DIRECT SOWING, MULCH-BASED SYSTEMS AND CONSERVATION AGRICULTURE (DMC) CASE STUDY
Progress of DMC activities since Manila

Background
The DMC (Direct sowing, Mulch-based systems and Conservation agriculture) is an international initiative that aims at strengthening the capacity of key stakeholders to develop suitable DMC systems and to accelerate their wide adoption. The proposed program features a process of learning and synthesis. By analysing and comparing experiences from decentralized initiatives, by synthesizing and systematizing lessons learned, and by identifying and filling gaps – not only on technologies, but also on processes – DMC practices can be harnessed by a wider range of stakeholders.

This initiative has been formally launched in January 2000 by many stakeholders such as National Agricultural Research Institutes, NGOs, International Agricultural Research Institutes, regional networks and other institutions. This group agreed on the potential advantages of a global cooperation for fostering the adoption of DMC systems worldwide. At that time, a broader framework for the DMC initiative was forged, but due to delays in bringing on board a full-time facilitator, it has not been operational so far.

During the period from May 2002 to August 2003, Ms. Fatima Ribeiro (a Brazilian researcher from IAPAR) carried out activities as DMC facilitator, hosted by CIRAD. Her workplan, approved by the interim steering committee on May 2002., is synthesized as below:

- **Learning Activities from local initiatives:** establishment of an inventory and implementation of case studies on DMC research and development projects
- **Synthesis activities:** synthesis of the (20-30) in order to answer questions on adoption and the state-of-the art about what has been learned about technologies, processes and policies
- **Feedback/Advocacy activities:** Encouraging linkages between research-extension with development, identifying relevant research questions, encouraging development of research methods on DMC, encouraging farmer-to-farmer sharing and exchanges across projects
- **Information sharing activities:** development of a DMC Website.

Main activities and outputs from May 2002 to August 2003

From the workplan established by the Steering Committee, we concentrated our efforts in on learning activities. However, as some opportunities arisen during this period, other activities were carried out, and the main outputs are summarized below.

*The inventory and the DMC Website*

CIRAD provided resources and hosted a server for the implementation of a DMC Website (http://agroecologie.cirad.fr/index/dmc.php). The Website has an inventory of 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.

*The case studies*

The first case study was carried out in Bolivia, in collaboration with ANAPO – The National Association of Oilseed Producers. No-till (NT) – one specific kind of DMC practice – is being practised in some 392,880 ha in the Department of Santa Cruz de la Sierra, mainly by medium-size farmers who have migrated Brazil and Japan. However, the adoption by small-scale farmers has remained very low. The case study indicated that 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 very costly. These farmers also have limited access to information.

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.

The second case study was carried out in Tanzania. This is being done under collaboration between IFAD, FAO, SARI (The Selian Agricultural Research Institute) and DMC, with funds mainly form the Government of Japan, NORAD and FAO. This study was proposed by FAO as an assessment of labour saving technology / practices with focus on women farmers and vulnerable groups. Specifically, the study has the following objectives: 1) to verify that reduced tillage practices / conservation agriculture do save significant amounts of labour; 2) verify that vulnerable groups (women, young people and orphans) are capable of adopting and practicing conservation agriculture (CA) without taking too many risks with regards to their own food security and the stability of their livelihoods and 3) identify and overcome stumbling blocks (socio-cultural) which hinder the adoption of labour saving practices such as CA.

The third case study was carried out in Ghana (Brong Ahafo Region, under a collaboration among the Sedentary Farming Systems Project, ICRA (The International Centre for Research oriented to development in Agriculture) and DMC. Farmers in the Region practise zero-tillage using hand tools traditionally, but mainly in combination with burning. Now some are adopting no-burn slash and mulch, the use of Glyphosate and direct planting. Some of them have also started to rotate with mucuna as improved fallow. However, there is an urgent need to increase labour productivity. This could be done by introducing mechanised options for conservation farming. Tractor services for land preparation are prominent in the savannah areas, but only use disc ploughs. This practice has started to spread into the transitional zone of Ghana. Therefore, it is very important to stop this trend and to develop and offer mechanised services for conservation farming. Under this context, the study aimed to find out whether mechanised options of conservation farming could be introduced considering social, ecological, technical and economical aspects; and to organise this in a way that ensures access by small scale farmers to such services.

In the short term, there are possibilities of other case studies in Africa, with the participation of Relma (Regional Land Management Unit/ East Africa) and ICRA/Montpellier (Madagascar).

Other activities

The KASSA platform

DMC participates in KASSA (Integrating and Strengthening the European Research Area), proposed and leaded by CIRAD. This proposal, to be financed by the European Union (Programme “Integrating and Strengthening the European Research Area” – Priority 1.1.6.3. “Global Change and Ecosystems”), is comprised of a consortium of 31 institutions, organised in regional platforms. Contacts made by the facilitator allowed the participation of important partners as the Rice-Wheat Consortium for the Indo-Gangetic Plains (south Asia), ANAPO/Bolivia and FAEPE/Brazil. It is important to highlight that, despite the relatively high levels of adoption of DMC by small farmers in Brazil, this is restricted to the subtropical areas. FAEPE is the first Brazilian institution that is dealing with this issue with small farmers in tropical areas, and thus we expect that participation of FAEPE in the KASSA initiative will provide elements for fostering adoption of DMC systems in tropical areas not only in Brazil, but in other countries.

Mainstreaming the DMC concept in Cambodia

Under the financial support of the Norwegian Trust Fund, a group of agronomists from the Ministry of Agriculture was trained in the concepts of DMC. As a result, a network of trials was established in the
country, and preliminary technical and economical assessments of DMC systems have been shown the feasibility of this technology for rice based farming systems.

**Building an African platform for the II World Congress on Conservation Agriculture**

DMC worked in close collaboration with the African Conservation Tillage Network in order to help ACT members to prepare an African platform with the main issues for the dissemination of DMC systems in Africa, which was presented in the II World Congress on Conservation Agriculture in Brazil, August 2003.


Fostering research to fill the gaps is another role for the DMC initiative. By identifying the main research needs, DMC can contribute in orienting research resources for priority issues. One initiative already taken is the representation of DMC in the European Forum on Agricultural Research for Development. Update on available funds for research but also contribute in orienting funds for relevant issues. Lobby for thesis, post doc, more specifically, the participation of the DMC in the meeting of the RWC was decisive for the participation of the RWC in the KASSA proposal.

**DURAS Project:** Under the Umbrella of Agropolis (Montpellier), funded by French Ministry of foreign affairs, a new project called DURAS will be launched in a few months with the objective of strengthening applied research to the benefit of local communities. DMC staff will so take any initiatives in the coming weeks in order to propose an integrated project aiming at promoting conservation agriculture. Contact with NGOs, research bodies in Zimbabwe, Malagasy, Burkina Faso and Guinea are already under implementation.