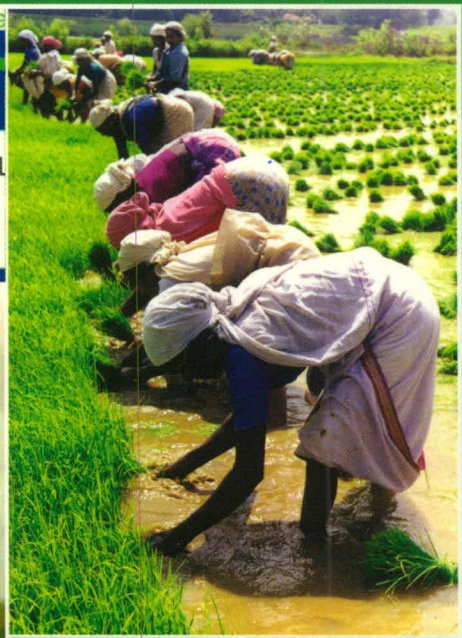




rice is life
INTERNATIONAL
YEAR OF RICE
2004



Gender, Rice and Food Security

a report on the IYR programmes

M S Swaminathan Research Foundation

Gender, Rice and Food Security

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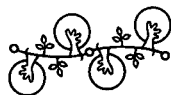


M S Swaminathan Research Foundation

MSSRF/PR/05/57

M. S. Swaminathan Research Foundation

January 2005



M. S. Swaminathan Research Foundation

Centre for Research on Sustainable Agricultural and Rural Development

3rd Cross Street, Institutional Area
Taramani, Chennai – 600 113, INDIA.

Tele: 91 44 22541229; 22541698

Fax: 91 44 22541319

Email: executivedirector@mssrf.res.in

www.mssrf.org

FOREWORD

The year 2004 has been designated by the United Nations as the International Year of Rice in recognition of the pivotal role rice plays in the food, livelihood and ecological security systems of many countries in Asia, Africa, and Latin America. Rice is also an important crop in the Mediterranean Region of Europe and in Southern United States. In India, rice occupies over 40 million hectares under conditions of varying latitudes and altitudes. The importance of rice in food and livelihood security is likely to grow in the future, if as a result of global warming there are adverse alterations in temperature, precipitation and sea level.

The First International Year of Rice was commemorated in 1966. I was then the Convener of the IYR Program of the Government of India and had helped to organise numerous national demonstrations all over the country on methods of raising the productivity, profitability and sustainability of major rice farming systems in the country. This was before the onset of the green revolution era which formally began in 1968.

During 2004 the M S Swaminathan Research Foundation organised a series of Consultations and Workshops in different parts of the country in collaboration with other interested organisations like the Kerala Agricultural University and the ICAR Research Complex in the North East Region. The discussions covered a wide range of issues such as shaping the future of rice through harnessing the tools of molecular genetics, the revitalization of the cultivation of medicinal rices, the gender dimensions of rice farming systems and the role of tribal women and men in the conservation and enhancement of rice genetic resources. Brief summaries of the conclusions of these workshops are contained in this publication.

MSSRF also organised with generous support from TIFAC (Technology Information, Forecasting & Assessment Council) a detailed business plan for establishing Rice BioParks for the purpose of preparing a wide range of products from the rice biomass, like straw, bran and husk. This will help to generate additional livelihoods and income in rice farming areas. We produce nearly 400 million tonnes of rice biomass every year. There are untapped opportunities in preparing value added products from rice biomass. I hope all rice growing States will take advantage of this Business Plan and establish Rice Bio-Parks with the help of agricultural and home science graduates and all those trained in improving post-harvest technologies.

I hope this publication will help to launch an Ever-green Revolution in Rice Farming Systems based on the principles of ecology, economics, social and gender equity and employment generation.

I wish to record our sincere appreciation to all organisations, national and international, without whose generous support the workshops / consultations described in this publication would not have been possible.



M. S. Swaminathan

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INTRODUCTION



Rice is the predominant staple food for more than half the world's population, and provides 20% of the world's dietary energy supply. It is also a good source of micronutrients, and forms an essential element of the culinary, ritual and spiritual traditions of many cultures. Indeed, rice is life.

The UN General Assembly has declared 2004 as the **International Year of Rice (IYR)** with the theme 'Rice is Life' in order to focus attention on improved production and access to this vital food crop, which feeds more than half the world's population and provides income for millions of rice producers, processors and traders. Yet rice farmers are among the poorest, often subject to risk and uncertainty and struggling for a livelihood. Development of sustainable rice-based systems involving value addition to every part of the biomass can help reduce hunger and poverty; and contribute to environmental conservation and a better life for present and future generations.

In commemorating the International Year of Rice, the UN envisioned rice as the focal point through which the interdependent relationships among agriculture, food security, nutrition, agrobiodiversity, the environment, culture, economics, science, gender and employment can be clearly viewed. The IYR was intended to foster a collective approach towards resolving the increasingly complex issues that affect the sustainable development of rice-based production systems. This has important technical, political, economic and social dimensions including enhancing the role of rice in meeting human needs.

In India, rice cultivation is a farming system spread over large areas. A way of life for rural communities for centuries, it still remains the crop produced for self-consumption by millions of people in the rain-fed as well as irrigated areas. Rice covers 25 percent of the gross cropped area and provides about 43 percent of the food grain production, being the staple food of millions. Developments in rice livelihood systems hence have profound influence in the realms of ecology, economics, employment, food security and gender and social equity.

Rice grows under a wide range of environmental conditions and in all parts of the country. Staple to over 50% of India's population, it is the backbone of the ecological and livelihood security systems in several parts of the country. India is also rich in rice biodiversity. The entire Northeastern region and Koraput district of Orissa, for example, are major centers of genetic diversity in rice in the world. Yet the average yield of rice is low in many parts of the country and the untapped yield reservoir even with existing technologies on the shelf is high. Also, rice production is paradoxically associated with poverty.

Over the years there has been a massive decline in the number of traditional rice varieties. The loss of this rich biodiversity is largely due to the replacement of traditional varieties by high yield varieties. This replacement denudes the local knowledge base and the genetic base built over time.

MSSRF commemorated the year and attempted to spread awareness by a series of events addressing two important aspects: one, at the scientific level examining the future of rice in the light of developments in the field of biotechnology and the other at the wider societal level in the context of the importance of rice in livelihood and food security.

Of the five events organised, one was a national scientific colloquium and there were four events on the theme – “**Rice, Gender and Food Security**”, three regional workshops and a national interdisciplinary seminar at Chennai -

1. Theme: “Conservation of Rice Biodiversity”, Jeypore, Orissa – March 1–2, 2004.
2. Theme: “Molecular Breeding and Shaping the Future of Rice”, National Colloquium, Chennai – March 12–13, 2004.
3. Theme: “Medicinal and Aromatic Rices of Kerala”, Pattambi, Kerala – August 20–21, 2004.
4. Theme: “Gender Concerns and Food Security Issues in Rice Livelihood Systems in India: Challenges and Opportunities”, National Seminar, Chennai – September 2–4, 2004.
5. Theme: “Rice Heritage of the North-East: Challenges, Opportunities and Strategies for the Future”, Shillong, Meghalaya – November 5–6, 2004.

The scientific colloquium addressed the research community and the agenda that emerged also targeted them. The inter-disciplinary seminar addressed academics and policy makers at all levels, and the outcomes have already been widely circulated as an input for change. The three regional workshops brought together a wide spectrum of stakeholders on specific regional issues and attempted to develop a holistic perspective and agendas for the various players.

We are deeply indebted to the following without whose generous support the series of events would not have been possible.

Food and Agriculture Organisation (FAO); Department of Biotechnology, Government of India; Planning Commission, Government of India; XV Genetic Congress Trust; MAHYCO Research Foundation; World Food Programme (WFP); Institute of Bioresources and Sustainable Development; National Medicinal Plants Board.



CONSERVATION OF RICE BIODIVERSITY

a regional workshop

in partnership with Koraput District Administration

Jeypore, Orissa

March 1-2, 2004

The aim of the workshop was to bring together scientists, researchers, government officials on the same platform with local non-governmental organizations, traders' associations, farmers' groups, parastatal organizations, banks and funding agencies and to discuss strategies for networking and synergy for further initiatives. This was also expected to drive home the need for inter-cultural and inter-disciplinary dialogues on the theme.

DISCUSSIONS

The discussions in the technical session centred on:

- Production constraints in rice farming specific to the region like severe soil erosion, soil acidity, biotic stress, lack of drought-tolerant varieties and measures to curb these problems.
- The origin, conservation and strengthening of traditional rice varieties, the number of which are dwindling at a very fast rate.
- Participatory plant breeding cum conservation to renew and multiply genes and seeds and the effectiveness of refined methods of cultivation like line sowing, optimal seed use and land preparation to increase the yield of rice varieties.
- The significance of the gene-seed-grain bank continuum to address the problems of food security of small and marginal farmers, and tide over crises during natural calamities.
- The problems of Koraput district such as migration, population pressure, declining soil fertility, forest degradation, ecological imbalance and issues of land rights.
- The sustained cultivation of indigenous varieties of aromatic rice and its relation to efficient seed production technology and convergent breeding techniques using diverse germplasm of assured quality and resistance.
- The role of the State in making agriculture more viable for the poor.
- Issues of marketing.

- The problems of commercialisation of agriculture in the current era of globalization and the impact on small and marginal farmers.
- The important role of women in preserving seeds, conserving agro-biodiversity and in rice production as a whole.
- The need for Government support to small farmers in the production of varied crops, most importantly food crops like *ragi* and millets to ensure food and nutrition security at the village level.
- The new legislation on Protection of Plant Varieties and Farmers' Rights (PPVFR), which perceives the farmer as the cultivator, conserver and breeder of plant varieties and safeguards the overreaching rights that farmers have on all traditional, modern and wild varieties.
- Scientists must move from being preoccupied with the physical and technical constraints alone to a more holistic perspective.
- The need for all academic disciplines to come together towards the specific cause of ensuring food security, conservation of agro-biodiversity, and recognizing and addressing the invisible role of women in the whole cycle.

The focus on the second day was on horizontal learning through people-to-people interaction. Tribal farm men and women shared their experiences on community gene-seed-grain banks, crossing technique in local rice varieties, storage and preservation of seed and grain, soil and water conservation and formal practices in local rice cultivation, and marketing. An exhibition showcasing methods and efforts in conservation, rice production, preservation and processing techniques and sale of local varieties of rice and value-added products, and tools and implements was included.

OUTCOMES

1. There is a need to strengthen participatory improvement in rice genetic enhancement and gene pyramiding using preferred landraces to conserve and enhance traditional varieties of rice.
2. It is necessary to promote widespread awareness of the two new Acts, PPVFR Act 2000 and Biodiversity (BD) Act 2002, for sustainable and equitable use and benefit sharing from biodiversity.
3. It is imperative to recognize the invisible yet vital role of women in rice farming systems in general and agro-biodiversity conservation and enhancement in particular and take this into account in planning.
4. The Gene-Seed-Grain Bank continuum needs to be popularised to promote conservation, tide over crises and address food scarcity. It can become the focal point for development

at the village level, since it links conservation, cultivation, consumption and commerce in a mutually reinforcing manner.

5. The Koraput district of Orissa has a very complex cropping system because of erratic weather and dependence on rainfall; in order to minimize the risks, a mixed cropping system and crop diversification are essential for food security at the village level.
6. Cropping systems have to be studied and understood at the micro-level. It is essential to understand the culture, food habits and way of life of communities before trying to introduce a new cropping system and look at opportunities for improving current practices and processes instead of changing them.
7. Economic benefits are not solely monetary but may also be in kind. There is a need for promoting the economic dimension of conservation efforts to ensure that communities benefit and have an added incentive to conserve.

Workshop on Conservation of Rice Biodiversity

March 1 – 2, 2004, Jeypore

Commemoration of International Year of Rice

Monday, 1st March 2004

- 10.00 – 11.00 hrs **Inaugural Session**
- Welcome: Mr. Bibhu Prasad Mohanty, Site Coordinator, MSSRF, Jeypore
- Introductory Remarks: Dr. M. Velayutham, Executive Director, MSSRF, Chennai
- Inaugural Address: Ms. Usha Padhee, District Collector, KoraputVote of
- Thanks: Ms. R. V. Bhavani, MSSRF, Chennai
- 11.00 – 11.20 hrs Tea / Coffee
- 11.20 – 13.20 hrs **Technical Session I - Rice farming system in Jeypore tract**
- Chair: Dr. S.D Sharma; Co-Chair: Dr. M. Velayutham
- Mr. Maharana, IMAGE: Rice Farming System in Jeypore Tract – History and Present Status
- Dr. B.C. Patra, CRRI: Conservation and Strengthening of Rice Genetic Resources
- Dr. V. Arunachalam, MSSRF: PPB – improved cultivation practices - Issues and concerns
- Mr. B. P. Mohanty, MSSRF: Rice Farming System and Gene-Seed-Grain Bank continuum
- 13.20 – 14.20 hrs Lunch
- 14.20 – 16.20 hrs **Technical Session II - Economic Stake in Conservation**
- Chair: Dr. V. Arunachalam; Co-Chair: Dr. M. Velayutham
- Dr. S.R. Das, OUAT: Aromatic and indigenous rice of Jeypore tract
- Dr. Pramod.C. Nayak, RRS, Jeypore: Conservation and Commercialisation
- Mr. A.R. Dutta, PD ATMA: Market Linkages - Problems and Prospects
- Ms. Vidhya Das, Agramee: Conservation, Gender and Food Security
- 16.20 – 16.45 hrs Tea / Coffee

16.45 – 18.00 hrs	Valedictory Session
Chair:	Ms. Mina Swaminathan
Keynote Address on Farmers' Rights:	Dr. S. Bala Ravi, MSSRF, Chennai
Valedictory Address:	Shri Rabinarayan Nanda, Minister of State for Water Resources, Govt. of Orissa
Summing up:	Ms. Mina Swaminathan, MSSRF, Chennai
Vote of Thanks:	Dr. A. Nambi, MSSRF, Chennai

18.30 hrs	Inauguration of Exhibition
	Mr. Rabinarayan Nanda, Minister of State for Water Resources, Govt. of Orissa

Tuesday, 2nd March 2004

10.30 – 13.30 hrs	Farmer to Farmer Interaction (Short informal sessions with breaks)
	Models from different Villages on – Formal methods of cultivation
	<ul style="list-style-type: none">● Soil and water conservation● Participatory Plant Breeding (PPB)● Gene-Seed-Grain Bank Continuum● Grain preservation and storage
	Exhibition open for viewing
13.30 – 14.30 hrs	Lunch
	Cultural events through the day
14.30 hrs	Exhibition continues



MOLECULAR BREEDING AND SHAPING THE FUTURE OF RICE

a national colloquium

MSSRF, Chennai

March 12 – 13, 2004

The aim of the colloquium was for the research community to review the progress made in molecular breeding in our country with specific reference to Genomics, Molecular Marker Technology, Stress Tolerance and Nutritional Enrichment, paving the way for identifying the prospects of biotechnology options in these two selected areas of national concern and developing strategies for improvement of productivity, quality, profitability and sustainability. The colloquium identified the opportunities for the safe and responsible use of recombinant DNA technology in rice improvement.

The colloquium was supported by the Food and Agriculture Organisation of the UN, (FAO) Department of Biotechnology, Govt. of India (DBT), XV Genetic Congress Trust and the MAHYCO Research Foundation.

DISCUSSIONS

In the context of the productivity gap, the need for strengthening all aspects of rice research, extension and development, was emphasised since rice farming systems will play an increasingly important role in strengthening India's ability to achieve a balance between human numbers and food requirements.

The following issues were highlighted:

- What nations with small farms and resource poor farmers need is the enhancement of productivity in perpetuity, without associated ecological or social harm. The green revolution should become an ever-green revolution rooted in the principles of ecology, economics and social and gender equity.
- Biotechnology can help in 'precision breeding', wherein with the help of molecular markers, genes can be introgressed more precisely compared to traditional breeding, thus reducing the time duration involved in varietal development.
- It has been estimated that annually in the world, there are about 7,50,000 reported pesticide poisonings with about 13,800 deaths. More than half of these poisoning cases and three-fourth of the documented deaths take place in the third world even though these consume only 15% of the world pesticide output.

- Biotechnology is a more precise extension of traditional plant breeding. It helps in transfer of the single gene that causes the desired trait; does not displace traditional technologies, rather it supplements and complements them; is eco-friendly; it transcends and impacts all facets of food chain from producer to consumer; and offers easy solutions for transfer of useful genes not only from wild relatives of rice but also from any genus/species thus transcending species/genus barriers
- Functional genomics and molecular breeding tools are required in priority areas which cannot be solved by traditional breeding. In rice breeding, many recalcitrant problems like breeding for stem borer, leaf folder, sheath blight resistances, introgression of yield contributing genes/QTLs etc., need to be immediately tackled by molecular breeding. Molecular markers are molecular landmarks linked to the locus/gene of interest and are used to identify, characterize and track the introgression of the gene/locus. Among the different molecular markers, DNA markers are the best
- Transgenic approach is useful with respect to the following traits: biotic stress resistance/tolerance, abiotic stress tolerance, nutritional quality improvement, and yield enhancement. Of these, stress tolerance and nutritional value addition are the two key areas of application, where maximum focus should be given.

OUTCOMES

1. Bridging the productivity gap

The first priority should go to tapping the underutilized yield reservoir, since to small and marginal farmers productivity improvement is a must for enlarging marketable surplus. The smaller the farm, the greater the need for marketable surplus in order to earn cash income. This will require an appropriate blend of location-specific technology, services and public policies, particularly in the area of assured and remunerative marketing opportunities.

2. Priority setting in Genetic Engineering Research in Rice

The bottom line in the use of recombinant DNA technologies should be the economic well-being of farm women and men, the safety of the environment and the health security of the consumers. Overall national interests like external trade should also be kept in view while taking up research projects. The importance of traditional *Basmati* rice in the export market is a case in point. An orientation workshop on priority setting in recombinant DNA research in rice for scientists engaged in research in the area of molecular breeding in rice would be useful. Such an orientation workshop could help to develop a code of conduct of 'dos' and 'don'ts' in relation to the choice of research problems and investment priorities in the public and private sectors.

3. Bio-informatics

More effort is needed in the development of databases on molecular markers and functional genomics. A National Bio-informatics Centre devoted to the rice genome should be set up.

4. From Discovery to Delivery

There is need for farmer-participatory knowledge delivery and extension systems in the case of GM varieties. Farmers' Self-Help Groups (FSHGs) should be formed to popularize Integrated Pest Management (IPM) techniques, including the cultivation of non-GM varieties in refugia. FSHGs for IPM in rice and other crops will help to confer on farmers with small holdings the power of scale in taking to new technologies in a scientific manner. They should be covered by group insurance procedures to insulate small farmers from loss in the event of unforeseen natural or other calamities.

5. Gene Development and Deployment for facing the impact of global warming and climate change

An anticipatory gene deployment strategy should be developed to enable farm families to face potential adverse changes in sea level and precipitation. The genetic enhancement work for seawater and drought tolerance in progress at MSSRF is an example of a valuable anticipatory research programme. There is need to institutionalize such an initiative by setting up a **Genetic Enhancement Centre for Gene Deployment**, to face the potential adverse impact of climate change, with particular reference to salinity and drought.

6. Bio-fortification

The work already done in rice has shown that there is much scope for the genetic enrichment of rice through molecular breeding with reference to the content of important micronutrients like Vitamin-A and iron. There is an urgent need for an integrated strategy for the elimination of micronutrient deficiencies in the diet, since hidden hunger caused by such deficiencies is widespread particularly among pregnant women and children. Such an integrated strategy should involve the incorporation of bio-fortified rice in the diet where appropriate.

7. Participatory Genotype Development

In order to avoid genetic vulnerability to pests and diseases arising from genetic homogeneity, it is desirable to foster **Participatory Genotype Development Programmes** with farming families. This will involve blending pre-breeding with participatory breeding and help provide the necessary varietal diversity essential for sustainable agriculture.

8. Private – Public Sector Partnership

A Consultation for developing guidelines for symbiotic public–private sector partnerships in biotechnology research, testing, extension and commercialization, taking into account the growing expansion of proprietary science would be useful.

9. Animal Nutrition

Since India has over 20% of the world's farm animal population, there is need for more research on improving the nutritive quality and digestibility of rice biomass comprising straw, bran and husk. This is an area of research which should receive priority attention from biotechnologists.

10. Breeding for Stress Tolerance

There is need for rice varieties tolerant to salinity, drought and flooding. A coordinated network of research centers could be organized for mobilizing molecular breeding methods for developing varieties of rice which could help to minimize losses from abiotic and biotic stresses.

11. Year of Scientific Awareness

The year 2004 being also the Year of Scientific Awareness, scientific institutions could launch a programme of Genetic Literacy in our villages, including **Genome Clubs** in schools and colleges.

On the occasion of the International Year of Rice
National Colloquium on
Molecular Breeding and Shaping the Future of Rice

March 12 – 13, 2004

PROGRAMME

Friday, 12th March 2003

- 10.00 hrs **Inauguration**
- Welcome:** Dr. M. Velayutham
Executive Director, MSSRF
- Keynote address:** Prof. M. S. Swaminathan
Chairman, MSSRF
- Inaugural address:** Dr. Maharaj Krishan Bhan
Secretary, Dept. of Biotechnology, Government of India
- Presidential address:** Smt. Radha Singh
Secretary, Agriculture & Cooperation, Government of India
- Vote of Thanks:** Dr. Ajay Parida
Programme Director (Biotechnology), MSSRF
- 11.45 – 13.00 hrs **Expectation from Biotechnology and Limitations**
Chair: Dr. E. A. Siddiq
Dr. B. Mishra, Directorate Rice Research, Hyderabad
Dr. Ajay Parida, MSSRF
Dr. N. Sivakumar, National Institute of Nutrition
- 13.00 – 14.00 hrs Lunch
- 14.00 – 15.00 hrs **Biotic Stress**
Chair: Dr. Jim Peacock
Dr. S. K. Raina, IARI, New Delhi
Dr. K. V. Rao, Osmania University

- 15.00 – 16.00 hrs **Genomics**
Dr. A. R. Reddy, University of Hyderabad
Dr. K. S. Charak, DBT
Dr. K. K. Narayanan, Meta Helix
- 16.30 – 17.30 hrs **Marker Assisted Selection and Breeding**
Chair: Dr. G. M. Reddy
Dr. Shailaja Hittalmani, GKVK, Bangalore
Dr. Maheswaran, TNAU
- 18.00 – 20.00 hrs **Public Forum**
(TRIPLE HELIX AUDITORIUM, CLRI, Chennai)
- Welcome:** Mr. N. Ram, Editor, *The Hindu*
- Panelists:** • Prof. M. S. Swaminathan, Chairman, MSSRF (Moderator)
• Dr. M. K. Bhan, Secretary, Dept of Biotechnology, Govt. of India
• Prof. William James Peacock, Chief, CSIRO, Canberra, Australia
• Dr. Gerard Barry, Golden Rice Network Coordinator, IRRI
• Dr. Suman Sahai, President Gene Campaign

Saturday, 13th March 2003

- 9.30 – 11.00 hrs **Biotic Stress, and transformation systems**
Chair: Dr. P. K. Ranjekar
Dr. Usha Barwale, Mahyco
Dr. K. Veluthambi, Madurai Kamraj University, Madurai
- 11.30 – 13.00 hrs **Nutritional Enhancement**
Chair: Dr. Usha Barwale
Dr. Gerard Barry, IRRI
Dr. D. Sudhakar, TNAU
- 14.00 – 15.00 hrs **Special Lecture**
Smart Seeds – Prof. William James Peacock
- 15.30 – 16.30 hrs **Conclusion and Recommendations**



MEDICINAL AND AROMATIC RICES OF KERALA

a regional workshop

in partnership with Kerala Agricultural University

Pattambi, Kerala

August 20 – 21, 2004

The aim was to bring together plant breeders, agronomists, biochemists/ biotechnologists, ethno-botanists, medical practitioners of Ayurveda, traditional healers, researchers, farmers, and people involved in post-harvest processing, product making, packaging and marketing. The objective of the symposium was to understand the current level of knowledge about the medicinal rice resources of Kerala and evolve a set of collaborative research and action projects to effectively resolve the scientific issues and develop health foods from medicinal rices.

The workshop was supported by the National Medicinal Plants Board.

DISCUSSION

The discussions in the technical sessions on the first day ranged over the following issues:

- Specialty rice varieties having aromatic and health food properties are essentially germplasm value-added by farmers and practitioners of traditional medicine, carefully conserved by farmers over thousands of years. Selective promotion of such varieties with value-added product and development and creation of niche market can increase income to farmers and make rice cultivation attractive.
- In tune with contemporary global marketing practice, the rich and valuable traditional knowledge associated with medicinal rice varieties needs scientific validation as an important requirement in establishing an exclusive niche market.
- The concept of whole plant utilization with value addition to each component will also offer new employment and income generation opportunities.
- Apart from *Basmati* rice, there are several other popular aromatic rice varieties each unique in quality, suitable for different growing conditions, and with specific culinary uses.
- The system of Ayurvedic medicine practiced in Kerala over thousands of years has established the multiple medicinal properties of the variety *Njavara*, and its importance as a health food.

- Ayurvedic texts are rich in the ancient knowledge associated with *Njavara* and other medicinal rice varieties, their recorded suitability to cure a variety of health disorders, and their richness as eminent health food.
- *Njavara* rice variety is widely used for both internal consumption as eminent health food and external application under therapeutic situations.
- Identifying and characterising the true-to-type *Njavara*, deployment of molecular technique to establish variety identity and identifying detectable components conferring its unique medicinal property is important.
- Genetic diversity, characterization and purification of medicinal rice of Kerala offer trade opportunities.
- Clinical methodology structuring well-built clinical questions, locating evidences from experiences of self, colleagues, experts and publications, randomization of clinical trials, and transparency in the conduct of trials, including involvement of institutional ethics committee and application of appropriate statistical tools in design and analysis.
- Traditional marginalisation of women with respect to holding of the traditional knowledge associated with medicinal practice, preparation and application of medicine and control of the income accruing thereof must be acknowledged.
- There is need for harmonized action involving farming communities, researchers, post-harvest processors and traders, supported by appropriate policy.

On the second day there was a science–society interface among farm men and women, academicians, extension workers, ayurvedic practitioners and representatives of rice-related industries, along with an exhibition on the theme '*Rice is Life*', posters on thematic areas and rice farming related products.

OUTCOMES

THE SCIENTIFIC AGENDA

1. Conservation & characterization of medicinal & aromatic rices

- Prepare a status report on medicinal & aromatic rices (*njavara*, *chennnelli*, *varinelli* etc.) in terms of spatial distribution (geographical indication) characterization and cataloguing (key characters morphological/ physiological/ molecular markers) in order to arrive at a set of descriptors for these rices.
- Document the Indigenous Knowledge (IK) associated with these through peoples' biodiversity registers with an increasing role of Panchayat Raj Institutions (PRI), in a participatory mode, with the scientific community, farmers and the traditional practitioners like the *Vaidyans*.

- Study the effective agronomic practices through a farmer-participatory approach to optimize the yield and help in niche-specific evaluation of the land races.
- Maintain a repository and help in the registration of the germplasm with National Bureau of Plant Genetic Resources (NBPGR) to protect these under the PPVFR Act.
- Ensure supply of quality seeds and promote community-based conservation through the gene-seed-grain banks approach.
- Increase the awareness of the farmers and the other end-users in the above-mentioned areas.

2. Evaluation and validation of the therapeutic and medicinal properties of medicinal and aromatic rices

- Evaluate and validate the medicinal and therapeutic properties expressed by the community and the Vaidyans through appropriate multi-disciplinary clinical trials for use in health foods and for curative properties in order to label.
- Follow global standards in such procedures, to be acceptable at the global level
- Impart legal literacy on the PPVFR/BD Acts to farmers and other members of the communities who use them through barefoot legal practitioners as part of the 'Right to Know' approach.
- Prepare a manual on the above Acts in regional languages, which could be disseminated to many people through a portal or hot line, linked to a National Virtual Academy (NVA) model.
- Maintain the traditional mode of treatments using these specialty rices and the mode of publicity in its 'pristine purity'.
- Ensure that the economic stake of the community is enhanced, by harnessing such natural resources in an increasingly global economy.
- Take up product development and diversification at R&D level and enhance technology transfers to help in increased demand for these specialty rices.
- Follow global standards in developing processes and product development, in order to lead to a set of standards for maintaining the Quality Control (QC).

THE SOCIAL AGENDA

The new social agenda growing out of this unique science-society interface reflects the new responsiveness of the scientific community and the willingness and desire to let the public, especially the user community set the agenda.

1. New objectives

- Emphasise not so much on increase of production or productivity, both of which may sometimes be counter-productive in terms of lower prices/higher costs, but on product development, that is, preparation of value-added items prepared from *Njavara*, and other medicinal rice which have specific demand at the local, national and export markets.
- Enable Traditional Knowledge (TK) holders to obtain and gain from their Intellectual Property Rights (IPR) under the new legislations (PVFPR and BD) Acts; include -
 - i. Individuals, (traditional practitioners/healers/farmers)
 - ii. Groups (tribal communities, farmers' groups) and
 - iii. Women, whose status with regard to IPR on TK is insecure and ill-defined.

2. New partners

- Product developers/makers/manufacturers, designers, packagers etc of existing rice products and makers of tools, equipment and implements.
- Designers of new products (Home Science Colleges, nutritionists and dieticians, pharmacists and ayurvedic medical practitioners, etc).
- Processors-millers, and others.
- Entrepreneurs, existing and potential at three levels-corporate sector, small and medium business houses run by individuals or companies, cooperatives or federations of SHGs like Kudumbashree.
- Marketers – traders, exporters, State marketing boards and product boards, Small Farmers Agri-business Consortium (SFAC) and other parastatals
- Financial services – banks, insurance, credit and donor agencies
- National Alliance for Mission 2007: Every Village a Knowledge Centre for development of e-outlets and services.

3. New forums

- Networks – for example, of *Njavara* farmers and other groups.
- Business associations like the Confederation of Indian Industries (CII).
- Professional associations-medical associations, pharmacists, and ayurvedic medical practitioners etc.
- Women's organisations, consumer associations, environmental groups, forest groups, other issue-based groups, and people's movements.

- Trade Unions, political parties and denominational groups.

4. New tools

- Multi-dimensional and integrated approach in programmes
- Existing networks and movements for communication
- New pedagogic strategies and communication tools
- Mass media, both radio and TV, for conveying messages
- ICT for rapid multi-user communication, using network of Rural Knowledge Centres, rural internet kiosks, and all other available services

ACTION PLAN

1. Preparation of **Yellow Pages on Medicinal Rices** of Kerala listing the names, addresses, services, products and specialties of all the persons/institutions concerned, category-wise.
2. Organisation of the ***Njavara Marketplace or Njavara Plaza*** at a suitable location where many of the stakeholders and groups listed in the Yellow Pages can come together for networking.

INTERNATIONAL YEAR OF RICE
Science-Society Interface
Technical Session

MEDICINAL AND AROMATIC RICES OF KERALA

**Venue: Seminar Pavilion, Near Administrative Block, Regional Agricultural
 Research Station, Pattambi**

August 20 – 21, 2004

Friday, 20th August 2004

INAUGURAL SESSION

9.15 – 9.20 hrs	Invocation	RARS Choir
9.20 – 9.25 hrs	Lighting the lamp	
9.25 – 9.35 hrs	Welcome	Dr. P.V. Balachandran, Assoc. Director of Research, RARS, KAU, Pattambi
9.35 – 9.50 hrs	Opening Remarks	Prof. M.S. Swaminathan, Chairman, MSSRF and UNESCO Chair in Ecotechnology
9.50 – 10.00 hrs	Special address	Dr. R.D.S. Rawat, CEO, National Medicinal Plant Board, AYUSH, Govt. of India, New Delhi
10.00 – 10.10 hrs	Presidential Remarks	Prof. K.V. Peter, Vice-Chancellor, Kerala Agriculture University, Thrissur
10.10 – 10.35 hrs	Inaugural Address	Dr. E.A. Siddiq, Former Deputy Director General (ICAR) and National Professor
10.35 – 10.40 hrs	Vote of Thanks	Dr. N. Anil Kumar, Head, Community Agro Biodiversity Centre, MSSRF, Wayanad
10.40 – 11.00 hrs	Inauguration of Poster session and Exhibition	Dr. R.D.S. Rawat
11.00 – 11.15 hrs	Tea	

	Rapporteurs	Dr. Meera V. Menon, Asst. Professor, KAU Dr. Diby Paul, MSSRF
14.10 – 14.30 hrs	Biochemical aspects of medicinal rice	Dr. R.B. Nair, Research Officer Central Research Institute on Ayurveda Govt. of India, Cheruthuruthy
14.30 – 14.50 hrs	Molecular characterization of medicinal and aromatic rice	Dr. George Thomas, Head, Dept. of Mol. Biology, Plant Genomics Group Rajiv Gandhi Centre for Biotechnology, TVM
14.50 – 15.10 hrs	Discussion & summing up by chair	
Session III: Conservation, Evaluation and Characterisation of Medicinal and Aromatic Rice		
15.15 – 15.20 hrs	Chair:	Dr. B.S. Dhillon, Director, National Bureau of Plant Genetic Resources, New MSSRF
	Co-Chair:	Dr. A.I. Jose, Former Director of Extension, KAU
	Rapporteurs	Dr. C.R. Elsy, Asst. Professor, KAU Ms. Deepa Varma, MSSRF
15.20 – 15.40 hrs	Genetic diversity, evaluation and purification of medicinal rice of Kerala	Dr. S. Leena Kumary, Project Co-ordinator (Rice) Rice Research Station, Moncompu, KAU
15.40 – 16.00 hrs	Genetic diversity, research advances and trade opportunities of non-basmati aromatic rice with special reference to Kerala	Dr. R. Shobha Rani Principal Scientist (Plant Breeding), DRR, Hyderabad
16.00 – 16.20 hrs	Discussion & summing up by chair	
16.20 – 16.40 hrs	Tea	

Session IV: Validation of Indigenous Knowledge & IPR

16.40 – 16.45 hrs	Chair:	Dr. M.D. Nair, IPR Consultant, Chennai
	Co-Chair:	Dr. S. Bala Ravi, Advisor – Biodiversity, MSSRF
	Rapporteurs	Dr. Mini Raj, Asst. Professor, KAU Dr. V. Arivudai Nambi, MSSRF
16.45 – 17.05 hrs	Clinical methodology for validation of medicinal properties of rice	Dr. R. Narahari Director, Institute of Applied Dermatology, Kasaragod
17.05 – 17.15 hrs	Medicinal rice and traditional knowledge of women	Dr. P.S. Geethakutty Assoc. Professor, Centre for Studies on Gender Concerns in Agriculture, KAU
17.15 – 17.25 hrs	Role of <i>Njavara</i> rice in traditional healing and healthcare system in Kerala	Dr. N. Anil Kumar, Head, Community Agro Biodiversity Centre, MSSRF, Wayanad
17.25 – 18.00 hrs	Discussion & summing up by chair	
18.15 – 19.30 hrs	Concluding Session	
	Chair:	Prof. M.S. Swaminathan
	Rapporteurs:	Dr. Sudha Nair, MSSRF; Dr. S. Leena Kumary, KAU
	Conclusions & Recommendations	
19.30 – 20.15 hrs	Meeting of committee to draft recommendations	
	Chair:	Prof. M.S. Swaminathan Participants – by invitation
20.30 hrs	Dinner	

Saturday, 21st August 2004

- 9.00 – 10.00 hrs Registration
- 10.00 – 14.00 hrs **Interactive Session**
- Moderator:** Dr. Joy Mathew, Assoc. Prof. (Ag. Extn), COH,
KAU (Assisted by: Dr. Sudha Nair and
Dr. N. Anil Kumar, MSSRF)
- 10.00 – 10.15 hrs **Introductory Remarks** Dr. Joy Mathew
- 10.15 – 10.45 hrs **Brief Presentations**
- Medicinal uses of rice
Dr. A.P. Haridasan Principal, VPSV Ayurveda
College, Kottakkal
- Value addition and processing in rice
Dr. V. Ganeshan, Assoc. Prof., KAU
- Marketing of speciality rice
Dr. P. Indira, Assoc. Prof., KAU
- 10.45 – 14.00 hrs **Discussion**
- Moderator:** Dr. Joy Mathew
- Resource Persons:
- Dr. C.K. Peethambaran, DR, KAU
Dr. U. Jaikumaran, Assoc. Prof., KAU
Dr. T. Nalinakumari, Assoc. Prof, KAU
Dr. G. Padmakumar, Assoc. Prof., KAU
Dr. P.V. Nandhini, Assoc. Prof, KAU
Mr. Cyriac A. Pattani, Gen. Manager (Marketing), Kitex Ltd.
Mr. N.P. George, President, Kalady Rice Mill Owner's Association
Mr. P.S. Abdul Nazar, President, Kerala Rice Mill Owner's Association
Mr. K.V. Francis, Gen Secretary, Kerala Rice Mill Owner's Association
Representative of Manjilas Group, Thrissur
Mr. Narayanan Unni, Rice Exporter
Dr. Jose Joseph, Assoc. Prof., KAU
Dr. C.P. Mohammed, Assoc. Prof., KAU
Dr. P.S. Geethakutty, Assoc. Prof., KAU
- 14.00 – 15.00 hrs Lunch

15.00 – 16.30 hrs	Plenary Session: Medicinal and Aromatic Rice – The Future: Action Plan
	Chair: Prof. K.V. Peter, Vice-Chancellor, KAU
	Summary of Day's Proceedings: Dr. Joy Mathew, Assoc. Prof., KAU
	Remarks: Dr. C.K. Pitambaran, Director of Research, KAU Dr. K.N.S. Nair, Former Vice-Chancellor, KAU
	Lessons Learnt: Scientific and Social Agenda Ms. Mina Swaminathan, Hon. Director, Uttara Devi Resource Centre for Gender and Development, MSSRF
	Summing up: Chair
16.30 hrs	Tea
17.00 hrs	Science-Society Interface Concludes



GENDER CONCERNS AND FOOD SECURITY ISSUES IN RICE LIVELIHOOD SYSTEMS IN INDIA: CHALLENGES AND OPPORTUNITIES

a national seminar

MSSRF, Chennai

September 2 – 3, 2004

The goal was to explore in depth and from various disciplinary perspectives, the linkages between food security and gender equity in the current and likely future scenario, taking rice livelihood systems as the base. Women have always played a major role in rice farming, and large numbers of them are engaged in it in India, either as paid labourers or as unpaid family labour on small owner or tenant cultivated farms, placing the causes of gender inequality directly in the realm of agrarian structures. Further, especially in subsistence agriculture, women have traditionally been in charge of household food security.

The various issues relating to the role of women at each stage of the farming system from seed conservation and management, through production and post-production to the market and the consumer, and in the entire range of farming systems from subsistence through the partially commercialized to the globalized were examined.

The seminar was supported by the Planning Commission, Government of India and the World Food Programme.

The objectives

- To explore the linkages between food security and gender concerns in “the rice livelihood systems” of India and capture the impact of recent technological and socio-economic trends.
- To gain better understanding of present trends and likely future outcomes, the challenges, prospects and possibilities
- To understand the structural features that perpetuate gender injustice in agrarian systems

DISCUSSION

- The discussions covered a gamut of issues from rice genetic resources to the impact of globalisation, and included such issues as the agrarian crisis, women’s access to land and other productive assets, the possibilities and impact of new production and post-harvest technologies, labour migration, and gender differentials in wages.

- In some areas, wide inter-regional and context-related differences were found – for example, in relation to the decline in land under paddy, shifts in cropping patterns, male and female migration, wage differentials, labour absorption or displacement, and the extent of “feminisation” of agriculture.
- On the other hand, some characteristics appeared to be pervasively spread across the country, in rice-based as well as other livelihood systems – for example, i) the agrarian crisis, characterized by falling incomes, prices and employment in rural areas; ii) mounting debt, stagnation in investment in agriculture and lack of public support services; iii) the lack of recognition for women as farmers and lack of both support services and technological inputs directed at women; and iv) lack of gender-sensitivity in the various Governmental services related to agriculture.
- The overall emphasis on the gender dimension also drew attention to other linkages and consequences such as. i) increased pressure for dowry, ii) increase in distress-related trafficking in women and children, iii) increased school dropout and malnutrition, iv) erosion of common property resources and v) threats to IPR related to TK, all of which are more adverse in their impact on women than on men.

OUTCOMES

1. Directions for Policy

- Recognition of women as farmers in their own right, is linked to land rights for women as well as women’s social prestige and acceptance in rural society. These need to be seriously pursued, but in the direction of joint rights, so that land continues to retain its value as a family resource. At the same time, ownership rights will open the doors to women and enable them to access and claim other resources.
- Higher investment in agriculture as a whole (in infrastructure, irrigation, credit and technology) is essential to combat the current agrarian crisis of collapse of prices, income and employment.
- Support for women farmers in the form of credit and financial services, knowledge and skills, marketing and extension services is essential, along with rights to land. Otherwise, the burden of responsibility for food security will become unfairly heavy on women alone.
- Since women form half of all agricultural labour, and the gender disparity in wages has shown no signs of closing, policy on equal wages for equal work as well as minimum wages for women needs revision.
- Social security for women agricultural labourers (80% of all women workers are in the unorganized sector) is a high priority, and must include maternity entitlements as well as all entitlements directed at men such as health, old age and unemployment.

- An Employment Guarantee or Food Guarantee scheme utilising food as payment for work, with special emphasis on women, is another high priority.
- A policy to diversify employment opportunities in rural areas through diversified cropping, agro-processing, value addition to agricultural / horticultural produce, generation of non-agricultural jobs, generation of skilled jobs and jobs in the service sector must also give special emphasis to women. Employment through access to technology, especially in areas like mechanization, and Information and Communication Technology (ICT), in addition to traditional technologies considered appropriate for women, should be included.
- A special policy for the conservation, promotion, processing and development of specialty rices (medicinal rices and non-basmati aromatic rices) for both domestic and export markets, is called for. At the same time, there should be a ban on the export of medium and low quality rice while domestic needs are unmet.
- A review of the rules on the PPVFR Act (to be notified shortly) is required to uphold the rights arising from the TK of women and tribal groups, who may be unable or unaware of the need to document this knowledge to claim their rights.
- Decentralisation of implementation regarding agricultural programmes and financial empowerment of PRIs is needed to ensure policy implementation. At the same time, women should be represented in all policy-making bodies.

2. Programmatic Interventions

- Develop a support package for women farmers, including credit and financial services, knowledge and skills, marketing and extension services, and access to technology, including options for women, to access and control large equipment through purchase or lease, individually or in groups.
- Develop schemes for social security for women agricultural labourers, (also all women workers in the unorganised sector) including maternity entitlements as well as other entitlements directed at men such as health, old age and unemployment.
- Adapt existing services to specifically meet the needs of both women farmers and women labourers and provide support services – for example, Integrated Child Development Services (ICDS) to offer crèches/day care services to children below six; appropriate nutrition for children below two; and noon meals for preschool (2-5 years) and primary school (6 +) children; extend Employees' State Insurance (ESI) to rural areas.
- Develop a package of food security services – linking both noon meals and food-for-work schemes with community food banks, and schemes to allow migrants to access food security support despite lacking Public Distribution System (PDS) entitlements.

- Develop employment opportunities through bio-parks which can generate employment for women at two levels, both rural producers and urban technologists, and at multiple skill levels (from labourers to scientists / technologists).
- Develop sensitization, orientation and training programmes to make Indian Council for Agricultural Research (ICAR), Agriculture Departments and extension services more gender-sensitive, including making the curriculum of study more gender-sensitive at all levels.
- Develop gender-sensitive machinery to protect the TK of women, tribals and other marginalized groups through the new legislations (BD and PVPFPR Acts).
- Ensure representation of women in policy-making bodies at all levels.

3. Emerging Research Agendas

- Studies of the current status of women's land rights in different regions, States and legal systems, with particular reference to the implementation of the policy directive to redistribute surplus-to-ceiling land to women, and to register joint *pattas* for homestead plots.
- Studies of the current status of customary and traditional laws, including those in matrilineal groups, in relation to women's property rights, with particular reference to their women-friendliness and possibilities for gender justice.
- Studies of different dimensions of social transformation arising out of or linked to land reforms and land redistribution policies and implementation, with particular reference to the gender dimensions of social change.
- Studies of the extent and nature of feminisation of agriculture in different regions, cropping patterns and social groups, with specific reference to the implementation of the Beijing Plan of Action 1995.
- Studies of gender-differentiated migration in different regions, social groups, States, and in relation to different cropping patterns and their gendered impact.
- Studies of the gendered impact of the growing privatisation of common property resources, especially water.

INTERNATIONAL YEAR OF RICE

National Seminar on

Gender Concerns and Food Security Issues in Rice Livelihood Systems in India: Challenges and Opportunities

Venue: Sambasivan Auditorium, M.S. Swaminathan Research Foundation, Chennai

September 2 – 3, 2004

Programme Schedule

Thursday, 2nd September 2004

DAY 1

9.30 – 10.00 hrs **Registration**

10.00 – 11.15 hrs **Inaugural Session**

Welcome Address Dr. M. Velayutham, Executive Director, MSSRF

Presidential Address Prof. M. S. Swaminathan, Chairman and UNESCO
Cousteau Chair, MSSRF

*Special Remarks –
About IYR*

Dr. Daniel Gustafson, FAO Representative

Keynote Address Mr. P. Sainath, Associate Editor, *The Hindu*

About the Seminar Ms. Mina Swaminathan, Hon. Programme Director
Uttara Devi Resource Centre for Gender and
Development, MSSRF

11.15 – 11.40 hrs TEA

11.40 – 13.00 hrs **Session I Theme: Case Studies on Conservation and Commercialisation
of Rice Varieties**

Chair: Dr. B. Mishra, Project Director, Directorate of Rice
Research

Aromatic Rices in the Jeypore Tract and their Commercial Potential

Mr. B P Mohanty, Mr. Susant Chaudhury,
Ms. Trilochana Ray, Mr. Parasant Parida, &
Mr. Saujanendra Swain, MSSRF, Orissa

Medicinal Rice Varieties of Kerala - Conservation to Commercialisation

Dr. N. Anil Kumar, MSSRF, Kerala

13.00 – 14.00 hrs LUNCH

14.00 – 15.30 hrs

Session II Theme: Women's Access to Land.

Chair: Dr. M. Velayutham, Executive Director, MSSRF

Gender Equality, Land Rights and Household Food Security: A Discussion in Relation to Rice Farming Systems

Dr. Nitya Rao, Lecturer, Gender and Development, University of East Anglia

Marriage-mediated Access as/and Livelihood Security: Gender, Land Rights and Agricultural Work in Kerala and West Bengal

Dr. Praveena Kodoth, Research Associate, Centre for Development Studies

15.30 – 16.00 hrs

TEA

16.00 – 17.30 hrs

Session III Theme: Labour, Migration and Agrarian Structure in Rice Farming Systems

Chair: Prof. Sunder Ramaswamy, Director, Madras School of Economics

Labour Absorption in Rice Cultivation: Recent Experience of Tamil Nadu

Dr. Madhura Swaminathan, Professor, Indian Statistical Institute and

Mr. V. Surjit, Junior Research Fellow, ISI

Impact of Male Out-migration on Rice Farming and Gender roles: A Case in Eastern Uttar Pradesh, India

Dr. Thelma Paris, Gender Specialist, IRRI,

Dr. Abha Singh, Sociologist, NDUAT and

Dr. Joyce Luis, Assistant Scientist, IRRI

Friday, 3rd September 2004 DAY 2

9.30 – 11.00 hrs

Session I Theme: Post Production Technologies in Rice Farming Systems

Chair: Prof. C. Ramaswamy, Vice Chancellor, TNAU

The Food and Nutrition Security through Adaptable Technologies in Rice Processing from CFTRI

Dr. V. Prakash, Director, CFTRI, Mysore

Rice Bio-Parks as an Instrument and Innovation for Promotion of Rice Based Livelihoods

Dr. Joseph Thomas, Advisor, Biotechnology, IIT, Chennai and

Dr. Sudha Nair, Programme Director – Biodiversity, MSSRF

- 11.00 – 11.30 hrs TEA
- 11.30 – 11.30 hrs **Session II Theme: Gender Concerns in Diverse Rice Cultivation Systems and Strategies**
- Chair: Dr. Utsa Patnaik, Professor, JNU
- The Role of GEAG in Engendering Rice Cultivation in Eastern Uttar Pradesh
- Dr. Sara Ahmed, Consultant in Gender and Development, and
Mr. Dilip Chinnakonda, Senior Consultant
ETC Consultants Pvt.Ltd
- Gender Bias in Irrigated and Rain fed Rice Farming Systems of India
Dr. Swarna S. Vepa, Ford Foundation Chair,
Women and Food Security and Programme
Director, Food Security, MSSRF
- 13.00 – 14.00 hrs LUNCH
- 14.00 – 16.00 hrs **Session III Theme: Markets, Trade and Globalisation**
- Chair: Dr. K.N.S. Nair, Former Vice-Chancellor, Kerala Agricultural University
- Rice Culture in the Indian Economy
Dr. Utsa Patnaik, Professor, Jawaharlal Nehru University
- General Discussion*
- Valedictory Address Prof. M.S. Swaminathan
Achieving Sustainable Food Security with Gender Equity in Rice Farming Systems
- Vote of Thanks Dr. Swarna S. Vepa, Ford Foundation Chair for Women and Food Security, MSSRF
- 16.00 – 16.30 hrs TEA
- 18.00 – 19.30 hrs **Millennium Lecture**
- Chair: Mr. N. Ram, Editor-in-Chief, *The Hindu*
- Changes in the Cost Structure of Rice Farming – Implications for Policy Including Gender
- Prof. Abhijit Sen, Member, Planning Commission and Professor, JNU

Venue: Raman Auditorium, Anna University, Chennai

RICE HERITAGE OF THE NORTH-EAST: CHALLENGES, OPPORTUNITIES AND STRATEGIES FOR THE FUTURE



a regional workshop

in partnership with ICAR Research Complex for NE Hill Region

Umiam, Meghalaya

November 5 – 6, 2004

The workshop was for the region of the “seven sisters” of the NE. The main objective was to bring together diverse stakeholders. The position occupied by rice farming systems in the food security of the region, with particular reference to gender roles in all aspects of the conservation– cultivation–consumption chain and the role of public policies in areas such as land ownership, shifting cultivation, rural infrastructure, technology development and dissemination and producer oriented marketing were reviewed. Gender equity and women’s knowledge and technological empowerment were examined in relation to the following three major components of food security - food availability, food access and food absorption.

The workshop was supported by the Institute of Bioresources and Sustainable Development.

DISCUSSIONS

The discussions focused on the following broad themes:

- Comprehensive overview of the current status of the rice heritage of the North East including more than 8,000 cultivars, many of which have been studied and described and their valuable characteristics identified, as well as traditional rice farming systems such as the *Zabo* in Phak district of Nagaland, and the Apatani plateau in Arunachal Pradesh.
- Some of the problems of rice farming in the region, such as lack of organised seed supply, the steadily shortening jhum cycle, the inadequacy of the research infrastructure, the growing incidence of pests and diseases, the enormous drudgery faced by women and the lack of recognition of women’s role in agriculture.
- Critical issues facing the rice economy of the region, such as the pressure of population, the lack of employment opportunities and the drift of educated youth away from agriculture.

- The need for agrarian change and reform to tilt the balance in favour of actual cultivators.
- The changing pattern of rainfall, soil erosion and natural resource degradation.
- The need for new options for educated urban youth to take to agriculture through skills in areas like value addition, or production of machinery and tools.
- The dependence of a large number of families without other livelihood options on jhum, which is both a natural and organic way of farming and a traditional way of life.
- The need for cultural, legal and genetic literacy, and protection of both cultural and biological diversity.
- Regulation, education and social mobilization as the three main instruments for people to obtain their rights under the PPVFR and BD Acts.
- New challenges to research systems, leading to participatory approaches, linking pre-breeding to participatory varietal selection, reorienting plant breeding based on local land races and developing innovative institutional mechanisms
- Linking the four basic principles of ecology, economics, employment and equity for sustainable development.
- Seizing new opportunities for development such as decentralized production through self-help groups, agri-clinics and agri-business, and the use of ICT to reach rural communities through Village Knowledge Centres.
- Ten major issues relating to increasing rice production, namely popularization of developed varieties for upland and lowland eco-systems; production, storage and distribution of quality seeds; shift from mono to multiple cropping, maximizing production in jhum areas; judicious use of water resources; popularization of better farm implements, especially for women; integrated approach to rice farming systems; organic production for the global market; better post-harvest collection and processing; and access to technology.
- The gender dimensions of food security in this region, including the linkages between gendered knowledge and skills, gender roles and labour, customary property and power structures and comparative analysis of the seven States using selected gender disparity indicators, leading to the conclusion that food and livelihood security cannot be "engendered" without addressing structural aspects of development and agricultural production. Micro-level field studies undertaken for the workshop as well as secondary data were also presented highlighting the diversity and complexity of the situation in the region.

On the second day, the participants divided into five groups, discussed the following main groups of issues:

- ↳ Land rights and agrarian reforms
- ↳ Biodiversity conservation, sustainable and equitable utilization
- ↳ Rice-based farming systems of the region
- ↳ Technology
- ↳ Policy frameworks
- ↳ Institutional arrangements, and
- ↳ Cross-cutting issues such as health and nutrition, drudgery reduction, research methodology, extension systems, and education, both formal and non-formal

Outcomes

- increased awareness, recognition and appreciation of women's role in agriculture.
- realisation of the need to integrate a gender perspective in all planning.
- understanding that technological solutions to the issues of conservation of rice heritage and greater production and productivity of rice farming need to be equitable and sustainable
- understanding of the importance of gender sensitisation at all levels and for all groups, from policy makers and bureaucrats to scientists, community leaders, extension workers and members of the rural community
- appreciation of traditional knowledge of the community, especially women, with regard to rice heritage, and the need to integrate it with latest scientific knowledge
- acceptance that all groups need to go through a process of unlearning followed by new learning to effectively solve problems in a harmonious manner

The Agenda for Action arising from these discussions is for advocacy, awareness creation and consolidated action by all the concerned stakeholders in a consultative and collaborative manner on the following broad groups of issues. The various groups should not only continue to work on this agenda individually, as they have already been doing, but also come together in order to achieve the goals faster and more realistically.

The broad spectrum of issues to be addressed and the action points that emerged are outlined below:

Land rights and agrarian change

- The governments should be urged to undertake cadastral survey immediately, as without this basic documentation it would become impossible either to protect existing rights or to undertake reform. This should be the highest priority.
- The extensive privatisation of land ownership has led to widespread class and gender inequality, while at the same time the actual cultivators are very often not the owners of land, having little security of tenure or incentive for improvement. Hence in the short run, distribution/redistribution of land, should prioritise cultivators, regardless of gender, and encourage community ownership.
- A sustained awareness campaign should be undertaken, to stimulate public debate about customary property law, leading in the long run to a process of revision through consultation with the community, which will ensure equity at all levels (for example, between genders, among siblings etc).
- In the long run, there is need to campaign for a land ceiling act, and for legislation to protect agricultural land from non-agricultural uses.
- Keeping in mind the major role played by women in agriculture, women's rights should be protected to strengthen their capacity for decision making at the field level.
- Steps need to be taken to check the increasing fragmentation of holdings leading to unviable farm sizes.

Biodiversity conservation, sustainable and equitable utilization

- While *ex-situ* conservation of rice germplasm has been effective and long-standing, there is considerable scope to strengthen *in-situ* conservation of local land races in participatory mode, with the involvement of both men and women in the community, and for extensive campaign for awareness about its importance.
- At the same time, efforts to document and validate traditional knowledge of both men and women regarding local land races, as well as medicinal plants and their uses should continue.
- Campaigns for creation of awareness about the new legislation to protect biodiversity and farmers' rights should be taken up to enable men and women farmers and conservers to understand their rights to recognition and reward, to provide incentives for such conservation and to enable them to realize their rights from the National Biodiversity Fund and the National Gene Fund. The protection of women's rights needs special attention.
- Mechanisms to conserve biodiversity and protect people's rights, which are also now provided for by law, include involving village councils and local bodies, maintaining biodiversity registers at the Panchayat / village level should be set up immediately.

- Maintenance of village germplasm banks should be encouraged by taking up such innovative schemes as the community gene bank-seed bank-grain-bank chain as demonstrated elsewhere in the country. These would also contribute to increased food security at the village level, keeping in mind the weakness of the Public distribution system (PDS) in rural areas.

Improved productivity of rice farming systems

- Technology package for each of the diverse rice-based farming systems should be location and situation specific and tailored to the micro-environment.
- Since many local land races are preferred by farmers for their own consumption, both technology for improved productivity and institutional support should be provided to encourage the production of these land races, which contribute to the basic food security of people.
- Since jhum is not only a traditional way of life, but also the only source of livelihood for thousands of families with few other options on hilly terrain, efforts should be made to strengthen and improve jhum cultivation so that it becomes a sustainable system and rehabilitation of abandoned jhum land should be given priority.
- The diverse indigenous farming systems, especially the rice-based integrated systems should be selected and evaluated and then strengthened with appropriate technical guidance. The nutritional quality of local land races should also be evaluated.

Technology development

- Emphasis should be placed on women-friendly and drudgery-reducing technology keeping in mind the key role played by women in rice farming.
- A number of women-friendly farm tools, implements and machinery have already been designed and developed, and there is need to popularize them among women through training and extension.
- Further development of such tools should make full use of ergonomic studies
- Production of such cost-effective tools by NGOs, SHGs, educated youth and local artisans should be promoted by establishing direct links with them and offering skill training, credit and institutional support for production and distribution.
- Technology development should be in participatory mode, and integrate local knowledge.
- Indigenous technical knowledge (ITK) in areas such as post-harvest storage and pest and disease control should be studied and integrated with latest scientific knowledge.

- Documentation and validation of such ITK in partnership with agencies such as the National Innovations Foundation may lead to recognition and concrete gains for men and women farmers.

Policy frameworks and institutional mechanisms

- The participation of women in all policy making bodies at all levels is an essential component of making women's contribution visible and of making policy gender-sensitive and responsive to women's needs. This has to be done by persuading and convincing at the level of traditional bodies, village councils, and other voluntary associations and institutions, and by appointment in all government-constituted bodies.
- Gender sensitisation of all groups should be taken up as a priority activity by Governments, institutions and local bodies and traditional groups. The agenda should include creating awareness about women's role in agriculture and providing space for women's decision-making in matters related to farming.
- Space should be provided for women's participation in all new institutional settings, which should be participatory in nature, and in new institutional arrangements like kisan credit cards.
- All Krishi Vigyan Kendras (KVKs) and all development Departments should have special facilities, programmes and services for women.

Reinvigoration of extension services

- As a critical role has to be played by extension, there is need for complete reinvigoration and reorientation of the extension system, making it more participatory and based on two-way communication.
- Extension should become more women-friendly, and gender sensitization of all extension personnel should be undertaken as a first step.
- The gap between research and extension must be closed, with more emphasis on context- and location specific research for each farming system being carried to the field through innovative mechanisms, involving the village councils, women's associations and other local groups.
- There should be continuous modification of extension based on evaluation, and target groups (farming communities) must also participate in such evaluation.
- Retraining and knowledge updating and intensification of extension personnel is needed to make the extension services more market-oriented and information-led.
- Rural Knowledge Centres with ICT component should be set up by State Governments in partnership with the newly launched National Mission 2007 – Every Village a

Knowledge Centre. Extension system should work through these centers, both to reach rural communities and for training of personnel. Fuller use should also be made of mass media for this purpose.

- Greater financial support for extension is needed to achieve these objectives.

Research methodology

- Research should have both a gender component in the content and methodology and in representation at the researcher level.
- Research in future must focus on innovative strategies like Participatory Plant Breeding (PPB), Technology Assessment and Refinement (TAR), and Pre-Varietal Selection (PVS).
- Greater financial support is needed to take already developed technologies to farmers in the form of front-line demonstration.
- Renewed efforts must be made to close the gap between research and extension.

Drudgery reduction

- Three major areas of drudgery for women are difficulty in accessing drinking water, fuelwood collection and marketing. Hence emphasis should be placed on developing and extending low-cost storage, non-conventional energy sources and fast-growing fuelwood plantations.

INTERNATIONAL YEAR OF RICE

Rice Heritage of the Northeast: Challenges, Opportunities and Strategies for the Future

M S Swaminathan Research Foundation and ICAR Complex for the NE Hill Region

November 5 – 6, 2004

Programme Schedule

Friday, 5th Nov, 2004

10.00 – 11.45 hrs	Inaugural Session
	Welcome Dr. K.M. Bujarbaruah, Director, ICAR Research Complex
	About the Workshop Dr. M. Velayutham, Executive Director, MSSRF
	Keynote Address: Rice Heritage of the Northeast Dr. D.N. Borthakur, Former VC, AAU and Former Director, ICAR Research Complex for NEH Region
	Special Address: Dr. S.S. Baghel, Vice Chancellor, CAU
	Inaugural Address: Shri P.J. Bazeley, Chief Secretary Government of Meghalaya
	Presidential Address: Prof. M.S. Swaminathan, Chairman, NCF and Chairman, MSSRF
	Vote of Thanks Ms. R.V. Bhavani, MSSRF
11.45 – 12.00 hrs	Tea
12.00 – 13.30 hrs	Session I: Status of Rice Farming Systems, Food Security and Rice Genetic Resources in the Northeast
	Chair: Dr. D.N. Borthakur
	Co-Chair: Dr. A.K. Pathak, Actg VC, AAU
	Rice Farming System and Livelihood Security Dr. A.K. Pathak, Director Research (Agri) & Acting VC, AAU, Jorhat, Assam

Rice Scenario in the Northeast – Issues and Perspective

Dr. K.M. Bujarbaruah, Director, ICAR Research Complex for NEH Region, Umiam, Meghalaya

Rice Diseases & Pest Scenario and their Management in the Northeast

Dr. Y.P. Sharma, Jt. Director, ICAR Research Complex for NEH Region, Umiam, Meghalaya

Rice-based Integrated Farming System in the Northeast

Dr. B.P. Bhatt, Sr. Scientist & Head, Division of Agro-forestry, ICAR Research Complex for NEH Region, Umiam, Meghalaya

Land-use system in Northeast: Issues and functions with special emphasis on natural resources conservation

Dr. K.K. Satapathy, Head, Div. of Agril. Engg., ICAR Research Complex for NEH Region, Umiam, Meghalaya

13.30 – 14.30 hrs

Lunch

14.30 – 18.00 hrs

Session II: Gender Concerns & Food Security in Rice Farming Systems in the Northeast

Chair: Prof. A.C. Bhagabati, Hon. Coordinator, Indira Gandhi National Centre for the Arts, Dept. of Anthropology, Guwahati University

Co-Chair & Discussant: Ms. Mina Swaminathan, Hon. Director, Uttara Devi Resource Centre for Gender and Development, MSSRF, Chennai

Keynote Paper: Ms. Sumi Krishna, Gender Consultant

State-wise Presentations:

1. Meghalaya Padmashree (Ms.) Patrica M. Mukhim
2. Assam Mrs. Mala Dutta, Lecturer, Cotton College, Guwahati
3. Mizoram Ms. Audrey Laldinpuii & Ms. Laithangpuii, NEHU, Shillong
4. Tripura Dr. Vincent Darlong, Addl. Director, MoEF, Bhubaneswar
5. Arunachal Pradesh Dr. N.C. Roy, Prof. of Economics, Arunachal University
6. Nagaland Ms. J. Longkumer, Nagaland University

18.00 – 19.30 hrs Chairs of two sessions, Keynote Presenters and Organising Committee Members to meet and finalize group discussion themes and coordinators

Saturday 6th Nov, 2004

10.00 – 13.00 hrs **Session III: Group Discussions on Major Issues and Preparation of Group Reports**

13.00 – 14.00 hrs Lunch

14.00 – 16.00 hrs **Valedictory Session - Taking Stock and Setting the Agenda**

Chair: Dr. M. Velayutham, Executive Director, MSSRF

Co-Chairs: Dr. K.M. Bujarbaruah and Ms. Mina Swaminathan

Presentation of Group Reports

General Discussion

Summing up by Co-Chairs

Vote of Thanks: Dr. Y.P. Sharma, JD ICAR Research Complex for
NEH Region, Umiam, Meghalaya



PADDY AND PROSPERITY

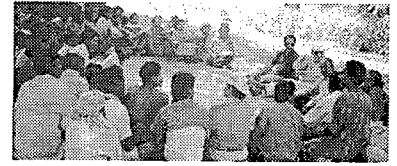
Rice Bio-Park – Adding value to every part of the rice biomass

Realizing the phenomenal value addition potential of every part of the paddy, the concept of setting up Rice Bio-Park was mooted in the International Year of Rice. The setting up of such Parks was proposed as a first step to create awareness on the techno economic feasibility of rice bio mass based units. Towards this end it was decided to prepare business plans, with the financial help from RuTAG, to establish them in Tamil Nadu, Karnataka and Andhra Pradesh in the first stage and later to be extended to other rice producing areas of the country.

The methodology involved while preparing the business plans included the analysis of the value addition potential of rice biomass; identification of the products and utilities based on different components of rice biomass; identification of the feasible technologies for such products and utilities; preparation of feasible business plans after prioritizing the opportunities and ensuring techno economic feasibility and identifying the strategies for promotion of the Park to achieve the primary mission of demonstrating value addition potential of Rice biomass. The business plan also spelt out the strategies for the promotion and infrastructure development.

The entire study was based on desk research and interview of scientists and technologists and the products and processes were chosen from the valuable research and development work of some of the reputed national laboratories, private sectors and other organizations. Twenty eight business plans have been proposed which covers the utilization of the full biomass such bran, germ, husk, straw and include units, which fall under tiny, small, medium and large enterprises.

This was presented at a meeting held on the 24th of August 2004, which was attended by all the stakeholder participants, the probable entrepreneurs, farmers, mill owners, bankers and technology providers. This provided an opportunity for testing the interest of the stakeholders in this concept. The study was also presented at ICRISAT on 6th October 2004, at a Planning Meeting for the establishment of a Rice Park in Hyderabad, at the IYR workshop organised by MSSRF in Chennai and at the Regional Consultation on Mission 2007 in Shillong. It was well received. It is proposed to set up the first such Rice Biopark at Chennai as part of the second phase of activity of the Golden Jubilee Biotech Park for Women at Siruseri. This is expected to help women entrepreneurs to set up enterprises based on the value addition of the different parts of the rice crop and tap the market for the same. The Urban Park will function with strong linkages with the rural areas. The proposed Park will also showcase the traditional aspects of "Rice" in the lives of people as part of the rich cultural diversity and traditions associated here.



The Way Ahead – An Agenda for Action

Cautioning on rice productivity growth - the case against complacency, the book on "Asian Rice Bowls -The Returning Crisis?" from IRRI and CAB International exhorts that concerted and consistent efforts be made towards increasing and/or sustaining rice productivity growth to avert any potential food crisis.

The series of events organized during the year have brought out important issues to be addressed in the areas of rice productivity, conservation of traditional rices with economic stake for commercialization, access and benefit sharing, (ABS) recognition and rewards for the primary conservers, gender concerns and sustainability of rice based livelihood systems.

An action plan for ensuring sustainable rice-based farming systems has emerged -

- Participatory Plant breeding (PPB) as a methodology for enhancing *in situ* conservation of preferred rice varieties with economic stake for commercialization of traditional non-basmati type aromatic rices, such as Kalajeera at Jeypore, has great potential to promote sustainable rice based agriculture in different agro – ecological niches. These efforts can also reinforce the institutionalization and replication of the community seed bank and grain bank model.
- Similarly the medicinal and aromatic rices of Kerala need characterization, geographical indication, purification through PPB and commercialization through brand names. Commercialization as micro enterprises in these two cases, by organized Self Help Groups will also help to ensure the Access and Benefit Sharing entitlements available to them through the National PPV & FR Act (2001) and Biodiversity Act (2002).
- Government and NGOs have to undertake large-scale awareness campaigns for popularizing the ABS provisions available in the two Acts through advocacy in print and electronic media in regional languages. Genome clubs of boys and girls in schools and colleges will help to foster genetic literacy and build awareness of the genetic heritage in the villages.
- The indigenous traditional knowledge associated with the communities using these rice varieties needs scientific accreditation through Community Gene Banks and clinical validation of their therapeutic uses and as health food.
- The National Colloquium on "Molecular breeding and shaping the future of rice" emphasized that the bottom line in the use of recombinant DNA technologies should be the economic well-being of farm women and men, the safety of the environment and the health security of the consumers. Overall national interests like capturing external trade, integrated strategy for the elimination of micronutrient deficiencies in

the diet through development of bio-fortified rice with Vitamin A and iron, and a National Bio-informatics Center devoted to the Rice Genome are identified themes of national interest.

- Further research on improving the productivity of the time-honoured traditional rice farming systems in North East India, maximizing rice production in 'jhum' areas, eliminating the drudgery faced by women in rice farming by designing appropriate tools and implements and the need to enhance the recognition of women's role in agriculture are areas of concern in the North – East region.

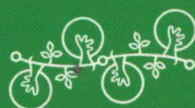
Lead papers from the socio-cultural analysis testify that food and livelihood security cannot be 'engendered' without addressing structural aspects and adjustments of development and agricultural production in tribal societies.

- Gender concerns which need policy level interventions are:
 1. Social security for women agricultural labourers,
 2. Curriculum and advocacy for promoting more gender sensitive approaches at all levels,
 3. Enabling women's land rights in the form of joint pattas
 4. Interplay between land reforms and social change in relation to feminisation of agriculture
- There is a very great value addition potential of every part of paddy, taking 'rice as a refinery'. Accordingly, the MSSRF has prepared a blue print for setting up Rice-Bio parks with diverse business enterprises models for the utilization of full biomass such as grain, germ, bran, husk and straw ranging from tiny, small and medium to large enterprises. The establishment of such urban rice parks will provide strong trade and social linkages with the rice producing rural areas, so that the paddy-population-poverty syndrome can be converted into paddy-population-prosperity era.



Supported by:

Food and Agriculture Organisation (FAO); Department of Biotechnology, Government of India; Planning Commission, Government of India; XV Genetic Congress Trust; MAHYCO Research Foundation; World Food Programme (WFP); Institute of Bioresources and Sustainable Development; National Medicinal Plants Board.



M S Swaminathan Research Foundation

3rd Cross Street, Taramani Institutional Area
Chennai 600113

Phone: 0091 44 22541229/1698; Fax: 0091 44 22541319
www.mssrf.org; excutiveedirector@mssrf.res.in