

# Conservation Farming - Farming God's Way

**C**onservation Farming (CF) is a novel agricultural production system that is known by a variety of names, depending on location and organization. The initial concept was developed by Brian Oldrieve in Zimbabwe in the late 1980's who coined the practice as "Farming God's Way". The reason for this unique title was in part to bring faith back into agriculture. According to Oldrieve, this spiritual link contributes significantly to its widespread adoption among small-holder farmers in Southern Africa.

Today, the practices associated with Farming God's Way (FGW) are varied, more secular and widely adopted by national and international organizations. The main terminology to describe FGW includes Conservation Agriculture, Basin Tillage and Conservation Farming. For the purposes of this document, we will refer to the practice as Conservation Farming.

## What is Conservation Farming?

CF is a farming system that **minimizes soil disturbance**. In fact, cultivating the soil with draft power (animals) is eliminated, and replaced by the systematic digging of small planting basins using a hoe. The recommended dimension of each basin is 15 cm (length) x 15 cm (width) x 15 cm (depth). Basins are usually spaced at 90 cm x 60 cm, depending on the crop grown. Available soil fertility amendments (manure and/or inorganic fertilizers) are added to each basin which is then lightly covered with soil in September/October. Early season rainfall collects in the basins in October/November. Planting begins in November/December when a significant moisture reserve is in the basins.

Given the strong tradition of cultivating land with oxen, adopting a farming system which does not involve tilling the soil is perhaps the greatest mental hurdle facing small farmers. When farmers learn about a zero tillage system, the concept is often met with much skepticism.

Part of the skepticism is overcome using Oldrieve's explanation that asks farmers to observe creation in its untouched state. These ecosystems are all characterized by a mulch covering over the soil which Oldrieve terms "God's Protective Blanket". There is much wisdom in this blanket as the covering protects soil, conserves water and recycles nutrients. Maintaining such a mulch layer on a field is only possible by limiting soil disturbance to where the seed is planted – the basin.

**Mulching** is an essential part of the CF system, and is a time-consuming task. When a plot is managed properly under CF, farmers will cut grass and gather leaves to cover the soil between the planting stations before the rain. Given this labour intense activity, starting CF on a smaller plot is recommended.

Laying down a thick mulch layer that provides 100% cover leads to a significant increase in yield. More work is needed in finding simple ways to maintain and increase mulches. In time, the mulch layer may be sustained with the decaying crop residue.

**Maintaining and improving soil fertility** is also a key component in CF. Harvested crops use up nutrients from the soil, and these nutrients must be continually replaced to sustain crop production. Unfortunately, this stewardship practice has been overlooked for many years given the declining soil fertility in many soils around the world. How soil fertility is replenished in CF systems varies depending on the region. Ideally, farmers add well composted manure (1-2 handfuls) or other organic nutrient sources to their planting stations. When these are not obtainable, fertilizers are used if available and affordable.

**Planting, weed control, thinning and harvesting** are typical activities that CF shares with other farming systems. More details on these practices can be found via the links noted in the "Resource" box at the end of this tips sheet.

A **diversified rotation** is key in every cropping system including CF. Often CF is applied to mono-culture maize production systems. The importance of rotating legume and cereal crops should be emphasized at training sessions. A proper crop rotation will reduce pests and improve soil structure and fertility. Ideally, one-third of the land area should be in rotation with a different crop other than the staple. Table 1 provides some basic cropping guidelines that should be considered for different crops grown using a CF system.

Table 1: Crop Management Guidelines for CF Production

		Maize	Groundnuts	Sunflower	Cotton	Sorghum	Soybeans	Cowpeas
Seed Rate	Kg/ha	30	80	6	25	10	80	80
Spacing	Rows	75	37.5	75	75	75	75	75
	In-row	60	4	60	60	10	10	10
Plant Depth	cm	5	3	2	2	2	2	2
Plant	Seeds/hole	3	1	3	4-6	1	1	1
Thin to	Seeds/hole	2	1	2	1-2	1	1	1
Target yield	Tons/ha	5-7	1.5-2	2-2.5	2-2.5	2-2.5	1.5-2	1.5-2

## Four Principles of CF

There are four simple principles that farmers learn at training workshops on CF.

**On Time:** Timing in agriculture is critical, especially with respect to planting date in low rainfall areas. In Zimbabwe, evidence shows that planting on or before November 25 is ideal to maximize yields. By preparing land during the dry season, farmers are ready for planting when the rains begin.

**At Standard:** Following specific proven standards or recommended practices inherent to the CF system help to reach the potential yield of a crop. Examples include weed free stands and correct population density, plant spacing and seeding depth.

**Minimal Wastage:** Many resources are used to produce a crop. Good stewardship of these resources means protecting them for the crop which ultimately will become food for a family. Water, manure and seed must be conserved and used wisely.

Conserving time is also part of CF. Many farmers feel that there is a lot of work that goes into making the planting stations, and rightly so. However, per ton of harvest, CF requires less hand labour, fuel and/or animal power than conventional agriculture, though the labour input per hectare is higher.

**With Joy:** According to the founder, small-scale farmers must follow all the practices to capture the benefits provided by CF. It is best to start on a small plot with intensive management, applying the principles of high standards, doing things on time and without wastage. If these steps are followed, the farmer comes to the realization that he can produce more food. A feeling of hope results which subsequently turns to joy. The joy then gives added energy for the tasks at hand.

## Advantages of CF

1. **Draft power not needed:** Many smallholder farmers have no access to animal traction for cultivating their fields when the rains begin. Those with access to animal traction resources often have to wait until their animals have strength to cultivate the land, or their neighbours have finished with the animals. These delays result in a late planting which consistently reduces yields. By relying on a hoe and completing land preparation in the dry winter months, CF farmers are consistently positioned to increase yields.
2. **Robust farming system:** Studies on the uptake and success of CF indicate that almost all the farmers applying this technology increased their yields. Most

technologies like CF only benefit a subset of better-than-average farmers. Clearly, CF is a robust farming system which lends to its quick uptake by farmers throughout Southern Africa.

3. **Reduced workload on established systems:** Although making the basins requires time and effort, once prepared, the same planting position can be used repeatedly. With each successive season, preparing the basins and weeding should become easier.
4. **Adapted to low rainfall regions:** CF is well-suited to areas with low rainfall given its moisture conservation attributes. These regions are often areas with the greatest food insecurity that suffer chronic food insecurity. CF is therefore an excellent method to improve food security in drought prone areas, especially if these regions will experience reduced and more sporadic rainfall with climate change.

## Personal Testimonies

*"Conservation Farming allows me to begin my land preparation as soon as I harvest. This allows me to do early planting at the onset of the rainy season, and hence my labour is spread over months."* – Mrs. Lupane, a widow caring for her three orphaned grandchildren.

*"Tilling the land the conventional way causes many risks, namely compaction of the soil and exposure of the soil to water and wind erosion by removing the earth's blanket."* – Mr. Chipunza, Farmer Field School facilitator.

## Resources

*Farming God's Way website:*

<http://www.farming-gods-way.org/>

Berkelaar, Dawn. 2008. *A Successful Approach to Field Cropping in Southern Africa*. Echo Development Notes, Issue 98.

Twomlow, Steve and Lewis Hove. 2006. *Is Conservation Agriculture an Option for Vulnerable Households?* Department for International Development. ICRISAT. Briefing Note No. 4. Retrieved February 24, 2009 from:

[http://www.icrisat.org/esa/is\\_conservation\\_agriculture.pdf](http://www.icrisat.org/esa/is_conservation_agriculture.pdf)

*For more information on Conservation Farming, contact the Canadian Foodgrains Bank at the address below, or email inquiries to [cfgb@foodgrainsbank.ca](mailto:cfgb@foodgrainsbank.ca)*