Reuter, D.J., Robinson, B.J. (ed.): **Plant Analysis: An Interpretation Manual.** - CSIRO Publishing, Collingwood 1997. 572 pp. ISBN 0-643-05938-5.

Plant analyses have been developed mainly to get information on the nutrient status of plants as a tool for optimal nutrient management of expected crop production. Increasingly they are being also used to protect environment from over-fertilization of crops, to monitor overall nutritional status of regional land, and to indicate environmental pollution and toxicity. Plant analysis alone can give a diagnosis of nutrient status of plant at time of sampling, but for the evaluation of nutrient supply from the soil or for nutrient requirement of plants to reach optimal growth and maximum yield there is necessary to provide the calibration of each individual element in defined stage of plant growth with the respect to plant species, cultivars and plant part in model and field experiments. Varied soil properties and climate status can significantly affect an element concentration of tested crop therefore the values of the identical plant cultivar sampled in clearly recognised growth stage with known soil and climate parameters are recommended to be used as reference values for farmers or advisors. Determination of total element concentration is the most common method to monitor nutrient status. Sometimes a particular form of nutrient can give a more sensitive indication of plant nutrient status to assume nutrient requirement.

Second edition of Plant Analysis Manual was completely revised and extended by new references. Twenty five Australian scientists collected data showing an interpretation criteria for 294 species based on more than 1872 world wide published papers. The book is divided into ten chapters. First four are focused on principles and interpretation of plant analyses, symptoms of nutrient deficiency and toxicity, guidelines for collecting and handling of plant materials and on definition of terms and symbols used in summarising tables. Following six chapters are describing in well organised tables the nutrient status of macro and microelements (N, $NO_3$-N, P, $PO_4$-P, S, $SO_4$-S, K, Ca, Mg, Na, Cl, Cu, Zn, Mn, Fe, Al, B, Mo, Co, Ni) in temperate and tropical crops, pasture species, fruits, vines, nuts, vegetables, ornamentals and forest plants.

Authors spent much effort to simplify difficulties of element uptake and nutrient deficiency and toxicity in introduction chapters, to make understandable textbook for practical use more than for research. Good example of this is a simple and well explained nutrient uptake, partitioning and demobilisation of elements in plants in first chapter. This Chapter 1 also describes five zones of nutrient concentration in plants and all parameters affecting nutrient status of plants. Besides diagnoses of nutrient status based on total element concentration, there are also other parameters introduced like the form of nutrient, nutrient-to-metabolite ratio, and enzyme assays, to improve a prediction of nutrient status. Chapter 2 dealing with symptoms of nutrient deficiency and toxicity is too short for such a difficult subject. Comprehensive information is concentrated in some tables, unfortunately there are not any pictures of basic visual element deficiencies printed in this book. Valuable tables of hierarchical text key for diagnosis of nutrient deficiencies and toxicities and insect and fungal disorders give a complex manual not only for presented crops but also guidelines how to solve any visual disorder during plant growth.

Chapter 3 on manipulation of samples and analyses is describing the different procedures of plant sampling in field concentrated on specificity of plant type. There are also some details of sampling with instructions. Concerning the analytical methodology, it was „*not the purpose of this review to describe in detail the variety of laboratory procedures for analysing nutrients in plant materials.*" Instead, basic references are quoted for individual methods and for various aspects of plant analytical system, *i.e.*: General; Atomic absorption; X-ray fluorescence spectroscopy (XFS); Inductively coupled plasma (ICP) spectrometry; ICP-mass spectrometry; Laboratory quality control. The use of near infrared reflectance spectroscopy is foreseen to gain broad support in the future. Some of the above references are surprisingly old, *e.g.* from 1968 (atomic absorption), 1977 (XFS), 1983-4 (ICP). Great progress in these fields should have been reflected in more recent quotations. This is particularly true as concerns the problematic of laboratory quality control. Since 1947 and 1962 (the two quoted references), there has been indeed remarkable progress in this area, what should be reflected in much more recent texts quoted as basic reading. No doubt the good

interpretation and diagnosis can be made only when based on good (*i.e.* accurate and reliable) analytical results.

The total 107 literature references which are quoted in Chapter 3 come mainly from the seventies (32) and eighties (32), as many as 27 being very old (prior 1970). Only 15 % can be called recent (nineties). This statistics should have reflected better an extensive experimental development and publishing boom in the area covered by Chapter 3.

Chapter 4 is a clear and comprehensive support of following tables with nutrient status of crops. Unfortunately the editors have not made any comparison of plant analyses with other methods optimising plant nutrition, in particular with available pool of nutrients in soil.

The following six Chapters 5 - 10 are organised into simple tables which consist of plant scientific and common name, elements analysed, growth stage and part of plant sampled, type and country of experiment and number of reference. Concentration range of element is divided into six subgroups starting from deficient trough marginal and critical to adequate and further to high and toxic. Crops are divided into six groups by similar properties, and plants grown from tropical to temperate region are described here. In this extremely wide and comprehensive material we miss one more column with abbreviation of climate belonging to each experiment, because the effect of temperature and moisture could be significant for element concentration in plants. Chapters 9 and 10 will partly eliminate a paucity of data for two groups of plants. There is the only disadvantage of presented nutrient status that majority of experiments was done at Australian and New Zealand fields and should be firstly verified for crops of temperate climate before massive use. Authors of an interpretation manual have only sorted element concentration into six zones showing nutrient status in specific growth stage, but they did not introduce any nutrient recommendation for any crop and element.

Plant Analysis Manual summarises the interpretation guidelines for plant tests and is a valuable resource for agronomists, horticulturists, foresters, consultants, and of course for university students in related disciplines.

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Maxted N., Ford-Lloyd B.V., Hawkes J.G. (ed.): **Plant Genetic Conservation. The *in Situ* Approach.** - Chapman & Hall, London 1997. 446 pp. GBP 24.99. ISBN 0-412-63730-8.

The Chapman & Hall continue in the consistent policy of publishing books which have a potential of becoming widely recognized by practitioners and at the same time having the most up-to-date scientific background. Cronk & Fuller's *Plant invaders* and Martin's *Ethnobotany* can be considered as predecessors of the present volume. It was compiled by a team of lecturers from the University of Birmingham, UK, who managed to bring together an international set of contributors. Majority of them come from UK, Israel and United States, but some developing countries are represented as well, which seems particularly important for a volume focused on conservation of global biodiversity and agriculture. The signing of Biodiversity Convention at the Earth Summit in 1992 drew need to conserve and utilize biological diversity for the benefit of all mankind. The main shift in the approach to the conservation, having started in the mid eighties, is that from *ex situ* techniques to *in situ* approaches. The former are represented by moving the genetic diversity from its original location for safe storage while the latter focuses upon conserving the diversity in natural environment. Agricultural approaches, *i.e.* to conserve the genetic diversity of crops and their wild relatives, are meeting with botanical and ecological aspects of conserving wild species in natural habitats. This book provides an array of practical techniques and body of theoretical knowledge to *in situ* conservation of plant genetic resources.

The introductory section contains an overview of principles applicable to conservation of botanical diversity. Using alarming numbers on extinct and threatened species in particular floras, Prance stresses the well-known principle of saving both species and ecosystem. The role of *ex situ*