INTRODUCTION

As we look ahead to 2020, cereal supply situation in developing countries does not lend itself to complacency. Developing country demand for the basic cereals, rice (Oryza sativa L.), wheat (Triticum aestivum L.) and maize (Zea mays L.), is anticipated to grow at least at the rate of 2% per annum. Even if cereal crop productivity growth continued at current levels of 1.5% per annum, developing countries are expected to import some 200 million tons of cereals annually by the year 2020. In the absence of a significant increase in cereal crop productivity, beyond current levels, the global availability of such import volumes at an affordable price is questionable. The current downturn in research and infrastructural investments, along with reduced farm level profitability of cereal production, make the problem of future imports and food security even more daunting.

There is an urgent need to increase cereal crop productivity growth in developing countries in order to meet future cereal food and feed requirements. A substantial shift in the yield frontier for cereal crops through the exploitation of heterosis is likely to be the most cost-effective strategy for increasing productivity in the short to medium term. A shift in the yield frontier also is likely to increase the competitiveness of cereal crop production by reducing the cost per ton of output produced. The rapid development and dissemination of cereal crop hybrids ought to be a high priority for the public and private sector research systems in developing countries.

This chapter provides an assessment of countries and production environments where high returns can be expected from investments in hybrid research and development. Particular attention is paid to hybrid development for the three major cereals, rice, wheat and maize. The returns to hybrid research and development are assessed both for traditional food importing countries as well as food exporting countries. In the case of maize, returns are assessed for food as well as feed demand. The final section of the paper discusses the distribution of responsibilities between the public and private sector in the development and dissemination of hybrids.

CEREAL SECTOR IN THE DEVELOPING WORLD:
LOOKING TOWARDS 2020

Recent projections by IFPRI indicate that, by 2020, 96% of the world’s rice consumption, two-thirds of the world’s wheat consumption and 57% of the world’s maize consumption will occur in developing countries. Relative to their 1993