by Jerry A. Sharples ■ In Short

Is a Crisis Ahead for World Grain Markets? A Look at World Grain Stocks

Recent (October 1995) figures by the U.S. Department of Agriculture indicate that there will be very tight grain supplies on world markets in 1996. My analysis of these numbers indicates that virtually no carryover stocks will be available to the world grain market at the end of this marketing year to buffer it from possible world crop shortfalls in 1996. If true, the global grain market will be under considerable stress to allocate scarce grain among the world's people and livestock in 1996 and beyond. (In this analysis "grain" consists of wheat, coarse grains, and rice.)

The USDA projects total world grain carryover at the end of the 1995–96 marketing year to be 233 million tons—13 percent of normal annual world consumption, or a little over 1.5 month's needs. On first impression that seems adequate. On the other hand, the smallest previous ratio since 1960 was 15 percent—a time when the world was considered to be in a serious food crisis and grain prices tripled (figure 1).

Global grain stocks have steadily declined since 1992. The USDA projects carryover stocks from the 1995 crop to be down 37 percent from 1992—and down 56 percent in major exporting countries, including the United States (figure 2).

Looking at the aggregate world grain stock data, however, can be misleading. The world-total stocks data would give an accurate estimation of world grain market conditions if grain could flow freely around the globe from surplus areas to deficit areas so that all consumers had equal access to the world's grain stocks. But that is not the case. Trade barriers form walls around countries. The location of the world's stocks matters.

A clearer picture of the implications of the USDA stocks forecast is obtained by (*a*) looking at the expected global location of these stocks, and (*b*) dividing stocks into two categories: pipeline stocks and buffer stocks. I assert that the stocks that are most important for buffering world markets from shortages (and surpluses) are buffer stocks located in the major grain-exporting countries. Estimates of these stocks are presented below. But first, I will discuss some concepts.

"Pipeline stocks" refers to the amount of grain in the global pipeline, so to speak, from producers to processors and final consumers. Analysts expect pipline stocks to be relatively constant from one year to the next—growing over time with the growth of global production and consumption, but growing less rapidly due to gradually improving efficiency in transportation, handling, and communication.

"Buffer stocks," on the other hand, are the stocks in reserve, available to help even out supplies over time. Buffer

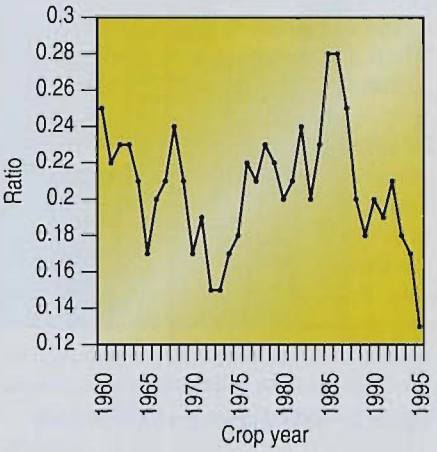

Figure 1. World grains stock-to-consumption ratio

stocks are expected to show considerable fluctuation over time in response to changing supply and demand conditions. An estimate of buffer stocks is a more useful indicator than is total carryover stocks of the end-of-marketing-year stocks available for covering shortfalls in production in the following year. Unfortunately, government agencies make no official estimates of buffer stocks.

Table 1. Estimated ending grain stocks, 1995–96 marketing year

	Carryover Stocks of Grain		
Country/Region	Pipeline	Buffer	Total
		(million metric tons)	
Major exporters			
United States	33.4	0.0	33.4[a]
EU-15	17.4	2.5	19.9
Canada	9.0	0.0	9.0[a]
Australia	2.2	0.6	2.8
Argentina	0.7	0.2	0.9
Other countries			
China	40.9	25.1	66.0
FSU	8.0	10.6	18.6
Rest of world	56.0	26.2	82.2
World total	167.6	65.2	232.8

Source: USDA, WASDE-307, October 1995.
[a]Pipeline equals total because the 1996 carryover stock-to-production ratio is the lowest since 1960.

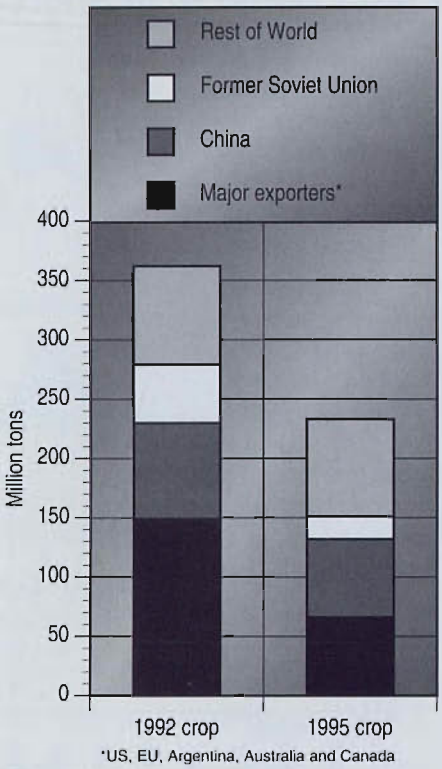

Figure 2. World carryover stocks of grain

I have constructed estimates of pipeline and buffer stocks based upon a simple rule: the best estimate of a country's pipeline stocks is the lowest level of carryover stocks (expressed as a ratio to production in exporting countries or consumption in importing countries) in that country since 1960. Any additional stocks are buffer stocks.

Previous research shows that major exporting countries make buffer stocks available to the world market. Buffer stocks in other countries, however, tend to be used only within the country to buffer domestic shortages. If a major production shortfall were to show up in say, India, then India would likely rely on her own buffer stocks plus any additional stocks that were available in the exporting countries. Buffer stocks in any other importing country likely would not be available to India. Thus, one can think of the buffer stocks in importing countries as strategic country reserves; buffer stocks in grain-exporting countries are global reserves.

Table 1 shows that the major exporting countries are expected to have virtually no buffer grain stocks available at the end of the 1995–96 marketing year. This implies that there likely will be no global reserves available. Virtually all the available buffer stocks are projected to be held by other countries for their own strategic needs. A small portion of these stocks might become available to the world market, however. Note in table 1 that the "rest of the world" is expected to have very low buffer stocks, equivalent to less than 4 percent of their annual consumption.

China is an example of a country that is expected to have a relatively large carryover stock of grain—just slightly smaller than in the previous year. This would appear surprising since China will be a significant importer of grain during the 1995–96 marketing year. But China's carryover grain stocks are mainly in interior locations. Due to poor interior transportation facilities, considerable quantities of grain have difficulty reaching the major population centers in China, let alone the world market.

Some conclusions can be drawn from these estimates:

1. World grain prices must be high throughout the 1995–96 marketing year to allocate scarce grain among the world's consumers.
2. Global grain production will need to be well above average in 1996, especially in the grain exporting and major importing countries, to enable a rebuilding of global buffer stocks.
3. World grain prices could become very unstable if buffer stock levels in exporting countries do not recover. Price reactions to news and rumors about changing world market conditions, such as changing crop-growing conditions, decisions by governments to increase or decrease imports, etc., will be magnified by the tight market.
4. The United States will not face a domestic grain shortage—production will greatly exceed domestic use—but domestic users will have to compete with consumers in the rest of the world for that grain. At some point, increasing grain prices could lead to domestic political pressure to limit exports.
5. The world could be in a precarious position going into the 1996–97 grain marketing year. There likely will be virtually no buffer stocks available in the major exporting countries in 1996 to meet possible shortages elsewhere in the world. If below-normal production occurs in a region with inadequate local stocks, then that region must compete with other countries for scarce grain on the world market. Those willing to pay the most will get the grain.
6. If a shortage occurs on world grain markets in 1996 and/or 1997, who will go without grain? Who will be the "residual demanders?" I expect three kinds of adjustment:

   (*a*) Higher prices will cause all consumers who face the impact of the world grain prices to marginally cut back on consumption. But a large share of the world's consumers are protected from world grain prices by government policy. If domestic grain prices do not increase to reflect global shortages, consumers in these countries will not cut back on consumption.

   (*b*) Poor people in poor countries who rely on grain imports will go without grain as imports are curtailed. These countries will not be able to outbid wealthier countries. They could request foreign aid to meet their grain needs, but if that aid were provided, the shortage would be more acute elsewhere. This could evolve into an international political struggle.

   (*c*) Livestock in the U.S. and other open markets will eat less grain. They were the major "residual demanders" of grain in the mid 1970s as herds were reduced and rations were switched out of grains.

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