

Book review for Crop Science

Advances in Hemp Research. Edited by P. RANALLI. Food Products Press, 10 Alice Street, Binghamton, NY 13904-1580. 1999. Hardback, 272 p., \$69.95. ISBN 1-56022-872-5.

After a time of oblivion and prohibition in most of the European and American countries, the cultivation and the processing of fibre hemp is now restarting in different parts of the world. East-European countries never stopped the research and the utilisation of hemp, but their knowledge was hardly accessible internationally. About ten years ago some important research work was started, above all, in the Netherlands. But the state-of-the-art concerning the biology, the agronomy, the transformation and the products of hemp remained unknown almost world-wide.

The edited book tries to condense the broad spectrum of new knowledge concerning this fascinating crop. Eleven chapters and an exhaustive index allow anyone who requires basic information of hemp cultivation, processing, breeding and even controlling (i.e. police) to find a competent source of information. The book is recommended especially for students, scientists, growers, authorities and breeders. The sections are organised logically and provide the reader with an extensive review of the majority of recent advances in hemp science.

The first and the seventh section explore the botany and the genetic resources of the genus *Cannabis*, its origin, domestication and migration all over the world from the pre-Christian era to the modern period. The *Cannabis* taxonomy and its gene pool are described, as well as the characteristics and the origin of the most existing fibre, seed and drug strains and *cultivars*.

Hemp became notorious because of its production of secondary compounds, most of all the cannabinoids. The second section of the book explains the biogenesis and the importance of cannabinoids for

the plant. The third section reviews conventional methods and proposes new techniques for detecting and monitoring the psychoactive molecule (THC) in hemp. Information on the immunological and chemical procedures for the analyses of the THC are presented.

Particularly interesting for crop agronomists are the sections four to six. Chapter four describes the cultivation practices with special attention to the production of textiles and paper pulp, but also crop rotation, planting, seeding rate and nitrogen fertilisation characteristics. Chapter five proposes a crop growth model to assess the yield potential of hemp. Limiting factors of the dry matter production are discussed and compared with kenaf, another annual bark fibre crop. In contrast to the frequent statement that hemp does not suffer under diseases and pests, chapter six enumerates the insects pests of stalk, roots, leaves, flowers and seeds, as well as fungal and other diseases affecting the hemp crop. In addition, pests and disease management with control possibilities and necessities are presented.

The first reported hemp breeding project took place in 1927 in the US. After that conventional breeding techniques were used in Western and Eastern Europe to develop fibre *cultivars*. As stated in the eighth section, the sex genetic of hemp played an important part in the breeding work. In addition, intensive efforts were done to improve the stem yield, the fibre content and to reduce the THC content. Just recently research has begun to perform hemp breeding using modern genetic techniques like tissue culture and molecular markers. This is described in a further section.

Two uses of hemp are described in detail in the tenth and the eleventh section of the book: paper pulping and oil utilisation. A Dutch feasibility study with the aim to introduce a new crop for the production of a forest-save paper was carried out after 1990. Pulping process was studied and adapted for the hemp crop, with special attention to the hemp bast fibres and the hemp woody core. The utilisation of hemp seed (“achene”) is not new. But the characteristics of the cold pressed hemp oil are poorly investigated and known. Hemp

oil has a high degree of unsaturated fatty acids and shows a unique pattern among the common plant oils. Especially the content of high unsaturated *gamma*-linoleic acid (GLA) and of stearidonic acid (SDA), in some new varieties, promise different and interesting applications in nutrition and in medicine.

Vito Mediavilla

Swiss Federal Research Station for Agroecology and Agriculture

Reckenholzstrasse 191

CH-8046 Zurich, Switzerland

(vito.mediavilla@fal.admin.ch)