World Status of Biotech/GM crops III

Editor's Note: In my January and February 2010 SJ column, we looked at the world wide use of GM crop plants and their world-wide acceptance and some of the facts surrounding the rise in use of GM crops. In this month's column, we will continue our look at the ever expanding acceptance and use of GM crops. The numbers of biotech crop farmers increased by 1.3 million in 2008, reaching 13.3 million globally in 25 countries – notably 90%, or 12.3 million were small farmers in developing countries. During the second decade of commercialization, 2006 to 2015, biotech crops have an enormous potential for contributing to the Millennium Development Goals (MDG) of reducing poverty by 50% by 2015.

The five principal developing countries committed to biotech crops, span all three continents of the south; they are India and China in Asia, Argentina and Brazil in Latin America and South Africa on the African continent – collectively they represent 2.6 billion people or 40% of the global population, with a combined population of 1.3 billion who are completely dependent on agriculture. The increasing collective impact of the five principal developing countries is an important continuing trend with implications for the future adoption and acceptance of biotech crops worldwide

In India in 2008, 5 million small farmers, (up from 3.8 million farmers in 2007) benefited from planting 7.6 million hectares of Bt cotton, equivalent to a high adoption rate of 82%. Benefits will vary according to varying pest infestation levels in different years and locations. However, on average, conservative estimates for small farmers indicate that yield increased by 31%, insecticide decreased by 39%, and profitability increased by 88% equivalent to US$250 per hectare. In addition, in contrast to the families of farmers planting conventional cotton, families of Bt cotton farmers enjoyed emerging welfare benefits including more prenatal care and assistance with at-home births for women, plus a higher school enrollment of their children, a higher percentage of who were vaccinated.

In China, based on studies conducted by the Center for Chinese Agricultural Policy (CCAP), it was concluded that, on average, small farmers adopting Bt cotton increased yield by 9.6%, reduced insecticide use by 60%, with positive implications for both the environment and the farmers' health, and generated a substantial US$220/ha increase in income which made a significant contribution to their livelihood as the income of many cotton farmers can be as low as US$1 per day. In China in 2008, 7.1 million small and resource-poor farmers benefited from Bt cotton.

In South Africa, a study published in 2005 involved 368 small and resource-poor farmers and 33 commercial farmers, the latter divided into irrigated and dry land maize production systems. The data indicated that under irrigated conditions, Bt maize resulted in an 11% higher yield (from 10.9 MT to 12.1 MT/ha), a cost savings in insecticides of US$18/ha equivalent to a 60% cost reduction, and an increase income of US$117/hectare. Under rain-fed conditions, Bt maize resulted in an 11% higher yield (from 3.1 to 3.4 MT/ha), a cost saving on insecticides of US$7/ha equivalent to a 60% cost reduction, and an increased income of US$35/hectare.

In the Philippines at least 200,000 small farmers gained from biotech maize in 2008. A socio-economic impact study reported that for small farmers, the additional farm income from Bt maize was 7,482 pesos (about US$135) per hectare during the dry season and 7,080 pesos (about US$125) per hectare during the wet season of the 2003-2004 crop year. Using data from the 2004-2005 crop years, it was determined that Bt maize could provide an overall income advantage that ranged from 5 to 14% during the wet season and 20 to 48% during the dry season. Overall, the four studies, which examined net farm income as well as other indicators, confirmed the positive impact of Bt maize on small and resource-poor farmers and maize producers generally in the Philippines.

Research and development investments in crop biotechnology in these countries are substantial, even by multinational company standards. Notably in 2008, China committed an additional US$3.5 billion over twelve years with Premier Wen Jiabao (Chairman of the State Council/Cabinet of China) expressing China's strong political will for the technology when addressing the Chinese Academy of Sciences in June 2008 said, "to solve the food problem, we have to rely on big science and technology measures, rely on biotechnology, rely on GM." Dr. Dafang Huang, former Director of the Biotechnology Research Institute of the Chinese Academy of Agricultural Sciences (CAAS) concluded that "Using GM rice is the only way to meet the growing food demand".

In 2008, seven of the 27 countries in the European Union officially planted Bt maize on a commercial basis. The total hectares for the seven countries increased from 88,673 hectares in 2007 to 107,719 hectares in 2008; this is equivalent to a 21% year-on-year increase equivalent to 19,046 hectares. The seven EU countries listed in order of biotech hectares of Bt maize were Spain, Czech Republic, Romania, Portugal, Germany, Poland and Slovakia.

G8 members meeting in Hokkaido Japan, recognized for the first time the significance of the important role that biotech crops can play in food security. The G8 leaders' statement on biotech crops reads as follows, "accelerate research and development and increase access to new agricultural technologies to boost agriculture production; we will promote science-based risk analysis, including on the contribution of seed varieties developed through biotechnology."

Garry Smith can be reached at garrypatsysmith@msn.com

SJ