Keynote Address

Sho-ichiro NAKAGAWA
Director General
National Research Institute of
Agricultural Engineering

Dear Friends,

On the occasion of the 20th International Symposium on "Technology for Double Cropping of Rice in the Tropics" sponsored by the Tropical Agriculture Research Center I consider it an honor to deliver the keynote address to the large number of participants from overseas and from Japan who are presently attending the symposium.

Among the food crops, rice offers incomparable advantages in terms of nutritive value, productivity, storage and marketing. In addition, the paddy fields where rice is being cultivated can be utilized continuously without experiencing the injury associated with repeated cultivation and play a major role in the maintenance and preservation of soil fertility. Therefore, the contribution of rice as the staple food of the populations living in the Asian countries including Japan, has been extremely important from time immemorial. Recently, as the outstanding characteristics of rice are being increasingly recognized, the area devoted to rice cultivation has expanded worldwide encompassing the American and African continents as well as Oceania.

Presently although the gap between the supply and the demand of food has become somehow narrower throughout the world, there are still areas afflicted with severe food shortages. Moreover, considering the continuous increase in the world population and destruction of arable land, it will be even more important in future to further promote rice cultivation and to develop paddy fields due to the superior attributes of rice.

To increase the production of rice heavy investment is necessary to establish a field infrastructure including irrigation and drainage facilities as rice is being cultivated under submerged conditions. However in exchange, high yields per unit area can be achieved and the cultivated surface per annum can be remarkably increased through the implementation of rice double cropping in the tropical zone.

Presently, the area cultivated with rice covers 1 hundred 40 million hectares worldwide of which 60% is concentrated in tropical Asia. Although in 12 countries of tropical Asia 27% of the paddy fields are equipped with irrigation facilities the area with double cropping amounts to less than 10%. Therefore in future, in order to maximize the production of wetland rice, it will be necessary to promote the implementation of rice double cropping along with establishing a field infrastructure including irrigation and drainage facilities.

To implement successfully rice double cropping in the tropics, which is the theme of the present symposium, it is important to combine harmoniously "software" fields such as plant breeding, methods of cultivation and fertilization, control of pests and diseases, farm mechanization and management with "hardware" components such as construction of irrigation and drainage facilities and farm roads as well as field consolidation. However, since in the tropics research on rice double cropping has been initiated only recently, the development of an integrated complex of techniques is still in its early stage. Therefore, although efforts are being made to implement rice double cropping in several countries, there is a poor coordination among the various techniques applied and in many instances the results obtained are not as

satisfactory as it was anticipated.

Presently at the National Research Institute of Agricultural Engineering to which I belong and which is the only research institute engaged in studies on engineering and related fields among the organizations affiliated to the Ministry of Agriculture, Forestry and Fisheries of Japan, research on irrigation and drainage, land consolidation and establishment of an infrastructure for agricultural use is being carried out. In 1968, I was the first researcher sent by the Tropical Agriculture Research Center to the Muda area to initiate engineering studies overseas. Since then a large number of researchers from this institute have been sent overseas to participate in systematic research from the viewpoint of engineering including the improvement of field conditions and water management in collaboration with researchers belonging to other disciplines.

In this regard, I have continuously emphasized the need for promoting a close collaboration among researchers and experts in the field of agriculture and engineering for the realization of agricultural development projects. I am happy to hear from the reports presented at the symposium that the effective collaboration between the two groups of researchers has contributed so significantly to the successful implementation of rice double cropping in the Muda area.

The adoption of such a multidisciplinary approach which is extremely useful for the establishment of technology systems will undoubtedly be very important for the promotion of research of this type in other countries and regions.

Finally, I am convinced that the results of research presented at the symposium will contribute significantly to the development of rice double cropping schemes in the tropics in future.

Thank you