

Creation and Adaptation of Direct seeding Mulch based Cropping systems for tropical upland in South-East Asia

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Cambodia
Rubber - Teak association on Stylo cover (6 months old)



Vietnam
Tea on Arachis pinto cover



Cambodia
Rubber - Teak association (same plot at 7 years old)





China (Yunnan province)
Active soil erosion on cultivated hills



Vietnam (Yen Bai Province)
"Matrix" of cropping systems



Laos (Xieng Khouang province)
Finger Millet + Pigeon Pea (*Cajanus cajan*)





Cambodia (Battambang province)
DMC on deep water rice plain (rainfed + flood lowland)



Cambodia (Battambang province)
DMC on upper sandy terraces (rainfed lowland)



Cambodia (Kampong Thom province)
DMC x irrigation scheme





Cambodia (Battambang province)
Maize mono-cropping on medium farms



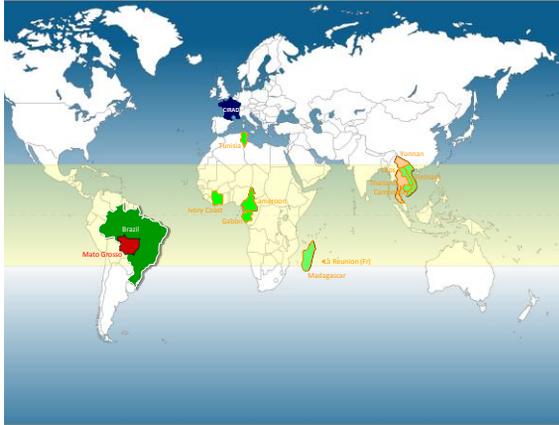
Laos (Xayaburi province)
Maize mono-cropping on small-medium farms



Cambodia (Kampong Cham province)
Cassava mono-cropping x small farms



CIRAD and partners
South to south transfer



CIRAD and partners
South to south transfer
Creation of DMC in Brazilian Cerrados

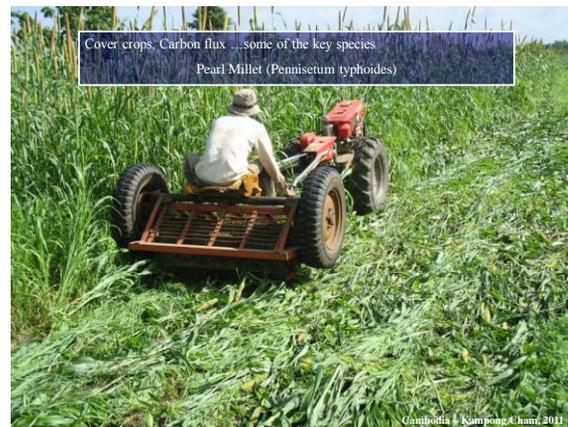
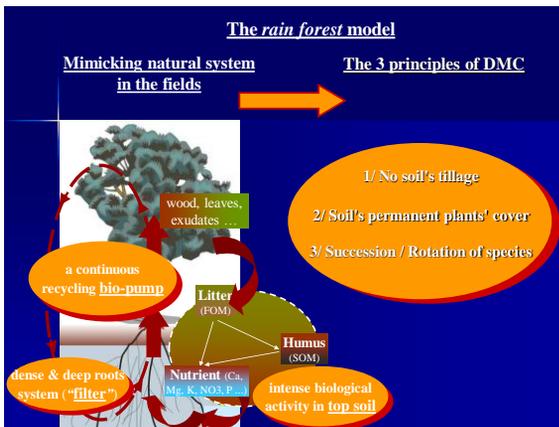
Stage 1: from tillage to the « No-till » necessity

Complete combination of the systemic components		x	Thematic components
Soil Tillage	Crops Sequence	x	Density Variety Fertilizers Weeds C ^{sol} Pest C ^{sol}
	Early Date Late Date		

Modeling and practicing innovative mechanized cropping systems in real conditions
 "On-farm with and for farmers" L. Seguy
 Sinop, MT-2001
 © Nicolas Cherrier, 2002

CIRAD and Transfer South to south
Creation of DMC in Brazilian Cerrados

Stage 2: from « No-till » to DMC
 « The rain forest model »
 Cover crops → Carbon flux and other services

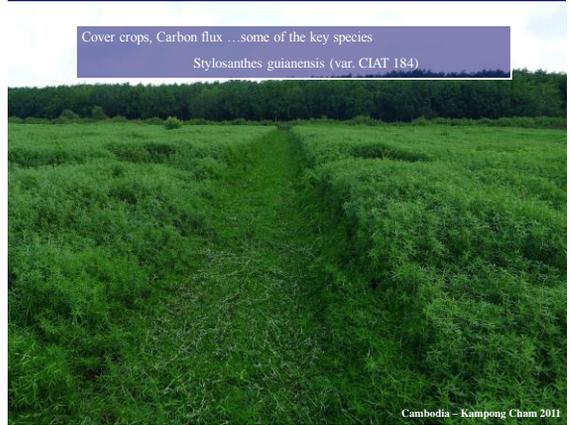


Cover crops, Carbon flux ...some of the key species
Sorghum (*Sorghum guineensis*)



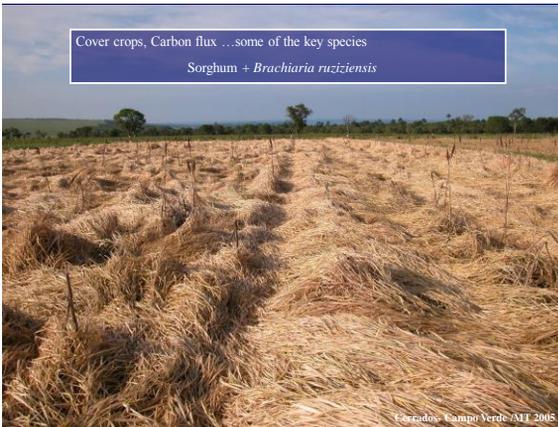
Cambodia - Kampong Cham 2012

Cover crops, Carbon flux ...some of the key species
Stylosanthes guianensis (var. CIAT 184)



Cambodia - Kampong Cham 2011

Cover crops, Carbon flux ...some of the key species
Sorghum + *Brachiaria ruziziensis*



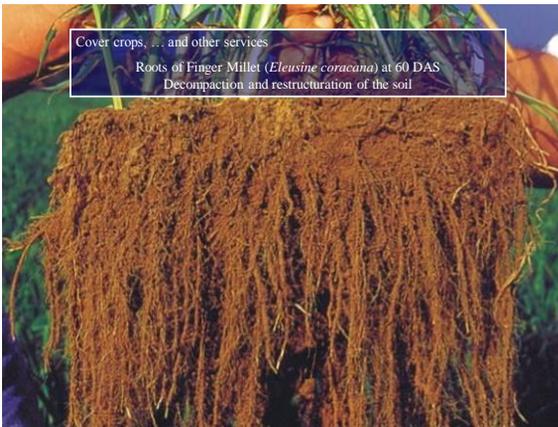
Cerrados - Campo Verde - MT 2005

Cover crops, ... and other services
Deep rooting of *Brachiaria ruziziensis*
Recycling nutrients and C "injection" in the soil profile

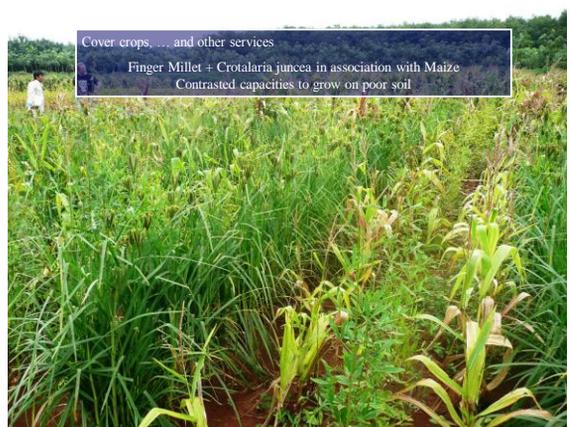


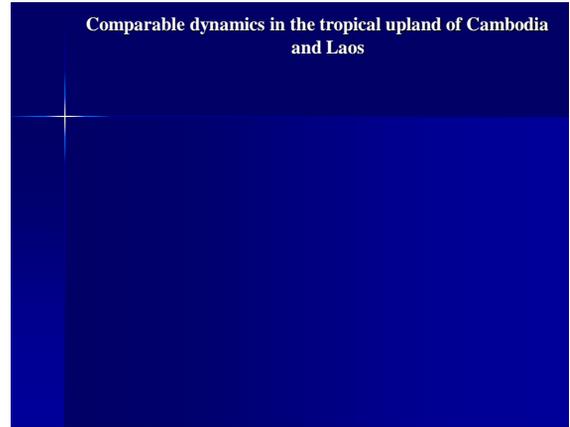
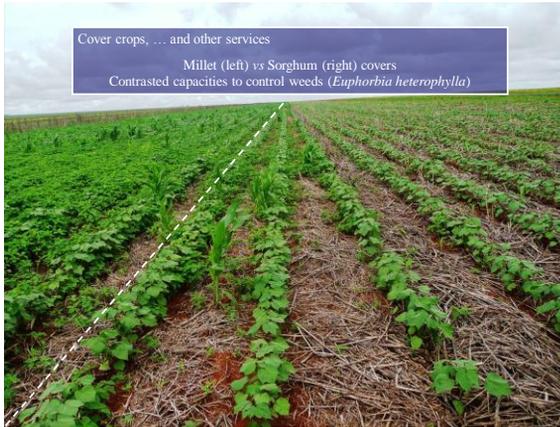
Arquivo: Embrapa Arroz e Feijão

Cover crops, ... and other services
Roots of Finger Millet (*Eleusine coracana*) at 60 DAS
Decompaction and restructuring of the soil



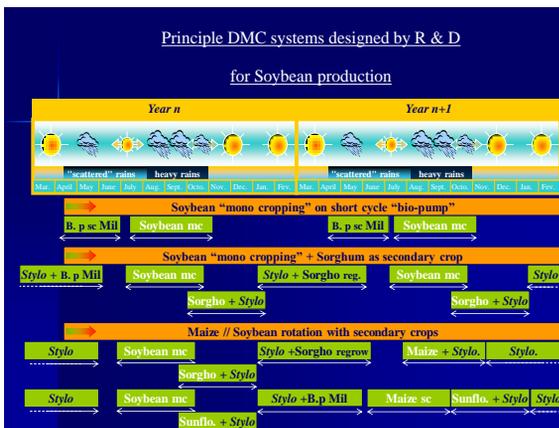
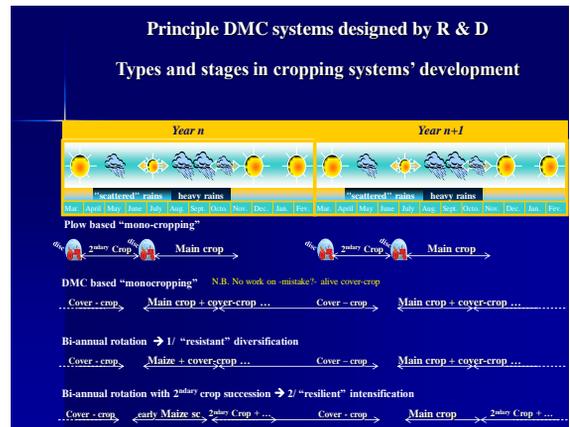
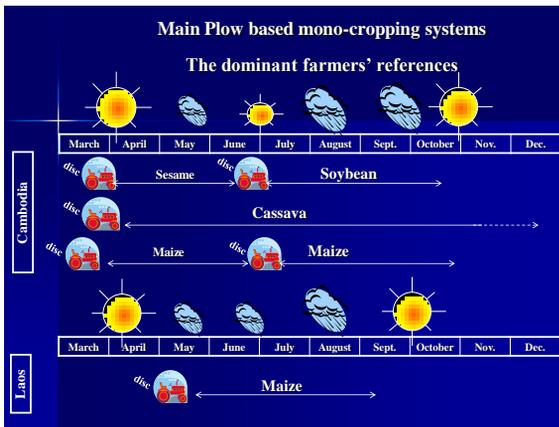
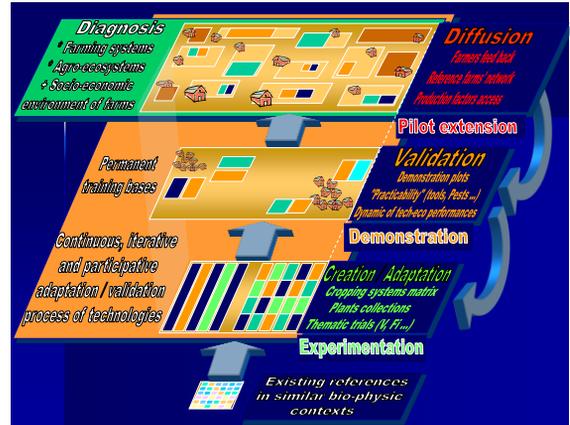
Cover crops, ... and other services
Finger Millet + *Crotalaria juncea* in association with Maize
Contrasted capacities to grow on poor soil



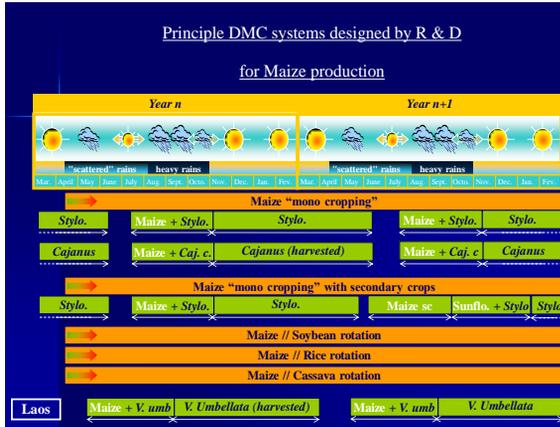


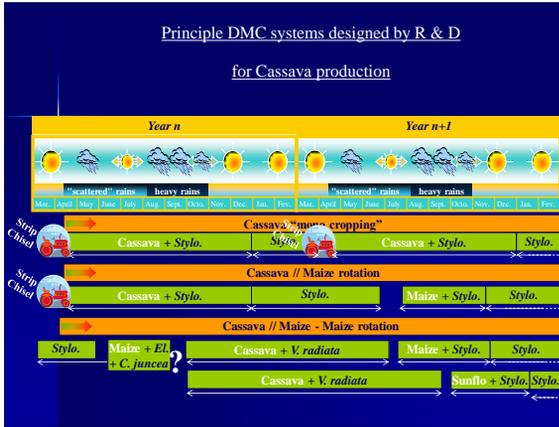
DATE

“Diagnostic, Design, Assessment, Training and Extension”
a systemic, iterative and integrative methodology
for the co-construction of adapted cropping systems





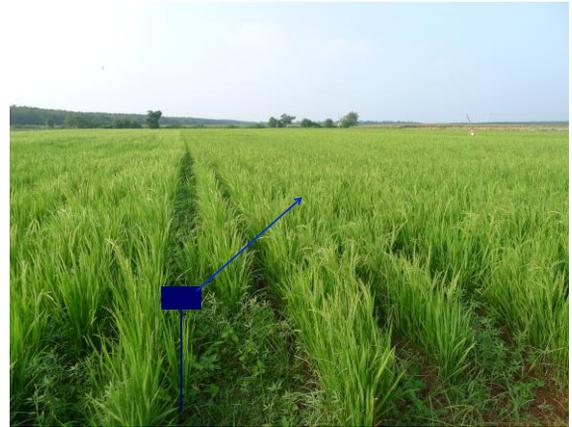
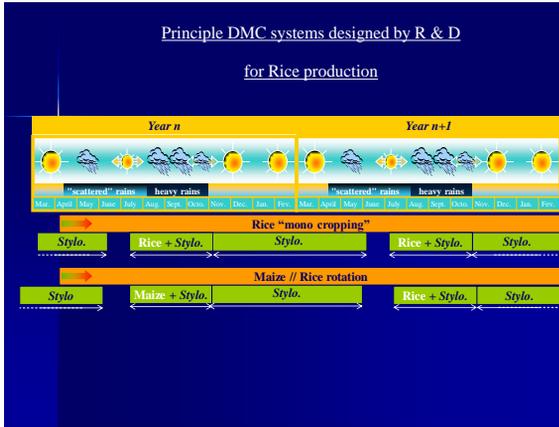


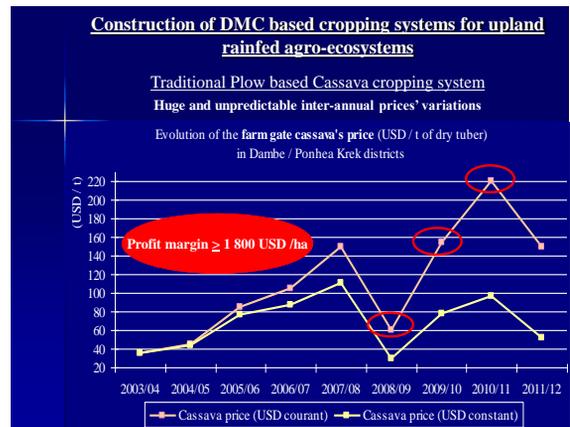
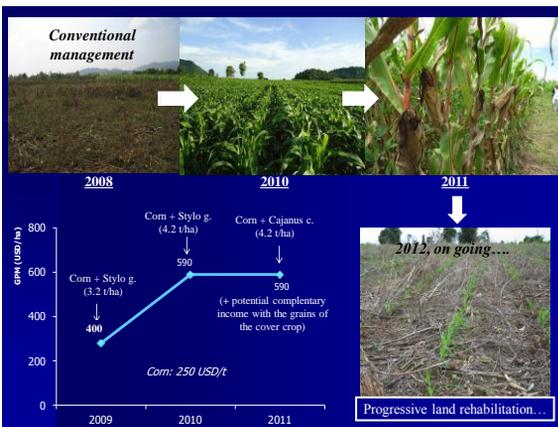
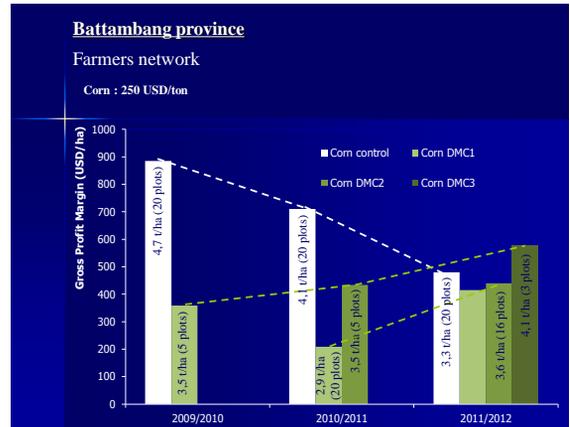
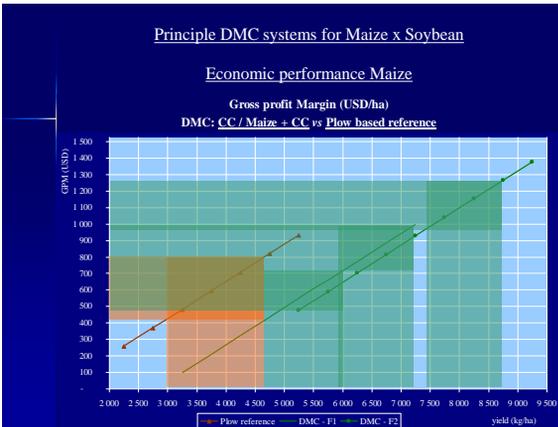
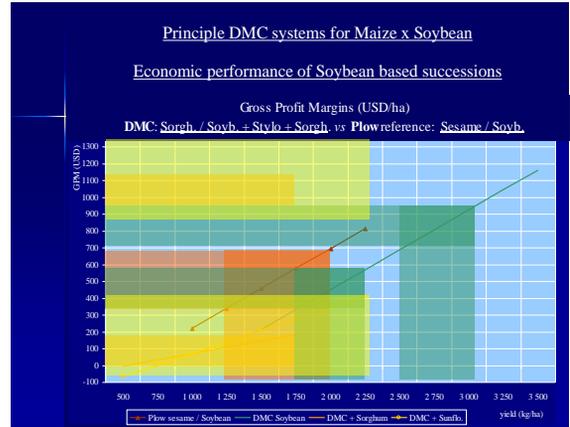


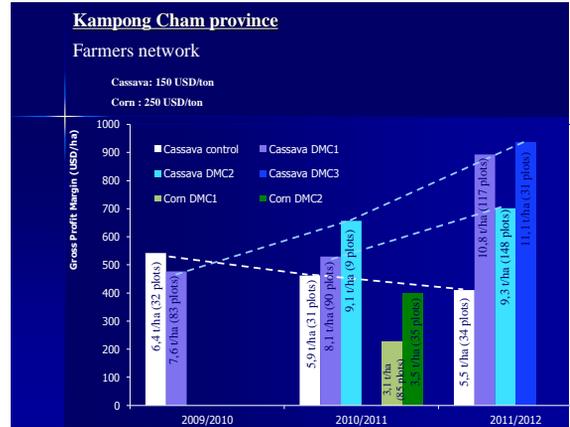
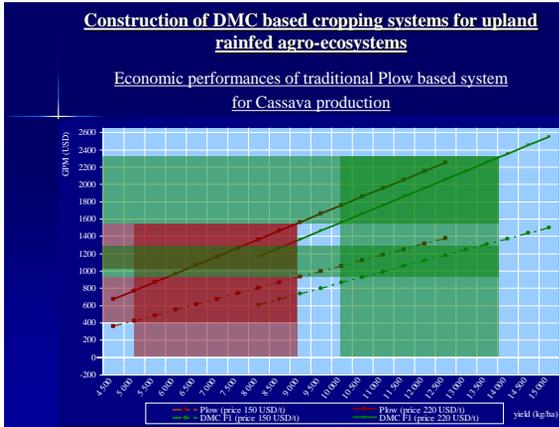
Principle DMC systems designed by R & D
for Cassava production

Photos,
Animation,
Etapes avancées du systèmes
Strip tillage (transitory step?) → cf new systems with strong roots
structuration









Creation and Adaptation of DMC systems for tropical upland in South-East Asia

Conclusion

- 1/ Continuum Creation – Adaptation
- 2/ from additive insertion of plant characteristic (“service”) to the unforeseeable emergence of agro-ecosystems properties
→ On field experimentation, primo modeling in Vivo !
- 3/ Transformation and transition ... of agro-ecosystems and minds (urgency and patience!) ... long term prospective
- 4/ Build and highlight continuum Bio-physic from POM ... to Earth Socio-economic from plots to territory and agricultural policy



