

Conservation agriculture

A manual for farmers and extension workers in Africa

Conservation agriculture holds special promise for Africa, where farming communities face the problems of low yields, impoverished soils, lack of capital, and labour shortages brought on by the scourge of AIDS. It is a way to improve the livelihoods of millions of people and achieve sustainable agriculture over a wide area.

Conservation agriculture is not a technology, but an approach to farming. It is based on three simple principles:

- Disturb the soil as little as possible,
- Keep the soil covered, and
- Mix and rotate crops.

Farmers can choose from many different technologies to do this. By applying these principles, they can improve their soil fertility and grow more food, using less labour, and at lower cost.

This manual aims to help Africa's farmers and extension workers understand the conservation agriculture approach and choose those technologies that best suit their situation.

The manual is based on the skills and experience of 90 farmers, extension personnel and scientists from 16 countries throughout Africa. It is written in clear, easy-to-understand language, and is illustrated with numerous clear line drawings.

Case studies throughout the book show how farmers in different situations have put conservation agriculture into effect.

Contents

1 What is conservation agriculture?

- Why start using conservation agriculture?
- How conservation agriculture works in different types of farms
- Different situations
- Conventional vs conservation
- Effects of conventional farming and conservation agriculture
- History of conservation agriculture
- Conservation agriculture in Africa
- Challenges for conservation agriculture

9 Livestock

- Feeding animals
- Sources of feed
- Protecting your fields
- Work animals

10 Harvesting, marketing and input supplies

- Harvesting
- Storage
- Processing and marketing
- Inputs

2 Converting to conservation agriculture

- Three stages
- Questions to ask
- Where to find answers in this book
- What are the risks?

3 Field preparation and planting

- Before starting conservation agriculture
- Planting basins
- Planting spots
- Ripping and planting
- Controlling weeds and the cover crop before planting
- Planting methods
- Using the right amount of seed and fertilizer

4 Keeping the soil healthy

- What makes soils hungry and sick?
- Organic matter
- Making the soil healthy again
- Keeping the soil healthy

5 Soil cover

- Cover crops
- Mulch
- Challenges for maintaining soil cover

6 Crops and cropping systems

- Crop rotation
- Converting a cropping system to conservation agriculture
- Challenges in cropping systems

7 Controlling weeds

- How to manage weeds
- Managing weeds with soil cover and crops
- Weeding by hand or with equipment
- Herbicides
- When and how to weed
- Challenges in managing weeds
- Using the right amount of herbicide
- Using herbicides correctly
- Using herbicides safely

- Obtaining inputs

11 Should you adopt conservation agriculture?

- How can conservation agriculture benefit me?
- How does conservation agriculture benefit other people?
- How much yield does conservation agriculture produce?
- How much does conservation agriculture cost?
- Is conservation agriculture profitable?
- Is conservation agriculture worthwhile?
- How much work is conservation agriculture?
- When is the work needed?

12 Conservation agriculture and people

- Women and men
- Cultural beliefs
- HIV/AIDS
- Farmers with disabilities
- Young people

13 Encouraging adaptation and adoption

- Adapting conservation agriculture
- Ways to promote conservation agriculture
- Training
- Extension
- Demonstrations
- Farmer field schools
- Schools and churches
- Farmer champions
- Farmer-to-farmer extension
- Farmers' organizations
- Other ways to share experiences
- Farming as a business
- Multiple stakeholder partnerships
- Small-scale entrepreneurs and private business
- Policy support

14 Resources

- Contributors' profiles
- Resource organizations and websites

- Care of sprayers
- Equipment manufacturers
- Resource materials

8 Conserving soil and water

- Soil conservation techniques
- Conserving water

Published 2005 by the **International Institute of Rural Reconstruction**, Africa Regional Office, PO Box 66873, Nairobi, Kenya; www.iirr.org, and the **African Conservation Tillage Network**, Harare.

ISBN: 9966-9705-9-2

Role of Paul Mundy: Writeshop manager, editing, desktop publishing, overall responsibility for production