Fundamentals of Aquacultural Engineering. Thomas B. Lawson. Chapman & Hall, USA. ISBN 0–412–06511–8. 355 pp. $ 45.

With the global fish production fast approaching the maximum sustainable yield, the role of aquaculture as an important contributor to high quality food production has become more apparent in recent years. The concept of aquaculture has shifted from traditional methods to more of a commercial operation, with attempts to maximize the production from a given waterbody. Commercial aquaculture is not simply a biological operation, but a complex, multidisciplinary activity involving the expertise of biologists, engineers, economists and others. In this context, the *Fundamentals of Aquacultural Engineering,* stands out prominently among the volumes of books on aquaculture. The author, basically a freshwater aquaculture engineer has brought out the fundamentals of aquaculture engineering principles in simple technical terms in the 12 chapters of this book.

Aquaculture production, to a great extent, is influenced by the physical, chemical and biological characteristics of the environment and their interactions. The aquaculturist should have know ledge of water quality and the environmental requirements of the cultured organism for the venture to be successful. Chapter 2 provides practical information on water quality standards for aquaculture. The illustrations and examples are mostly drawn from freshwater aquaculture and may not be directly applicable to mariculture though the basic processes are common to both the systems. Chapters 3 and 4 briefly highlight the factors that should be considered while selecting a suitable site and water source for freshwater aquaculture.

Among the various culture systems developed for open waterbodies, the technology for cage culture has evolved essentially from engineering techniques. The bulk of the section on aquaculture in open systems presents a fairly good overview of this subject. Inadequate knowledge of water requirements and poor selection of pumps can result in significantly increased operating and maintenance costs and result in crop failure. In the three chapters, fluid mechanics, pumps and flow estimation and measurement, the author presents the basic engineering principles of fluid dynamics, functioning of different types of pumps and methods for sensing and maintaining water levels in ponds with illustrations and practical examples. This information will be very useful to the aquaculture engineer as well as the entrepreneur.

Success of aquaculture in ponds, raceways and tanks to a great extent depends on the engineering design of the system. Chapter 9 provides the basic structural designs and tips for water and waste management in these three advanced culture systems. This information which rarely finds place in many of the aquaculture books is quite useful for the aquaculturists. Good quality water is likely to become a limiting factor for aquaculture, and therefore, water reuse systems have been gaining more attention, recently. Recirculation systems offer advantage of water saving, reduced risk of external contamination and better environmental control. The author deserves appreciation for a detailed presentation concerning the principles and various methods of water treatment in the chapter on Recirculating Aquaculture Systems. Equally commendable is the chapter on oxygen and aeration which discusses the fundamental principles of aeration, aerator devices and application practices in aquaculture. In fact, the author earmarked a major portion of the book to this important aspect as many farmers are ignorant of the benefits of aeration on production. The last chapter on sterilization and disinfection is very relevant as disease transmission is on the increase with the intensification of aquaculture. There are a number of readily accepted methods of treatment. The merits and demerits of different treatments are broadly discussed.

This book is undoubtedly an useful practical guide not only to the aquaculture engineering students, but also the fishery biologists, the practising engineers and the aquaculturists. Most of the examples are from temperate freshwater aquaculture, though aqua- culture is more of a tropical occupation. The book deals basically with freshwater aquaculture engineering, but it is equally useful to the mariculturists. The exhaustive bibliography will be beneficial to the students in obtaining additional information on specific topics of interest in their respective fields.

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