GE potato marketplace

Context

Potato is considered the fourth most important food crop in the world, with annual production approaching 300 million tons and covers more than 18 million hectares and more than one-third of the global potato output now comes from developing countries. Although potato production in Europe has fallen since the early 1960s, this decline has been more than offset by the growth in Asia, Africa and Latin America, thereby explaining the rise in global potato tonnage.

In recent years in many developing countries the production rate of potatoes has exceeded that of other food crops, such as maize and rice. Reflecting the importance of the crop, there is a huge amount of research into the production of GM potatoes, including insect resistance, virus resistance and changes in nutritional quality such as starch or protein content. However, the two main GM potatoes that have been commercially approved are potatoes that have been modified to include the traits of insect resistance Bt potatoes, virus resistance (potato leafroll virus) or both traits. In addition potatoes have been modified to be resistant to potato virus X and Y. In 2001, to avoid genetically modified (GM) ingredients in their food for fear that consumers would consider the potatoes unsafe and lose confidence in their products, fast food companies refused to use GM potatoes in their French fry and potato chip products. Large potato processors were forced to stop buying GM potatoes from US and Canadian growers resulting in decreased production of GM potatoes from 50,000 to 20,000 acres between 2000 and 2001.

However, a study completed by the National Center for Food and Agricultural Policy (2002) revealed that the potential value from the use of GM potato crops in the US on an annual basis was approximately $86.3 million, with a 1.5 billion pound increase in the potato crop and reductions in pesticide use of 29 million pounds per year.

The NewLeaf? story

Monsanto NewLeaf potato which incorporate a Bt gene conferring resistance to the Colorado Potato Beetle was first approved by the US regulatory agencies in early 1995. The GE Russet Burbank potato first was first transformed and appeared in Canada food chain in 1996, Bt varieties of Atlantic and Superior soon followed. In both cases, the potatoes were labeled as NatureMark and were accompanied by informational brochures detailing the new technology.

In late 1998, Monsanto acquired final approval for a second type of GE potatoes: a Russet Burbank marketed as New Leaf Plus which combines the Bt trait with resistance to the Potato Leaf Roll Virus (PLRV). Shortly after that, in 1999, Monsanto added a third GE potato, New Leaf Y combining Bt with resistance to the Potato Virus Y (PVY). This GE trait was available in both Russet Burbank and Shepody varieties. Those varieties were relatively popular with growers. The initial planting of NewLeaf Russel Burbank was only 1500 acres but quickly grew to 50,000 due to the difficulty to control the Colorado potato beetle, which was developing resistance to pesticides, and few alternatives were available. Then, in 1995, there were a high green peach aphid pressure which is the vector of the potato leafroll virus thus growers planting NewLeaf potatoes were able to reduce insecticides costs significantly.

However, GE potatoes never amounted to more than 2-3% of the total potato market, and plantings of the GE varieties declined slightly after 1999. First of all, it was really expensive to bring the NewLeaf potatoes to the market inducing high fees for seed purchasing. Potato is a slow propagation crop thus there were low GE potato acres of the total potato market and close of the business had very little impact. Then, for resistance management strategy the variety switch during planting operation was a complication that many potato growers were not used to and the introduction on the market at the same period of a new insecticide, which offered an efficient alternative to struggle against Colorado Beetle have help the potato business failure
In 2002 less than 1 million hectares of GM potato was grown worldwide, all grown in either the USA or Canada. Due largely to poor sales, all GE potato varieties were discontinued by the developer in March of 2001 and since have not been sold to farmers for planting.

References


Kaniewski, W., Lawson, C., Sammons, B., Haley, L., Hart, J., Delannay, X., Tumer, N. 9 (1990) Field resistance of transgenic Russet Burbank Potato to effects of infection by potato virus X and potato virus Y. Biotechnology, 8(8), 750-754


The European tentative

Avebe have produced two lines of transgenic potatoes with Alteration of carbohydrate composition starch biosynthesis alteration and down-regulation of granule bound starch synthase producing only amylopectin starch that is more useful to industry. They made an application for the GM potatoes to market for industrial purposes and for animal feed in August 1997. However the EU's Scientific Committee on plants gave an unfavorable opinion on the Potato lines in 1998 mainly because of the antibiotic resistance selectable marker gene.

Then the Dutch authorities no longer allowed the company to grow the potatoes on a large scale.

Read more:

http://www.accessexcellence.org/RC/AB/BA/Potatos_in_Netherlands.html

Is China the market for Gently Modified Potatoes?


Major food companies have refused to use genetically modified (GM) potatoes in their processed potato products for fear of consumer backlash resulting from anti-GM food attitudes in Europe and Japan. However, recent findings conclude that consumers in China appear more positive about GM foods and that China may be an attractive market for GM products including GM potatoes.

Key words: biotechnology, China, genetically modified foods, potatoes.

Full text