Agroecological Action Plan

On

Direct seeding Mulch based Cropping systems

DMC

1/ No removing the soil

2/ Permanent vegetal cover

3/ Direct seeding through the mulch and

4/ Rotation succession of diversified crops

How to do in order to produce more high quality products while protecting soil surface and potentiality with a permanent cover crop
An international agronomic network devoted to DMC creation

monitored by Cirad and national partners

Research has been initiated in tropical brasilian zone by Dr L. Séguy in the eighties…

DMC is suitable for equatorial agrobusiness (below, in area near Amazonia)…
... with positive results on sustainable soybean production in Mato Grosso, Brazil ... 

Rendements en soja supérieurs à 5 tonnes/ha

... and has been extended to small farmers in Malagasy in the nineties with positive impact on beans and corn rice productivity when cultivated under DMC.
First agroecological DMC project in south-east Asia was in north of Vietnam in 1999. For small farmers, DMC systems were allowing growing upland rice and fodders even on sloppy fields. A significant effect of DMC system on run off, erosion control and yield was put in evidence.

Cho Don SAM Project. ( VAAS – Cirad )

In Laos the project was initiated in 2001 in the Sayaboury Province. Main objective was to propose DMC viable alternatives to the soil destruction process caused by ploughing machines and mono cropping (corn, cotton...). In 2004, the national program PRONAE was officially created by the government of Laos with the implementation of new projects in other provinces.
To increase viability of DMC innovation, adapted machinery is a priority for small farmers. It means that mechanization is an important issue for technological research with the necessity of sharing knowledge and know-how (first direct seeding DMC equipments in Laos were so coming from southern Brasil ...)

Adaptation of a conventional machine to direct seeding
Laos

DMC Activities in Cambodia started in 2003 in the Province of Kampong Cham

4. First results on Red Oxysol

Tradition reaches the deadlocks of plow-based systems

Plowed sesame before harvest

Crusting and erosion

Cyperus sp.

Imperata cylindrica

Cassava monoculture

End of the huge production potential

Above: damaged soils due to unadapted soil ploughing with invasion of vegetal pests
DMC researches are resulting in soil fertility recovery under the cultivation of cover crops followed by main crops (Campong Cham Province, Cambodia).

4. First results on Red Oxysol
building of the first DMC proposals … photos
Ex. : system with short term bio pump before the main crop

In the coming years, adaptation of DMC technology to Rice cultivation in Cambodia is expected to a strong positive impact.

5. First results on rainfed lowland rice
Soil biological activity, as the development of macrofauna and microfauna biodiversity under the DMC technology is studied at the Campus of Sakhon Nakon in north Thailand (Kasetsart University).

Macro Fauna is rapidly recovering in DMC managed fields.

Linking and bridging these R&D activities becomes a true GMS challenge.
Addendum.

An GMS Agroecology oriented CD-Rom is also provided with this document. Readers will find diaporama on approach, methods and main results all over the world. Posters and articles focusing on agroecological results in the concerned countries are also available.

For more detailed informations, the CIRAD agroecological web site is easy to access:

http://agroecologie.cirad.fr
http://www.cirad.fr/ur/couverts_permanents

In any case, please contact:

Cirad DMC-Unit Cirad Representative Cirad- MAF
Executive secretary Hanoï Vientiane
C. Casino G. de taffin A. Chabanne
Casino@cirad.fr ciradvn@gmail.com Chabanne@cirad.fr

Ready for sharing knowledge and know how on the agroecological challenge throughout the Greater Mekong sub region GMS