

## BOOK REVIEW

**Fundamentals of Rice Crop Science**—Shouichi Yoshida Editor Published by International Rice Research Institute, Los Banos, Laguna, Philippines P.O. Box 933 Manila, Philippines, Pages: 250.

Growth and development of plants depend on nutrition, cultural practices, environmental milieu and soil-water-plant inter relationship. The present book "Fundamentals of Rice Crop Science" by Dr. S. Yoshida is the culmination of the author's attempt to bring together available information in a concise way to enable the readers to have a broad view of the various processes involved. The author has taken special pains to make the book highly applied and purposeful.

The book contains material from different disciplines to provide a communication media for the scientists in the various disciplines to interact and to have a better appreciation of the importance of interdisciplinary approach.

Various aspects of rice are discussed in seven chapters. Initiating the presentation, the seed germination phase is considered in all its phases. Independent stages and inter dependence nature are clearly brought out. This information would be of immense value to students in the field of crop physiology, breeding, soil science and agronomy. A firm grounding is thus ensured for a take off. A comprehensive treatment of the environmental influence on growth and productivity in rice is presented in the next chapter which covers water relations and growth aspects.

Mineral nutrition of the rice plant and nutrition disorders are considered in detail, ably supplemented by beautiful photographs taken in different rice growing countries in South and S.E. Asia. This elaborate consideration would provide guidelines for extension workers for improving fertiliser use efficiency.

Photosynthesis and respiration form the topic in the fifth chapter. The twin aspects are dealt with in a two dimensional approach—physiological and biochemical to be more meaningful and effective for practical application and utility. A brief consideration of "bioenergetics" of crop yields is a novel approach for a calculation of the yield of different crops using the conversion efficiency.

Production and productivity efficiency are the final criteria. The various parameters influencing the productivity in relation to the "plant type" concept are discussed in chapter 6, thus providing the scientists a possibility of tailoring rice plant for high productivity under different situations.

Any discussion on productivity efficiency is incomplete without a consideration of physiological

analysis which is taken up in the last chapter. The relative contribution of the "accumulated carbohydrates" and "current photosynthetic" product to grain production is dealt with in association with the factors that contribute to grain production. The "high yielding cultivation" technology, a terminology used by the author is critically examined in the light of "physiological requirements for high productivity based on crop photosynthesis, mineral nutrition and yield components". The relative importance of CO<sub>2</sub> enrichment at pre and post flowering stages is brought out after a critical analysis. Alternatives to increase yield capacity (sink potential) are considered with the existing possibilities.

A step by step development is thus attempted in projecting the various factors both external and internal, responsible for greater productivity. In doing so, the author has drawn conclusions from his own experience in Japan and at the International Rice Research Institute, Manila, the Philippines supplemented by data and/or conclusions drawn by other rice scientists working in different disciplines. This is evident from the long list of references which itself adds to the value of the book.

Technological changes at different times, their relevance for realising optimum/maximum yields and the implications of differences in yields with varied technology are clearly brought out. Other important features of the book are a discussion on the factors limiting the current yield plateau, analysis of the physiological parameters for high yields, an evaluation of the high yielding technology and a comparison of yield attributing factors at different levels of technology.

This type of approach which deviates from the conventional text book oriented lines but comprehensively presents different aspects from various disciplines in clear perspective oriented towards a better understanding of growth and development in rice is of great relevance. The book would be of great use to students to have an understanding of the processes involved in the growth and development of rice, to researchers for their future endeavours in furthering yield potential, to extension staff in their attempts to convince and induce the farmers in technology adoption process through clarity of thought and reasoning and to progressive farmers to extract the maximum crop potential through the adoption of appropriate cultural practices. The author fully deserves rich compliments.

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