

Participatory modeling for managing rice varieties and seed system in lower northeast Thailand

The situation

- The government has been successful in disseminating a few rainfed lowland rice (RLR) varieties (KDML105, RD 15 and RD6) across lower northeast Thailand. Generally, a loss of rice biodiversity is observed but other traditional or introduced varieties are still being grown at some locations.
- The RLR seed supply system is mostly controlled by government agencies emphasizing the production of seeds of a few recommended varieties. To grow other varieties, farmers depend mainly on seed exchanges among themselves.
- The inadequate supply of quality seeds of dominant RLR varieties led to the emergence of several new seed supply agents with government support.



Objectives

- To understand farmers' needs and decision-making processes concerning RLR varieties and seed requirements in lower northeast Thailand.
- To identify the current problems of the regional rice seed supply system as it is integrating an increasing number of operators.

Methodology

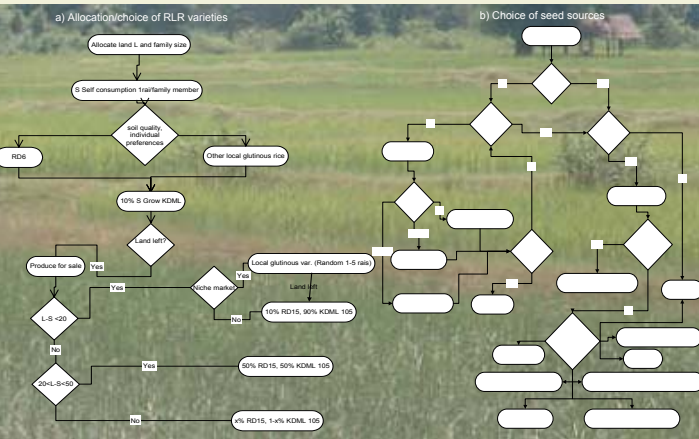


- Meetings among researchers from different institutions - Office of Agricultural Research and Development IV (OARD-IV), Ubon Ratchathani University (UBU), Ubon Ratchathani University (UBU), Rice Research Institute (RRI), and International Rice Research Institute (IRRI)-was used to design a conceptual model of the system under study by using Unified Modeling Language (UML) diagrams.
- A farm survey in Ubon Ratchathani Province (258 farmers in 25 districts) and interviews with key informants from organizations involved in the RLR seed system.

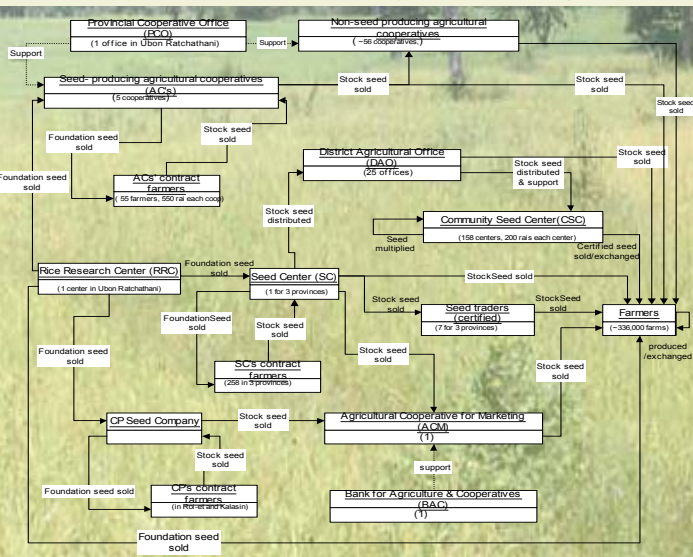
- Model verification, validation, and facilitation of communication among stakeholders is done through role-playing games followed by individual interviews of players and focused group discussions to analyze linkages between the game and their real circumstances.

Conceptual models

- A first model represents farmers' decision-making processes regarding: a) the selection and allocation of a combination of RLR varieties to their fields, and b) how farmers manage RLR seeds and choose seed suppliers for each variety.

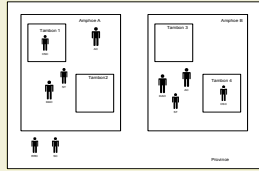


- A second structural model displays the relationships among stakeholders in the RLR seed systems and the flow of different types of seeds among them.



Design and use of role-playing games

- Two role-playing games (RPG) corresponding to the conceptual models prepared by the research team were built to facilitate their discussion and improvement with stakeholders.
- Gaming sessions with the first RPG were organized at two different locations with farmers living either close to key seed production agencies or in more remote areas. A board displaying upper, medium and lower paddies and different farm sizes was used and farmers could choose different sources of seeds.



- The second RPG simulates the production and exchange of seeds among suppliers at the provincial scale. Two districts, each made of two sub-districts (village clusters growing RLR on 160 ha) are located in the gaming room. Representatives from different institutions plan their productions and exchanges under conditions given by the game moderator.

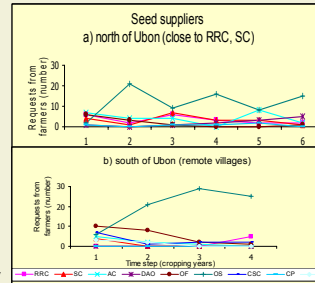


- The farmer demand for seeds from each organization is generated by a computer using data from the farm survey. A group discussion follows each gaming session to criticize the model.

Preliminary results

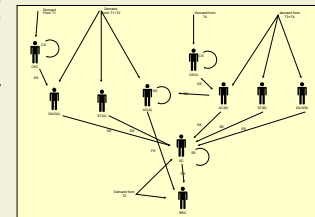
Farmers' decision-making

- The production of glutinous rice for family consumption is a priority: need for early maturing varieties to fit different water regimes and labor exchanges, and good seeds to guarantee high grain quality after cooking and higher farm gate prices.
- Major factors influencing the choice of seed suppliers are seed quality and accessibility (distance or social network).
- Villages located in remote areas use a higher diversity of varieties compared to farms located close to seed production centers.
- There is little information sharing among farmers on rice varieties and seed supply.



Seed supply system

- Seed production and supply is strongly centralized with policy and annual plans decided at the Department of Agriculture headquarters.
- Plans for seed production are prepared routinely according to budget availability and institutional constraints, with inadequate feedback from farmers and their demand.
- Opportunities for stakeholders to meet, coordinate, and plan together are rare.
- Foundation seeds produced at high costs by RRC are not properly used. Better production plans and distribution of stock seeds produced by Seed Centers and Agricultural Cooperatives are needed. The production of certified seed at low cost by Community Seed Centers requires more technical support, quality control, and marketing.



Perspectives

- The lack of proper communication and flow of information on RLR varieties and seed suppliers among stakeholders at local and regional levels can be improved by participatory modeling sessions.
- The RLR seed supply system can be improved through concerted planning by concerned stakeholders at both local and regional scale to improve linkages between farmers' needs and government support.
- A multi-agent model of this seed system will be built to assess scenarios of changes to improve the current situation with all concerned stakeholders.



Authors and institutions

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