GRET

Professionals for Fair Development

Agroecological practices for paddy cultivation in Ayeyarwaddy delta of Myanmar

Gret Delta – Justine Scholle – 24/01/2017

Devoted to Action and Innovation for Global Solidarity

Delta context

- <u>Natural constraints</u> : 3 ecological area (salty, brackish and fresh water) and water environment → time and costly transportation by boat
- Major rice production region but many other secondary sources of income and livelihood
- population shared in *lauthama* (rice farmer) and *bauthama* *(general worker with no or limited land)* 66%
- High prevalence of stunting

→ Nargis cyclone in 2008 severely impacted productive and economic systems

Current Delta program (2016-2018)

- **66 villages** of Bogale and Mawlamyinegyun Townships
- **4 projects** on **rural development**
- but **1 implementation team** with common objectives :

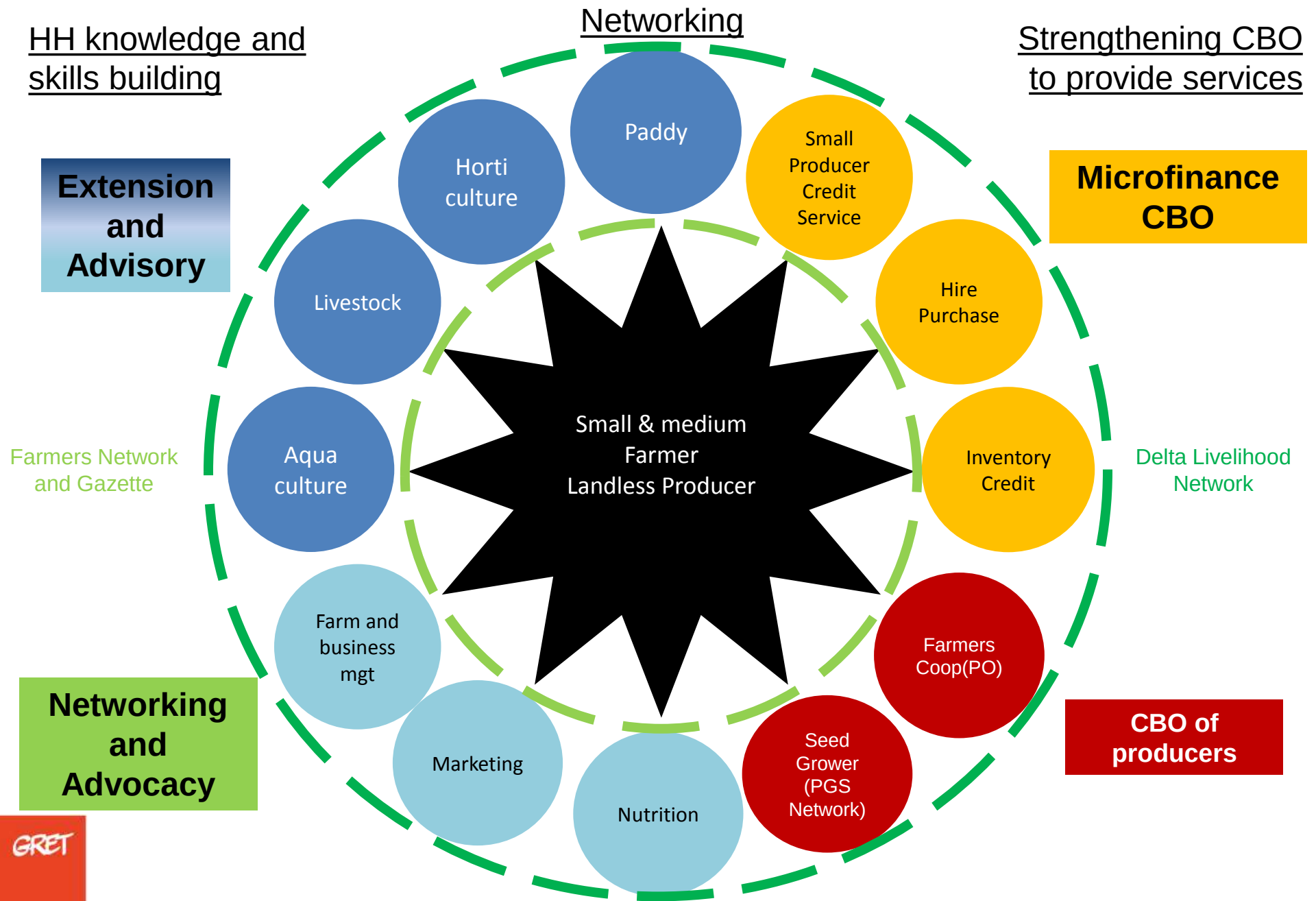
*To contribute to improvement of **livelihood security** , **economic development** and **local governance** in Delta by* :

→ *Empowering the rural households through knowledge and skills building*

→ *Supporting the emergence and strengthening CBO to sustainably provide appropriate services for rural communities*

→ *Facilitating experience sharing and networking of rural development stakeholders*

Gret activities in Delta



Challenges for farmers in Delta

Various challenges :

- Climate change and weather instability
- Lack of quality seeds
- Soil fertility decreasing
- Poor diversification of the crops
- Lot of pests and diseases on crops
- Difficult water management
- Labors shortage
- Difficult access to loans
- Market price instability
- Low quality of the products (for selling and consumption)

How AE can answer these challenges ?

AE aims to :

- Reduce the use of external inputs
- Increase food and nutrition quality
- Increase production diversification
- Increase biodiversity
- Ensure soil fertility
- Ensure environment conservation
- Ensure Food and Nutrition Security
- Empower farmers
- Fight against climate change

AE techniques developed in Delta (focus on rice)




Compost

Objectives :

- To increase soil fertility and replace chemical fertilizers
- To strengthen the plants to increase their resistance against pests and diseases
- To improve the soil structure in the field
- To maximize the use of natural resources and avoid loss

Different types of composts :

- Solid compost with raw vegetation
- Rice straw compost
- Vermi compost

+ super bokashi

AE techniques developed in Delta

Compost

Fertilizers trials during monsoon 2016 : 3 farms

Plots	Fertilizer rate/0.1 acre	Average yield (ton)
T0	Farmers' practices	1.4 (66.67 bsk)
T1	Urea 5 kg + T Super 2.5 kg + P 2.5 kg	1.5 (71.3 bsk)
T2	50 % T1 + Straw compost 200 kg	1.77 (84.3 bsk)
T3	50 % T1 + Super bokashi 100 kg	1.61 (76.67 bsk)
T4	50% T1 + Vermicompost 25 kg	1.67 (79.33 bsk)

→ **Higher plants, more filled grains, more grains/panicles with T2 and T4 than T1 and T0**

→ **Better yields with less chemical fertilizers**

AE techniques developed in Delta




Compost

1 acre straw for compost making in 2016 :

1 acre of summer rice straw = 1566 kg of compost

Labor = 5 men/day for straw collection + 4 men/day for pile building + 1 man/day for aftercare

→ Incorporation for summer 2017 on 1 acre of paddy without chemical fertilizer

→ 3 other trials are ongoing with monsoon straw

→ 377 piles were made between January and June 2016

→ ***In summer, farmers increased rice yields by 15%*** *and if they combine good agriculture practices, they can produce 30% more (Compost usage survey, Gret, 2016).*

AE techniques developed in Delta




Compost

One acre straw compost making

Turning pile of one acre straw compost (during training)

AE techniques developed in Delta

Indigenous Effective Microorganisms

Objectives :

- To fasten the decomposition of straw compost
- To promote germination, growth, flowering used in field
- To enhance soil biological activity
- ..... A lot of benefits and usages !

→ The straw compost is ready in 3 to 4 months with IEM instead of 5-8 months.

→Easy to made by farmers themselves with accessible resources (jaggery, papaya, banana, pumpkin and eggs)

→ 1 bottle of IEM (1L) = 500 MMK at village level

AE techniques developed in Delta

Fruits chopping

IEM solution before fermentation

IEM ready to use after 45 days

AE techniques developed in Delta

Green Manure

Objectives :

- To increase soil fertility
- To maintain nitrogen fixation
- To increase yield of rice in coming season
- To improve soil structure

Several trials before monsoon :

- Leguminous : *Sesbania acuelata*, *Crotalaria juncea*, black gram (*Vigna mungo*)
- Non leguminous : Jute (*Corchorus capsularis)*

AE techniques developed in Delta




Green Manure

Results :

→ Cow pea before paddy in monsoon 2015 : + 5% yield

→ Only jute gave good results in monsoon 2016 due to water resistance. The others crops were flooded and died.

→ 33% increased yield plot with jute VS without jute

Paddy without jute before (left) after jute (right)

There are other effects like :

- no infection, more resistant to pests (stem borers),
- darker green color,
- longer length of panicle,
- More tillers, etc.

AE techniques developed in Delta

Quality Seeds Production with Participatory Guarantee System certification (QSP PGS)

Challenges :

- Difficult access to quality seeds
- Weak formal production system : not enough quantity and variable quality

Objectives :

- Increase food and nutrition quality and quantity
- Empower farmers by technical and management capacity building
- To support community development and autonomy by recognition of farmers production quality and trust building among actors

AE techniques developed in Delta




QSP PGS

Seed demand VS formal production :

→ At Myanmar level

seed production = **3.6 million baskets** (amount covering all class of seeds, from breeder seeds to commercial seeds)

VS

seed requirement = 30 million baskets (based on an average seed rate and taking into account all arable lands under paddy cultivation).

→ At Bogale Township level : 310 824 acres of rainy rice (90 920 for summer)

Seed production = 600 baskets of Registered Seeds (2013)

VS

Seed requirement = 3 000 to 4 000 baskets of RS to be multiply to produce 62 000 –77 000 baskets of Certified Seed

AE techniques developed in Delta




QSP PGS

Production :

Seed quality (variety)	Market	Production in tons (monsoon only)		
		2014	2015	2016
RS to CS (4-5) with PGS certification	Open market, linkage with local Producers organizations	20.3 (966 bsk) 18.7 acres 15 farmers	35.1 (1673) 28.25 acres 25 farmers	31.8 (1515) 32.2 acres 31 farmers

Link with the DoA

→ Reduced need of seeds (1.5 instead of 2 bsk/acre) as better germination rate

→ Renewal of seed stock every 3 years

→ **Increase rice yield from 16 to 30 %**

AE techniques developed in Delta

System of Rice Intensification Adapted

Objectives :

- To increase rice yields
- To manage soil fertility
- To manage water resource

SRI principles :

1. Pure seeds selection	7. Transplantation in line
2. Rice nursery with compost between 12 days and 3 weeks before transplanting	8. Transplantation with spacing 25-40 cm between plants and rows
3. Rice field leveling	9. Few water, 7-20 days after transplanting
4. Vigorous rice seedlings selection	10. Fertilization (10-20t/ha of compost)
5. Transplantation of 1 seedling per hole	11. Mechanical and early weeding
6. Transplantation not deep	

AE techniques developed in Delta

System of Rice Intensification Adapted

- Farmers use the techniques of SRI adapted mostly for PGS production
- The water management is still a problem for farmers in Delta
- No use in summer, farmers broadcast (no labors available for hand transplanting)

AE techniques developed in Delta




System of Rice Intensification Adapted

Seed selection with salty water

Main field with 1 seedling per hole transplanted in line

Nursery with raised bed but problem of water management

Still some challenges to overcome

AE =

- Labor intensive practices but labor shortage in Delta
- Knowledge intensive practices so need time and a lot of practice for farmers to handle AE techniques
- Techniques adapted to each region and context : need to be tried first before adoption and extension in one region
- Effects can be seen in long term but farmers don’t want/can’t wait
- Different from the conventional agriculture, need change of practices but farmers need to see results to believe
- It is new also for the staff, everybody needs to learn
- Lack of information and research results for AE dissemination

Next steps

Local Agroecology Innovative Site with :

- 1 experimental farm
- Innovative farmers

Sharing knowledge and link with other stakeholders:

- Technical sheets ongoing
- Field visits and agri fair (DoA, other development stakeholders, farmers)
- Member of Alisea network

→ To contact me : scholle@gret.org

GRET

Professionals for Fair Development

Thank you for your attention

Devoted to Action and Innovation for Global Solidarity