REPORT OF THE

FOURTEENTH SESSION OF THE INTERNATIONAL RICE COMMISSION

Held in Rome, Italy
27-30 April 1977

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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INTRODUCTION

Opening of the Session

1. The Fourteenth Session of the IRC was held in Rome from 27 to 30 April 1977. The Session was opened by Mr. Max L. Witcher (U.S.A.). The Session was attended by 26 Member Nations of the IRC, Observers from 4 Member Nations of the Organization, 3 Observers from International Research Institutes and 1 Observer from UN and Specialized Agencies.

2. The Comission elected Mr. H. Mends (Ghana) as the Chairman, Dr. G.S. Kalkat (India) as the first Vice-Chairman and Mr.Virgilio Blanco (Mexico) as the second Vice-Chairman.

Adoption of the Agenda

3. The Commission noted the comments of some delegations who felt that the schedule of FAO meetings at this time was very tight, but adopted the proposed agenda and time-table. The Commission agreed that there would be no Drafting Committee and that the secretariat would prepare the draft report.

Keynote Address by the Assistant Director-General, Agriculture Department

4. Dr. D.F.R. Bommer, Assistant Director-General, Agriculture Department, (AG) delivered the keynote address to the Session.

5. Dr. D.F.R. Bommer reviewed the changes in the global rice situation between 1972-77, highlighted the challenges facing the Member Governments in rapidly stepping up rice production, and reiterated the FAO commitment to support the national institutions in their drive to improve rice production, conservation and utilization. The full text of this address appears in Appendix B.

PROGRAMMES AND PRIORITIES

Regional Overview of Rice Development

6. The Commission considered the document IRC/77/4 and suggested some revisions, viz: to consider Pakistan along with Asia rather than the Near East, to add the Republic of Korea along with the Asian countries with high irrigated rice area and to highlight the production constraints in West Africa and elsewhere. The Commission also noted the reason for continued popularity of non-high-yielding varieties (HYVs) in Pakistan being due to the attractive export price of basmati rice, and this is the reason for the fall in area under IRRI HYVs from 0.73 to 0.67 million ha between 1971 and 1976.

7. The Commission welcomed the additional information provided by the delegates from Nigeria, Brazil and India. It recognized that Brazil, the biggest rice producer in Latin America (9.5 million tons in 1976) gave greater attention to upland rather than irrigated rice.

8. The Commission noted with appreciation the phenomenal increase in rice production in Nigeria over the last two decades. From a low 95 000 tons in 1960, the production rose to 325 000 tons in 1970 and 600 000 tons in 1976. Present plans aim at the production of 1.1 million tons to erase the rice deficit by 1980, which at one time cost the country 2.5 million annually for rice imports. Major emphasis is on the transfer of technology.

9. The Commission noted the major losses in Liberia due to birds and recommended that increased attention be given to research on bird control.

10. The Commission noted that improvements in Indian rice production have come mostly from the irrigated area, dry season and from areas not subjected to water congestion. The obvious challenge is the rainfed monsoon rice which is subjected to drought and submersion at different stages of growth.

11. The Commission also noted the recent developmental emphasis on Indian monsoon season rice production through the organization of community rice nurseries, Minikit programme and improved cultivation practices.

12. The Commission recognized the need for varieties of different growth durations for different water regimes and for different fields topographies.

13. The Commission also recommended that research programmes should address themselves to a cropping system and design varieties which permit better utilization of the growing season for rice and crops to follow it in rotation.

14. The Commission recognized the urgency to develop appropriate technology for direct sown rice. In India alone, 10 million ha are grown in this manner.

15. The Commission noted the observations of IITA that dry sown rice which is later converted into lowland rice is practicable only when the practice of bueshening (inter-cultivation in flooded rice fields, 6-8 weeks after sowing) is properly practised and with late maturing varieties. It also noted that ''dyking'' the upland rice and fertilizer application can make an enormous difference in yields in West African countries.

16. The Commission noted the major strides being made in research and the opportunity for development stemming therefrom and appealed to the Governments to accelerate the national rice production efforts to bridge the formidable demand gap projected for the end of the next decade.

17. The Commission endorsed the priority for low-cost rice production technology through the development of varieties which withstand various stresses, viz: soil problems, insects, diseases, etc.

18. The Commission recommended that greater attention be given to the mobilization of irrigation resources for rice production in the Near East, Africa and Latin America and for improved soil/water management in monsoon Asia.

19. The Commission noted the impressive listing of the UNDP-funded projects in support of rice production at national, regional and global level - partly listed in IRC/77/11. It was recognized that global projects like the International Rice Testing Programme are invaluable in fostering international cooperation and providing technical assistance.

20. The Commission felt that appropriate documentation should be devised by FAO to make available the wealth of information available in the various FAO/UNDP field projects for the benefit of all rice-growing countries.

Selected Country Production Programmes

21. The Commission considered document IRC/77/5 which dealt with national production campaigns in some countries, viz: the Philippines (Masagana 99), Indonesia (BIMAS), Ivory Coast (SODERIZ), and Colombia.

22. The Commission was informed that three successive bad production years (1971-73) in the Philippines has necessitated the launching of Masagana 99. The key elements of the programme were the provision of farm credit under joint guarantee of the farmers (''Selda''), liberalization of loan procedures including the organization of mobile banks and governmental guarantee of 85 percent bank loans, mobilization of mass communication media, ensuring a support price for the paddy, subsidizing the price of fertilizer used for rice, and intensive training of agricultural extension staff. The Commission agreed with the importance of the above measures in large-scale diffusion of the total package of modern rice production technology.

23. The Commission recognized the impact of the Masagana programme which elevated the national rice production from 2.7 million tons in 1973 to 3.4, 3.5 and 3.8 million tons respectively in 1974, 1975 and 1976.

24. The Commission expressed its appreciation for the excellent presentation of the programme through audio-visuals; and commended the Philippines for the formulation of the imaginative programme which covered 1.7 million ha, advanced loans of US$ 110 million, benefited 57 provinces and spread the benefits among 950 000 rice farmers.

25. The Commission realized that a programme of this magnitude would face several types of problems, such as the epidemic of brown plant hopper (59 000 ha affected in 1976), slips in credit delivery, drops in repayment of loans (93.1% in 1974 to 76.1% in 1976), distraction of farm technicians from extension to loan disbursal etc.

26. The Commission then considered the Indonesian BIMAS programme which originally started as an action research, but eventually evolved into an educational and welfare programme for the rural areas. It noted the complexity of this undertaking which calls for an elevation in the functioning of rural institutions, in managerial skills in timely input delivery, and infrastructural development and warehousing, procurement, and processing.

27. The Commission noted the impact of BIMAS on national production. It recognized the problems in transfer of technology and those related to the non-recovery of accumulated farm loans due to poor seasonal conditions.

28. The Commission then considered the production programme in India. It noted that the crux of the problem is the stagnant low yields (800 kg/ha milled rice) in the rainfed rice of Northeast India, which is beset with problems of drought, flooding, low fertilizer use, high risk etc.

29. The Commission noted with satisfaction the remedial measures being taken by the Government by promoting advanced planting through community nurseries, row sowing in place of random direct seeding, weed control, fertilizer use and improved cultivation practices.

30. It also noted the steady progress made in rice production by the Northwestern and Southern States of India, which enjoy good facilities of irrigation and water management.

31. The Commission noted the work in progress in Thailand on the incorporation of ''floating'' gene into the high-yielding varieties.

32. The Commission noted the rapid progress made by the Republic of Korea in rice production by a rapid diffusion of the semi-dwarf cold tolerant variety, Tongil, which covered 1.2 million ha in 1975 (1/3 of the planted area) and more recently, by an even better variety, Youshin. It also noted the impact on rice yield, which, as a result of national campaigns, rose from 3.0 tons/ha in 1970 to 4.29 tons/ha in 1976. The Commission expressed satisfaction that rice development in Korea is a part of overall rural development (saemaeul movement) and economic growth.

33. The Commission noted that Malaysia is presently 85 percent self-sufficient in rice as a result of a sound research base (Malaysian Agricultural Research and Development Institute), extension, progressive investment in irrigation, promotion of fertilizers with subsidy, mechanization and plant protection.

34. The Commission expressed its satisfaction with the success of the rice production programmes reviewed. Some members, Japan, Sierra Leone and Nigeria in particular, enquired about the problems encountered in programme delivery and the solutions found to meet these problems, since these aspects were of wide interest.

35. The Commission was informed of the various logistic problems viz: timeliness of input delivery, ensuring the prevalence of floor prices for procurement in a large country, local variations in recovery of benefits from the package of modern technology (in Indonesia), competence of extension staff and their determination in pursuing the declared policy in loan disbursal, inadequacy of supervision of field technicians (Philippines), poor communications in rural areas (India).

36. The Commission noted that given the magnitude of governmental support, the available technology could make a big impact on national production in many situations.

37. The Commission therefore recommended that the national production campaigns of the type reported, with appropriate modifications to suit local situations, should be seriously considered by the Governments as a means of speedily stepping up their rice production.

38. The Commission also laid special emphasis on the need to make rural institutions more effective as a means of alleviating the economic condition of the rice farmers.

Global Network of International Rice Research

39. The Commission expressed its appreciation of the programme development at the International Rice Research Institute (IRRI) which had resulted in the creation of an international network of rice research. It noted that diversity of rice-growing conditions, inter-locational variations in problems of soil, insect and diseases, wide disparity in skills of farmers and production constraints lead to the logical conclusion of extensive testing of technology as a pre-requisite to specific locational diffusion of proven technology in a given situation.

40. The Commission commended the farsightedness of IRRI in fostering links with regional and national institutions and strengthening the national institutions through training of local workers. It expressed appreciation that 1 500 trainees have been associated with IRRI over the past 15 years.

41. The Commission also expressed satisfaction over the management of research networks by supporting activities such as data processing and diffusion, organizing the multi-locational monitoring tours on specific topics, joint programme planning etc.

42. The delegates from the Philippines, Nigeria and Japan expressed their satisfaction of their close collaboration with IRRI and particularly emphasized the continued value of national scientists's training.

43. The Commission appreciated the excellent cooperation between the host country (the Philippines) and IRRI, as reflected in the technical support to Masagana 99 and other programmes.

44. The Commission noted the over-commitment of IRRI's training facilities and expressed the hope that initially, other International Centres, and eventually National Institutions would fill this role.

45. The Commission was also satisfied with the Inter-Centre cooperation within the CGIAR system, since such cooperation avoids duplication and benefits member countries.

46. The Commission recommended continued support to the programmes of the type of IRTP and suggested that Member Governments take full advantage of these programmes.

Production Technology

(a) Varietal Improvement and Plant Protection

47. The Commission noted the Japanese delegation's comments on salient recent developments in rice production technology, viz: evolution of HYVs based upon traditional local varieties, maximizing the fertilizer-efficiency by biological nitrogen fixation and management of soil fertility.

48. The observer from IRRI outlined the logistics and programme accomplishments of the inter-disciplinary research focus to varietal improvement covering the facets of agronomic attributes, tolerance to soil, climatic and water-related stresses and resistance to insects and diseases. The Commission noted that the opportunities for exploiting the genetic variation in rice even for tolerance to plant nutrients (Zn, P, N etc.) are enormous.

49. The Commission noted with satisfaction the receptivity to the IRRI GEU programme from the Philippines, Nigeria, Japan and other countries and endorsed the emphasis on varietal resistance over chemical control of insects and diseases, greater attention to varietal improvements in rainfed lowland rice, continuous monitoring of the biotypic and racial changes in insects and diseases.

50. The Commission also recommended that the adaptational attributes of the local varieties should not be lost sight of in implementation of the national breeding programmes.

51. The Commission was impressed by the awareness of IRRI to safeguard against the hazards of spreading genetically homogeneous rice varieties in extensive areas through the incorporation of multigenic, horizontal and general resistance to insects and diseases. It welcomed the wide dissemination of this strategy through the IRC Newsletter.

52. The Commission noted the research in the USA whereby even a tall lodging variety can be so managed, by split application of fertilizer, to respond to fertilizers with less risk of lodging.

53. The Commission recognized that next only to weather (as stated by IRRI), insects and diseases are the major production problems. It recognized that while resistance breeding is an appropriate strategy for insects with high host-specificity, chemical control is needed for those with low specificity.

54. The Commission noted the population build-up of brown plant hopper in several rice growing countries; and the threat of biotypic differentiation in this insect.

55. The Commission noted the cost-reducing major advances in methods of insecticidal application, viz: granules in paddy water, root-zone placement, ULV sprays etc. It also noted the efficacy of low cost herbicides such as 2,4-D as pre-emergent weedicides, but recognized that weed control in upland rice continues to be difficult.

56. The Commission shared the concern of the delegate from Japan over the long distance migration of insects (e.g. lead and plant hoppers) and of the observer from IITA over the multiplicity of insect/disease problems in West Africa which need intensive study. It noted for example, the problem of yellow mottle virus and crinkling disease. It noted the comments of the Philippines that a continuous monitoring of these biotic stresses in essential.

57. The Commission was satisfied that attention was given simultaneously to biological control of insects but recognized that it has not yet reached the stage of general adoption. The delegate from the USA informed the Commission of weed control by infection with specific diseases.

58. The Commission noted that perennial weeds are difficult to control, although the cultivation practices can mitigate their menace. The Commission welcomed the USDA publication on weed control.

59. The Commission was pleased to note the development of the FAO/UNEP Global Project on Integrated Pest Control which aims at optimisation of various components of insect control (varietal resistance, chemical control, cultivation practices etc.) by promoting inter-country programmes through demonstrations, training and applied research.

(b) Management of Soil Fertility

60. The Secretariat introduced the document which considered that the problem is two-fold, viz: to correct the soil problems in order to elevate the yield level from sub-normal to normal level and later to elevate the yields from normal to high-level.

61. The Commission recognized the widespread soil problems - deficiencies of P, Zn, Fe and toxicities of Fe, Al and reduction products. It noted that while these problems are relatively simple of solution, the major challenge is the maintenance of nitrogen status.

62. The Commission noted the relevance of methods and times of N-application for a high order of efficiency.

63. The Commission welcomed the UNDP project on biological N-fixation providing long-term support to rice production systems.

64. The Commission noted the IITA research in West Africa which focuses on the important role which fertilizers can play even under bush-fallow systems of rice cultivation. It appealed to member countries to bestow greater attention to the promotion of fertilizers, guided by the local technical data. For example, the response to P is widespread in African soils. The Commission was pleased to note that IITA is assembling diverse germplasm from various sources and testing it for adaptation to the African situation.

65. The Commission noted the IITA comment on the severity of Fe-toxicity in the rice soils of West Africa and the urgency to solve this problm.

66. The Commission was informed of the activities of the FAO/IAEA Joint Division in Isotope-Based Research on Phosphatic, Nitrogenous and Micro-element Fertilizers as well as of the plans for a regional rice seminar in Jakarta in September 1977.

(c) Mechanization

67. The Commission noted with satisfaction the philosophy of IITA in pursuing a low-energy-input mechanization, viz: jab planter, stripper harvester, ULV-herbicide/insecticide applicator etc. It also noted that the peak labour demand in West African rice farming is at weeding and harvesting and to a less extent in land preparation.

68. The Commission was impressed by the increased human output following the changes in rice farming systems from bush-fallow-slash-burn to desiccated mulch-jab planting.

69. The Commission recommended that greater attention be given to the economic and social implications of mechanization in accordance with technical feasibility.

70. The Commission was informed of the technical problems in direct seeding of rice in standing water in the tropics.

71. It was noted that while the presentation of IITA dealt mainly with upmand rice in West Africa, most of the rice is grown in the tropical region under rainfed and irrigated conditions. For introducing new production technology, especially for a higher level of mechanization, water control, level fields as well as accessibility are essential prerequisites, as has become evident in several projects implemented by FAO.

72. The Commission noted that with regard to the question of the economics of farm mechanization, apart from the yield level, the price of paddy paid to the farmers has an important bearing on the level and type of mechanization. Prices paid to farmers vary as much as by a factor 7-8. In developing new production techniques the specific conditions in a country should therefore be carefully examined.

73. The Commission appreciated the presentation of the research findings of a mechanization study carried out in India, Nigeria and Senegal. In collaboration with the University of Wageningen, Netherlands, and FAO, a publication was made available to the delegates on the outcome of the efforts.

74. The Commission agreed with the recommendations to update the Manual on Equipment for Rice Production and noted with interest the formation of a working group by FAO and the FAO/Industry Cooperative Programme. The Commission was informed that FAO will take steps to implement this activity.

Resource Potential and Investment

75. The Commission considered document IRC/77/8 which outlines the wide variation in irrigated areas among rice growing countries and the effect of irrigation and drainage on rice yields. As against the world average yield of 2.3 tons/ha, irrigated and rainfed rice yields are 3.67 and 1.86 tons/ha respectively. It was noted that irrigation also includes harnessing, drainage and management of water resources. The Commission noted that while new projects should fill this lacuna, modernization of old irrigation projects should be simultaneously undertaken. It was also noted that while the investment demands seem to be high, the justification for such investment is obvious, when considering the projected demand for rice and instability of rainfed rice production.

76. The Commission also considered the various steps involved in the preparation of Investment Projects. It noted that to ensure a viable project a detailed study from technical, economic, social and financial standpoints is essential. The chosen project should have an administrative frame for successful execution and should satisfy various tests of consistency and viability in order to justify investment by a financial institution.

77. The Commission was informed that in Indonesia 53 percent of the total rice production area and 65 percent lowland area is irrigated.

78. The Commission felt that the investment figure of $4 000/ha for the development of irrigation as mentioned in the document IRC/77/8 is too low. It was informed that much depends on local conditions and that costs could be anywhere from $5 000-$10 000/ha.

79. With regard to the managemental sensibility of HYVs, the Commission was informed that IRRI is aware of these problems, but that HYVs are only one factor in the search for increasing production and that development of adequate production techniques is equally important.

80. The Commission was informed that in the USA 100 percent of the rice is grown under controlled irrigation and that the average yield level is 5.1 tons/ha.

81. The Commission noted the enormous potential that exists for augmenting world rice production by improving the irrigation and drainage and recommended that Member Governments should continue to attach high priority to the modernization of irrigation and drainage systems.

82. The Commission also recommended an intensification of development of improved production techniques for rain fed rice production in order to cope with the increased demand, parallel to continued efforts to increase irrigated areas.

Main Activities and Future Strategy

83. The Commission considered this item on the basis of document IRC/77/9 which was very much appreciated. It recognized that the twin problems concerned with rice are low level of productivity and annual instability and that production is well below the demand in many developing countries.

84. The Commission recognized the major research developments at international and national levels and at the same time, expressed concern over the wide range of production constraints operating at farm level, expecially in the developing countries.

85. The Commission recognized that rice would continue to be grown in rainfed lowlands and that major production breakthrough with this production system calls for concerted inter-disciplinary effort, the intensification of which it recommended.

86. The Commission agreed that high priority be given to strenghthening of national institutions, both for long-term technological self-reliance and short-term utilization of international research. It therefore recommended greatly increased efforts in the training of national workers (research, development and extension).

87. The Commission emphasized the urgency in providing a functional linkage between research and development wings within a country. It also noted that the success in national production programmes resulted from such interaction. It also recognized the need for close liaison between the technology testing programmes at international and national levels in order to refine the local recommendations and to minimize the risks in promotion of new technology.

88. The Commission attached high priority to the intensification of training of extension staff as well as to the motivation and reinforcement of extension services.

89. The Commission, having noticed the impact which some national production campaigns have generated, recommended that similar activities be undertaken by interested developing countries.

90. The Commission decided to abolish the following statutory bodies:

IRC Working Party on the Agricultural Engineering Aspects of Rice Production, Storage and Processing;

IRC Working Party on Rice Soils, Water and Fertilizer Practices;

IRC Working Party on Rice Production and Protection.

91. The Commission recommended that ad hoc meetings, technical conferences or expert consultations at national, sub-regional or regional level be convened instead.

OTHER MATTERS

Progress Report on Inter-Sessional Activities

92. The Commission reviewed the FAO activities of interest which have been listed in the Secretariat document IRC/77/10.

93. The Commission recommended the continuation of such inter-sessional activities which were of value to Member Governments. Since the Commission meets only once in four years, the inter-sessional activities of FAO become all the more important, and the Secretariat should continue to report these to the IRC Sessions.

IRC Newsletter

94. Since more periodicals from Research Institutions are now available, the style and format of the IRC Newsletter has now been revised in order to conform more to that of a Newsletter and to make it more useful to the rice-growing countries in all regions.

95. The Commission welcomed that, since 1976 the Newsletter has been issued in the three official languages of the Commission: English, French and Spanish. The full-length articles have been curtailed, except for those which have been requested by special invitation. In addition to the short communications on research and technology which continue to be published, additional sections on National Production Programmes and FAO activities have been added. The nomination by Member Governments of correspondents, with whom the Technical Editor can communicate, has contributed towards improving the content of the Newsletter.

96. The Commission endorsed the changes brought about in the IRC Newsletter and recommended a wide distribution among rice workers.

Other Business

97. None.

Date and Place of the Next Meeting

98. The date and place of the next session shall be determined by the Director-General in consultation with the Chairman according to Rule I of the Rules of Procedures. The Commission suggested that the next session be held, if possible, in a rice growing member country where rice projects could be visited.

ACKNOWLEDGEMENTS

The Commission thanks the various contributors to the Session documents i.e., IRRI, IITA and several scientists in member countries. It also thanked the Chairman and Vice-Chairman for their able conduct of the Session.