

II WORLD CONGRESS IN CONSERVATION AGRICULTURE "Producing in Harmony with Nature"

Iguassu Falls, State of Parana, Brazil, August 11-15, 2003

Promotion of Conservation Agriculture by German Development Cooperation

By Conze, Peter and Steiner, Kurt

Deutsche Gesellschaft fuer Technische Zusammenarbeit (GTZ) GmbH
P O Box 5180, 65760 Eschborn / Germany
Email: kurt.steiner@gtz.de

Key Words:

Development cooperation, dissemination approaches, know-how transfer, networking, semi-arid areas, Africa

1. Changes of Orientation of German Development Cooperation

The orientation of German development cooperation (DC) has undergone major changes over the last decades along with a changed understanding of technical cooperation. There was an expressed change of paradigms from technical advice to policy advice with a strong focus on capacity building. Today German DC aims at contributing to global structural policy with a strong focus on poverty reduction. The goal of German DC is to enable people and organisations in partner countries to improve their living conditions on their own responsibility and through their own effort.

Table 1: Guidelines on Development Policy of the Federal Republic of Germany

Focuses of Development Cooperation (DC)

- Poverty reduction
 - Environmental protection and conservation of natural resources
 - Health
 - Education and training
 - Emergency aid and conflict prevention and
 - Private-sector promotion
- are becoming increasingly important.

The overall framework for German DC is the Program 2015, aiming at halving poverty till 2015 (BMZ, 2001). German support to partner countries shall therefore contribute to the implementation of national poverty reduction strategies. In view of concentrating efforts, eleven focal points have been defined, which form the basis for the formulation of country programmes. In relation to conservation agriculture (CA) the most relevant focal points are food security/agriculture and environmental policies/sustainable management of natural resources. And especially in Africa the alleviation of effects of HIV/AIDS has to be added as a cross-sectional issue of increasing importance.

While it is accepted that CA has the potential to improve rural livelihood, the questions that arise are, what can CA contribute to the achievement of development objectives, what activities related to CA can be incorporated into defined country or regional programmes, where are entry points for CA in all those countries in which GTZ does no longer have an agricultural programme?

2. GTZ Involvement in Development and Promotion of Conservation Agriculture

2.1. Early Days in Latin America

GTZ has a special relationship to CA as it was on the forefront in developing direct planting practices in Brazil already in the early seventies. When conventional soil and water conservation techniques proved to be neither technical efficient nor economically viable alternatives had to be developed. Direct planting combined with green manures/cover crops and crop rotations, offered a new chance to farmers whose existence was endangered by declining yields and increasing production costs (Derpsch, 1998).

The first promising results and experiences were taken up by GTZ projects in other Latin American countries, mainly Colombia, Argentina and later on Paraguay. A major challenge was to adapt the practices developed for large and medium size farms to the conditions and needs of smallholder farmers, the principal target group of development cooperation (Steiner et al. 2001). To date more than 60 % of the agricultural land in Paraguay, 50% in Argentina and 45% in Brazil are under direct planting. Thus direct planting can be considered a real success story of German development cooperation. While conventional soil and water conservation techniques promoted in other LA countries as well as in Africa and Asia were only reluctantly adopted by farmers due to increased labour demands, with direct planting techniques soil fertility could be maintained successfully even with less labour and costs. It was primarily the reduction of production costs, which made direct planting attractive to farmers while yields increased only slowly with the years.

2.2. Know-how Transfer to Africa

Rapidly progressing soil degradation in Africa combined with frequent droughts threatens food security and rural livelihood in most African countries. Vast areas are endangered by desertification. As mentioned above, the development and promotion of soil conservation technologies had only limited success. Impressed by the success of direct planting in Latin America the idea of transferring the gained know-how to the African continent arose. As a first step in 1996 GTZ conducted a study in some West and East African countries in view of analysing the potential of direct planting systems, taking into consideration the quite different ecological and socio-economic circumstances. It became evident that direct planting systems, as developed in Brazil have a potential only in the humid parts of Africa, while in the vast semi-arid areas minimum tillage systems are more appropriate. In these dry regions the maintenance of a soil cover is hardly possible. Due to a limited growing period of only 4 to 6 months followed by a long dry season, often combined with poor sandy soils, biomass production is limited. Growing of cover crops is hardly possible due to limited residual soil moisture. Crop residues are used as fodder during the dry season. Apart from ecological constraints the small sizes of farms, low educational standard of farmers and extension staff as well as the underdeveloped rural infrastructure constitute major constraints to the promotion of new farming practices (Steiner, 1998).

The study made evident that in many African countries research and development organisations had started to work on conservation agriculture practices, but often in an isolated manner. This is why a lack of information exchange and a need for networking were expressed by all interviewed persons. To overcome this constraint the African Conservation Tillage Network (ACT) was founded by a group of devoted individuals in 1998 (FAO/GTZ/ZFU/Farmesa/ARC, 1998). Since 2000 the network is technically and financially supported by GTZ in the frame of a regional development project.

ACT's overall goal is to promote and facilitate information exchange and partnerships to enhance the adaptation and adoption of conservation tillage principles and practices in Africa. Main target groups are smallholder farmers, especially women headed households. (Steiner and Bwalya, 2001). This goal should be achieved through:

- Information Management (Databases, Newsletters, Information materials)
- Regional Networking
- Support to National Networks
- Training/Capacity Building Workshops, training materials)
- Pilot Activities (On-Farm Action-Learning)

- Lobbying for Conservation Tillage at all levels

It is primarily the facilitation of change processes, GTZ is interested in: dissemination approaches, regional cooperation, community based farmer organisations, or involvement of the private sector.



Figure 1: Countries where ACT is conducting Pilot Activities.

The regional focus of the ACT network is on southeast Africa. This region is predominantly semi-arid. Farmers practice dryland farming, relying on hazardous rainfalls. Under these conditions the increase of rainwater or green water productivity (crop per drop) is a major challenge, and conservation tillage practices have proved to make better use of scarce rainwater and reduce the risk of drought induced crop failure (Rockström and Steiner, 2003). Apart from labour savings (Table 1), which becomes a key issue under the impact of HIV/AIDS induced labour shortage, it is the reduced risk of crop failure due to drought which makes farmers adopt conservation farming practices (Figure 2).

GTZ is strengthening the network in the frame of a regional development project. But GTZ is not the only network partner and it shares networking with other development organisations, primarily FAO and SIDA, through its Regional Land Management Programme.

Activity	No-tillage Man days	Conventional tillage Man days
Soil preparation (ploughing)	-	6 days
Pre-planting Spraying	2 days	
1 st Weeding	-	16 days
2 nd weeding	12 days	16 days
3 rd weeding	12 days	16 days
Total	26 days	54 days

Table 2: Labour savings by conservation farming (Arusha Region/Tanzania)
W. Mariki, pers. communication

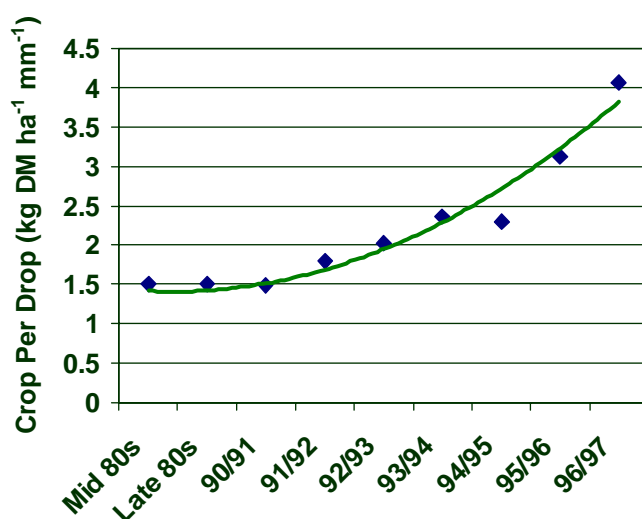


Figure 2: Development of rain use efficiency (kg DM grain mm⁻¹ ha⁻¹) of maize in Babati District, Tanzania, before introduction of conservation tillage (Mid 80s to 90/91) compared to after introduction of conservation tillage (91/92 onwards) (Rockström, 2001).

3. GTZ Interest in Promoting Conservation Agriculture

As mentioned above GTZ is no longer involved in technology and agricultural development sector, and therefore not interested in promoting CA *per se*. But it was realised, that CA could contribute to the most urgent development objectives, especially in Africa. There exist linkages between the objectives of CA and development objectives:

- Maintenance of the production basis/ Sustainable management of natural resources
 - Soil fertility maintenance
- Improved food security
 - Increased rainwater productivity
 - In-situ rainwater harvesting
 - Timely planting (no delay by ploughing after the first rains)

- Labour saving technologies to alleviate effects of HIV/AIDS
 - Breaking of labour peaks (soil preparation, weeding)
 - Reducing labour burden of women and children
- Strengthening of community based farmer organisations
 - Training in group management
 - Support to women groups
- Private sector involvement in rural development
 - Implements manufacturers
 - Rural workshops
 - Farm services providers

A major task for promoters of CA is to raise awareness for the effects of CA and to integrate activities linked to the promotion of CA into GTZ projects and programmes. This is quite a challenge, as in most countries of the region GTZ is no longer directly involved in agricultural development.

4. Mainstreaming of Conservation Agriculture into German Development Cooperation

As GTZ has defined for partner countries up to three country programmes, these have to be used as entry points for CA. One possibility is to introduce conservation agriculture as a cross-sectional subject like HIV/AIDS, another one to address specific issues like maintenance of the production basis or strengthening of community based organisations, depending on the focus of the programme.

In view of getting the private sector more involved in development activities, the German Federal Ministry of Economic Cooperation and Development (BMZ) has established a private-public-partnership facility. This facility is used to co-fund private-public-partnership projects. Such a project with focus on conservation agriculture was conducted in Tanzania together with a farm service provider. Further projects are in the planning stage, e.g. for the manufacturing of conservation agriculture implements in South Africa.

Regional programmes offer another entry point. In southern Africa, e.g. GTZ is promoting regional cooperation by strengthening the Southern Africa Regional Development Community (SADC). Lobby work is required to introduce CA as an issue into the SADC organisations like the Food, Agriculture and Natural Resources Sector Coordination Unit (FANR), the Environment and Land Management Sector Coordination Unit (ELMS), or the newly formed Land Management Programme, which supports small regional research programmes with EU funds. Regional research networks like ASARECA in East Africa, which is supported by German CD, and CORAF in West Africa, or SACCAR in Southern Africa constitute further entry points as well as the Forum for Agricultural Research for Africa (FARA). German DC supports also soil related programmes of International Research Institutes (CGIAR). These institutes realise the potential of conservation agriculture, also in combination with drought resistant varieties. CIMMYT, e.g., has just submitted a research proposal related to conservation agriculture to the German Federal Ministry of Economic Cooperation and Development (BMZ).

The German development cooperation is strongly supporting the implementation international conventions. These conventions constitute a further entry point. Because of its close links with food security, biodiversity, land and water resources, carbon sequestration and sustainable rural development, CA could contribute to the implementation of the Convention to Combat Desertification (UN-CCD), the Convention on Bio-Diversity (UN-CBD), or the UN Framework Convention on Climate Change (UNFCCC). More hard facts and lobby work is required to raise awareness for these connections.

Conservation Agriculture has the means to contribute significantly to prime objectives of German development cooperation, especially in Africa. Major challenge is to find the entry points for CA into country or regional programmes, which have no longer a focus on agriculture. More hard facts,

especially on labour requirements, production costs, long-term yield development, are required in order to lobby efficiently for CA.

Reference List:

- BMZ, Poverty reduction – a Global Responsibility. Program of Action 2015, Federal Ministry of Economic Cooperation and development, Bonn, 2001.
- Derpsch, R., Historical review of no-tillage cultivation of crops. Proceedings of the 1st JIRCAS Seminar on System Research - No-tillage Cultivation and Future Research Needs, March 5-6, 1998, Iguazu Falls, Brazil, JIRCAS Working Paper No. 13, 1998.
- FAO/GTZ/ZFU/FARMESA/ARC, Conservation tillage for sustainable agriculture. Proceedings of an international workshop, Harare, Zimbabwe, 22-27.7.1998, Volumes I and II, GTZ, Eschborn, 1998.
- Rockström, J.; Barron, J. and Fox, P., Rainwater management for increased crop productivity among smallholder farmers in drought prone environments, 2. WARFSA/Waternet Symposium: Integrated Water Resource management Theory, Practice, Cases; Cape Town, 30-31-Oct. 2001, 2001.
- Rockström, J. and Steiner, K.G., Conservation farming – A strategy for improved agricultural and water productivity among small-holder farmers in drought prone environments - Paper presented at the Symposium on Water Conservation Technologies for Sustainable Dryland Agriculture in Sub-Saharan Africa (WCT), Bloemfontein, South Africa, 8 – 11 April 2003, 2003.
- Steiner, K. G., Conserving natural resources and enhancing food-security by adopting no-tillage - An assessment of the potential for soil-conserving production systems in various agro-ecological zones of Africa, TOEB/GTZ, Eschborn, 1998.
- Steiner, K.G. and Bwalya, M., The African Conservation Tillage Network. Enhancing conservation tillage in Africa - Proceedings of the I. World Congress on Conservation Agriculture. 1–5 October, 2001, Madrid, 2001.
- Steiner, K. G., Derpsch, R., Birbaumer, G. and Loos, H., Promotion of conservation farming by the German development cooperation - Paper presented at the I. World Congress on Conservation Agriculture. 1–5 October, 2001, Madrid, 2001.