

BIOTECH PIPELINE & ECONOMIC IMPLICATIONS FOR THE FOOD AND FEED INDUSTRY

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Twenty years after their initial commercial introduction, biotech crops were planted in more than 180 million hectares in 2015. Over the same period, annual private R&D spending in biotech increased tenfold –from less than \$400 million to more than \$4 billion--and the resulting pipeline grew at a similar pace. Indeed, a growing number of companies and research institutes now use biotechnology to develop new crop varieties for food, feed and industrial uses.

Commercialization of biotech traits in the last two decades has focused on agronomic improvements in a few large hectare crops, such as maize, soybeans, rapeseed and cotton. Resulting productivity increases expanded supplies, tradeable surpluses and led to commodity price reductions thereby transferring some of the economic benefits from agricultural producers to the rest of the supply chain and food consumers. For instance, we estimate that the benefits to the global livestock industry from lower-priced feedstuffs over the last twenty years were well above \$175 billion, some of which were retained by livestock producers and some enjoyed by consumers of livestock products.

Looking into 2020 and beyond, the biotech pipeline will continue to be focused on traits that improve productivity (e.g. insect resistance, herbicide tolerance, drought resistance, disease resistance, etc.) in large hectare crops. However, an increasing number of traits focused on modified product qualities and in smaller hectare crops are also expected to enter the market or approach commercialization. Overall, there are currently more than twice as many new traits that are being deregulated or prepared for commercial introduction than those already in the market place. Technical advances are also accelerating the development of new biotech traits and shortening the period for integrating such traits into elite germplasm for all crops. As such, the biotech pipeline is expected to be broader and fuller in the coming decade and to create a larger amount of economic benefits than those realized until now.

A larger biotech pipeline, however, is expected to bring in the forefront considerations of asynchronous approvals across different countries and the chance of trade disruptions from occurrences of low level presence (LLP). Such trade disruptions are costly for both importers and exporters. Depending on the commodity and the countries involved, we estimate that bilateral trade disruptions could cost from a few million to more than \$4.5 billion per year. As such, governments around the world are considering policy options that might limit regulatory asynchronicities and trade disruptions from LLP.