IRC SESSIONS

20TH SESSION OF THE COMMISSION, 23-26 JULY 2002, BANGKOK, THAILAND

19TH SESSION OF THE COMMISSION, 7-9 SEPTEMBER 1998, CAIRO, EGYPT

18TH SESSION OF THE COMMISSION 5-9 SEPTEMBER 1994, ROME, ITALY

20TH SESSION OF THE COMMISSION, 23-26 JULY 2002, BANGKOK, THAILAND

The Twentieth Session of the International Rice Commission was convened at the United Nations Economic and Social Commission for Asia and the Pacific (UN-ESCAP) in Bangkok, Thailand, from 23 to 26 July 2002. The Meeting was jointly organized by the Ministry of Agriculture and Cooperatives of Thailand and FAO.

The Session was attended by 58 delegates from 27 Member Countries of the Commission, 5 observers from 2 FAO Member Countries, and 28 participants from UN international and regional organizations. During the 3-day Session and one day field trip, the delegations actively participated in the deliberation and addressed the diversified issues and concerns on rice production systems in the world.

Following are major recommendations made at the Session:

Status of the World Rice Market in 2002

1. Rice production should continue to expand as the current consumption, which exceeds production, is not sustainable and may, before long, lead to surging world prices.

2. Rice-producing Member Countries should adopt policies with the least distorting effects on the world market.

3. Support to producers should be provided preferably by facilitating the transfer of technologies. Biotechnology for rice breeding: progress and impact

4. FAO should increase capacity building in biotechnology, relevant to rice improvement, in developing countries and provide assistance in preparing bio-safety regulations.

Nutritional contribution of rice and impact of biotechnology and biodiversity in rice-consuming countries

5. Existing biodiversity of rice varieties and their nutritional composition needs to be explored before engaging in transgenics.

6. Nutrient content needs to be among the criteria in cultivar promotion.

7. Cultivar-specific nutrient analysis and data dissemination should be systematically undertaken.

Conservation and use of rice germplasm: an evolving paradigm under the international treaty of plant genetic resources for food and agriculture

8. Member Countries (if they have not already done so) should ratify, in the near future, the International Treaty on Plant Genetic Resources for Food and Agriculture.

9. Member Countries should provide full support to the funding of the Global Conservation Trust and ensure effective conservation and exchange of the International and National Plant Genetic Resources for Food and Agriculture.

10. FAO, in concert with National Programmes and relevant IARCs, should facilitate the assessment of plant breeding capacities in support of the Treaty and the Global Plan of Action on Plant Genetic Resources.

Genetic diversity in rice production: its past contribution and the potential of utilization for sustainable rice production

11. Genetic variability in released varieties should be increased and calls for greater use of existing genetic variability for diversified varietal/hybrid development.

12. Public investment for respective NARS and contribution to institutions dealing with rice should be intensified.

13. Solid partnerships should be encouraged to resolve issues related to easy access to genetic resources and patent protection.

The second generation of hybrid rice in China

14. FAO should organize training courses on breeding of super hybrid rice (e.g. second generation hybrid rice) which can outyield the existing rice hybrids by 15-20 percent.

15. Member Countries should strongly support and promote the development of super hybrid rice.

Progress and issues in development and use of hybrid rice in the tropics

16. IRRI and NARS should intensify their research efforts to develop hybrid varieties with acceptable grain quality using parental lines possessing higher out-crossing rates and thus resulting in higher seed yields.

17. NARS should identify improved management packages to maximize yield expression of hybrids.

18. Member Countries should consistently provide well-defined policies and a strong financial commitment for research in seed production and extension of hybrid rice while ensuring the effective coordination of the same.

19. IRRI, FAO, APSA and China should continue to work together to support NARS' efforts in technology generation, seed production and technology transfer for the development and use of hybrid rice.

Quality seed production in hybrid rice

20. Member Countries should encourage the private sector to be increasingly involved in F1 seed production.

21. For rapid and large-scale adoption of hybrid rice, the cost of hybrid-seed production should be reduced by increasing seed yield with CMS lines, which have a high out-crossing rate, and by using less GA3 through combined use with alternates such as urea and other agro-chemicals.

The development and use of Integrated Crop Management for rice production

22. FAO and Member Countries should promote and develop RICM efforts through Farmers' Field Schools, following the effective approach, such as Ricecheck methods, to narrow the yield gap and enhance food security and economic wellbeing, based on the concepts of Rice Integrated Crop Management systems.

23. FAO and Member Countries should formulate policies to encourage incentives and support for the development and transfer of RICM.

Options for effective rice water management

24. The linkages between field, system and basin levels should be properly incorporated in the management of irrigation systems and adapt to the changing service needs of farmers.

25. Greater attention should be given to the design and operation of irrigation and drainage systems through a comprehensive re-training of irrigation experts.

26. Reforms should be implemented to promote a service orientation in the irrigation sector and allow an effective participation of farmers in the decision making on system performance and service objectives.

Economic and environmental impact of improved nitrogen management in Asian rice-farming systems

27. Current yield gaps should be bridged, through improved crop and nutrient management in favourable conditions, and liberating marginal lands, prone to degradation and environmental risks from cultivation, should receive greater attention in national action plans.

28. Country-wise and ecoregion-specific analysis of N use levels and N use efficiency should be evaluated to promote optimum management of N.

29. To facilitate deep placement of urea N, a simple and inexpensive applicator should be made available to farmers.

30. A firm commitment and provision of resources from all stakeholders (governments, the fertilizer sector, NGOs and international agencies) in transferring sound N management technologies, along with integrated crop management practices, through a bottom-up farmers' participatory approach, should be made to attain food security, maximize farmers' income and reduce environmental pollution on rice-based farming systems in Asia.

The need for improved weed management in rice

31. Policy makers need to pay more attention to the problems posed by weeds in rice as an important constraint affecting rice productivity. Support to weed research programmes and farmers' training on improved weed management in rice is required for further improvement of rice production.

32. Weed management in rice can only improve if farmers take into consideration the ecology of major weeds and interaction with rice. Elements of weed ecology (weed seed bank, behaviour of prevailing weeds, critical periods of weed competition and others) should be an essential part of the IPM curriculum in Farmers' Field Schools.

33. The potential risk of transfer of resistant trait from transgenic herbicide resistant rice to weedy rice has been recognized and farmers should be made aware of such a phenomenon.

Global integrated production and pest management development

34. Member Countries should support "resource-poor" research such as biological nitrogen fixation and other soil fertility management issues, locally produced pest management products and post-harvest processing.

35. Member Countries should support large-scale adult education programmes using mechanisms such as self-financed food security Field Schools that cover pre-planting to post-harvest topics, processing, marketing, savings and credit methods and other community-based programmes.

Recent initiatives on the availability and use of aquatic organisms in rice-based farming

36. Member Countries should promote sustainable development of aquatic biodiversity in rice-based ecosystems and policy decisions. Management measures should enhance the living aquatic resource base. In areas where wild fish are depleted, ricefish farming should be considered as a means of enhancing food security and securing sustainable rural development.

37. Attention should be given to the nutritional contribution of aquatic organisms in the diet of rural people who produce or depend on rice.

An overview of rice post-harvest technology: use of small metallic silos for minimizing losses

38. Suitable technologies, such as a small metallic silos, should be widely promoted for reducing post-harvest losses.

39. Resources and policies should be adequate to promote appropriate rice drying, particularly in humid and tropical areas.

40. Member Countries should give priority to rice-processing technologies in order to add value and thereby increase income generation.

Challenges, innovation and change towards rice-based food security in Sub-Saharan Africa

41. WARDA should continue its commitment towards the development of NERICAs and related technologies, including the use of cheap phosphate and legumes in rotation with NERICAs. This will be accomplished through the support of the recently established African Rice Initiative (ARI).

42. WARDA should continue to develop and fine-tune the extension-led PVS (participatory variety selection) to expand the outcome of the research-led PVS to the national extension services, NGOs and large number of farmers. In addition a participatory plant breeding (PPB) approach will be developed to involve farmers during the early stages of WARDA's breeding programme to better respond to site-specific problems.

43. WARDA should continue its breeding efforts to develop high-yielding, short-duration cultivars with resistance to major African stresses, principally RYMV and AfRGM.

44. WARDA should continue to focus its attention on the lowland rice ecology with high potential for intensification and diversification. WARDA will continue its efforts on improved water control taking into account the major driving forces such as population pressure and market forces.

45. WARDA should continue to develop and extrapolate Integrated Rice Management (IRM) practices with special attention to adaptation to low and medium input lowland ecologies, including more efficient use of available resources, conservation of biodiversity and keeping dependencies on external systems to a reasonable minimum.

46. WARDA should continue to develop and fine-tune a participatory learning and action research (PLAR) approach for IRM. PLAR is a social learning process that will lead to the development of a curriculum for farmer learning and facilitation of farmer learning.

47. WARDA should continue to assist in the set up and development of farmer networks and stakeholder platforms, including research on human and social capital development.

Rice development strategies for food security in Africa

48. Member Countries should foster alliances and dialogues among diverse stakeholders for shaping policy decisions and action plans with a shared vision.

49. Member Countries should promote, inter alia, farmer-participatory research and extension, focusing especially on highpotential hydromorphics and inland swamps in order to address low yields and improve national food security. Sustainable and diverse systems such as rice-fish, rice-fish-vegetable, rice-legume, rice-vegetable and no-till rice rotation systems should be emphasized.

50. As upland rice will remain important for food security for some time, improved technologies such as the use of NERICA varieties and cropping systems that enhance soil fertility, such as rotations and associations with food legume and leguminous cover crops, should be promoted by Member Countries.

51. Member Countries should give special attention to promoting home and especially community-level post-harvest enterprises by facilitating training and access to threshers, mini-mills, silos, baggers, etc.; emphasizing opportunities to improve the roles and productivity of women in post-harvest activities is of great importance.

52. Member Countries should promote, when possible, community-based seed production of improved varieties and facilitate the effective marketing and distribution of seed with quality assurance processes and regulations. Women's groups should be fostered and supported to participate effectively in such initiatives.

53. Member Countries should promote establishment of farmer organization and facilitate their diverse programmes through mechanisms for joint planning, information exchange and self-funding.

54. FAO should promote the exchange of information through its diverse normative activities and facilitate technology exchanges within the region and from outside the region.

55. WARDA and FAO should jointly promote NERICA and other improved varieties throughout Africa.

56. The IRC should expand its role in sensitizing bilateral and multi-lateral donors to support land and water development programmes in African Member Countries.

New rice technologies and challenges for food security in Asia and the Pacific

57. Research and development of rice technologies should take into consideration the development stage of national economies.

58. Initiatives such as improved quality, organic agriculture and genetically modified rice should be supported within these various development contexts.

59. FAO should coordinate a study on social acceptability of genetically modified rice in Member Countries.

60. FAO should urge Member Countries to strengthen infrastructure for biotechnology research in rice in the public sector and integrate upstream biotechnology research with downstream research on breeding of improved varieties.

Strategies to sustain and enhance Asia-Pacific rice production

61. Integrated crop management for the rice crop and the farming system should be used to maintain and build on the gains in yields made to date and by expanding IPM programmes, yield gap bridging and use of farmer participatory methodology, such as the Ricecheck system.

62. Conventional breeding, including biotechnological techniques, should be used to increase rice yield potential and improve grain quality.

63. Water use efficiency, sound soil and nutrient management practices, and other practices that can reduce greenhouse gas emissions, should be encouraged to minimize the impact of rice farming practices on the environment.

64. Appropriate funding should be provided to support the three above-mentioned strategies to achieve their goals.

Strategy for sustainable rice production in Latin American and the Caribbean

65. The yield gap is apparent in all irrigated rice production areas, and bridging the yield gap represents the most immediate opportunity for increasing rice production in the LAC. Priority, therefore, should be given to the development of human capacity and expertise on the development and transfer of Rice Integrated Crop Management for improving productivity, reducing costs and minimizing environmental pollution.

66. Support should be given to the development of self-taxation systems among producers and processors to generate funds for rice research and technology transfer, especially on RICM.

67. Resources should be pooled among countries for the generation of improved genetic materials and assistance in crop management; especially via FLAR (Latin America Fund for Irrigated Rice).

68. Rice should be classified as a sensitive commodity.

Recommendations presented by Member Countries of the Near East

69. The International Rice Commission, FAO and other institutions should provide support to the building/training of manpower and expertise in the fields of hybrid rice production and integrated crop management through the following activities:

a) Provide continued support to the building/training of manpower and expertise on hybrid rice production technology and rice integrated crop management system whereby Egypt takes the lead institution in these technical areas.

b) Organize an Expert Consultation in the year 2003 on the transfer of hybrid rice technology and the rice integrated crop management system for food security in the Near Eastern countries.

70. Member Countries should promote variety improvement, industrial rice processing for rice grain quality, rice milling and eating/nutritional quality to improve rice trade and marketing in the world.

Other Matters

71. The Commission confirmed its support to the efforts of Member Countries and FAO with a view to having the United Nations declare the Year 2004 as the International Year of Rice.

19TH SESSION OF THE COMMISSION, 7-9 SEPTEMBER 1998, CAIRO, EGYPT.

The Commission's 19th Session was successfully convened by FAO in Cairo, Egypt, from 7 to 9 September 1998, in collaboration with the Egyptian Ministry of Agriculture and Land Reclamation, with the participation of approximately 100 decision makers, senior rice specialists, developers and researchers from national, regional and international institutions and agencies. During the 3-day Session, the delegations actively participated in the deliberation and addressed the following major issues and concerns on rice production in the world:

• Yield deceleration of rice (annual growth rate declined from 2.3% in the 1980s to 1% in the 1990s), less land, less water and increased rice import especially in Asia (Indonesia, the Philippines, etc.).

• Productivity decline of rice (lower outputs/inputs ratio) in the intensive cropping system (2-3 rice crops per year).

• Yield gaps between rice farmers and research stations reach 40-50%.

• The environmental impact of the shifting cultivation of upland rice, particularly in Asia and Africa.

• The impact of changing from transplanting to direct seeding method especially in Asia, due to the shortage of labour and the availability of herbicides.

• More attention to plant biotechnology at the cost of conventional breeding at the IARCs and several NARS.

• Effects of the private sector's research on rice and intellectual property rights (IPR) on the exchange of germplasm and scientific information.

• Upon conclusion of the Session, 61 recommendations had been made by the Commission for the IRC Member Countries, the regional and international institutions and FAO.

RECOMMENDATIONS OF THE 19TH SESSION OF THE INTERNATIONAL RICE COMMISSION, CAIRO, EGYPT, 7-9

SEPTEMBER 1998

Supply and Demand for Rice: A Medium- and Longer-Term Outlook

Sustainable Rice Production Issues for the Third Millennium

Genetic Diversity, Productivity and Sustainable Rice Production

Case Studies: Indonesia, Vietnam, Egypt, Benin and Brazil

Rice: Global Achievements and Advances

Latin America and the Caribbean

Rice Production in Asia and the Pacific

Rice Production in Africa

Supply and Demand for Rice: A Medium-and Longer-Term Outlook

1. The importance of hybrid rice for future yield increases requires additional attention and should be directed in seed production that will permit accelerated adoption under both transplanted and direct-seed conditions. Hybrid rice seed technology requires further improvement for widespread adoption.

2. Additional attention is required to improve water usage in rice due to increased competition for this scarce resource.

3. Efforts should be reinforced to reduce post-harvest losses, which often surpass 20% due to the lack of appropriate postharvest facilities.

Sustainable Rice Production Issues for the Third Millennium

4. Immediate attention should be directed to address the declining productivity problem in the intensified irrigated production system. Initial effects should focus on documenting the incidence and intensity of the problem.

5. More resources should be allocated to bridging the yield-gap in irrigated rice. Emphasis is required in transferring knowledge-based Integrated Crop Management technologies. This will require new paradigms in technology transfer that will result in improved decision-making capabilities of the rice grower.

6. Seed production in several Asian countries should receive additional attention in order to expand hybrid-rice technology and ensure that the transformation to directed? rice does not prejudice the current yield level of irrigated rice.

Case Study: Sustainability of Rice Production in Egypt

7. The National Rice Research Program should collaborate with IRRI, FAO and other pertinent agencies to establish a hybrid rice-breeding program in order to further stimulate yield.

8. The National Program should undertake extensive studies to improve irrigation water use efficiency. Numerous options for reduced water consumption are available and most have been verified at IRRI.

Genetic Diversity, Productivity and Sustainable Rice Production

9. Continuous efforts should be made to add and expand the rice germplasm collection. Deep water ecologies, upland areas of soil problems and under/unexplored centres of diversity should receive priority attention in future explorations.

10. More attention should be given to broadening the genetic base of existing commercial varieties. This includes employment of diverse sources of cytoplasmic male sterility in hybrid rice programs.

Advances in Rice Genetics and Biotechnology

11. Research in rice genetics and biotechnology should continue but be complementary to conventional plant breeding. It is imperative that international institutions maintain an equally strong conventional breeding program, as well as a biotechnology program. Inter-regional and regional cooperation must be focused on applied breeding and biotechnology networking activities.

12. Member countries of the IRC should have biosafety committees and protocols, which should be stringently followed in all genetic engineering research.

Case Study: Rice Biotechnology in Egypt: Applications, Limitations and Prospects

13. Egyptian scientists need to ensure that current efforts in biotechnology are complementary to efforts in conventional crop improvement. Additional collaboration between Egyptian institutions and international institutions should be pursued.

Hybrid Rice Development and Use: Innovative Approach and Challenges

14. Seed production of hybrid rice should receive priority attention. Seed production is the principal limitation to further expansion of hybrid rice technology.

15. The private sector should receive additional attention in hybrid rice seed production. Involvement of the private sector in hybrid rice seed production is essential, outside of China.

Advances in the Development and Use of Hybrid Rice Technologies for Increasing Global Rice Production

16. A joint effort between FAO, IRRI, China and other interested parties should be directed to improve the hybrid rice seed production capacity at the national level, under the INTAFOHR. This must include strong involvement of the private seed sector.

17.Countries interested in developing and using hybrid rice technology should make adequate commitments and deploy sufficient human and financial resources for the effort to succeed.

The Outlook for Water Resources in the Year 2020: Challenges for Research on Water Management in Rice Production

18. The appropriate agencies, such as IWMI, IRRI and FAO, should make substantial efforts to identify policies, management practices, genetic improvement and other technologies to increase the productivity of water at the farm, system and basin level.

19. A collaborative effort is required for improved irrigation water usage in rice. FAO is appropriate for coordinating collaborative efforts to improve rice-water usage.

Saving Water in Rice Cultivation

20. More research effort should be devoted to developing and evaluating more cost-effective mechanisms for reducing irrigation water for rice production.

21. Attention should be given to identifying critical agronomic practices for reducing irrigation water. Major emphasis should be given to direct seeding of rice, which can significantly reduce water usage.

Farm Mechanisation for Sustainable Rice Production

22. In areas where mechanisation is feasible, attention should be directed to assist farmers in forming organisations that permit access to mechanisation.

23. Assistance should be given to the formation of custom mechanised work within the private sector.

New Developments in Rice Post-Production Activities

24. New cost-effective methods for drying rice and new storage systems should be given priority attention.

25. Modern communications and information systems should be employed to disseminate extension messages on improved post-production methods.

Trends in Rice-Fish Farming Activities

26. Governments should consider rice-fish farming as a means of enhancing food security and securing sustainable rural development. More efforts should be directed to strengthening the private sector in fish seed supply.

27. Additional attention should be given to the successful rice-fish system in lowland rainfed rice as practised in Thailand. This system is appealing due to its water saving aspects.

Women's Role in Rice Farming

28. The role of women in rice production should be recognised, especially when preparing development projects and technical assistance. This permits more effective production and project planning.

29. Access to agricultural resources and services for women should be increased.

30. A more holistic view of rice production systems should be developed to permit policy-makers and planners to better understand the dynamics operating at the household and community levels.

Case Study Indonesia Achievements on Rice Production, Research and Development: Past and Current Situation

31. Indonesian authorities should thoroughly investigate the problems associated with intensified cropping under irrigation before encouraging farmers to further intensify production.

32. The success with IPM and the Farmers' Field School should be employed as a model system for other countries.

Case Study Rice Production in Viet Nam and the Policies to Promote its Development

33. Viet Nam should continue collaborating with FAO, IRRI and China in order to master hybrid rice seed production.

34. Viet Nam should continue with policy reforms that favour market-driven rice production and marketing.

35. Authorities should thoroughly investigate the problems associated with intensified cropping under irrigation before encouraging farmers to further intensify production.

Case Study: Egyptian Policies for Rice Development

36. Other member countries of the IRC should thoroughly examine policy reforms of Egypt that were instrumental in promoting production and exportation of rice.

37. Egypt should encourage and assist the formation of rice producer associations. The associations would include a check-off on production that would be used to support rice research and development efforts. This could reduce and eventually eliminate the need for public financial resources for rice and establish a farmer-supported system, sustained by the rice growers.

Case Study: National Strategy for Rice Production in Benin

38. Continuous efforts should be made to revive irrigated rice and develop inland valley swamps. More attention is required in the area of private sector production with/where there is less government assistance and involvement.

39. The national programme should maintain close relations with NARS, FAO, WARDA and other organizations with experience in small-scaled irrigated rice production and swampland development.

Case Study: Rice Production in Brazil, Achievements and Policies

40. Brazilian rice scientists should investigate the technical constraints to improve production and lack of development of the large rice potential in the country. In particular, efforts should be undertaken to ascertain the cause for limited production in the highly favoured and traditional rice growing areas in the South.

41. Brazilian scientists should thoroughly document the process of developing the agricultural potential of the cerrados (large extensions of slightly acid soils with adequate rainfall for most annual crops). This information could be highly valuable for similar undeveloped areas such as the savannahs of Africa.

Rice: Global Achievements and Advances in Innovative Rice Technology Development

42. Additional efforts should be focused on bridging the yield gap present in most Asian countries.

43. Member Countries of the IRC should be kept abreast of the success of the new communication strategies and support systems for effective technology dissemination.

44. Additional attention should be directed to working with farmer groups in technology transfer in order to accelerate the rate of technology adoption, particularly in efforts to bridge the yield gap.

Rice Plant Types for Areas of Low-Input Management in West Africa

45. Additional attention should be given to the development of improved plant types and associated technologies for more favourable and environmentally friendly areas, characterised as inland valleys. Production increases achieved in the rainfed and irrigated lowlands will reduce pressure on the upland ecologies where, in turn, the low input plant types will contribute to the stabilisation of production.

46. The favoured characteristics? obtained from O. glaberrima, such as resistance to several diseases and viruses, should also be incorporated into genetic material adapted to the more favoured production ecologies.

Current Situation and Issues on Rice Production in Latin America and the Caribbean (LAC)

47. Cooperative projects should be fostered on breeding methods and strategies, including recurrent selection, advanced population improvement, biotechnology, and another culture as a means of improving research efficiency.

48. FLAR should expand its efforts in the area of crop management. Much progress can be made by bridging the yield gap that is apparent in much of the irrigated ecology in LAC. Induced Mutations in Rice Breeding and Germplasm Enhancement.

49. FAO/IAEA should continue its innovative programme in rice genetics and Member Countries should avail themselves of the opportunities for collaboration in areas of research, training and development.

50. Member Countries with interest and capacity in rice genetics and molecular biology should fully utilise the research findings and germplasm generated by the FAO/IAEA staff.

51. FAO/IAEA should be invited to become a member of the IRC Steering Committee.

Current Situation and Issues of Rice Production in Asia and the Pacific

52. New paradigms in technology transfer should be researched. Attention should be directed to understand yield deceleration, stagnation and productivity declines that are occurring in much of Asia.

53. Efforts need to be reinforced to accelerate the development of yield-enhancing technologies, i.e., hybrid rice and the New Plant Type.

54. Special attention should be directed to market-oriented rice-economy under GATT. Technologies that increase efficiency must receive greater attention

Rice Production in Africa: Current Situation and Issues

55. African Governments, in collaboration with FAO, should develop appropriate policies that address socio-economic, institutional and technological constraints to permit Africa to unleash its potential on a sustainable basis as an important producer of rice in the third millennium.

56. Increased attention should be directed to the vast potential for increasing rice in the more favoured ecologies of inland valleys.

57. Reduced emphasis should be placed on large-scale conventional irrigation schemes, due to the history of failed efforts in managing some irrigation schemes.

Coordinated Rice Research in The Mediterranean

58. The Cooperation should naturally be enlarged to all rice scientists and research in Mediterranean climate zones. In particular, it is necessary to strengthen the training and updating of the researchers in the Member Countries on the achievements and advances in rice science.

Other Matters

59. In future meetings, papers on agricultural extension should be included in order to focus on the issue of narrowing yield gaps of rice and the weak linkages between research stations and farmers and solve the existing constraints of rice production.

60. Various institutions should strengthen and/or establish specialised extension services, through effective training of the extension agents and subject matter specialists, who in turn will train and transfer the up-to-date technology to farmers.

61. The IRC considers the effects of private sector research in rice, which will be likely covered by IPR, by inviting presentations and/or studies, especially as to how this will affect international exchange of scientific information and germplasm.

18TH SESSION OF THE COMMISSION 5-9 SEPTEMBER 1994, ROME, ITALY

SUMMARY OF THE RECOMMENDATIONS

Review of the World Rice Situation and Outlook

New Technology Development

Sustainable Rice Production

Post-Harvest Technology and Nutrition

Achievements and Innovations in Rice Research

Regional Networks on Rice and Rice-Based Farming Systems

Other Matters

The Eighteenth Session of the International Rice Commission was convened at the Green Room of FAO Headquarters in Rome, Italy, from 5 to 9 September 1994 and was attended by 63 Delegates from 39 of the Member Countries of the Commission and 5 observers from 5 FAO Member Countries. There were also 32 participants from 5 international organisations.

The Commission elected Mr. Michel Jacquot of France as the Chairman of the Commission, Mr. Mohammad Mamunur Rashid from Bangladesh as first Vice-Chairman, and Mr. Yacouba Sere from Burkina Faso as the second Vice-Chairman of the Commission.

The welcome address was delivered by the Assistant Director-General of the Agriculture Department, on behalf of the Director-General of FAO. The Chairman of the IRC Steering Committee, Officer-in-charge of the Plant Production and Protection Division, FAO gave the keynote address.

SUMMARY OF THE RECOMMENDATIONS MADE BY THE COMMISSION

Review of the World Rice Situation and Outlook

1. In the coming decade, the improvement of access to rice should remain an important issue for action on the agenda of both national and international fora to reduce hunger.

2. Emphasis and support should be given to:

• accelerate the development of varieties with stable yield performance;

• transfer of technologies among countries, and especially to the farm level in each country to bridge the gap between the potential and realised yields; and

• more studies to be initiated and maintained to monitor the effects of rice cultivation on the environment.

New Technology Development

3. FAO should promote dissemination of available hybrid rice technology to interested countries where appropriate.

4. FAO should facilitate exchange of germplasm among the rice-growing countries for varietal improvement including hybrid technologies.

5. The national and international research institutions should develop high-yielding heterotic hybrids with pest resistance and good grain quality for the tropics.

6. National governments should promote development and/or improve seed production systems and seed technology units to:

• reduce the cost of production of improved good quality seed,

• ensure adequate quantities; and

• enhance proper distribution systems and extension services;

7. FAO, in collaboration with regional/international institutions/agencies concerned, should establish an "International Task Force on Hybrid Rice" to strengthen global collaboration, for development and utilisation of hybrid rice technology for increasing rice yields.

8. Member Countries should ensure that conventional breeding programmes are well supported prior to major investments in biotechnologies, which are tools for strengthening programmes. Initially, developing countries should generally master basic, less sophisticated biotechnological skills before embarking on molecular procedures.

9. In the process of training of scientific personnel on biotechnology, emphasis should be given to the mastering of techniques that are relevant to the countries' objectives and needs.

10. Global collaboration on the development and sharing of biotechnological methodologies and materials should be promoted.

Sustainable Rice Production

11. Governments should promote and facilitate efficient, yet judicious, use of agricultural inputs, optimising economic return to the farm family while preserving the environmental resource base.

12. Rice production should not be viewed in isolation but as part of a holistic farming system in which the farmer's income and welfare, as well as the diversity of social and biophysical environments, should be integrated in the design of technologies.

13. An integrated land development plan should be used when exploiting fragile deepwater and mangrove. This should include adequate land use planning and surveys on socio-economic and environmental considerations in short and longer terms. Several opportunities for development of wetland ecosystems such as agriculture, aquaculture agro-forestry, wildlife management, game ranching and ecotourism should be included in these land use systems.

14. African countries should mobilise national policies, where appropriate, to promote the use of productive and sustainable inland valley swamps, with emphasis on water management, to increase rice and other food production.

15. New approaches, including national policy reorientation and political will to stabilise and reduce vulnerable upland rice area, should be established to make them more economic, productive and sustainable in exploitation.

16. Governments should elaborate and implement policies related to taxation, price regulation, credit availability, marketing, etc., to promote sustainable rice production.

17. The focus of research resource allocation ought to shift from a fixation on yield improvements to a more integrated approach to the resource management.

18. National and regional programmes should be developed, promoting a better diagnosis of the productivity of mineral fertilizer use in rice cropping systems by farmers. All sources of plant nutrients should be considered, within a balance sheet approach, for all types of rice cropping systems. The mechanisms of plant nutrient uptake and plant nutrient losses under farmers' conditions and the relevant innovations should be evaluated within integrated programmes.

19. The Governments should promote strategies for improving plant nutrient management through the monitoring of fertilizer formulation and utilisation, adequate pricing policies, and support to research and extension.

20. Where heavy pesticide use is prevalent, or being promoted, governments should carefully explore application of IMP, based on the proven principles stated above. The IPM Programme should also include rodent control in the agenda.

21. FAO continues its technical support to national programmes in the design and implementation of the farmer-participating IPM programme; institutions such as IRRI, WARDA, CIAT, etc. continue to pursue relevant research on IPM.

22. More information on appropriate value-added ? technologies, at farm or village level, is needed to enhance incomes and options especially for rural women.

23. A higher priority should be given to the support and funding of agricultural engineering research, development and extension, especially in relation to the following five areas: (i) direct seeding technologies and engineered equipment; (ii) small-scale stripper harvesters; (iii) improved small-scale post-harvest systems; (iv) improved small-scale environmental friendly pesticide application technologies; and (v) issue of rodent control to reduce crop losses.

24. Where "red rice" is a serious problem, a programme of integrated weed management, including crop rotation, should be considered.

25. International organisations (especially FAO, IRRI, and ICLARM), donor agencies and Member Governments should support the development of appropriate technologies for integrated rice-fish culture in irrigated and deepwater rice fields.

26. The Member Governments should actively support the development of integrated rice-fish culture, with a view to creating employment opportunities, generating additional family income, and supplying affordable animal protein for the rural population. To achieve this, the Member Governments should assist the farmers by transferring technologies through effective extension services and by providing easy access to credit facilities and basic inputs.

Post-Harvest Technology and Nutrition

27. Consumer preferences should be monitored and results made available to orient production of selected varieties to meet specific requirements.

28. "Thriving with Rice" concept should be introduced vigorously in developing rice-growing countries to generate additional income and employment opportunities in rural farming communities.

29. The milling industry in rice-growing countries should be modernised.

30. Efforts should be made not only to increase the production of rice, but its availability in optimum quantity to people of low income groups. This will contribute to improve nutrition in these groups.

31. Crop diversification, at farm level, in favour of production of vegetables and fruits, primarily for home consumption, should be encouraged as these will contribute to the variety and balance of diets.

32. Governments and other relevant agencies should promote nutrition education, including consumption of parboiled rice, better cooking practices, and supplementation with vegetables, legumes, etc.

Achievements and Innovations in Rice Research

33. There is an urgent need to understand the nature of causes associated with yield declines in intensively irrigated systems; this should be a major focus of IARCs such as IRRI, CIAT, WARDA, etc. FAO should work with the relevant NARs to obtain adequate information on the geographic extent and intensity of the yield decline phenomenon under farmers' conditions.

34. The National Rice Research Programme should give adequate attention to plant traits preferred by farmers under different ecologies. Farmers' participation, at the early stage of research, should be considered.

35. As demands for rice and wide adoption of modern varieties in Africa have increased, the regional and national Rice Research Programmes should focus more on rice germplasm conservation, evaluation and utilisation, and developing varieties with broad genetic base and multiple resistance and tolerance to stress in different agro-ecologies.

36. There is an urgent need to find ways and means to improve research funding in Latin America and the Caribbean (LAC) region.

Regional Networks on Rice and Rice-Based Farming Systems

37. There is an urgent need to further sensitise the national efforts for intensive research and development activities through a sustained international cooperative mechanism to achieve regional self-reliance for food grains in Asia and the Pacific.

38. The Commission endorsed the recommendation of FAO Expert Consultation on "The Sustainability of Rice-Wheat Production System in Different Agro-ecological Settings in Asia", held in Bangkok, Thailand, on 6-9 July 1993: FAO should take action to establish a Regional Working Group on Rice-Wheat Production Systems in Asia.

39. Close collaboration with international institutions and among national rice research programmes in LAC should be continued.

40. A greater participation of national governments and their respective private sectors (in LAC), in both marketing and research, should be encouraged to protect national food security.

41. There is a need to identify international backing to buttress the Mediterranean Rice Research Network.

Other Matters

42. There should be periodical working group meetings to assess and monitor the progress of technology development and dissemination on key target areas such as hybrid rice, inland valley swamp development, sustainable rice-wheat production systems, mechanisation, etc.

43. Exchange of information on technology innovations among the national, international organisations and countries, within and among regions, should be promoted. Also, information needed for rice development and research should be made available to national and international institutions.

44. In order to exploit the available technology and boost rice production, emphasis should be given on effective extension services.

45. There should be an integrated approach to bridge the yield gap between the experiment stations and farmers' yields. The integrated approach should include dynamic extension services, availability of inputs (improved seeds, water supply, fertilisers, etc.), credit facilities, research, national policies, etc.

46. The market analysis of rice should take into consideration consumers' preferences.

47. Adequate focus surfacing the various issues, related to rice production in East-Africa, should be emphasised.