

Intervention:	PROMEK – Conservation Agriculture
Country:	Mozambique: Buzi, Dondo, Nhamatanda, Chivavaba and Machanga District
Date:	2001-2007
Objectives:	<p>The support of agricultural development is a priority for the Austrian Development Cooperation in Mozambique. One of the concrete project objectives of the Austrian financed project PROMEC (Promoção Económica de Camponeses) is the promotion of conservation agriculture.</p> <p>Conservation Agriculture is a kind of agriculture that aims to coexist with the environment. CA is a concept for resource-saving agricultural crop production that strives to achieve acceptable profits together with high and sustained production levels while concurrently conserving the environment. CA is characterized by three principles which are linked to each other, namely: (1) Continuous minimum mechanical soil disturbance, (2) Permanent organic soil cover and (3) Diversified crop rotations in the case of annual crops or plant associations in case of perennial crops. CA refers to several practices which permit the management of the soil, altering its composition, structure, and natural biodiversity as little as possible, and defending it from degradation processes (soil erosion and compaction). These practices include: direct sowing and no ploughing, non- or minimum-tillage, establishment of cover crops, avoiding residues burning, maintaining enough surface residue throughout the year, protecting the soil from rainfall erosion and water runoff.</p> <p>There are strong environmental benefits to be obtained from practicing CA. It provides a truly sustainable production system, not only conserving but also enhancing the natural resources and increasing the variety of soil biota, fauna and flora (including wild life) in agricultural production systems without sacrificing yields on high production levels. As CA depends on biological processes to work, it enhances the biodiversity in an agricultural production system on a micro- as well as macro level.</p> <p>There are also strong economic benefits to the practice of CA. CA is by no means a low output agriculture and allows yields comparable with modern intensive agriculture but in a sustainable way. Yields tend to increase over the years with yield variations decreasing. For the farmer, conservation farming is mostly attractive because it allows a reduction of the production costs, reduction of time and labour, particularly at times of peak demand such as land preparation and planting</p>
Approach of the Intervention:	<ul style="list-style-type: none"> <input type="checkbox"/> a Brazilian specialist was contracted, he has carried out a total of 10 short-term missions, of an average of 15 days each. Generally the missions included field visits and training for extensionists and farmers, but also discussions of strategies and policies at Provincial and National level. In between the expert's visits follow-up was provided by the PROMEC assistants and the extensionists of the districts. <input type="checkbox"/> A total of roughly 150 extensionists/agronomists and about 2,500 smallholder farmers have participated directly in the different training sessions, field days, demonstrations, generally held on site of demonstration plots in the five districts. Indirectly up to 8,000

	<p>families have become acquainted with CA practices in all Sofala Province.</p> <ul style="list-style-type: none"> □ UTVs (<i>Unidades de Teste e Validação</i>, Testing and Validation Units), were set up at different strategic locations, serving demonstration and training purposes: <ul style="list-style-type: none"> - Cover crops and green manure (with legumes <i>mucuna</i>, <i>crotolaria</i>, <i>stizolobium</i>, nhemba, pigeon pea, etc.), seed multiplication; - trials with regional food crops (horticulture crops, maize, rice, cow pea (<i>vigna unguiculata</i>), pigeon pea (<i>cajanus cajan</i>), etc., - mixed cropping and rotation trials. □ The UTVs are managed by the farmers themselves, assisted by extensionists and/or <i>promotores</i> (<i>farmer trained to assist others</i>). Most trials conducted were comparison trials, comparing AC management practices and yields to traditionally managed plots. □ Minor implements and tools for CA have been produced locally: Two <i>rolo-facas</i> (<i>straw-chopper</i>, a roller with metal blades) have been built locally, used for chopping vegetation (grass, shrub), to be used as mulching and <i>matracas</i> (hand tool for direct seeding). □ For the last two seasons, CA has been increasingly practiced on larger areas and also during the first planting season (mixed cropping with maize and sorghum).
Benefits and Impacts:	<p>At the end of the first project phase of PROMEC in 2005, 96 families in Buzi and 69 families in Dondo were applying CA practices, with very encouraging results in yields and income. In many cases, due to the time saving feature of CA practices, it has been possible to raise (even double) the cultivated surface, obtaining considerably higher incomes. These families can be considered the pioneers and a solid group of AC practitioners, who have come to understand the holistic approach of CA and are ready to pass on their know-how and experience to other smallholders. These practices are now being up scaled to the new districts with good results.</p> <p>Many of the farmers produce their own seeds of legumes (such as <i>mucuna</i>, <i>pigeon pea</i> and <i>nhemba</i>) and even manage to sell them to other groups and farmers who want to adopt CA practices.</p> <p>The advantages obtained through the application of CA practices are recognised by all farmers: substantial yield increases, even the possibility of harvesting more than once during one season; more diverse production; more humidity stored in the soil and therefore less need for irrigation; enhanced and integrated pest management (through crop rotation the infection chain between subsequent crops gets interrupted and full use of the physical and chemical interactions between different plant species can be made); time-saving because of reduced labour; better quality of the produce;</p> <p>As example, these are the results obtained for onions, planted in soil with permanent ground cover/mulching:</p> <ul style="list-style-type: none"> □ Yield increase of 30% □ Reduction of irrigation by 60% □ Reduction of weeding by up to 90% □ Reduction of soil preparation by close to 75% □ Farmers, especially women, have adopted the new practices rapidly, because they reduce heavy work and drudgery and the benefits can be noted rather quickly.
Lessons learned:	<ul style="list-style-type: none"> □ CA application leads to increased yields and diversified production; the yields increase over the years of CA application □ Soils under CA have very high water infiltration capacities,

	<p>benefiting farmers in dry and semi-arid areas</p> <ul style="list-style-type: none"> □ CA application enhances humidity and nutrients in the soil, making it possible to overcome periods of irregular rainfall □ seed production for cover crops and exchange/marketing of these seeds at the local level, among farmer groups for instance, is important to ensure long-term sustainability □ small-scale equipment (like jab planters and <i>rolo-faca</i>), combined with animal traction, are needed in the long run to increase the areas under CA □ CA is a knowledge-intensive technology that requires a change in the mindset of smallholder farmers and extensionists: it has to be seen as a system and a holistic approach and requires constant and regular training and capacity building □ the use of participatory extension methodologies (such as the farmer-to-farmer system) facilitates the exchange of experiences among farmers and extensionists, the adaptation of practices to the local environment and the local needs, as well as the spreading of the production techniques.
Wider application:	<p>Given the positive results of CA, at the beginning of 2004 it was decided by the Provincial Directorate that CA principles and practices were to be introduced as basic agronomic foundations of extension, conditioning the contents of all further know-how transfer in cropping and soil conservation issues.</p> <p>There is a specific project on CA integrated in the national programme for agricultural development (ProAgri) and strategies to spread the technology on a national level are being designed by a national team. Two national workshops were held so far. The FAO has also come aboard and has offered to carry out training for extensionists in the province of Sofala. The bilateral German-financed development project PRODER will make propagation of CA practices as a means of fighting droughts. CIAT, CYMMIT and other actors are taking actions in specific projects on CA including research oriented actions.</p>
Implementing agency & partners	<p>Implementing Agency: H3000 Development Consult Partners: Provincial Directorate and District Departments for Agriculture in Sofala Province</p>
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