used in Conservation Agriculture are:

- Reduced tillage or no-tillage
- Establishment of a permanent cover on the soil
- Use of crop rotations and crop combinations.

### Reducing tillage

When a farmer ploughs the land to prepare for planting or tills the soil to control weeds, the soil becomes more vulnerable to erosion. Sometimes, the soil structure is destroyed. Instead of routine ploughing, farmers who use Conservation Agriculture aim to disturb the soil as little as possible by using reduced tillage practices such as no-till, ripping or planting pits. At first, there may be increased weed pressure. But over time and with use of complementary practices such as cover cropping and crop rotations, farmers who practise reduced tillage often find that soil becomes more fertile and can hold more water, and crop yields stabilize and eventually increase.

### **Disadvantages of ploughing**

- Costly in terms of equipment and labour
- Accelerates soil and moisture losses
- Destroys the soil structure
- Creates compacted layers
- Is harmful to soil flora and fauna

### **Advantages of reduced- or no-till**

- Fewer equipment and fuel costs
- Improved soil structure
- Increased water filtration
- Less compaction
- Timelier planting



### **Keeping the soil covered**

This establishment of a permanent cover on the soil is another important part of Conservation Agriculture. Farmers can accomplish this with the use of cover crops or mulch from crop residues, or with the shade and leaves of the crop itself. If crop residues are left on the field, over time a layer of mulch builds up to cover the soil. This layer of mulch protects the soil against erosion by acting as a barrier that prevents rain from hitting the soil directly. This slows down the water before it hits the soil and reduces the impact of the raindrops on the land. Water has a chance to soak into the soil gradually. Water that soaks into the soil does not cause erosion because it does not wash away the soil. In dry regions this is especially important. In addition, mulch reflects a lot of the sun that otherwise beats down on the soil. This keeps the soil cooler so there is less evaporation. Also, mulch layers offer an ideal habitat for a host of beneficial soil fauna and flora, such as earthworms.

#### **Bare soil:**

- Is prone to erosion
- Loses water easily and quickly
- Suffers high daytime surface temperatures
- Is not friendly to soil-dwelling organisms

#### **A cover over the soil:**

- Helps keep moisture in the soil
- Suppresses weeds
- Reduces erosion
- Enhances soil fauna and microorganisms
- Reduces soil temperature variations

### **Crop rotations and combinations**

Because tillage is reduced in Conservation Agriculture, farmers have to rely more on the action of crop roots and soil organisms to improve the soil and keep their crops healthy. This is sometimes called 'biological tillage'. To make sure that soil organisms have a chance to grow and thrive, farmers practising Conservation Agriculture reduce their use of chemical pesticides and establish an effective system of crop rotation.

#### **Growing only one crop in a field can lead to:**

- More weeds
- More pests and diseases
- Loss of nutrients
- More economic risk

#### **Crop rotations and combinations have the following benefits:**

- Better nutrient uptake in the soil
- More soil organisms
- Fewer weeds, pests and diseases
- Integration of livestock by providing forage and manure
- Food security and diversification of income sources



### **Does Conservation Agriculture work?**

The degree of success on individual farms depends on the individual situation of each farmer, including specific environmental and economic conditions. Conservation Agriculture has proven to be successful under a wide array of environments and socio-economic conditions, provided that farmers adapt the principles to match their specific situation. Conservation Agriculture is still being developed and adapted across Africa. In places where farmers have been practising Conservation Agriculture for several seasons, many farmers report declining weed and disease problems, improved soil structure, more stable yields, less labour and a more sustainable farming system overall.

### **Broadcasting information about Conservation Agriculture**

The adoption of Conservation Agriculture requires a big shift in the mindset of farmers; this in itself is a challenge. Radio and other media can play a role in addressing this challenge by promoting Conservation Agriculture through programming. As a broadcaster you can air programs about the different practices involved in Conservation Agriculture, as well as giving voice to farmers who are practising it so that they can share their experiences with listeners. Introduce the idea slowly, providing more details and information with each successive program. Reinforce the idea that farmers who choose to adopt this technology will face challenges, as they would with any new practice, but that experience is showing that farmers do have the tools to solve these problems as they arise. Of course innovation is one of the trademark characteristics of farmers everywhere. The reward for farmers will be that their soils will become productive again and their farming systems overall will become more sustainable.

### **Where you can find more information about Conservation Agriculture**

Africa Conservation Tillage Network (ACT)

**<http://www.fao.org/act-network>**

Food and Agriculture Organization of the United Nations (FAO)

**<http://www.fao.org>**

Centre de Cooperation Internationale en Recherche Agronomique pour le Developpement (CIRAD)

**<http://agroecologie.cirad.fr/dmc/index.php>**

Regional Land Management Unit (RELMA)

**<http://www.relma.org>**

Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH

**<http://www.gtz.de/conservation-tillage>**



### **Information Sources**

Conservation Agriculture: The future of Africa, Fact Sheet, World Agroforestry Centre, Nairobi, Kenya.

Shedding light on Conservation Agriculture, Theodor Friedrich, Agricultural Engineering Branch, Food and Agriculture Organization, New Agriculturist on-line, <http://www.new-agri.co.uk/00-4/perspect.html>

What is Conservation Agriculture?, FAO, 2005.  
[http://www.fao.org/ag/AGS/AGSE/agse\\_e/1ero/conser.HTM](http://www.fao.org/ag/AGS/AGSE/agse_e/1ero/conser.HTM)

Conventional tilling severely erodes the soil: New concepts for soil conservation required, FAO Press Release, 1998. [http://www.fao.org/waicent/ois/press\\_ne/presseng/1998/pren9842.htm](http://www.fao.org/waicent/ois/press_ne/presseng/1998/pren9842.htm)

