Introduction to Crop Modeling Papers from Eastern Europe and the Former Soviet Union

John M. Baker*

At the 1994 ASA–CSSA–SSSA annual meetings in Seattle, WA, ASA Division A-3 sponsored a symposium entitled, “Use and Abuse of Crop Simulation Models.” The four speakers (Tom Sinclair, Ken Boote, John Pasiora, and John Monteith) presented such an entertaining and provocative picture of the state of the science that there were a number of suggestions afterwards for a written product. Accordingly, the editorial board of *Agronomy Journal* was approached and agreed to publish a set of papers, provided that they were subject to full peer review. Those papers appeared in print in 1996 (Agron. J. 88:689–716) and in turn elicited considerable interest among scientists in eastern Europe and the countries of the former Soviet Union where crop simulation modeling had a long parallel history, which was not well known elsewhere in the world due to political constraints on the professional interaction that most of us take for granted. Dr. Vitalij Denisov, of Klaipeda University in Lithuania, proposed a second set of papers to provide a view of the philosophy and status of crop modeling in these countries. The editorial board of *Agronomy Journal* agreed to the concept, subject to peer review, and the resulting papers are presented here. They are not intended to provide a comprehensive picture, but rather a snapshot of some of the crop modeling efforts undertaken in eastern Europe and the former Soviet Union as well as a vision of the potential role of such research in the future.

Crop Modeling: Advances and Problems

Oleg D. Sirotenko*

ABSTRACT

A brief history of crop modeling activities in the former USSR is presented, and the author's view on the problems and perspectives of further developments is delineated. The paper is an analytical review of a detailed report on the issue of advances and problems in crop modeling that was recently published by the author. Although both theoretical and applied crop models are subjects of this review, the main emphasis is placed on the explanatory and behavioral features of existing and future crop models.


THE WYM SOCIETY HAS SUFFERED FROM THE ECONOMIC CRISIS CAUSED BY THE DISINTEGRATION OF THE USSR. THE OPTIMISM OF ITS PARTICIPANTS HAS CHANGED TO DEEP DISAPPOINTMENT ASSOCIATED WITH LACK OF PROGRESS ON THE APPLICATION OF MATHEMATICAL MODELS AND COMPUTERS IN AGRONOMY. ACTIVITIES IN THIS FIELD PRACTICALLY STOPPED FOR SOME YEARS AND ONLY RECENTLY HAVE SHOWN SOME SIGNS OF REANIMATION. WHAT CONCLUSIONS CAN BE DRAWN FROM AN ANALYSIS OF THE EXPERIENCE GAINED IN CROP MODELING IN THE FORMER USSR?

ADVANCES IN CROP MODELING

As a result of long-term investigations, an interdisciplinary field of knowledge on relations between the geophysical environment and plant productivity has developed quantitative theory, following the template of such traditional mathematically based disciplines as hydrology and meteorology. Now, the agroecosystem is

*Corresponding author (jmbaker@soils.umn.edu).