EuropaBio answers the question of the Friends of the Earth Report "Who benefits from gm crops?" with real facts and figures

The FoE report is entitled ñ*Who Benefits from GM Crops?"* and was timed to be released today 13 February 2008 although it has been in the public domain since January.

As far as EuropaBio is concerned, the answer to that question is two-fold:

1. Economically: we all benefit
2. The environment benefits

1. Economic benefit

A recent publication, *GM Crops in Europe: How Much Value and for Whom?* (Demont et al., 2007) shows that - as a global rule of thumb - **two thirds of the benefits of GM crops are shared among farmers and consumers**, while one third goes to gene developers and suppliers. Farmers get a direct profit from growing GM crops via higher yields and lower crop protection product use. There is also an economic advantage for consumers, because of lower prices.

If farmers did not benefit from the technology, then why has the increase in biotech crops every year represented a double percent point change year on year since the technology was introduced?

2. Environmental benefit

2.1. GM crops lead to a decrease in pesticide use

In fact, biotech varieties have dramatically reduced farmersô reliance on plant protection products.

There is now experience from 10 years of large-scale commercial cultivation of transgenic crops. Lots of data indicate that there is a **decrease in the amounts of plant protection products applied to these crops**.

This was one of the conclusions of a recent large project (2002-2006) ô**Impact of transgenic crop cultivation on the use of agrochemicals and its environmental consequences**ö under the supervision of the International Union for Pure and Applied Chemistry (IUPAC). The project made an inventory of altered agrochemical use per hectare of transgenic crops compared with conventional crops by collecting data from public sources, including scientific literature and reports published by dedicated institutions. The results have been published in a recent and very comprehensive article by Kleter et al. (2007).

A. Lower Herbicide* use in Herbicide-resistant crops

Several large studies in the US, for example by the Economic Research Service (USDA-ERS) (Fernandez Cornejo et al., 2007), come to the same conclusion: there is lower herbicide use in herbicide-resistant crops. A recent report by the National Center for Food and Agricultural Policy (NCFAP) (Sankula et al., 2005) is showing **substantial 25-33 % decreases in the use of agrochemicals** for herbicide-

resistant crops (canola, cotton, maize and soybean) compared to their conventional counterparts.

In Europe, data from field trials have clearly demonstrated lower herbicide use in several glyphosate-resistant crops. In sugar beets, for example, the number of herbicide applications in glyphosate-resistant varieties could be halved, compared to their conventional counterparts (Kleter et al., in press).

The only exception is herbicide-resistant soybean in Romania, where a slight increase (5%) of herbicide use was found. But this resulted in better weed control and hence increased yields. The increase related to the comparatively low average use of conventional herbicides before the herbicide tolerant technology was available which itself was due to financial constraints faced by farmers.

B. Lower Insecticide** use in *Bt* crops

US figures continuously indicate a decrease in insecticide sprays in *Bt* crops. For insect-resistant crops expressing two Cry-proteins, the estimated reduction in pesticides is most outspoken. As for *Bt* cotton, a nationwide survey carried out in India in 2003 indicated that the farmers were able to obtain on average a reduction in chemical sprays by 60%, and a yield increase by about 29% due to effective control of bollworms, as compared to non-*Bt* cotton. Similar trends and benefits had been reported from other countries also.

For France, it was estimated that the 22,000 ha of *Bt* maize cultivated in 2007 allowed for saving up to 8 800 litres of insecticide sprays (Orama report, 2007).

2.2. Environmental impact decreases in transgenic crops

To predict the environmental impact of pesticides used on transgenic crops, data on the quantities of pesticides used need to be combined with data on their environmental and toxicological properties. A universal indicator, the **'environmental impact quotient'** (EIQ), was employed in the studies by Kleter et al., indicating that the **environmental impact decreases upon the adoption of transgenic crops**, which can be more pronounced than just the reduction of active ingredients applied to the crops.

Furthermore, transgenic crops may also have an impact on the environment through secondary effects. For example the introduction of GM soybeans in the USA is correlated with an **increase in reduced or no-tillage activities**, which is beneficial for erosion-sensitive soils (Kleter et al., 2007) and which may lead to a substantial reduction in CO_2 output and farm energy needs (Fawcett and Towery, 2002).

* Herbicide: Agent used for weed control
** Insecticide: Agent used for insect control

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