

## THE PROBLEMS OF CHERNOZEMIC SOIL OF MOLDOVA PUBLISHED IN SPRINGER'S EDITION

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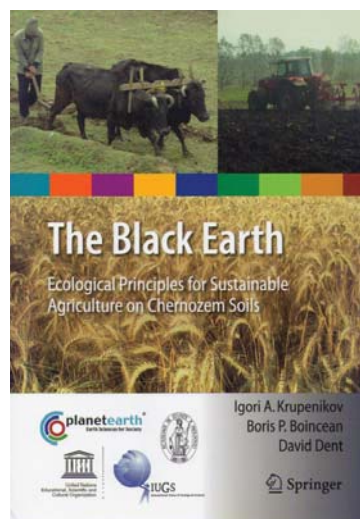
The first task of a reviewer is to make clear what a book is and what it is not. This is not a synthesis of chernozem soils of the world comparable with, say, Dudal's (1965) classic monograph on the dark clay soils of the tropics. It is largely based on experience in Moldova, where 75% of soils are chernozems and where Dokuchaev first defined the Typical chernozem. The original text was written in Russian by a soil scientist, Krupenikov, and an agronomist, Boincean, respectively from the Dimo Institute and the Selectia Experimental Station in Balti ('the Rothamsted of the steppes'). The English translation is edited and, in places, augmented by the former head of World Soils Information, David Dent.

This work is published as one of the legacy volumes of the International Year of Planet Earth (which became a triennium, 2007-09). The consequence is a rather cumbersome opening of Foreword – Series Preface – Preface – and Part I: Introduction, this last making clear the focus on the chernozems of Moldova and their management problems which are, indeed, shared by chernozems everywhere. The intended readership of the series is stated to be earth/soil science professionals and students but the authors of this monograph seek the wider audience of everyone involved in agriculture - „After all, this is everybody's business.”

Part II begins with a summary of chernozems and their relation to the less black kastanozems of neighbouring drier climates. It would have helped readers to link this with Chapter 12, The Chernozem Family, describing the sub-types in detail. The bulk of this Part is made up of nine chapters on the physical, chemical and biological properties of chernozems, based largely on data from Moldova. The distinctive feature of chernozems is not so much high topsoil humus, some 3-5%, but the depth to which it extends, typically to over one metre with >1%. It is clear that humus is the key property underlying the fertility of this soil type.

Part III turns to agriculture. Some key data are found in Chapter 18, showing mean yields of wheat and maize in Moldova rose 1961-71, maintained this level for the next 20 years, but have signifi-

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Igori A. Krupenikov, Boris P. Boincean and David Dent.  
*The Black Earth: Ecological Principles for Sustainable Agriculture on Chernozem Soils.* Springer: Dordrecht, Heidelberg, London and New York, 2011. Hardback, 143 + xxvi pp.

cantly fallen from 1991 onwards. The authors do not analyze all possible causes (e.g. a sequence of dry years, higher price/reduced use of fertilizer) but maintain that it to be due to „diminishing inherent soil fertility”.

Results of long-term field experiments are presented showing how conventional agriculture is unsustainable, because it is mining the soil organic matter, and how sustainability can be achieved by maintaining or raising soil organic matter through crop rotation, perennial legumes, farmyard manure and, especially, zero tillage. The fact that this is in no way an unexpected conclusion does not diminish its importance. Four future scenarios are presented, of which the optimistic scenario is „to secure enhancement of present levels of fertility and environmental services”. Regrettably, this „is not real [practised] on any scale at present”.

There is disappointingly little reference to parallel developments in the western world - the ecological agriculture referred to in this volume is very similar to ‘conservation agriculture’ now being advocated (e.g. Kassam *et al.* 2011) – nor to the international Land Degradation in Drylands project (LADA). In compensation, a service is provided to western readers by the extensive reference to research and publications in the Russian language.

The volume is excellently produced, with clear illustrations including 23 striking colour photographs of soil profiles and field experiments. It should be on the shelves of all good soils research libraries and, more importantly, read by students and practitioners of soils and agriculture.

This book summarizes the research, with a clear statement of its conclusions. The next stage is to persuade farmers to adopt these ecological principles, a task faced by soil scientists in all parts of the world.