

# GLOBAL PROGRAM ON DIRECT SOWING, MULCH-BASED AND CONSERVATION AGRICULTURE (GP-DMC)

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## Stakeholders

### GFAR

Secretariat of FORA at FAO Headquarters.

### CIRAD

Host of the animator from March, 2002 until August 2003. Logistics for the animator, creation & maintenance of the Web site and the technical support for the network.

### IAPAR

Mme F. Ribeiro salaries, host of the animator after September 2003.

### CIMMYT

Rice Wheat consortium. Partner for the Bolivia case study.

### ANAPO

The National Association of Oil-Seed Producers). Partner for the Bolivia case study.

### GTZ

Deutsche Gesellschaft für Technische Zusammenarbeit. Partner for the Ghana case study.

### FAO

Partner for the Tanzania case study.

### IFAD

Partner for the Tanzania case study.

### Government of Japan

Funding of the Tanzania case study.

### ICRA

(International Centre for Research oriented to development in Agriculture - Wageningen) /GTZ. Partner for the Ghana case study.

The GP-DMC (direct sowing, mulch-based and conservation agriculture) program is a Global Partnership Program under GFAR (Global Forum on Agricultural Research). It is an international initiative that aims to strengthen the capacity of key stakeholders to develop suitable DMC systems and to accelerate their wide adoption.

Research and development programs to develop and promote DMC technologies exist in more than 40 countries, but adoption by small-scale farmers has been limited by a large number of interacting technical, economic and institutional constraints. Improved understanding of the factors that determine successful adoption of DMC systems by small-scale farmers could have a major impact on poverty, as has been shown in the regions where it has been adopted.

This initiative was formally launched in January 2000 at a stakeholder meeting attended by representatives of National Agricultural Research Institutes, NGOs, International Agricultural Research Centers, regional networks and other institutions. A Facilitation Unit was formed, with support from CIRAD at Montpellier, and a researcher from IAPAR (the Agricultural Research Institute of the State of Parana, Brazil) was named GP-DMC Facilitator.

## DMC web site

The DMC Website contains an inventory of DMC R&D projects. Any DMC project that has a research and a development component can become part of the inventory. Managers of projects featuring DMC can fill in a form on the DMC Website and submit it - thus becoming part of the inventory. In addition to the inventory, DMC facilitates the dissemination of information by providing links to other Websites on related subject.

<http://agroecologie.cirad.fr/dmc/index.php>

Webmaster information: [MEDIACOM agroeco@cirad.fr](mailto:MEDIACOM_agroeco@cirad.fr)



## The case studies

It is envisioned that a total of 20-30 case studies of DMC development and adoption will be carried out. During the first phase of the DMC Global Program, a framework for case studies was developed and the first three of these were implemented, one each in Bolivia, Ghana and Tanzania. The case studies will be the basis of a synthesis work that should answer the following question: "Why in some cases farmers adopt DMC systems and why in other cases they don't?"

### In BOLIVIA,

no-till (NT) - one specific kind of DMC practice - is being practised on some 392,880 ha in the Department of Santa Cruz de la Sierra, mainly by medium-size farmers who have migrated Brazil and Japan (Table 1).

Development and adoption of NT began with the immigration of Brazilian farmers with previous experience in NT management. Further informal groups were formed in order to foster communication and exchange of experiences. As adoption of NT proceeded, local cooperatives began to formally promote its use. In 1993, ANAPO (The Association of Oilseed Producers) asked CIMMYT for support in research and development of NT. Simultaneously, another R&D network emerged, this one formed by Fundacruz, a research foundation with funding from farmers and agrochemical companies (Ekboir, 2002).

Adoption of NT still remains low for Mennonite farmers and small farmers in general. For Mennonites, adoption is low because their traditions discourage the use of most machinery. Small farmers are constrained from using NT by a lack of specialized equipment - rental markets for NT equipment have not developed, and its purchase can be very costly. These farmers also have limited access to information.



NT field in Santa Cruz de la Sierra

Case study results suggest that small farmers also wish to use NT if suitable equipment were available. Brazilian-developed medium-size powered planters might usefully be evaluated for use under Bolivian conditions - this planters are cheaper but still with good performance. Farmer groups might be formed to test these planters, and rental markets might be fostered. These actions could make NT technology more accessible to small-scale farmers.

Adoption rates (in percentages) of NT by ethnic group and farm size, Santa Cruz de la Sierra, Bolivia (2002)

Ethnic group	Small (30-50 ha)		Medium (51-100 ha)	
	No-tillage	Flexible Tillage	No-tillage	Flexible Tillage
Indigenous farmers	10	20	18	33
Mennonites	9	11	9	10
Brazilian background	-	-	75	-
Japanese background	-	-	98	-

Source: DMC

### In TANZANIA,

a case study was conducted in Arusha region, in the districts of Karatu and Babati. This study was funded by The Government of Japan and carried out by IFAD, FAO and DMC. The main purposes were to assess the extent to which DMC technologies are labour saving and are accessible to vulnerable farmers, and to identify the constraints to adoption.

Among the many issues known to be constraints to adoption of DMC systems in sub-Saharan Africa, one of particular interest was free grazing, in turn linked to land tenure. Traditionally, after crops is harvested, residues may be grazed by livestock belonging to anyone, even other farmers. However, once a crop with market value has been established in the field, farmers may not allow livestock from grazing that land. The case of Ms. Maria Erro illustrates that once farmers are aware of their rights and as long as they see the benefits of the technology, traditions can change.

In Babati District, the Local Management of Natural Resources Programme known as LAMP (a Swedish-Tanzania development cooperation program), aims to increase the capacity of the local government to control and administer land allocation, deal with boundary conflicts and support participatory land use planning and management. Among many activities, LAMP is fostering awareness on land rights among the farmers. Initiatives such as these one are a basis for the promotion of DMC systems.

Ms. Maria Erro had her field sown with lablab under no-tillage. This field was invaded by another farmer who plowed up the lablab and planted wheat. It turns out, however, that change was possible. Ms Erro was aware of her rights and complained to the village council, who decided that she had a right to compensation. During the trial, the second farmer said that he had invaded the area because it was covered with "crop residues" and therefore was not being cultivated. However, under the system of land allocation in the village, any farmer who wants to cultivate free land first has to ask the permission of the village government, who will check to see if the land is actually being used by someone else.

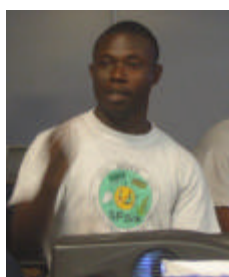


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### In GHANA,

DMC systems are being promoted in Brong Ahafo Region, through the Sedentary Farming Systems Project funded by GTZ. The case study was done by ICRA (The International Centre for Research oriented to development in Agriculture), based in Wageningen, the Netherlands. Farmers in the region practise zero-tillage using traditional hand tools, commonly in combination with burning. Now some farmers are adopting a no-burn slash and mulch system, featuring the use of herbicides and direct planting. Some have also started to rotate maize with mucuna as improved fallow. However, there is an urgent need to increase labour productivity. This could be done by introducing mechanised options for DMC.

The agronomist Philip Boahen works on the promotion of No-tillage for farmers in the mandate area (Brong Ahafo region) of the Sedentary Farming Systems Project. He is one of the ICRA team members and the team leader that carried out the case study in Ghana. For him, the field study contributed to a better understanding of the role of social aspects for the adoption of no-tillage systems.



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The case study indicates that the preference for the DMC practices depend on the land tenure arrangement. For instance, in farmers have access to tractor ploughing services, those who hire land for a short period of time (1 year) expressed preference for the conventional Nkoranza District, where tillage with the disk plough. Only if these farmers would be able to hire land for more 2 years, they would switch to no-tillage.

Table 2: Farmers' preference for different tillage practices as a function of the land tenure system in Nkoranza District, Brong Ahafo region, Ghana.

Land tenure system		Farmers' preference		
		Conventional tillage (hand hoe)	Conventional tillage (disk plough)	No-tillage
Family land		**	*	*****
	Hired land (cash)	1 year	****	**
	2-5 years	***	***	****
Hired land (share cropping)	>5 years	****		*****
	1 year	*****	**	**
	2-5 years	****		*****
	>5 years	**	***	*****

Source: ICRA/DMC case study, 2003.