

A walk on the supply side

We continue to hear government officials, traders and academics talk about the potential for increased international grain demand to expand U.S. exports and thereby to lift farm prices and incomes. From a business and policy point of view, we agree that the outlook for international grain demand is important, but the realities and trends on the supply side also deserve attention.

Over the last century, supply issues have most often set the tone for crop markets. Farmers have consistently produced crops at surplus levels over multi-year periods. Likewise short-term run-ups in grain prices have more often been caused by weather-related supply reductions—either here or abroad—than by sudden surges in international grain demand from increased per capita incomes or other demand shifters.

As a result, and especially since focusing exclusively on the international demand side has not served us well as a predictor of U.S. grain exports over the last two decades, we believe it is important to take a dispassionate look at factors that may have the potential to bring about large increases on the supply side of world crop agriculture.

We will discuss a couple of important supply issues in this column and mention others in another piece.

Yield Gains

For the foreseeable future, yield gains have the potential to continue to drive production levels higher and higher. The upper end of yield gains shows little sign of plateauing, as new varieties and pest control systems are continually introduced into production agriculture. U.S. corn yields increased from 119 bushels/acre to 137 bushels/acre between the 1990 and 2000 crop years.

The introduction of increasingly efficient production systems in the U.S. and other developed countries now spreads at information-age speed to the rest of the world. Even without the introduction of new varieties and techniques, the expanded use of existing fertilization and pest control technologies could bring about a two-or-more-fold increase in production levels for the major crops in many countries. For instance, the 2000 corn yield in Rus-

sia was just under 31 bushels per acre, not all of which can be attributed to climatic and soil conditions.

Crop Adaptation

Specialized crop breeding and genetic research continues to expand the range of areas and conditions under which individual crops can be grown as commercial crops. In the 1950s, no one imagined that soybeans would be grown in the low latitudes of areas like the cerrados in Brazil. But Brazilian soybean researchers at EMBRAPA were able to identify the biological factors that brought about low yields at low latitudes. They then were able to find a way to overcome the yield limiting factor. By 1999 and 2000, Brazil's soybean yields exceeded those in the U.S.

Will corn be next? Today Brazil's corn yields average only 45 bushels/acre compared to a U.S. average corn yield of 137 bushels/acre. As the Brazilians and others invest in basic research, we may see that gap diminish.

In addition, USDA's Agricultural Research Service is conducting research that will expand the area in which soybeans can be double cropped by encapsulating the seeds with a time release coating. Chinese researchers are using plant genetic research to breed crops that will be adapted to arid, alkaline and saline soils. Success in any of these areas will increase production levels.

The introduction of hybrids in the 1930s and 1940s brought corn yields, which had languished in the 20 to 30 bushel per acre range for most of the previous century, to today's unprecedented 130+ bushels per acre. Will today's plant genetic research will bring about comparable yield increases in the future?

Clearly, U.S. export levels, which receive a lot of attention these days, will be affected by expansions of international SUPPLY as well as international demand.

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