

## European Commission's Joint Research Centre produces the first large-scale study on the agronomic and economic performance of a genetically modified crop cultivated in the EU

The Joint Research Centre's *Institute for Prospective Technological Studies* has today, 24 June, 2008 released the results of a face-to-face survey with 402 maize farmers in Spain - the largest EU producer (75,148 hectares) followed by France (21,174), the Czech Republic (5,000), Portugal (4,199), Germany (2,685), Slovakia (900) and Romania (350). The aim of the study is to obtain, for the first time, data on the agronomic and economic performance of *Bt* corn during three growing seasons (2002 – 2004), while also looking at the socioeconomic profile of farmers who adopted *Bt* maize versus those who did not.

Entitled the "*Adoption and performance of the first GM crop introduced in EU agriculture: Bt maize in Spain*", the survey was conducted in the three leading *Bt* corn-growing regions (Aragon, Catalonia and Castilla-La Mancha), which accounted for 90% of the *Bt* maize growing area of Spain in 2006. Farmers involved from three provinces within these regions - Zaragoza, Lleida and Albacete - were producing *Bt* maize for feed manufacturing.

### Survey results

- Survey results show that farmers adopting *Bt* maize experienced higher average yields than conventional maize growers.
- These higher yields were, however, statistically significant only for the province of Zaragoza (1,110 kg/hectare or 11,8%).
- No differences were found in the price paid to farmers for *Bt* or conventional maize.
- *Bt* maize growers paid more for the seeds than conventional growers, but had reduced insecticide use and costs.
- On average, growers of conventional maize applied an average of 0.86 insecticide treatments per year to control pests, versus an average 0.32 per year applied by *Bt* maize growers.
- All things considered, the impact of *Bt* maize adoption on gross margin obtained by farmers in different provinces ranged from neutral to €122 per hectare, per year.
- The reason most quoted by farmers in the survey for adopting *Bt* maize was "lowering the risk of maize borer damage" followed by "obtaining higher yields".
- "Better quality of the harvest" is also quoted as a reason for cultivating *Bt* maize, because of reductions in maize ear damage by pests.

Finally, the report compared the socio-economic profiles of farmers adopting and not adopting *Bt* maize varieties.

No statistical differences were found between the two groups of farmers for such variables as land ownership, farm size, main crop cultivated, age, education, agricultural training or years of experience as a maize grower. The report concludes that differences in yields and margins are attributable to the adoption of *Bt* maize varieties and not to the socio-economic profiles of farmers surveyed.

### **Future research**

There are few reports on the economic performance of *Bt* maize in other parts of the world. For the United States, the largest grower, on-farm evidence is limited to the early years of adoption (1997 – 1999). The JRC's report constitutes the first large-scale, empirically based estimation of the economic impact of a GM crop for EU farmers.

Future socioeconomic analyses of GM crops need to consider the costs incurred by farmers adopting GM crops to ensure coexistence with non-GM crops. Most EU Member States are now drafting or adopting specific coexistence measures for GM crop cultivation.

### **Background information**

The only GM crop currently available to EU farmers for cultivation, *Bt* maize was authorised by the European Union in 1997. *Bt* maize is a genetically modified variety expressing the insecticidal protein from the soil bacterium *Bacillus thuringiensis*, and genetically resistant to borer attacks. Maize borers are the most damaging maize pests in Spain.

*Bt* maize was first planted in Spain in 1998 on 20,000 hectares. By 2007, this had grown to over 75, 148 hectares, equivalent to about 20% of the country's maize-growing area. *Bt* maize is the second GM crop worldwide after GM soybeans in terms of cultivation area.

### **Further information**

The JRC's *Institute for Prospective Technological Studies*, located in Seville, Spain has published this and several other reports on the socio-economic aspects of genetically modified crops: <http://ipts.jrc.ec.europa.eu>

The report can be downloaded at: <http://ipts.jrc.ec.europa.eu/publications/pub.cfm?id=1580>

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The main findings of this report have also been published in the April 2008 issue of *Nature Biotechnology* (*Bt* corn in Spain - the performance of the EU's first GM crop. Vol. 26, No. 4, pp – pp 384 – 386).