Research and commercialization of GM crops in the world and in Europe, plum ´HoneySweet´ resistant to PPV

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Abstract

The benefits from biotech crops, lower cost of production, higher productivity, health and social positive influence, cleaner environment, resistence to pathogens and pests were clearly demonstrate by public sector institutions. Commercialization of Biotech crops started in 1995. By 2011 genetically modified (GM) crops were grown world-wide on 160 million ha. Currently, developing countries account for close to 50% of global Biotech crop production. The U.S.A. is the lead producer of Biotech crops with 69 million ha, 43% of global. Only 114.507 ha of GM crops were grown in Europe, of that, 114.490 ha were Bt maize and 17 ha were potato for industrial starch production. GM soybean remains the dominant crop, followed by Bt maize, cotton, and canola. Golden Rice is advancing towards the completion of its regulatory requirements.

Not only field crops, but also horticultural transgenic crops are under development and are beginning to be commercialized. impressive progress is in Biotech vegetable projects which include tomato, potato, cabbage, brassica, cauliflower, bean, sweet pepper, chili, zuccini, squash, eggplant, cucumber, carrot, and sweet corn. Genetic engineering has the potential to revolutionize fruit tree breeding.. The development of transgenic fruit cultivars is in progress. Papaya resistant to Papaya mosaic virus is grown in U.S.A. and China. Biotech grapevine resistant to viral, bacterial, fungal disease with abiotic stress tolerance and health benefits is grown in South Africa. Biotech banana, apple, pear, and strawberry cultivars are under the development. A result of over the past 20 years an international research is development of ´HoneySweet´ plum highly resistant to PPV. GM plum ´HoneySweet´ resistant to Plum pox virus (PPV) was deregulated in U.S.A. in 2010.

´HoneySweet´ has been evaluated for ten years (2002-2011) in a regulated field trial in the Czech Republic for resistance to PPV, *Prune dwarf virus* (PDV), and *Apple chlorotic leaf spot virus* (ACLSV), all serious diseases of plum. Even under high and permanent infection pressure produced through grafting, PPV has only been detected in ‚HoneySweet' trees in several leaves and fruits situated close to the point of inoculum grafting. The lack of infection spread in ´HoneySweet´ demonstrates its high level of PPV resistance. Co-infections of PPV with PDV and/or ACLSV had practically no influence on the quantity and quality of ‚HoneySweet' fruit which are large, sweet, and of high eating quality. In many respects they are superior to fruit of the well-known cultivar ‚Stanley'. Many fruit growers and fruit tree nurseries the Czech Republic are supportive of the deregulation of ´HoneySweet´ plum to help improve plum production and control the spread of PPV. It is absolutely necessary to change the wrong European policy and to exploit the benefits of biotech crops in Europe, too. This work was supported by grčants of Ministry of Agriculture, CR, no. QJ1210175, and no. QI101A123