

## Book reviews

**Ross, H.: Potato Breeding – Problems and Perspectives. Advances in Plant Breeding (Supplements to journal of Plant Breeding).** Berlin, Hamburg: Paul Parey 1986. 132 pp., several figs. and tabs.

This book has appeared as supplement nr 13 to 'Zeitschrift für Pflanzenzüchtung'. According to the author it aims at stimulating the dialogue between scientists and practical breeders about the performance of classical breeding methods and the progress from applying new technology in the various fields of potato breeding.

The book contains 10 chapters of varying length. The main emphasis is on basic breeding material (11 pp), new breeding methods (30 pp) and breeding for resistance (31 pp). The other (small) chapters cover the subjects: Genetics of potato (5 pp), breeding aims and basic breeding procedures (4 pp), true potato seed (3 pp), breeding for yield and maturity type (2 pp), breeding for quality (6 pp) and production of seed potatoes (4 pp).

The opinions of breeders and scientists on the importance to be assigned to the different subjects usually vary widely so I will refrain from giving one opinion about this aspect.

The best and most informative chapter of the book is that about resistance breeding, especially the parts on viral diseases and cyst nematodes. It would not have been feasible to cover all potato pests and diseases so the author had to restrict himself to those which in his view are the most important. A certain degree of subjectivity in the choice of diseases to be treated in detail and in the way of treatment is unavoidable.

As a matter of course the large chapter on new breeding methods is highly heterogeneous. It includes potato breeding at the diploid level using dihaploids and diploid relatives, the resynthesis of tetraploids through sexual polyploidization, the induction and potential of monohaploids, tissue, cell and protoplast culture (regeneration of plants, somaclonal variation), parasexual hybridization and transformation.

It is not an easy task for one author all by himself to cover adequately and without failings such a complex chapter. It detracts little from the author's merits when stating that especially the (cyto)genetic subjects of this and other chapters are treated rather poorly and are defaced by some controversial or even incorrect citations, terminology and statements.

Apart from this criticism it may be said that the author has brought together a lot of valuable information and an extensive list of references. Potato breeders and researchers may be grateful to Professor Ross for this review which fills a gap in the existing literature on potato breeding.

J. G. T. Hermsen, Wageningen

**International Atomic Energy Agency. Nuclear Techniques and in vitro Culture for Plant Improvement. Proc. Symp. Vienna, 19–23 August 1985. Organized by IAEA and FAO.** Vienna: IAEA 1986. 529 pp., several figs. and tabs. Soft bound. Austrian Schillings 1,100.

The space for reviewing this proceedings volume is so limited that only the chapters will be mentioned as well as some (subjectively) selected highlights. I. Genetic variation

from in vitro culture: spontaneous mutations and somaclonal variation; cytogenetics of garlic; analyses of plant regenerants from in vitro culture of maize; in vitro embryogenesis of alfalfa. II. Genetic stability of in vitro cultures: preservation of genetic resources; embryogenic cell cultures of Gramineae; mosaic composition of protoplast calli and segregation of various phenotypes in potato (why here, it should be better located in the previous chapter (?)). III. In vitro culture with application of mutagens: effects of ionizing radiation on cells of diverse plant tissue culture systems. IV. Haploids: androgenesis and gynogenesis; "bulbosum-technique" in the case of barley and wheat. V. In vitro mutant selection: metal, low-temperature and disease resistance in soybean, chrysanthemum, and potato, barley, sugar-beet and hop, respectively. VI. Use of genetic variation derived by in vitro culture: somaclonal variation in tobacco and tomato; genetic variation in rice plants produced by androgenesis or seed-derived callus culture. VII. In vitro techniques as aids in mutation breeding: mutagenesis and mass propagation in *Dactylis glomerata*; mutation breeding in potato using microcuttings; some other mutation breeding aspects in more or less important crop plants (carnation, chickpea, peanut, banana, lemon, mandarin, jackfruit, mango, strawberry, cocoa). VIII. Genetic engineering: "gamma fusion" and "egg transformation"; cytoplasmic genes in Solanaceae; general aspects in cereal cells transformation (*Agrobacterium* and viruses as vector systems, direct gene transfer into protoplasts, micro-injection of DNA into plant cells, pollen-mediated transformation).

This book represents a valuable survey on more or less recent successes, as well as problems, in plant improvement and plant breeding using non conventional techniques. It can not be said that this book is urgently expected to fill a gap in the literature flood inundating the market during the last years, especially in the aspects enumerated in this collection. Besides, the price of 1,100 Austrian shillings may be adequate but not moderate.

H. Koblitz, Gatersleben

**International Board for Plant Genetic Resources. A Report of the Meeting of a Sub-Committee of the IBPGR Advisory Committee on Seed Storage, held at Reading, U.K., 1–3 April 1985. Cost-Effective Long-Term Seed Stores.** Rome: IBPGR 1985. v + 38 pp., 4 figs., 4 tabs., 7 appendixes.

In many gene banks, seeds were usually stored at room temperature and under room-atmosphere conditions. Under these conditions, however, seeds age rapidly and loose optimal vigour within a few years. Some 15 years ago, Harrington formulated two rules of thumb for seed storage: each 1% decrease in moisture content or 5°C decrease in storage temperature doubles the life of seeds. At present, many gene banks store their seeds under such favourable conditions. The report of the International Board for Plant Genetic Resources discusses the various modes to obtain these favourable conditions, viz. refrigerated cold stores, liquid nitrogen store, and storing under natural conditions, e.g. in the Antarctica. It especially stresses the advantages and disadvantages of these several ways from an economical and practical viewpoint.

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