Preface

This special issue of the European Journal of Agronomy presents a selection of full papers based on contributions to the Fifth Congress of the European Society for Agronomy. This Fifth edition of the ESA congresses was held from 28 June-2 July 1998 in Nitra, The Slovak Republic, and was the first in a East European Country. Over 400 contributions of scientists from Europe and abroad have been presented at this congress in three Themes (Zima and Bartosova, 1998a,b): Change in agriculture and land use in Europe; Water and nutrient limitations of plant production; Agriculture and biodiversity.

The three themes and their contributions reflect the need to address agricultural change at different hierarchical levels: European and national level, farming system level, field and crop level and plant or process level. The themes and contributions also illustrate a growing concern for a broader range of objectives than just food production, which are relevant to agriculture: quality aspects of products, environmental objectives, anticipating global change and biodiversity received due attention in many contributions. Finally, the contributions can be characterised by the type of research: empirical and experimental research in the laboratory, greenhouse or field, prototyping research on experimental or commercial farms and systems analytical approaches using mathematical modelling techniques. The 12 papers in this issue of the Journal give a cross cut of research addressing different hierarchical levels and different aspects and objectives of agriculture, using experimental, prototyping or systems analytical approaches.

The first paper (Rabbinge and Van Diepen) describes the inevitable changes in agricultural land use at European level, the more when the European Union expands its territory towards the East. It quantifies the enormous production potentials under different production situations for Eastern European countries. The next two papers (Rroço and Mengel; Colbach et al.) contribute to process knowledge with respect to nitrogen uptake using an experimental set-up, and seed bank-tillage interactions, using a modelling approach, respectively. Rana and Katerji (water), Villalobos et al. (water), and Justes et al. (nitrogen-temperature-radiation interaction) analyse resource use efficiency at crop level.

Four papers evaluate different cropping systems with respect to climate change and elevated CO₂ concentrations (Tubiello et al.), nitrogen flows (Acutis et al.; Webb et al.) and fertilisation and yield stability (Berzsenyi et al.) using both experimental and modelling approaches. Finally, Van Keulen et al. and Ten Berge et al. present two complementary approaches to design farming systems: empirical prototyping at an experimental farm and model-based explorations using optimization techniques.

We trust that this selection of papers will give a flavour of the contents of the Fifth ESA Congress and a good sample of the agronomic research agenda of various institutions in Eastern and Western Europe and to some extent, elsewhere in the world.

References

Preface

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