Book Reviews

Solbrig, O.T.; Jain, S; Johnson, G.B.; Raven, P.H. (eds.): Topics in Plant Population Biology.

London: MacMillan 1979. 589 pp., 75 figs., 37 tabs. Hard bound £ 14.00.

In 1977 population geneticists and ecologists discussed the papers of this volume at a preliminary conference held at Ithaca College, in Ithaca, New York. The participants of this meeting came from the United States only, a factor possibly reflected by financial consideration. On the other hand, the high scientific level of the articles discussed, once again shows the leading position played by the United States plant population biologists. Their self-sufficiency, also reflected in the literature citations, may be justified.

This volume is dedicated to George Ledyard Stebbins on the occasion of his 70th birthday in 1976. It contains a comprehensive list of his publications and opens with an introductory discussion by himself of the historical development of plant population biology. An additional seventeen articles are grouped into three main parts. In part 1 'adaptation and genetic variation in populations' are discussed; in part 2 'life-cycle parameters' are examined; and part 3 collects papers on 'energy harvest and nutrient capture'. Summarizing the topics discussed in this volume, Peter H. Raven examines future directions in plant population biology in a closing article. These wide-ranging and often very stimulating topics discuss current thought on plant evolution and will provide the conceptual framework for further studies. The declared aim is to achieve more balanced ecosystems under human influence. Therefore we will hope that the optimistic prediction of the jubilee will come true: 'The coming years may be even more satisfying since they may see the advent of significant contributions made by evolutionists toward solving the world's problems.'

K. Hammer, Gatersleben

Staniforth, A.R.: Cereal Straw.

Oxford: Clarendon Press 1979. 175 pp., 53 figs., 50 tabs, Hard bound £ 12.00.

The straw of the five slender-stemmed cereals, wheat, barley, rye, oats and rice, is used as bedding for livestock, in the production of farmyard manure, as mineral fertilizer through field burning and as substrate for growing mushrooms and cucumbers. Straw is valuable as food for ruminants in the form of pellets, especially if the digestibility of its cellulose is increased by treatment with alkali. Excellent pulp can be made from straw and processed into paper and elastic boards. Straw is used for heating and has potential in the chemical industry in the production of glucose, alcohol, polythene, rubber, detergents and furfural. Baskets and hats are craftwork products of straw. A.R. Staniforth treats all these subjects in an authorative and enlightning manner. Special emphasis is placed on objective, economic evaluation of the various present and potential uses of straw.

It is apparent from this book that many of the earlier and present uses of straw – with the exception of field burning – are declining because of the labour cost of handling straw and the inferior quality of the straw harvested by the combine harvesters as compared to the methods using binders, scythes and sickles. Staniforth makes it clear that this is primarily due to the later harvest time required by the combiner for the successful collecting of the grain. By then the straw has reached a maturity and chemical composition which is disadvantageous for most processes using straw as raw material.

Roughly speaking, these cereals yield an equal amount of grain and straw on a dry matter basis. The book emphasizes that new non-laborious and efficient techniques of harvesting, storing and transporting of straw are the key to successful uses of straw at the farm or in the factory.

I have read the book with the purpose of finding out if plant breeding could improve the quality of straw. So far straw has been successfully bred for increased lodging resistance. As set out in Chapter 3 of the book this has led to a shortening of the culm without decreasing the yield of straw in weight per area. The lesson from the book is, that plant breeders should try to produce high yielding varieties, in which the grain is ripe for combine harvest before the straw is fully 'mature', that is before it has lost much of its protein, before its digestibility has declined and before its crude fibre content has risen to an extreme value.

D. von Wettstein, Copenhagen