WORLD SUPPLY AND DEMAND PROJECTIONS FOR CEREALS, 2020

Mercedita C. Agcaoili And Mark W. Rosegrant

2020 BRIEF 2 *A 2020 Vision for Food, Agriculture, and the Environment* **AUGUST 1994**

Future directions of food supply and demand will be determined by the interaction of various market forces (such as prices, population, and income) as they will be affected by decisions and policies of farmers, national governments, and international donors. Considering all these factors, IFPRI's global food model* was used to estimate future world prices, supply, demand, and trade of cereals. Results for three scenarios are presented: a baseline scenario, a scenario where production growth will slow, and a scenario in which, in conjunction with the production growth reduction, income growth will also slow. The model is also capable of simulating other scenarios.

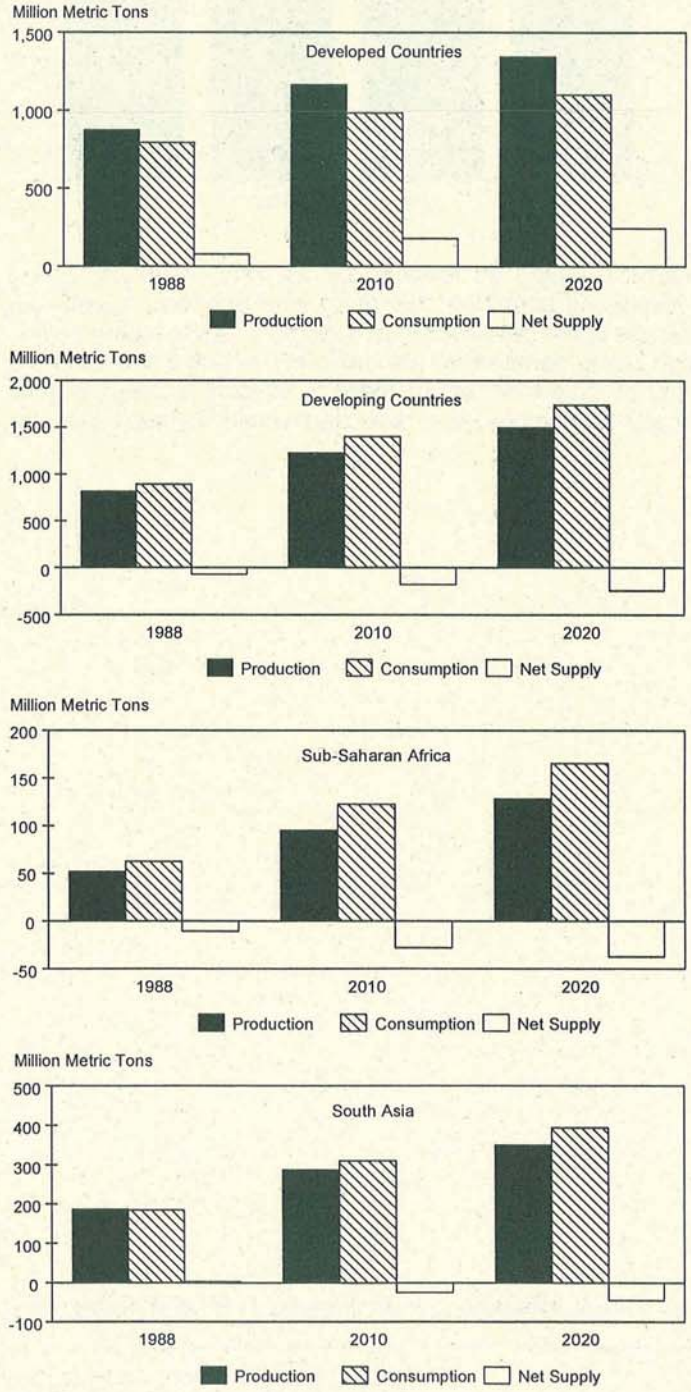
SCENARIO 1: CURRENT GROWTH RATES WILL CONTINUE

This baseline scenario assumes that production will continue to grow at the same pace as it has from 1988 to the present and that the current level of investment in agriculture by governments will be maintained. Under this scenario, real world prices of cereals are projected to decline by 33 percent from US$126 per ton in 1988 to US$85 per ton in 2020 at 1988 prices. However, this aggregate price decline masks emerging problems of hunger and malnutrition in some regions. Even under this optimistic scenario, the developed countries are projected to produce more than they consume, but cereal deficits in developing countries will continue to increase from 78 million metric tons in 1988 to 244 million metric tons by 2020 (Figure 1). The situation is particularly alarming for Sub-Saharan Africa and South Asia, where projected market demand for cereals will increase by 116 percent and 113 percent, respectively, between 1988 and 2020. Per capita demand, however, will only increase by 10 percent and 14 percent because of rapid population growth. Food deficits in these regions would more than triple by 2020.

SCENARIO 2: 20 PERCENT REDUCTION IN YIELD GROWTH RATES

What happens if committed investment in agriculture is not sustained, so that the production growth rates in the baseline scenario are not realized? Scenario 2 presents the likely cereal supply and demand situation if yield growth rates are 20 percent lower than their current levels. The projected world cereal prices in 2020 (US$145/ton) would be about 70 percent higher than the prices projected in Scenario 1 (US$85/ton) for the same period because the world supply of cereals would be tighter (Figure 2). Cereal

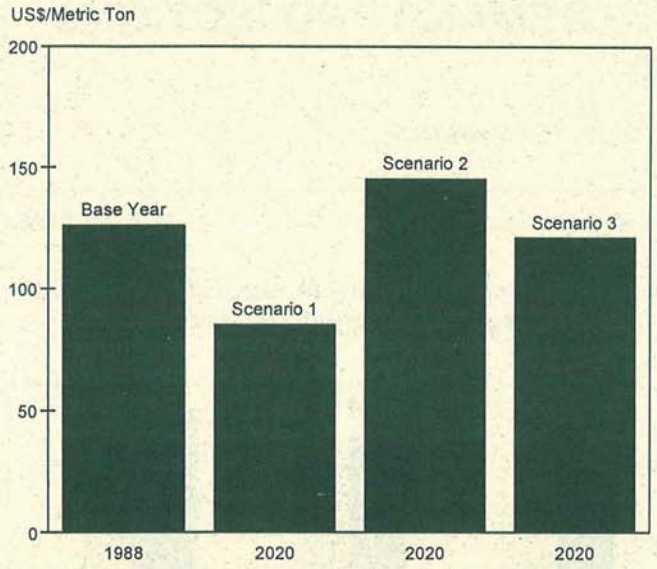
Figure 1—Scenario 1: Current rates of investment in agriculture are maintained to 2020



*IFPRI's global food model, International Food Policy and Trade Simulation Model (IFPTSIM), is a modified version of IFPSIM, developed by Keiji Oga.

IFPRI • 1200 SEVENTEENTH STREET, N.W. • WASHINGTON, D.C. 20036-3006 • U.S.A. 1-202/862-5600 • FAX 1-202/467-4439 • E-MAIL IFPRI@CGNET.COM

Figure 2—Projected real world prices in 2020



demand would be reduced by as much as 6 percent in developing countries compared with Scenario 1, because people could not afford to buy as much at the higher prices. Per capita demand will also be lower; in Sub-Saharan Africa and all countries where there is already a deficit in total available calories, the reduction would be such that per capita demand will remain almost constant throughout the projection years.

SCENARIO 3: SCENARIO 2 PLUS A 20 PERCENT REDUCTION IN INCOME GROWTH RATES IN DEVELOPING COUNTRIES

Scenario 3 compounds the slower yield growth with a 20 percent decline in the growth of national incomes in developing countries. Since agriculture accounts for large shares of national income in developing countries, slower yield growth implies a roughly proportional slowing of growth in national income. Despite slightly lower world prices (US$121/ton), demand in developing countries would be further reduced. Under this scenario, per capita demand for cereals in Sub-Saharan Africa would be even lower than in 1988.

CONCLUSION

The results clearly indicate that it is critical to maintain yield growth rates in developing economies, particularly in Sub-Saharan Africa. Because lower production is associated with income losses, it would be disastrous in developing regions. Higher prices would also have a profound impact on effective demand and the ability of the world's poor, the bottom 20 percent of the world's population, to obtain adequate food supplies.

Mercedita C. Agcaoili is a post-doctoral fellow and Mark W. Rosegrant is a research fellow in the Environment and Production Technology Division, IFPRI.

2020 VISION

"A 2020 Vision for Food, Agriculture, and the Environment" is an initiative of the International Food Policy Research Institute (IFPRI) to develop a shared vision and a consensus for action on how to meet future world food needs while reducing poverty and protecting the environment. Through the 2020 Vision initiative, IFPRI is bringing together divergent schools of thought on these issues, generating research, and identifying recommendations. The *2020 Briefs* present information on various aspects of the issues.