Book Review

Breeding Research on Aromatic and Medicinal Plants
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This special thematic volume contains a significant portion of papers which were presented at the Second International Conference on 'Breeding Research on Medicinal and Aromatic Plants' held at the Mediterranean Agronomic Institute of Chania, Crete, in July 2000. These papers have also been co-published simultaneously in the Journal of Herbs, Spices and Medicinal Plants (2002, Volume 9, Numbers 2/3 and 4). However, this special issue brings together a number of interesting papers that make a useful contribution in medicinal and aromatic plant research. The research presented, from laboratories and institutions throughout Europe and the Mediterranean region, explores recent developments in the selection and breeding of aromatic and medicinal plants. Fifty-three well-written papers provide valuable scientific and technical information on over 35 aromatic and medicinal plants. The papers range from topics dealing with conventional breeding to more modern aspects involving biochemistry, biotechnology and molecular genetics.

The contributions are divided into four sections, under the following headings: Conventional breeding (18 papers); Biochemistry, biotechnology, molecular genetics and physiology (15 papers); Biodiversity and conservation of medicinal and aromatic plants resources (15 papers); and Economic, ethical and legal aspects (5 papers).

The first group of papers mainly deal with traditional breeding studies and illustrate the value of this kind of research on aromatic and medicinal plants. Such studies are important if wild harvesting of important species is to be lessened and controlled cultivation is to be increased. Furthermore, the need to improve the quality of materials made available to the consumers is important, along with the standardisation and characterisation of products for human use. Most of the papers deal with research conducted on well-known aromatic culinary herbs, such as Origanum majorana L. (marjoram), Ocimum basilicum L. (sweet basil) and Borago officinalis L. (borage). Topics include investigations on the effect of drought stress and/or nitrogen fertilisation on yield and secondary metabolite content, the effect of herbicide treatment on fertility and seed production, breeding for wilt resistance and the selection of cultivars to optimise yields. A number of papers report on breeding trials of some well-known and widely used medicinal plants such as Hypericum perforatum L. (St John's wort) and Atropa belladonna L. (deadly nightshade). In some cases, researchers aimed at increasing yield of active components and in others, trials were conducted to reduce levels of toxic compounds.

In the second group, a short review article on the 'Manipulation of natural product accumulation in plants through genetic engineering' highlights the possibility of manipulating biosynthetic pathways in commercially important plants and the potential for improving medicinal and aromatic plants using genetic modification. A number of studies report on the in vitro micropropagation and somatic embryogenesis of aromatic and medicinal plant species, as well as the application of protoplast fusion technology. The use of RAPD for evaluating the genetic stability of certain cultivars and the characterisation of plants from various accessions is also the topic of a number of papers.

The biodiversity and conservation of medicinal and aromatic plants is an important aspect of research in this field. The keynote paper on the 'Challenges and opportunities in enhancing the conservation and use of medicinal and aromatic plants' addresses a number of related issues and discusses possible solutions. This is particularly important as many medicinal plants harvested in the wild are under threat of extinction and cultivation is an important consideration for their conservation and sustainable use. The majority of papers in this section focus on the conservation of plant genetic resources (wild germplasm) as a potentially important source of genetic variation for the improvement of cultivated material. Examples of papers include studies on the variability of essential oils of samples from a gene bank collection of Ocimum, the variation in morphological and chemical characters of wild populations of Hypericum perforatum L. and H. maculatum Crantz, and variation for agronomic and essential oil traits among wild populations of...
Chamomilla recutita (L.) Rauschert. This kind of research highlights the need for better knowledge of the taxonomy, distribution, genetic diversity, ecology and conservation of these species in order to properly monitor wild populations. In the last section, two keynote papers deal with complex issues of intellectual property protection for plant material within Europe, economic valuation of plants for medicinal application and the controversial topic of access to genetic resources.

Although the papers presented in this volume are largely by researchers from Europe and the Mediterranean, they provide examples for research in other medicinal and aromatic plant species and are recommended reading to those involved with this kind of research. The comprehensive index provides a useful aid for quick referencing of the papers.

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