IPM-SRI PRACTICES IN THAILAND

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National Workshop on Sustainable Rice Production

Revisiting IPM, 12-13 September 2012, UKM

AIT

The Asian Institute of Technology, an International and Intergovernmental Organization, promotes technological change and sustainable development in the Asia-Pacific region through higher education, research and outreach. Established in Bangkok in 1959

MISSION

To develop highly qualified and committed professionals who will play a leading role in the sustainable development of the region and its integration into the global economy

AIT Focus

- ✓ On the needs of stakeholders and the importance of involving colleagues from the private and public sectors, from national research institutes, and from other academic institutions;
- ✓ On linking universities and other research institutes with private sector and communities, with strong partnerships;
- ✓ On the need for research work having high relevance to the national and regional users.

AIT Research Strategy

Sustainable Development in the context of Climate Change

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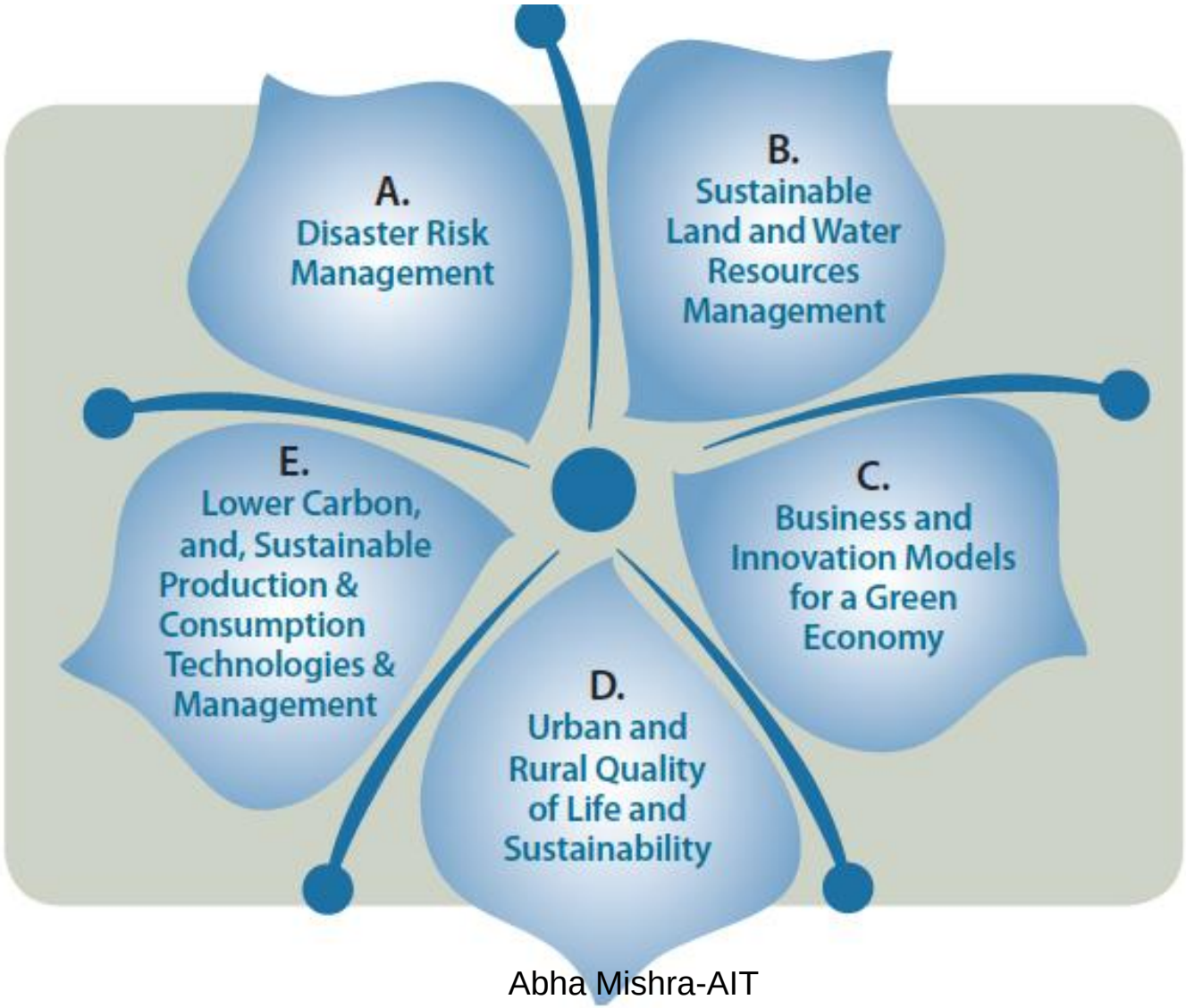
NEED

- Evolving inter-dependence across the nations
- Realizing the gap between science and society
- Climate change context (energy and carbon footprints)
- Capturing and fueling innovation
- Next generation of human resources
- Re-establishing backward forward linkages

"To significantly increase, by 2016, AIT's contribution towards sustainable development of Asia and beyond through collaborative research in relation to climate change, and implementation of applications to address real life challenges and fill knowledge gaps".

Research Focus



Sub-thematic areas

B. Sustainable Land and Water Resource Management

- ✓ Future climate and water resources
- ✓ Forestry and land management
- ✓ Integrated water resource management
- ✓ **Sustainable agriculture and aquaculture intensification**
- ✓ Integrated costal management

"Co-generation of innovative technological solutions for sustainable intensification, and *innovation in climate change adaptive technologies to enhance factor productivity".*

SRI @ AIT

Why SRI at AIT

- ✓ Global interest
- ✓ Major attraction at farmers ‘field;
- ✓ **Asia:** largest producer of rice;
- ✓ **Asia:** largest consumer of agricultural water;
- ✓ **Asia:** 50-70% farmers are engaged in rice farming;
- ✓ **Asia:** Food security is linked to rice production;

SRI: Provides larger ambit to address the multiple issues associated with sustainable agricultural development in the context of climate change

ADDRESSING THE NEED

Yields under SRI are governed by four factors:

1. Genetic potential
2. Resource inputs (quantitative)
3. **Management of inputs (qualitative), and**
4. **The abundance and diversity of soil biota, and their response to SRI management**

SRI focuses on third in order to affect the fourth

IPM-SRI

SRI

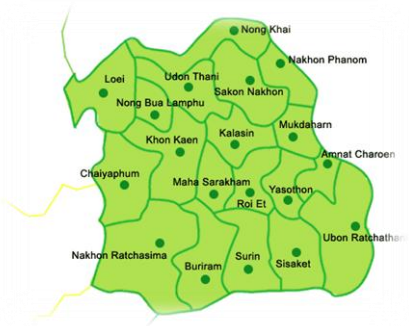
- knowledge intensive and location-specific
- Amenable to farmer experimentation and adaptation
- Elements for innovation

FFS/IPM

- Learning-centered approach (structured learning cycle through experimentation, observation and evaluation leading to informed-intervention;
- A platform for bringing various stakeholders together to address the issue beyond farmer's field in a more systematic way;
- Though the FFS/IPM, if not always, focuses on farmers' education, nevertheless it has potential to go beyond farmers' education –proving learning opportunity to all participants through collaborative action research.

IPM-SRI & collaborative action research

Welcome to NE Thailand



- > 80% population engaged in agriculture
- Greatest number of farms
- 70% agricultural land is devoted to rice cultivation
- Produce world quality rice - Home of Jasmine rice

- Lower rice productivity
- Poor soil fertility, lack of appropriate location specific technology
- Lack of multi-stakeholder consortium

The need…

- To adapt good crop management principles
- To improve soil fertility
- To increase rice productivity
- Easy assess to market
- Easy assess to information

Project/activities

- CPWF SG 504 (2006-07)
- Used elements from SRI along with using green mulch to improve water productivity.
- 2 Seasons of action research, FFS conducted at Samart, Roi Et province


Field Preparation


Rice Transplanting by Governor, Farmers & Officials


PAR Data-Collection

Our living lab… and innovative farmers





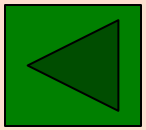

Evaluating legumes as cover crops and then as a green manure for enhancing water use efficiency and soil fertility status using FFS approach


Activities…

1. Preparation of draft questionnaire and conduction of survey
2. Selection of farmers and experimental site
3. Formulation of specific experimental protocol for trial (identify problems, potential solution (*integrate local as well as SRI knowledge*)
4. Selection of variety.
5. Identification of experimental design.
6. Curriculum development – Based on the experimental design, the experiment objectives and varietal characteristics, develop a detailed curriculum for field activities.

Activities (contd.)

Development of learning curriculum

Sl. No.	Topic	Activities	Crop stage
1	Rice root 	Uprooting, collecting and comparing seedling from SRI and conventional seedbed for following characteristics: root length, shoot length, root weight, shoot weight, leaf color and leaf number, root colour	Seedling stage
2	Designing experiment for evaluation	Describing experimental design, treatments, field visit and lay out	Seedling stage
3	Soil ecology and rice root growth	Theory session on “what are the factors required for root growth and how does soil ecology affect root growth?”	Seedling stage, panicle initiation stage

Development of learning curriculum (contd.)

SI. No.	Topic	Activities	Crop stage
4	Collecting data and plant sample	Theory session and field exercise on how to collect samples, Field visit- tagging the sample plant in each plot, measuring leaf color by using IRRI's Leaf Colour Chart (CLL).	Early tillering stage
5	Rice root development with seedling age, and water regime at panicle initiation stage	Measuring leaf color by IRRI LCC, uprooting rice plant from young seedling and older seedling planted plots (12 day-old vs. 30-day-old)- from continuously flooded and non-flooded water regimes.	Panicle initiation stage

Development of learning curriculum (contd.)

SI. No.	Topic	Activities	Crop stage
6	Physiological growth	Observing the field for “days to flowering” in all treatments, counting the number of tiller, measuring leaf colour by IRRI’s LCC.	Flowering stage
7	Rice root development in different moisture regimes, and with seedling age	Uprooting rice plant from continuously flooded, and non-flooded water regimes 12-day old vs. 30-day-old	Grain filling stage

Development of learning curriculum (contd.)

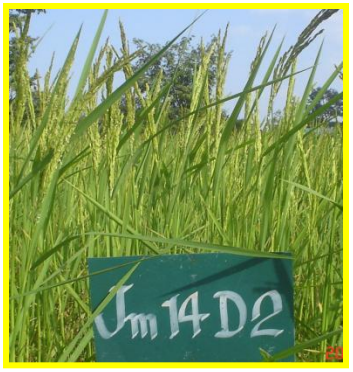
Sl. No.	Topic	Activities	Crop stage
8	Physiological maturity	Visiting the experimental plot, observing the chlorophyll content of the plant by using IRRI's LCC, especially the lower leaves, collecting agronomic data from each plot by observing sample plant	grain filling stage
8	Physiological maturity	Visiting the experimental plot, uprooting the plant from each plot and measuring root growth, weight, and observing the white and brown root growth, observing root length	grain filling sage
9	Before harvesting	Visiting the experimental plot, counting the number of tillers having panicles	harvesting stage
10	Harvesting	harvesting the sample plants, measuring plant height, panicle length, number of grain/panicle, number of filled grains/panicle, and 1000 seed weight.	Harvesting stage

Development of learning curriculum (contd.)

Sl. No.	Topic	Activities	Crop stage
11	Yield measurement	Crop cut from each plot and grain weight/plot	After harvesting stage
12	Evaluation	Arranging the yield data treatment wise, discuss which treatment combination gave better yield and why?	
13	Linking soil ecology with evaluation result focusing on root growth	Discussing the effect of seedling age and water regime on rice growth and yield, and how do they affect soil as well as root health. How do they perform when organic manure is added to the soil…?	

Participatory Action Research

Experimentation, observation, and evaluation are participatory



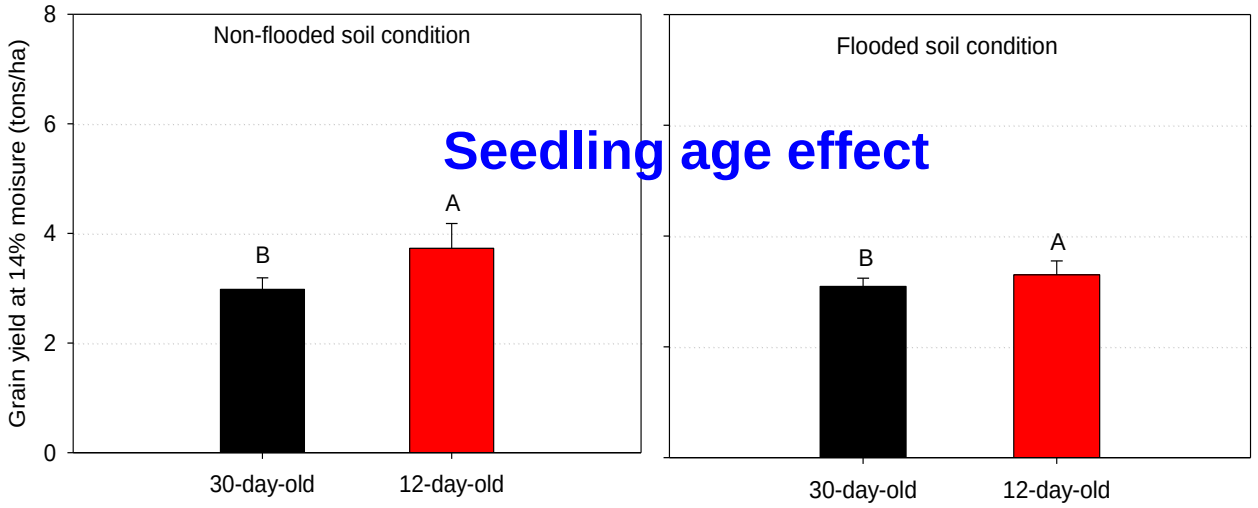
Participatory Action Research

IPM/FFS process - useful for structured learning

Picture speaks better than words !

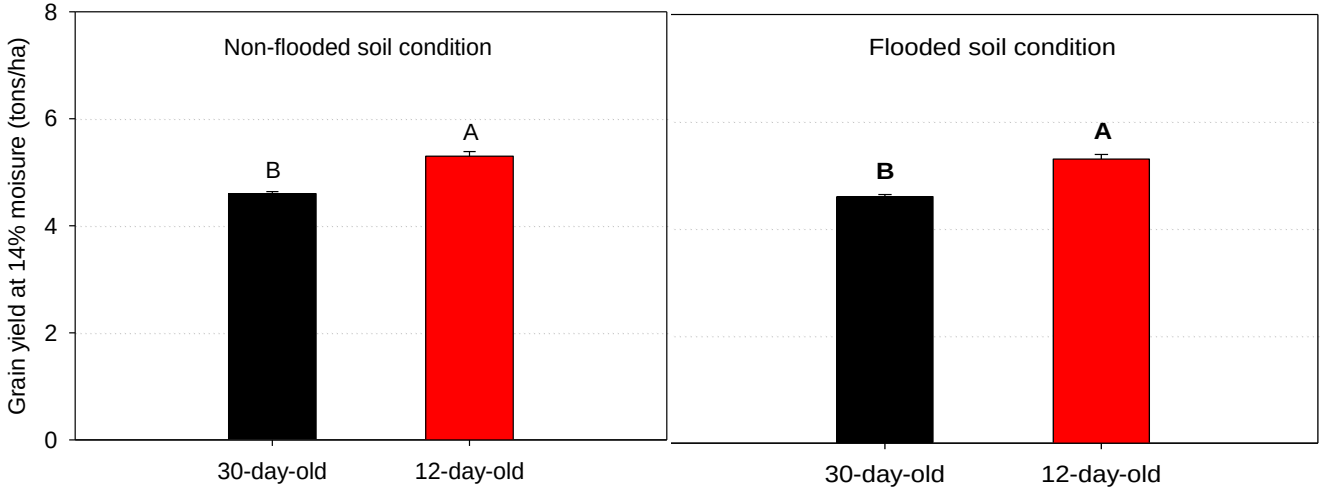
R E S U L T S

Rice yield (tons/ ha) wet season 2006

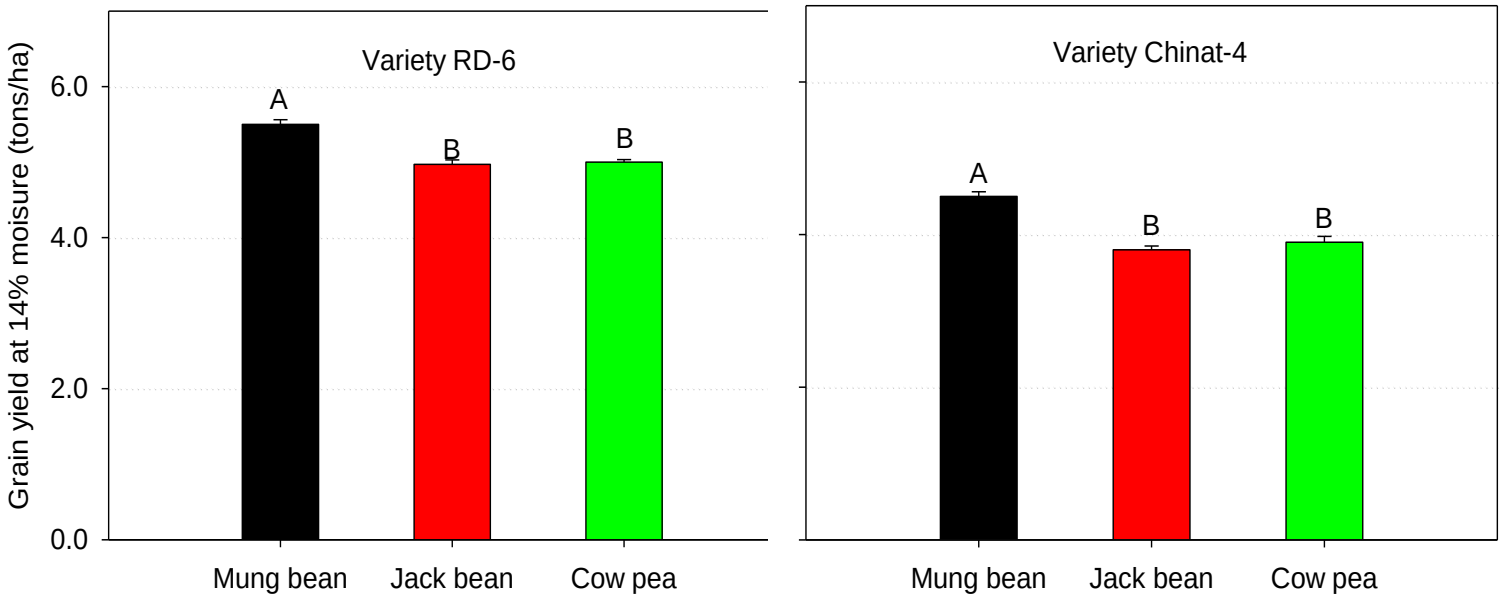


Seedling age effect

Rice yield (tons/ ha) dry season 2007



Green mulch and rice yield



Rice grain yield under non-flooded soil condition when intercropped with different mulch species of legumes (Mung bean, Jack bean and Cow pea)

Farmers sharing their learning at the International Forum for Water and Food (IFWF), Laos, 2006

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CPWF-SG-504 contd.

Documents:

Mishra, Abha. 2006. Increasing water use efficiency by using mulch under SRI management practices in Northeast Thailand. Paper presented at the CGIAR Challenge Program on Water and Food Forum, November 12-16, in Vientiane, Laos. (68p., 866KB pdf)

Salokhe, V.M., P. Kumar and A. Mishra. 2007. Increasing Water Use Efficiency by Using Mulch under SRI Management Practices in Northeast Thailand, Participatory Action Phase (July.- Dec. 2006). CPFW, AIT and TEF, Bangkok. *System of Rice Intensification* website. (40 p., 2.13MB pdf) [Challenge Programme for Water and Food (CPWF)-funded Small Grant Project No. 504]

Available at: http://sri.ciifad.cornell.edu/countries/thailand/index.html

Video: Available at: http://www.youtube.com/watch?v=b31LgNMu-hg

Thailand: Surin & Roi-Et province (CS0-CGIAR pilot project)



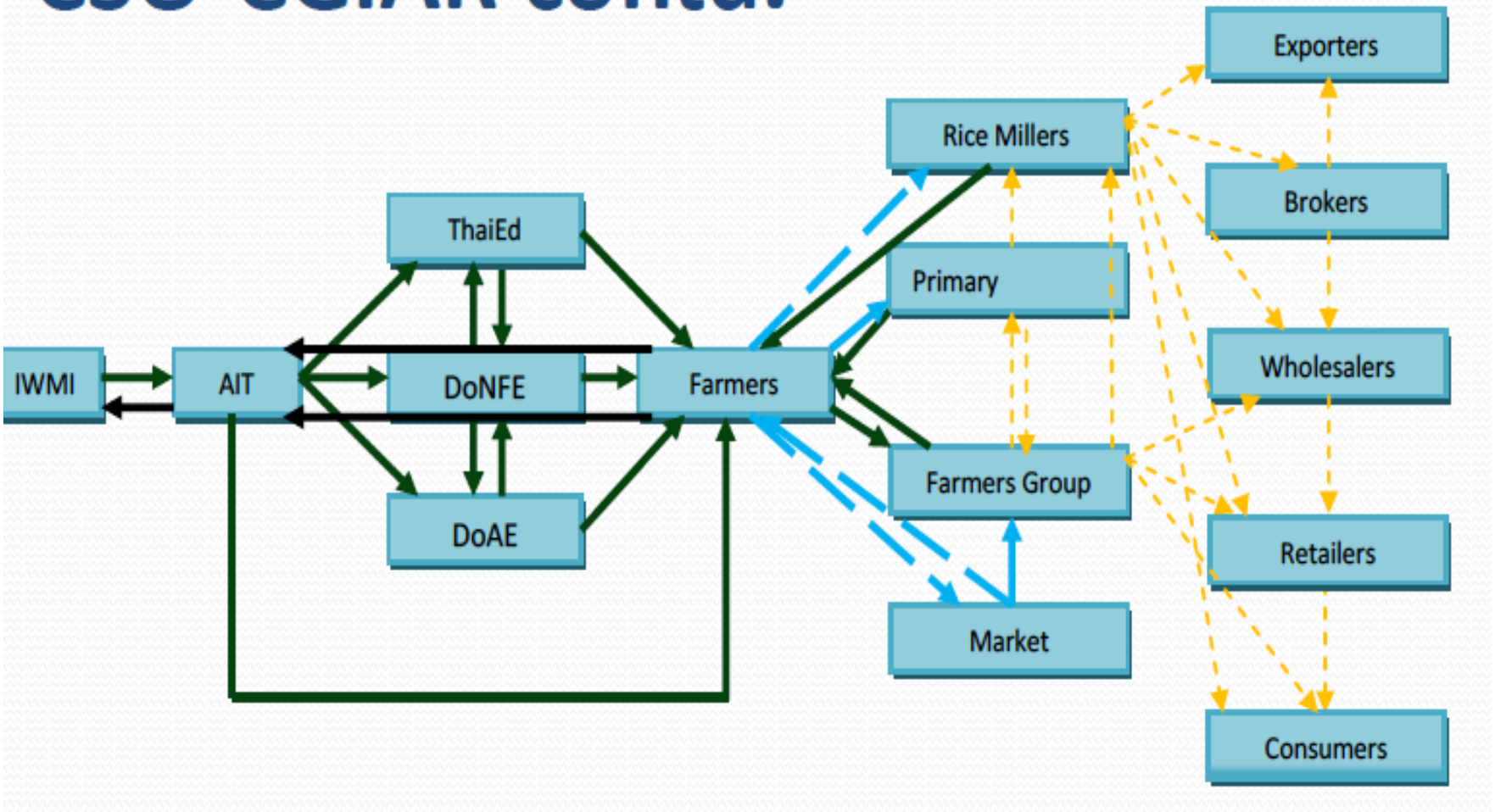


Rejuvenating soil with bentonite + legumes for enhancing water use efficiency and soil fertility status using FFS approach

see at: http://www.cgiar.org/csos/cso_cgiar_grant_program.html)

IWMI International Water Management Institute

CSO-CGIAR contd.



Mishra, A., Kumar, P. and Noble, A. (2012) Assessing the potential of SRI management principles and the FFS approach in Northeasr Thailand for sustainable rice intensification in the context of climate change, International Journal of Agricultural Sustainability, DOI:10.1080/ 14735903.2012.658648

Thailand: Ratchaburi province, Central Thailand (APFED Showcase 2008)

Community preparedness for climate change and increased water use efficiency for rice cultivation using principles of System of Rice Intensification (SRI) in Central Thailand

http://www.ait.ac.th/news-and-events/2010/news/climate-friendly-rice-production-demonstrated-in-central-thailand/view

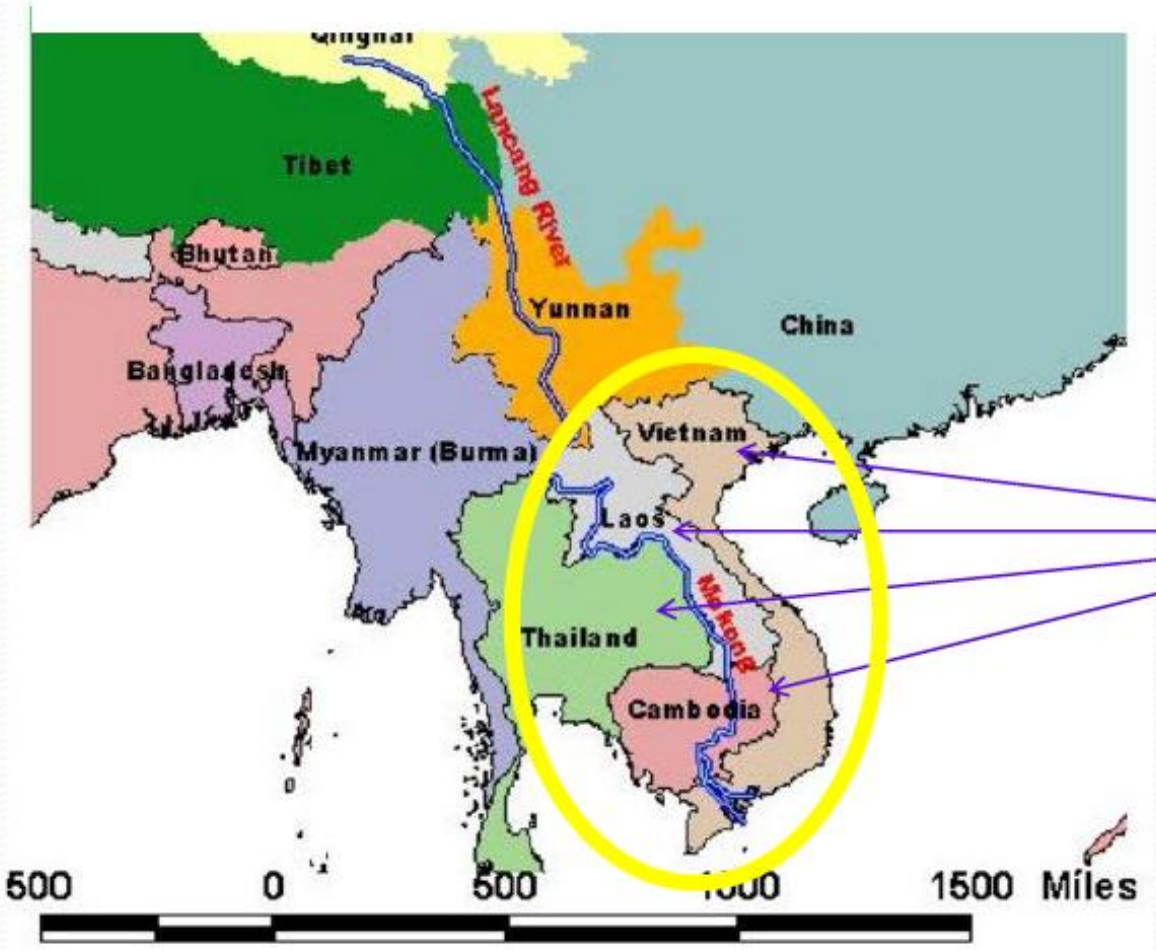
UNEP

ASIAN INSTITUTE OF TECHNOLOGY 1959

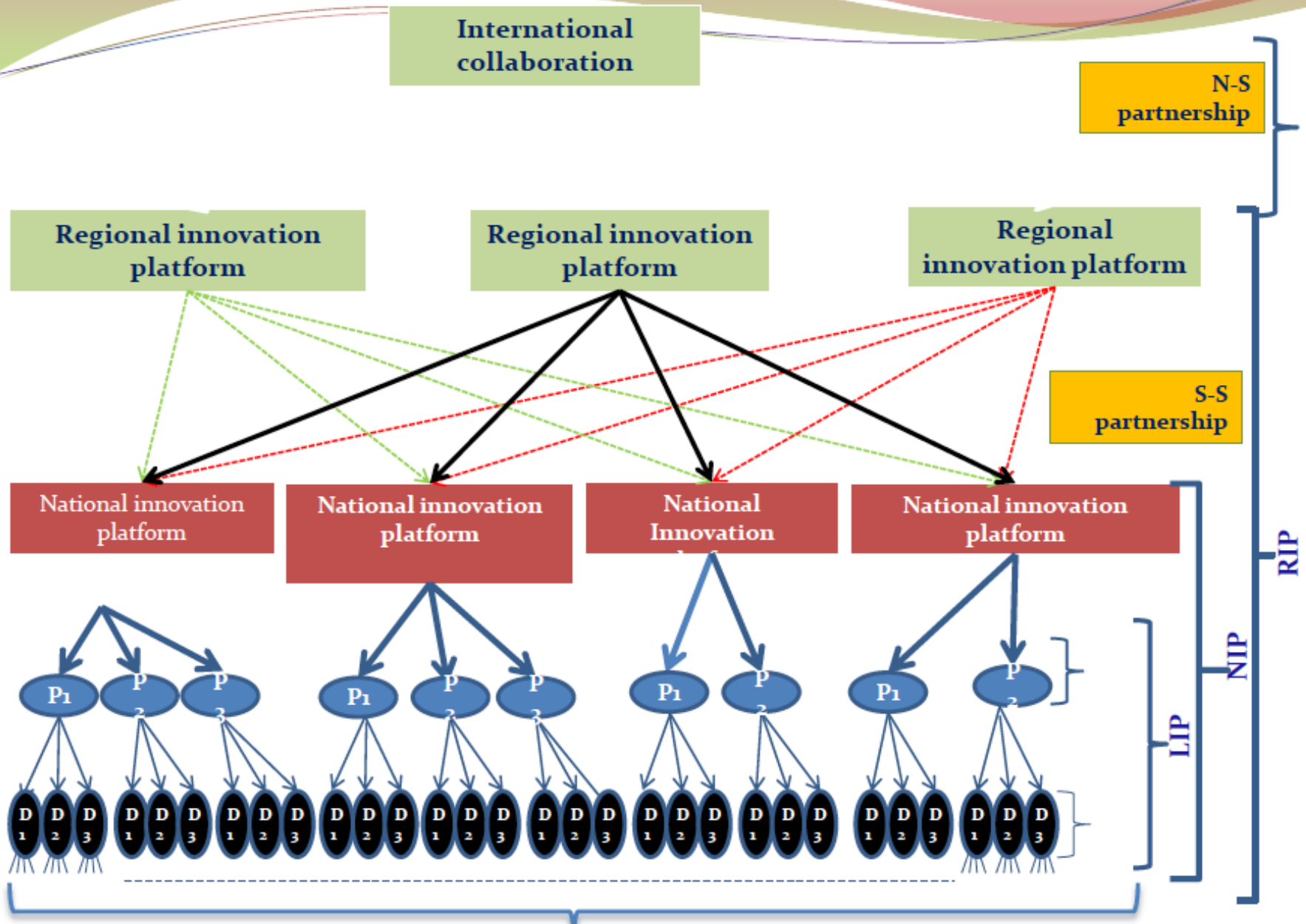

SRI


แผนผังแปลงเรียนรู้ FFS


แผนผังแปลงเรียนรู้
SRI
SRI


Tibet
Bhutan
Bangladesh
Myanmar (Burma)
Lancang River
Yunnan
China
Vietnam
Laos
Mekong
Thailand
Cambodia
500
0
500
1500 Miles

Future plan


International collaboration
N-S partnership
Regional innovation platform
Regional innovation platform
Regional innovation platform
S-S partnership
National innovation platform
National innovation platform
National Innovation
National innovation platform
RIP
NIP
LIP

Take-home message (contd.)

- ✓ Useful for developing ‘hybrid technology’
- ✓ Linkage between a participatory research project and national and international research organizations would be useful for institutionalization and sustainability of such action research approaches.
- ✓ Verification and documentation of the results

SUSTAINABILITY

Value added production alternatives and better incentive for IPM-SRI farmers are needed to ensure wider adaptation

"GERAKAN INSAN LESTARIKAN" ALAM
GILA... GILA...

thanks

... For your kind attention

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