

---

## BOOK REVIEWS

---

**Organic Matter and Rice – A** Proceedings of the International Conference on Organic Matter and Rice held at the International Rice Research Institute, Philippines during 27 September to 1 October 1982. (Published by the International Rice Research Institute, Los Banos, Laguna, P.O. Box 933, Manila, Philippines.) 1984, pp. 631. Price not known.

This is a compilation of 36 detailed papers presented at the conference along with details of the discussion and the recommendations which emerged at the end. In all 90 scientists from 15 countries participated in the conference, with major contributions from IRRI, China, Japan, Philippines, Indonesia and India.

The papers have been grouped under: (1) organic sources of plant nutrients, (2) decomposition of organic matter in wetland rice soils, (3) organic matter and soil physical properties, (4) organic matter and plant growth and (5) management and evaluation of organic manures in rice-based farming systems, besides four general papers listed under Foreword.

In recent years, there is reassessment of the values of organic manure in crop production and this is particularly true in respect of rice cultivation. Rice straw is the major organic mass available in all the rice growing areas and the quantity may vary from 2 to 6 tonnes per hectare. Also, under intensive cultivation practices of high yielding rice varieties relatively large quantities of root systems is left over *in situ* in rice fields. Potentials of the straw as supplier of plant nutrients are detailed by several workers, but none of them have taken cognition of the benefits from the root system. In an integrated farming system including a crop rotation, animal husbandary, poultry, etc, the organic waste is to be properly utilised to minimise environmental pollution.

The experiences of the Chinese farmers in handling organic manure, including human waste, are presented in several papers by the scientists from that country. The experiences of Japan are much different from those of China, India and the Philippines.

The beneficial effects of organic manure on soil physical properties and rice yield have been brought out in a set of nine papers. The adverse effects of the organic matter in temporarily immobilising plant nutrients are also pointed out by some authors. The general consensus is that organic manure application to rice field is beneficial and if applied in almost equal

proportions along with inorganic fertilisers, in respect of nitrogen supply, bring the best economic returns as well as improvements to the soil qualities as a long range benefit.

The microbiology and biochemistry of organic matter decomposition in rice soils are brought out in six papers under a separate head. The anaerobic and microaerophilic nature of microbial decomposition of the organic wastes, the mobilization and immobilization of plant nutrients, with concomitant production of gases and other volatile products and low molecular weight phenolic substances are presented in the papers.

The recommendations of the conference presented under: (1) Organic evaluation, (2) management and economics of use of organic materials, (3) decomposition and transformation process, (4) nutritional and physiological effects, (5) soil physical properties and processes, and (6) environmental and ecological problems, are very valuable as they give guidelines for research programmes in the respective areas of specialization. Coming as they do from the deliberations of the leading specialists, after sharing of their experiences and free exchange of thoughts on new lines of work, these recommendation would help rapid expansions of the horizons of our knowledge in the subject. This publication should become available for reference by all rice research workers of the world.

G. RANGASWAMI

21, Indira Gandhi Road,  
Fairlands, Salem 636 004.

---

**Principles of Animal Developmental Biology** by Suresh C Goel (Poona University) (Published by Himalaya Publishing House. "Ramdoot", Dr Bhalerao Marg, Girgaon, Bombay 400 004). Price Rs 225/- (VIII + 267.) 1984.

Post-graduate students in Biology in Indian universities were feeling the absence of an integrated account of animal developmental biology. Particularly where both developmental biology and embryology are taught. Moreover, there is so much overlapping between the two subjects that a book like this is most welcome. The author was a student of (late) Professor



C H Waddington and Dr A Jurand of Edinburgh. Added to this, he did a diploma course in animal genetics there. Coming as it does with such a backdrop of these disciplines, the matter is set out in unambiguous language and is quite authoritative.

The book comprises of 16 chapters. In the first (Introduction), there is a historical reference to Spemann's Organizer Concept of neural induction and it is now known that a similar one could be replicated by using methylene blue. The author in describing the possibility of cloning in humans has a cynical dig when he says that we can have "thousands of Shankaras, Bhaskaracharyas, Vivekanandas and Tulsis". I wish this comes true.

In the chapter on Fertilization (chapter 3), Capacitation is defined; when the sperm residing in the female genital duct (what part?), loses the coating substance on the acrosome and thus enables the sperm to decipher signals from the ovum.

With regard to parthenogenesis in frog particularly, it has been brought out that pricking an egg with a needle dipped in blood activates it. This happens on account of the mitochondria present in blood. Such eggs rarely pass into the adult stage. This chapter is followed by one on different types of cleavage. In chapter 5, it is described how heterokaryons or cell-hybrids can be formed using inactivated Sendai virus. In a heterokaryon, the genes from both the nuclei are active at the same time. In the chapter on gastrulation, differences between invagination, involution, ingression and immigration are brought out clearly.

In the next chapter (Concepts in Developmental Biology), some fundamental questions are raised. Why do salivary gland cells become polytenic? What causes DNA to replicate? The author pithily puts that differentiation is the core of animal development as speciation is the core of organic evolution. Briefly, differentiation is the process by which blastomeres give rise to cells of an independent living organism. Waddington called it 'histogenesis'. But differentiation is more acceptable as it embraces dedifferentiation, redifferentiation, modulation and neoplastic growth.

Extraembryonic structures are dealt with in chapter 8. In giving an account of mammalian placenta,

unfortunately, there is no reference to (late) Amoroso's work. Figure 8.7 gives a comparative account of placenta and the figure could have been more artistic. That the giant cells in the trophoblast are merely a further differentiation product of trophoblastic cells is not referred to. While rabbit placenta does not produce any hormone, the human one secretes at least five hormones. The placenta is thought to permit no exchange of blood between mother and fetus. In erythroblastosis fetalis, a Rhesus negative mother gestates a Rhesus positive fetus. An exchange of erythrocytes becomes possible when the placenta becomes aged or senile.

A good account of limb morphogenesis is given incorporating work done in the author's laboratory. The views put forward by Amprino (1965) and Zwilling & Saunders are discussed. In limb development, cell death is due to a genetic cause and not to a physiological stress. Chapters 10 and 11 deal with eye-morphogenesis and cartilage respectively. Metamorphosis, particularly of anuran tadpoles is described in detail. The part played by thyroid hormone involving morphology, physiology and biochemistry in anuran tadpoles makes interesting reading.

Regeneration and metaplasia occupy chapter 13. Urodela have spectacular potentialities for regeneration. Regeneration of eye-lens in Amphibia is discussed at length. The last chapter (16) deals with Eukaryotic genome organization and needs a knowledge of genetics to follow.

In addition to the longish errata list provided at the end of the book, there are quite a few more which appear to have escaped the proof-reader. Some of the figures could have been drawn better; the author should have engaged the services of an artist.

The book, though aimed for the student population, has been priced so high (Rs. 225/-) that only libraries could afford to possess.

All the same, the book is a mine of information and is recommended for every student of animal developmental biology who can afford.

387, Upper Palace Orchards,  
Bangalore 560 080.

L S RAMASWAMI