

Implementing Conservation Agriculture (CA) on Farmers' Fields

How do you implement CA on your own farm?

Preparation:

- ✓ Identify a piece of land on your own farm where you want to start CA - usually about 10% of your holding is sufficient. The small area will enable you to acquire enough ground cover, prepare the land on time, seed when the first effective rains occur, and learn to effectively manage and control weeds. Learning to manage crop production challenges in a small field is always easier than in a large one.
- ✓ Clear the land of trees and shrubs. Make sure the field is weed free and there is enough surface cover from residues or imported biomass. If there are not enough maize residues available it is advisable in the first year(s) to use thatching grass, leaf litter or other organic material to improve ground cover.
- ✓ Depending on the seeding systems (manual or animal traction), it is necessary to prepare the land beforehand. Basins are normally dug during the dry season to spread the labour required for digging throughout the winter period. This will ensure that the basins are ready for planting at the onset of rains. Jab-planting, rip-line and direct seeding can be done at seeding time; however it is important to make sure that the equipment is in good working order and ready for use on-site.

Implementation:

- Plan a good crop rotation from the beginning to improve the nutrient status of your soil and to reduce the incidence of pests and diseases.
- Sow the crop after the first effective rains. There are regional differences but rainfall events greater than 30mm after the 15th of November will normally mark the start of the rainy season.
- Sufficient fertilization is necessary for good crop production. If your soils are very sandy, an additional dose of nitrogen fertilizer, manure or compost might be necessary to get good yields (harvest produce and biomass).
- After crop emergence, make sure that you gap-fill by sowing more seed wherever the crop has not germinated.
- Keep the field weed free as much as possible although this might require extra weeding.
- Fertilize the crop with sufficient nitrogen fertilizers as top-dressing (AN or urea) to ensure that the crop is always well-nourished.
- Harvest the crop at physiological maturity and keep the crop residues on your field for the next season's crops.



Photo: Walter Mupangwa



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Thatching grass and leaf litter can provide initial ground cover on CA fields (top) Perennial weeds such as couch grass (*Cynodon dactylon* L.) have to be eliminated (bottom)

In the longer term, CA is the only sustainable cropping system that maintains your base of living!

What limitations have to be overcome before starting?

Previous management problems such as soil compaction and surface unevenness need to be corrected at the end of the previous season. If the soil is acidic, a blanket application of lime at 500-1000 kg/ha in the rip-lines or planting basins is beneficial. Perennial weeds need to be controlled with herbicides or by careful manual weeding. It is important to aim at a weed free field throughout the year and to weed before the weeds are 10cm tall or 10cm in circumference.

The need for precision and timeliness

Good crop production needs precision for success and yields tend to be poor if crops are not managed well. Precision becomes even more important in CA as many of its benefits depend on timeliness and accuracy. During preparation all necessary inputs need to be acquired (seeding equipment, seed, fertilizers, herbicides, etc.) so that everything is at the farm before the rains start.

How do you overcome difficulties in the field?

Experimenting with CA on your own fields can sometimes lead to unexpected management problems. The most common challenges in the initial seasons are:

- weed control
- difficulties in retaining enough crop residues
- calibration of equipment
- acquiring fertilizer and fertilizing at the right rates
- correct plant stand and adequate germination, and
- pest and diseases

The best way to overcome these challenges is to talk to experienced farmers in the area, and consult with the extension officer who will help you to solve and overcome your problems.

How do you deal with initial disappointments?

Some farmers are easily discouraged during the first season because they cannot see immediate benefits and returns to their investment. However, the first season in many aspects is a learning season and all farmers who try CA on their own fields need to be prepared for this in advance. It is therefore important to start on a small piece of land to be able to manage the plot in an optimal and timely manner and so reduce the risk of failure and discouragement.



Photo: Pat Wall

Starting CA on your own field can be challenging - experienced farmers and extension officers can help overcoming the problems



Photo: Christian Thierfelder

Adopting CA farmer shares his experiences with different crops during a field day



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