

RWC Socio-economic Planning Meeting

23-24 May 2002

National Centre for Agricultural Economics and Policy
Research (NCAP)
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The Inaugural Session

The inaugural session was **chaired by Dr. J S Samara**, Deputy Director General (NRM), Indian Council of Agricultural Research. Dr. R L Yadav welcomed the delegates for attending the workshop. In his welcome address, he briefed about the technology intervention, particularly zero tillage, in the rice-wheat system of the Indo-Gangetic plains. He emphasized the need for socioeconomic and sustainability issues in technology adoption. He urged the group to address to provide some methodologies to measure the total factor productivity and unsustainability issues in the system.

Dr. Mruthunjaya also welcomed all the delegates from 5 CGIAR institutes and 3 National Agricultural Research systems. He thanked the RWC for facilitating the process of strengthening socioeconomic research particularly in the rice-wheat system.

Dr. Peter Hobbs gave some introductory remarks, and raised following issues:

- Food security is major challenge despite of large stock of rice and wheat in the system because population is rising.
- Globalization has thrown more challenges of reducing unit cost, raising profitability and diversification.
- Weather uncertainty (e.g. drought or flood) is adversely affecting the production and profitability.
- Growth in TFP is declining. In long-term trials the quantity and quality of natural resource is deteriorating and productivity levels are falling. The issue of adapting appropriate methodology in analyzing is very critical to demonstrate the effects of technological intervention in quality and quantity of natural resources.
- Global warming and green house effects are becoming important.
- RWC has introduced new technologies, which are characterized as resource-conservation, low-cost and yield-enhancement. These are contributing in conserving water and crop residue. There is a need to critically assess the benefits of these resource conservation technologies, identify the beneficiaries, and evaluate the distribution of benefits, and examine constraints in larger adoption. The role of private sector is to be examined for dissemination of improved technologies and see what preventing them in venturing in such technologies.

- In a changing environment of declining research resources and global economic environment, there is a need for working together more professionally with different partners.

Dr. Prabhu Pingali briefly reviewed the objectives of the meeting. He appreciated the contribution of Dr. Peter Hobbs in the RWC. He mentioned that this meeting is the follow-up of the Kathmandu meeting in 1998 to further strengthening the socioeconomic research. He raised following issues:

- The external environment has radically changed since the last meeting. The economies are opening-up as a consequence of the World Trade Organization.
- Small farmers are growing in number and see tremendous changes. How to sustain their livelihood. A different research approach is needed for small holders.
- Agricultural research community is facing more complex challenge of sustaining profitability of rice and wheat in the system. Large emphasis is needed on long-term sustainability of farm system. For sustaining the sustainability of the system, fall in unit cost should be faster than the output prices.
- Degradation of natural resources was due to the consequence of intensification of rice and wheat.
- The competitive environment is compelling changes in the input-output price policies, particularly fertilizer, power, water, and so on. Under changing price policies, we expect improved input use efficiency.
- Even the price structure change, technology must improve for enhancing the input use efficiency. Here comes the role of resource conservation technologies.
- There is a need to assess how the unit cost of production is declining, what is the pace of adoption, and what are the constraints in larger adoption.
- Pressure on rice wheat will continue due to high population growth, high demand for food, and rise in income. The region is witnessing very low level of per capita calorie consumption. Livelihood of poor can be raised through enhancing the productivity of the major crops, namely rice and wheat.
- Technologies and policies should result a win-win situation, which raise productivity and conserve resources.

Dr. Pingali felt that this meeting would provide an excellent opportunity to enhance the social science research in RWC. We need to list and prioritize the social science issues. The need is to assess the changes taking places at micro level as a result of macro level changes.

He also expressed thanks to NCAP for agreeing to host the workshop.

Dr. J S Samra joined previous speakers in welcoming the delegates for CG system and NARS. He raised following issues:

- Public investment in agriculture is declining, while that of private is rising in the RWCS.

- The Government of India has announced the disinvestments of fertilizer industry, which will have implications on fertilizer prices. Research must address the issue.
- Diversification of agriculture in favor of agro-forestry (especially popular) is promising.
- There is need to develop appropriate methodologies for measuring the benefits of technology intervention on resource conservation.

On behalf of Dr. Panjab Singh, DG, Indian Council of Agricultural Research, he expressed following:

- Poverty driven migration is throwing enormous burdon of rural women in South Asia region.
- Technologies of rice and wheat need to be improved as there are evidences of declining partial and total factor productivity.
- Past research and policies have generated surplus but ignored the issues of conserving natural resources. The biodiversity is extinguishing in the region besides several problems related to soil and water resources. There is urgent need to address the issue of residue management, micro-nutrient management, declining water table, excess use of herbicides.
- Zero tillage and bed planting are water and herbicide saving technologies, which also raises the crop productivity.
- There is a need to incorporate legumes in the system.
- Participatory research by CG Centers, NARS and farmers can not be ignored for enhancing productivity and conserving natural resources.
- Galaxy of biophysical and economists will help in addressing the issues of the system

Dr. Raj K Gupta thanked all the delegates and all those contributed in organizing the meeting. He particularly thanked Dr. Panjab Singh, Dr. J S Samra for providing all support from the Indian Council of Agricultural Research, and to Dr. Mruthyunjaya, Dr. R L Yadav and Dr. P K Joshi for extending all support in organizing the meeting. In his vote of thanks, he submitted following issues:

- How to address global environment changes? How livelihood of farming community is improved? How farmers are adjusting to new changes.
- How diversification contribute in addressing the sustainability issue of the rice-wheat system.
- Rice wheat market is changing.

Presentation of Research Working Groups (M.Miller)

1. Adoption and impacts of resource-conservation technologies.

2. Constraints to diversification of rice-wheat cropping systems.
3. Farm level impacts of the changing macro-policy environment.
4. Environmental and natural resource issues.

Questions after presentation of Dr. Miller

1. In terms of diversification, may be diversification of cultivators as well as crops.
2. Capability to address the issues identified.
3. What can we do in terms of research on biodiversity: Also have to address issues of conflict between different policies.
4. Does diversification also include technological diversification as well as crops?
5. Change title of #z to “rice-wheat farming systems”.
6. How did farmers adopt technology to their own needs? How did they use the benefits they obtained? Need to include animals and other non-crop benefits in looking at diversification.
7. Socio-Economic impacts can only be measured after diversification. Before that we have to understand why farmers do not diversify?
8. Problem of qualification of impact: especially returns to the entire systems, not just a single crop analysis.
9. It will be necessary that some research will cut across the themes we have, but they are alright as starting points.
10. Rainfall is very critical factor in determining the extent of diversification. With less rainfall farmers in Nepal rely on wheat, but can diversify with some rainfall. Longer duration crops make it harder to diversify.
11. Concern that the issues more oriented to Upper Gangetic Plains.
12. Need to decide which environmental issues we shall focus.
13. RCTs cover a wide range of technologies actually covers all parts of Gangetic Plains.
14. What changes occur in Socio-economy of households, particularly if spends less time on basic rice-wheat farming. Also need to see how this affects the role of women.
15. Feel that research group # is more methodological and should be integrated into the other three themes.

What are the potential advantages and disadvantages of coordinating socio-economics research activities across multiple RWC sites?

Potential advantages:

- Allows standardization of definitions and concepts
- Allows standardization of research methods
- Allows collection of larger and more consistent data sets
- Facilitates cross-site (and cross-country) comparisons
- Facilitates technology targeting, identification of potential spillovers
- Improves research quality control

Potential disadvantages

- Some research issues are site-specific
- Coordinated research implies additional costs (cross-site coordination)

Cross-cutting research themes identified by workshop participants

Theme #1: Adoption and impacts of resource-conserving technologies

Points presented for this theme

What RCT's?

- Tillage
 - Zero-tillage
 - Minimum tillage
 - Surface seeding
 - Bed planting
 - LCC, Precision land leveling, IPM
- Water related technologies examples:
 - Land leveling/consolidation
 - Watercourse improvements
 - Use irrigation water to make better use monsoon rains.

Objectives

- Adoption
 - Ex Ante & Ex Post, Extent, Who is/isn't adopting?
Key incentives, constraints, local adaptation
- Impacts
 - Profitability (farm level) ↑outputs ↓inputs
 - Use of income gains? Time savings
 - Poverty alleviation (distributional aspects) –
who benefits
 - Environmental impacts (water, soil)

Expected outputs

- Document adoption (also modification)
& quantify impacts
- Identify constraints and key incentives
 - Database (adoption indicators)
 - Strategies for promoting dissemination, including policy measures
 - Implications for future research
 - Cross site comparison and synthesis

Activities

- Six sites interested
- Need to identify contact person for each site
- Prepare work plan based on template
 - Area coverage

- Methodology

Sampling strategies

- What RCT?
- Extent of adoption estimated indirectly (e.g., by random sample equipment use and then numbers sold).
- Adoption or Impact objective? Adoption first year.
- Pre-stratified – adopters/non-adopters (but non-adopters must know about technology)
- How choose sample?
 - Farm size, soils, where on watercourse, etc.
 - How randomly select farmer?
- Sample size: Minimum number adopters = 40; 160 adopters if available, 40 non-adopters.

Potential Criteria for selection

- Farm size
- Cropping pattern
- Soil type
- Water regime – source, where on the command, quality.
- Tractor owner (?)

Questionnaire

- Exchange existing questionnaires
- Simplify
- Data
 - Household characteristics
 - Resources
 - Farming activities, cropping pattern
 - Experience and history with technology, adaptation
 - Impacts – RCT costs and benefits (partial budgets)
 - Use of ↑ income, time savings (men/women).
 - Environmental impacts (changes and resource use)

Potential research questions:

- What has been the extent of adoption of RCTs (area, number of farmers)?
- What are potential constraints to adoption?
- What have been the productivity gains associated with adoption?
- What have been the economic benefits associated with adoption?
- What have been the environmental impacts associated with adoption?

- Who has benefited from adoption (large farmers vs. small farmers, wealthy farmers vs. poor farmers, favored environments vs. marginal environments, landowners vs. landless laborers, men vs. women vs. children, etc.)
- Will use of RCTs be sustainable over the longer term?

Theme #2: Constraints to diversification of rice-wheat cropping systems

Potential research issues:

- What non-cereal crops can be introduced profitably into traditional rice-wheat cropping systems?
- How does the profitability of traditional rice-wheat cropping systems compare to the profitability of more diversified systems?
- Are traditional rice-wheat cropping systems more risky or less risky than diversified systems?
- What are the potential constraints to introduction of alternative crops?
- How will the facilitating environment have to change in order for farmers to diversify (i.e., what changes will be needed in farmer education, extension, inputs supply, price policy, marketing systems, etc.)

Theme #3: Farm-level impacts of the changing macro policy environment

Points presented for this theme

1. Inter-regional Competitive Advantage

- a. Inter-regional comparison of competitive advantages (DRC component)
- b. Documentation and review of changes in policies during 1990s
- c. Site-level analysis of opportunities of reducing unit cost of production
- d. Impact of changes (cost and non-cost factors) on income stabilization and house hold food security Poverty and nutrition issues
- e. Regional analysis of price behaviour of rice wheat system

2. Impact of Input Policy Changes on Micro-production decision and productivity

- a. Impact of changes in policy on
- b. Fertilizer, water and power tariff on production decision, and
- c. Profitability (micro-level analysis)

- d. Analysis of profitability under rice wheat technology under different input pricing scenarios.

3. Opportunity cost of labour and changing patterns of labour use

- a. Farm employment opportunities
- b. Non-farm employment opportunities

Potential research questions:

- How will domestic rice and wheat prices change with the opening of national economies? How will the farm-level profitability of rice and wheat production be affected? How will farmers respond? What will be the aggregate (system-level) consequences?
- How will prices of purchased inputs (e.g., fertilizer, seed, crop chemicals) change with the opening of national economies? How will the farm-level profitability of rice and wheat production be affected? How will farmers respond? What will be the aggregate (system-level) consequences?
- How will prices of machinery (including power) change with the opening of national economies? How will the farm-level profitability of rice and wheat production be affected? How will farmers respond? What will be the aggregate (system-level) consequences?
- How will the availability and cost of land in rice-wheat areas change with the opening of national economies? How will the farm-level profitability of rice-wheat cropping systems be affected? How will farmers respond? What will be the aggregate (system-level) consequences?
- How will the availability and cost of labor in rice-wheat areas change with the opening of national economies? How will the farm-level profitability of rice-wheat cropping systems be affected? How will farmers respond? What will be the aggregate (system-level) consequences?
- How will the availability and cost of credit in rice-wheat areas change with the opening of national economies? How will the farm-level profitability of rice-wheat cropping systems be affected? How will farmers respond? What will be the aggregate (system-level) consequences?
- How will food security at the household level change with the opening of national economies?
- How will food security at the regional and national levels change with the opening of national economies?

Theme #4: Environmental and natural resource issues

Potential research questions:

- What key resources should socio-economics researchers be worrying about? Water? Soils? Atmosphere? Genetic resources/biodiversity?
- What easily measurable quantitative indicators can and should be monitored over the longer term to determine the state of environmental health?
- What methods are suitable for assigning value to quantitative or qualitative changes in the natural resource base?
- How can environmental impacts of new technologies be measured?
- What policy options are available for “internalizing” positive and negative environmental externalities associated with rice and wheat productions?

Diversification of Rice-Wheat systems

Key Questions:

1. What are a pattern, extent and scope of diversification and farmers perception?
2. Understanding the facilitating environment: who generates the technology and how it is disseminated to farmers.

Objectives:

1. Document and quantify the process of diversification and its dynamics. (Short-term immediate within 12 months).
2. Remove identified constraints for improving rice-wheat based Systems sustainability (long-term: after 12 months).

Activities:

- 1.1. RRA/PRA survey at 6 sites.
- 1.2. Data analysis and report writing.
- 2.1. Semi-structured interviews of key-players: researchers, traders, policy makers, NGO'S etc.
- 2.2. Data analysis and report writing.

Output:

1. Status report for each site and then comprehensive analytical report across sites.
2. Concept note developed.

Time Line: 12 Months

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Activities to be done in the coming year

Activities

Months

1 2 3 4 5 6 7 8 9 10 11 12

Questionnaire Development ←-----→

Collection of Surveys ←-----→

Data Input ←-----→

Data Analysis ←-----→

Orientation to data collectors ←-----→

Report Writing ←-----→

Concept Note ←-----→

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