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Production potential in the "bread baskets" of Eastern Europe and Central Asia

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ABSTRACT

Eastern Europe and Central Asia is a major food producer and exporter. Almost a quarter of world wheat exports come from the region, and especially from Kazakhstan, Russia and Ukraine (RUK). The potential of these countries to become a "bread basket" for the world has been emphasized because of already large production and exports and their "immense land and yield reserves", referring to the abandonment of more than 50 million hectares of cropland and the large drop in crop productivity in the 1990s. However, there is considerable uncertainty about the potential of this land for food production. In this paper we review interdisciplinary literature and empirical evidence, predictions of production potential and impacts of climate change; and discuss the potential of the region to become a reliable breadbasket of the world. From a biophysical (crop growth) perspective, under different scenarios of increased yields, land use and climate change effects, RUK could produce an additional 40–110 million tons of wheat compared to current production, which would be a substantial additional production. However economic incentives, in particular the evolution of food prices and competition from other crops, are likely to significantly constrain these potentials. In addition, the introduction of export restrictions during recent times of high prices raised concerns on the reliability of RUK as exporters.

1. Introduction

The "transition countries" of Eastern Europe and Central Asia (ECA) are major food producers, in particular for products like cereals and dairy (see Appendix A1 for country details). It is in particular their role as producer and exporter of wheat that has attracted much attention in the global food security debate. The region accounts for approximately 18% of the worlds' wheat production and 22% of global wheat exports. The major wheat producing countries are Russia, Ukraine and Kazakhstan (RUK). They account for almost all exports. Wheat exports from RUK already increased dramatically compared to the beginning of the 1990s: from around 5 million tons (Mt) in 1992–1994 to more than 34 Mt in 2010–2012.

The potential of these countries to become a "breadbasket" for the world has been emphasized because the already large production and exports can be further augmented with their "immense land and yield reserves" (Glauben et al., 2014). This potential is associated with the huge decline in land use and agricultural production during the transition process from a centrally planned economy to a more market-orientated economy. Between 50 and 60 million hectares (Mha) of land were abandoned – equivalent to almost 50% of the current land use in RUK alone. However, there is considerable uncertainty about the potential of all this land to be put back in use for food production and what the actual yield potential is (Kraemer et al., 2015; Liefert and Liefert, 2015). In this paper we review the predictions of studies from different disciplines on this. Because of space constraints and because the vast majority of studies and simulations focus on grain production in RUK, we also concentrate on this in our review.

We start our paper with a brief discussion of the transition process and its implications, observations on output and productivity evolutions and the current state of agricultural production. Afterwards we discuss changes in land use and yields and predictions on the grain production potential for the future. We conclude with a discussion of the potential of the region to become a reliable breadbasket of the world.

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