MINISTERUL AGRICULTURII, PĂDURILOR ŞI DEZVOLTĂRII RURALE
B-dul Carol I, nr. 24, Bucureşti, Sector 3
Tel: 021.3078625; Fax: 021.3078635
Directia de cercetare, calitatea productiei si agricultura ecologica
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Domnului Director Silviu MEGAN

Director

Ministerul Mediului

Stimate domnule Director,

Cu privire la adresa Ministerului Mediului nr. 8819/E.G.U./22.10.2009, va transmitem in continuare, completat in limba engleza, chestionarul pentru evaluarea implicatiilor socio-economice ale introducerii pe piata a OMG-urilor pentru cultivare.

1 - Economic and social implications: influence on concerned economic operators

1.1. Farmers

Farmers cultivated GM crops

A.GM Insectant Rezistance (IR) maize:

a) Impact on revenue, yields and profitability

Starting 2007 in Romania one biotech insect resistant traits have been commercially used targeting the common corn boring pest (*Ostrinia nubilalis*). This is the major pest of corn crops in the west part of the country and significantly reduces yield and crop quality, unless crop protection practices are employed.

The one biotech IR corn traits (MON 810) have delivered positive yield impacts in Romania when compared to average yields derived from crops using conventional technology (mostly application of insecticides and seed treatments) for control of corn borer.

Table 1: Corn: yield and production impact of biotechnology (Corn borer resistant) in Romania

Year of first adoption	GM trait area 2007	% of crop to trait[1]	Average trait impact on yield %[1]	Average yield impact (tonnes/ha)	Additional production from trait (tonnes): 2007	Additional production from trait (tonnes): cumulative
2007	360	0.02	7.1	0.25	89	89

[1] Average of impact, as estimated by Brookes & Barfoot (2009)

A summary of the impact of GM IR technology in Romania is presented in Table 2. This shows that in 2007, the additional farm income derived from using GM IR technology Romania was +0,01 million $.

Table 2: Farm level income impact of using GM IR maize in Romania 2007

Year first planted GM IR maize	Area 2007 (hectares)	Yield impact (%)	Cost of technology 2007 ($/ha)	Cost savings 2007 (before deduction of cost of technology: $/ha)	Net increase in gross margin 2007 ($/ha)	Impact on farm income at a national level 2007 (million $)
2007	360	+7.1	43.66	0	34.66	0.01

Source and notes:

1. Source: based on Brookes (2008)
2. All values for prices and costs denominated in Euros have been converted to US dollars at the annual average exchange rate in each year

In 2008, the area cultivated with GM IR maize (MON 810) in Romania was 7146 ha and in 2009 were cultivated 3243,5 ha.

Interviewed farmers who cultivate larger areas of 500-1000 ha in 2008 and 2009 said that GM maize MON 810 provides the following advantages:

• Production bonuses ranging between 10-15%.
• Eliminates the risk of production losses due to insects attack and other diseases that are easier on the plants installed under appeal.
• Lowers cost of production through economies of time, energy, insecticides (by reducing considerably the number of applications).
• Benefits in terms of final product safety- lower levels of mycotoxins in maize that show resistance to this pest.
• Reducing the toxicity and health-benefits for farmers (by reducing the number of applications of insecticides).
• The attack of *Ostrinia Nubilalis* favors installation of diseases (*Fusarium spp.*) and contribute to the depreciation of the production quality due to increasing the level of mycotoxins in grains.

B. GM Herbicide Tolerance soybeans

The impact data presented below therefore covers the period 1999-2006, when Romanian farmers cultivated GM soybean line MON 40-3-2.
Weeds have traditionally been a significant problem for soybean farmers, causing important yield losses (from weed competition for light, nutrients and water). Most weeds in soybean crops have been reasonably controlled, based on application of a mix of herbicides.
Although the primary impact of biotech herbicide tolerant (HT) technology has been to *provide more cost effective* (less expensive) and *easier* weed control versus improving yields from *better* weed control (relative to weed control obtained from conventional technology), improved weed control has, nevertheless occurred - delivering higher yields.
Weed infestation levels, particularly of difficult to control weeds such as Johnson grass have been very high in Romania. This is largely a legacy of the economic transition during the 1990s which resulted in very low levels of farm income, abandonment of land and very low levels of weed control. As a result, the weed bank developed substantially and has been subsequently very difficult to control, until the GM HT soybean system became available (glyphosate has been the key to controlling difficult weeds like Johnson grass).

The growing of GM HT soybeans in Romania had resulted in substantially greater net farm income gains per hectare than any of the other countries using the technology:

- Yield gains of an average of 31%[2] have been recorded;
- The cost of the technology to farmers in Romania has tended to be higher than other countries, with seed being sold in conjunction with the herbicide. For example, in the 2002-2006 period, the average cost of seed and herbicide per hectare was $120/ha to $130/ha. This relatively high cost however, did not deter adoption of the technology because of the major yield gains, improvements in the quality of soybeans produced (less weed material in the beans sold to crushers which resulted in price premia being obtained[3]) and cost savings derived;
- The average net increase in gross margin in 2006 was $220/ha (an average of $175/ha over the eight years of commercial use: Table 3);
- At the national level, the increase in farm income amounted to $28.6 million in 2006. Cumulatively in the period 1999-2006 the increase in farm income was $92.7 million (in nominal terms);
- The yield gains in 2006 were equivalent to an 21% increase in national production[4] (the annual average increase in production over the eight years was equal to 14.9%);
- In added value terms, the combined effect of higher yields, improved quality of beans and reduced cost of production on farm income in 2006 was equivalent to an annual increase in production of 33% (124,000 tonnes).

Table 3: Farm level income impact of using herbicide tolerant soybeans in Romania 1999-2006

Year	Cost saving ($/ha)	Cost savings net of cost of technology ($/ha)	Net increase in gross margin ($/ha)	Impact on farm income at a national level ($ millions)	Increase in national farm income as % of farm level value of national production
1999	162.08	2.08	105.18	1.63	4.0
2000	140.30	-19.7	89.14	3.21	8.2
2001	147.33	-0.67	107.17	1.93	10.3
2002	167.80	32.8	157.41	5.19	14.6
2003	206.70	76.7	219.01	8.76	12.7
2004	260.25	130.25	285.57	19.99	27.4
2005	277.76	156.76	266.68	23.33	38.6
2006	239.07	113.6	220.55	28.67	33.2

Sources and notes:

1. Impact data (source: Brookes 2005). Average yield increase 31% applied to all years, average improvement in price premia from high quality 2% applied to years 1999-2004
2. All values for prices and costs denominated in Romanian Lei have been converted to US dollars at the annual average exchange rate in each year
3. Technology cost includes cost of herbicides
4. The technology was not permitted to be planted in 2007 – due to Romania joining the EU

[2] Source: Brookes (2005)

[3] Industry sources report that price premia for cleaner crops were no longer payable from 2005 by crushers and hence this element has been discontinued in the subsequent analysis

[4] Derived by calculating the yield gains made on the GM HT area and comparing this increase in production relative to total soybean production

a) Farm income and cost of production effects
Biotechnology has had a significant positive impact on global farm income derived from a combination of enhanced productivity and efficiency gains.

b) Labour flexibility : increased convenience and management flexibility; significant benefit for follow-on crop.

According to Brookes & Barfoot (2005) farm level benefits of herbicide-tolerant crops are generated primarily through:

- Increased management flexibility that comes from a combination of the ease of use associated with broad-spectrum, post-emergent herbicides like glyphosate and the increased/longer time window for spraying;
- Facilitation of adoption of no/reduced tillage practices with resultant savings in time and equipment usage;
- Improved weed control has reduced harvesting costs – cleaner crops have resulted in reduced times for harvesting. It has also improved harvest quality and led to higher levels of quality price bonuses in some regions;
- Elimination of potential damage caused by soil-incorporated residual herbicides in follow-on crops;
- Compared to conventional crops, where post-emergent herbicide application may result in 'knock-back' (some risk of crop damage from the herbicide), this problem is less likely to occur in GM HT crops.

c) Quality of the harvest

The adoption of GM IR maize has delivered important improvements in grain quality from significant reductions in the levels of mycotoxins and pesticide residues found in the grains. Bt corn has much lower amount fumonisin then conventional corn does, because there is less insect damage to corn kernels on which the fungi can grow.
Several papers quantifying and measuring this, in the EU, are summarised in Brookes G (2008).
Improved weed control arising from the adoption of GM HT crops has also reduced harvesting costs for many farmers. Cleaner crops have resulted in reduced times for harvesting. It has also improved harvest quality and led to higher levels of quality price bonuses in some regions. Examples where this arisen include in Romania (GM HT soybeans: see Brookes G (2005) .

Information gathered both from soybean growers and crushers showed that improved quality due to less weed material in the beans typically resulted in price premia for HT soybeans.

d) Seed prices

In 2007-2009, the technology cost varied around €30 ha. If we consider just the direct incremental yield, estimated at 700 kg/ha in 2008 (a year with moderate corn borer infestation) at a farm gate market price of € 95/tonne, the net gain is of 36.5 €/ha. In a year with high insect pressure, the production gain will go up accordingly.

e) Impact on seed variety availability/biodiversity

Variable topoclimatic conditions in Romania, varing from average temperatures and heavy precipitation within the Carpatic mountain chain to low precipitation values in the southern regions and notable differences between seasons imposes cultivation of different maturity groups varieties. Late maturity group varieties are appropriate for regions laying within the Carpatic arch while early maturity varieties are well adapted in southern regions. Low temperatures during the winter season distroy potential volunteer plants. Most favorable climatic conditions for soybean cultivation is found in the Danube Plain. Therefore, genetically modified cultivars on the market in

Romania belong to maturity groups 00, 0, I and II. In the Romanian Official Catalogue 14 varieties were registered (3 Pioneer varieties and 11 Monsanto varieties). In 2006, 6 varieties were marketed (one belonging Pioneer and 5 to Monsanto).

Companies that provided the Bt corn technoly in their hybrids in the 3 years after Romania's accession also sold their conventional counterparts, as the Bt technonology is appropriate only in those regions with insect pressure. The market is quite competitive, with most big players present with their most recent products in every maturity group. Likewise, there are a smaller operators (local), while public research Institutes (Fundulea, Turda) are present on the market with about 23% of the total certified seed sold (Kleffman Group 2009).

f) Health of labour

GM crops improved health and safety for farmers and farm workers from reduced handling and use of insecticides.
The specific cultivation, management and harvesting techniques used for the RR soybean are identical to those used for non-genetically modified soybean, with the exception of the herbicide regime.
Based on surveys of hundreds of farmers in the Yellow River cotton-growing region in northern China in 1999, 2000 and 2001, over 4 million smallholders have been able to increase yield per hectare, and reduce pesticide costs, time spent spraying dangerous pesticides, and illnesses due to pesticide poisoning (Pray et al., 2002).

g) Use of agricultural inputs

In the case of soybeans adoption of RR varieties led to an almost complete abandonment of herbicides belonging to toxicity classes II and III. There are no other herbicides used in soybeans which belong to toxicity class I. Consequently, RR technology has led to an increase in the use of a relatively harmless herbicide and a significant reduction in the use of more hazardous herbicides (Traxler, 2006). Substitution of glyphosate for other herbicides resulted in the replacement of herbicides that are at least three times more toxic, and that persist nearly twice as long as glyphosate (Heimlich et al., 2000; Gianessi & Carpenter, 2000). An analysis by Trewavas & Leaver (2001) showed that 3.27 million kg of other herbicides have been replaced by 2.45 million kg of glyphosate in US soybean fields.
Based on herbicide usage data from the years 2000-2003 (Brookes, 2003), Brookes & Barfoot (2005) calculated that the adoption of RR soybean in Romania has resulted in a small net increase in the volume of ingredient active applied, but a net reduction in EIQ/ha load.

h) Co-existence and GM IR maize production in Romania

Overall, evidence from both commercial practice, and research shows that GM, conventional and organic growers of maize have co-existed, and can co-exist and maintain the integrity of their crops without problems through the application of good farming and co-existence practices.

The results of the Romanian researches show that when co-existence measures are applied (isolation distances, cleaning of sowing and harvesting equipment) ensure compliance with legal provisions regarding labeling (results obtained in the project financed by Ministry of Agriculture).

1.2 Seed industry

The GM HT soybean cultivation in Romania positively impacted the seed industry in the cultivation period (1999-2006), boosting profitability of operators all along the marketing chain. In the last year of cultivation (2006), 70% of the total soybean area was GM, proving the rapid pace of technology adoption.

Downstream

1.3 Consumers

Qaim and Traxler found that in 2001, RR soybeans created more than $1.2 billion, or about 4% of the value of the world soybean crop, in economic benefits at the global level. The largest share of these overall benefits went to **soybean consumers**, who gained $652 million due to lower prices. **Soybean producers** received net benefits of $158 million, and **biotechnology and seed firms** received $421 million as technology revenue. Soybean producers in countries where RR technology is not available faced losses of $291 million in 2001 due to the induced decline of about 2% ($4.06/mt) in world market prices. This underlines that national restrictions to GM technology access can bring about considerable taxation of the domestic farm sector.

1.4 Co-operatives and grain handling companies

MAPDR has not available data concerning this issue.

1.5 Food and feed industry

Since 2007, and further in 2008 and 2009 the area cultivated with conventional soybeans fell sharply, in these circumstances Romania became a net importer of soya beans and meal - thereby increasing the cost of feeding animals and increases the cost of default poultry and pork.

1.6 Transport companies

MAPDR has not available data concerning this issue.

1.7 Insurance companies

It is important to mention that in US, starting with 2008, because of the diminished variance in production from one year to another, the insurance companies have started offering discounts (reported to stand at around 5-5.5 EUR/ha) to those farmers who plant corn staks (traits for herbicide tolerance and insect resistence). This is a direct recognition of the fact that yields are better protected as the pest damage is eliminated through bitechnology use. Various studies (summarised, for example in Brookes & Barfoot (2009)) highlight the importance of GM IR technology in improving production risk management.

1.8 Laboratories

Institute of Food Bioresources IBA performs the analysis in official control of seeds for sowing. In December 2006, IBA was accredited (by National Accreditation Body RENAR) to perform detection and quantification of CP4 EPSPS protein from RUR soybean and Cry1Ab protein from MON810 maize, acordingly to the SR EN ISO/CEI 17025/2005. IBA is also member of ENGL since 2007.
In this actvity are involved 6 people. The prices of the analyses is ≈ 90 Eur/sample and the profits is ≈10 %.
The time necessary to provide the results is 10 days / 30 samples.

1.9 Innovation and research

Do GMO cultivation and the technology spill over have an impact on the following topics? If so, which one?

-investment in plant research, number of patents held by European organisations (public or private bodies);

The development of biotech crops entails long process and significant costs. These include research costs in developing the technology and the regulatory costs that account for the real resources used, government regulation, transitional costs, and social welfare costs. There is no estimates of development and regulatory costs involved in the development of a GM crop in UE.
Organisations (public or private bodies) from the UE have invested mainly in biosafety research. Because of the very restrictive legislation, public institution are not capable to invest, or even though they go through the preliminary phases they are nor able to bring it to completion because of the prohibitive costs.

- investment in research in minor crops;
The regulatory cost is prohibitiv mainly for a small market

- employment in the R&D centres in the EU;
-use of non-GM modern breeding techniques (e.g. identification of molecular markers);
There are o lot of new technologies used in breeding, some of them being subject to the GMO regulations.

- access to genetic resources;
Have no impact

-access to new knowledge (molecular markers, use of new varieties in breeding programmes, etc.).
Have no impact

1.10 Public administration

Under current legislation, the cost analysis of seeds are borne by the operators. The cost of field testing, from plant tissue is supported by the Ministry of Agriculture.

1.11 Internal market

Several companies active on the Romanian market and licensed for MON810 technology have explored opportunities to provide their own seeds with the incorporated trait. Similarly, back in 2005-2006, Pioneer was licensed by Monsanto to sell the RR soybean trait in their own varieties.This demonstrates that Monsanto has enabled the use of its traits in competing products. This way, farmers have choice. In 2008 and 2009, only Monsanto and Pioneer biotech hybrids were available on the market, because the other players did not pursue this business. Which combinations of traits and hybrids farmers will choose to plant in the future, (especially as other traits may become avilable in EU), will be a rational decision based on the problem that the concerned products can address and at what cost.

1.12 Specific regions and sectors

Adoption of biotech traits and size of farm
We consider that the size of farm has not been a factor affecting use of the biotechnology. Biotechnology adoption has been by both large and small farmers, with size of operation not having been a barrier to adoption.
Brookes identified in Romania that the size of farm was not an important factor in the adoption of HT soybeans. Both large and smaller farms (within the context of the structure of production in Romania), within a range of 30 hectares to 20,000 hectares in size using the technology (Brookes G, 2005). Since 2007, when Romanian farmers began cultivating the IR GM maize (MON 810) the situation was similar, the GM technology being adopted by farmers within a range of 2 hectares to over 1000 hectares.

2 Agricultural sustainability

2.1 Agricultural inputs

Use of pesticides and associated environmental impact

To examine this impact, the Brookes & Barfoot (2009) analysis analysed both active ingredient use and utilised the indicator known as the Environmental Impact Quotient (EIQ) to assess the broader impact on the environment (plus impact on animal and human health). The EIQ distils the various environmental and health impacts of individual pesticides in different GM and conventional production systems into a single 'field value per hectare' and draws on all of the key toxicity and environmental exposure data related to individual products. It therefore provides a consistent and fairly comprehensive measure to contrast and compare the impact of various pesticides on the environment and human health. In the analysis of GM HT technology it uses the (reasonable) assumption that the conventional alternative delivers the same level of weed control as occurs in the GM HT production system.

Use of pesticides and associated environmental impact: Romania

GM HT soybeans in Romania

Brookes & Barfoot (2009) examined the impact of changes in herbicide use associated with the adoption of GM HT soybeans in Romania. The analysis refers to the period 1999-2006. It draws on herbicide usage data for the years 2000-2003 from Brookes (2005), and identified that the adoption of GM HT soybeans in Romania resulted in a small net increase in the volume of herbicide active ingredient applied, but a net reduction EIQ load (
Table 4). More specifically:

- The average volume of herbicide ai applied has increased by 0.09 kg/ha from 1.26 kg/ha to 1.35 kg/ha);
- The average field EIQ/ha has decreased from 23/ha for conventional soybeans to 21/ha for GM HT soybeans;
- The total volume of herbicide ai use[5] is 4% higher (equal to about 42,000 kg) than the level of use if the crop had been all non GM since 1999 (in 2006 usage was 5.25% higher);
- The field EIQ load has fallen by 5% (equal to 943,000 field EIQ/ha units) since 1999 (in 2006 the EIQ load was 6.5% lower).

Table 4: National level changes in herbicide ai use and field EIQ values for GM HT soybeans in Romania 1999-2006

Year	Ai use (negative sign denotes an increase in use: kg)	EIQ saving (units)	% decrease in ai (- = increase)	% saving EIQ
1999	-1,502	34,016	-1.22	1.52
2000	-3,489	79,005	-3.06	3.81
2001	-1,744	39,502	-3.2	3.97
2002	-3,198	72,421	-3.55	4.41
2003	-3,876	87,783	-2.53	3.14
2004	-6,783	153,620	-4.48	5.57
2005	-8,479	192,025	-5.59	6.45
2006	-12,597	285,295	-5.25	6.53

With the banning of planting of GM HT soybeans in 2007, there will have been a net negative environmental impact associated with herbicide use on the Romanian soybean crop, as farmers

[5] Savings calculated by comparing the ai use and EIQ load if all of the crop was planted to a conventional (non GM) crop relative to the ai and EIQ levels based on the actual areas of GM and non GM crops in each year

will have had to resort to conventional chemistry to control weeds. On a per hectare basis, the EIQ load/ha will have probably increased by over 9%.

2.2 Biodiversity, flora, fauna and landscapes

Does the cultivation of EU approved GMOs have an impact regarding the number of non agriculture species/varieties?
Have no impact

Does GMO cultivation have an impact on agriculture diversity (number of plant varieties available, agriculture species, etc?)
No negative impact.

Does GMO cultivation have an impact, and if so which one, regarding:
- protected or endangered species;

Soybean is not sexually compatible with any indigenous or introduced wild plant species present in Europe (OECD, 2001); soybean is a self-pollinated species, propagated commercially by seed, cross pollination is usually less than one percent (OECD, 2001); soybean cannot survive without human assistance and is not capable of surviving as a weed; soybean possesss few of the characteristics of plants that are weeds (Baker, 1974). In Romania, GM soybean will be commercially grown in pre-existing agro-ecological environments, and the direct and indirect ecological effects of the Roundup Ready technology would likely to be broadly similar to those resulting from conventional chemical spraying. In Romania, *Glycine max* is not found outside of cultivation and untill now hybridization between soybean and other spontaneous or cultivated leguminous species is not known to occur. Aditionally, in Romania, biology of the soybean have been also studied (Ţopa, 1957; Ciocîrlan, 1990; Popescu and Sanda 1998).

The maize is originate from Meso-America. It has been domesticated long years ago, which is the reason of the vulnerability of the crop in wild environments. Thus, the potential of the invasiveness of the crop itself poses no concern. There are no wild maize relatives in Europe. Novel varieties of maize, once introduced in the new environments in Romania, do not represent a threat to biodiversity (native species conservation).

- their habitats;
There are no evidence that GM crops differ from their conventional counterparts in terms of its outcrossing bevaviour, potential for volunteering and weediness. There is no threat for impact on biodiversity with respect to wild species preservation in Romania. There are no anticipated adverse effects of GM crops on non-target organisms.

- ecologically sensitive areas;
Adoption of herbicide tolerant crops is associated with conservation tillage. The use of conservation tillage reduces soil erosion by wind and water, increases water retention, and reduces soil degradation and water and chemical runoff.

Does GMO cultivation have an impact, and if so which one, regarding:
-**migration routes;**
No negative effects.

-ecological corridors;
No negative effects.

-buffer zones.
No negative effects.

Does GMO cultivation have an impact, and if so which one, regarding:
- biodiversity;
In Romania, GM soybean was commercially grown in pre-existing agro-ecological environments, and the direct and indirect ecological effects of the Roundup Ready technology were likely to be broadly similar to those resulting from conventional chemical spraying. In order to confirm some conclusions of the environmental risk assessment deposited by the applicant, field experiments (case-specific monitoring) were undertaken for evaluating the impact of RR *versus* conventional technology on the soil microorganisms, arthropode fauna and weed population. Results of these monitoring activities of RR soybean crops in Romania have been published (Badea et al., 2005; 2006).
A general surveillance was conducted, during the period 2002-2004, farmers cultivating RR soybean being asked questions regarding plant behaviour in new agro-ecosystem. Responses were considered indicators for soybean behaviour related to invazivness, persistance, rate and/or mode of reproduction, dissemination, survivability, etc.
Case-specific monitoring has been carried out in 2004, in a monoculture (2002-2004) soybean experimental field located at the Moara Domnească Didactic Experimental Station and focused on structure and composition of weed population, invertebrate population fauna, and heterotrophic bacteria and microscopic fungi from RR and conventional plant rhizosphere. The experimental protocol included several variants of conventional cropping system and one of Roundup Ready technology, applied on two RR soybean cultivars, SP9191RR and S2454RR.
The conclusion of monitoring activities: RR soybeen is not persistent in agricultural habitats and its invasiveness into natural habitats is not altered as compared to conventional soybean. Annual and perennial weed species are drastically eliminated from soybean crops by herbicide applications. After the treatment, some annual species germinate from remaining seeds, develop, flower and recover the seed bank in the soil. All weed species proliferate in the field edges and along the access pathway and produce a large quantity of seeds. Their existance is not jeopardised.
The results of a field study conducted in order to evaluate the impact of RR *versus* conventional technology on the arthropod fauna showed no significant differences in epigeal and beneficial insects from the soybean plants (in terms of population size and/or composition).

- flora;
Results of general surveillance activity undertaken in Romania confirmed the lack of any risk for the RR soybean to become persistent in agro-ecosystems or invasive in natural habitats. There have been no significant changes in the RR soybean plants survival capacity since the release approval was granted in Romania since 2000. Soybean itself never appeared as volunteer crop. Within the naturally occurring plant populations located in the immediate vicinity of the soybean crop fields or in the ruderal areas, feral soybean plants were never observed, a logical situation for Romanian climate which does not allow *Glycine* species owerwintering (Badea et al., 2005, 2006).

- fauna;
No significant effects of glyphosate, weed management systems and glyphosate resistant soybean on arthropods.A study on the useful *entomofauna* and of the *epigee* fauna in the ecosystem of GM RR maize cropping, has been done in Romania (Rosca, personal communication). 1447 specimens were captured in total, appertaining to the following classes: Anelida – 2 (0,14%) ; Crustacea – 243 (16,79%); Miriapoda – 14 (0,97%) ; Arahnida – 46 (3,18%) ; Insecta – 1142 (78,92%). It was found that there were no statistically significant differences in the populations of the entomofauna and the epigee fauna between conventional and RR maize fields (Rosca, 2003)
A study on the non target effects of cultivation of Bt maize has been done in Romania. The conclusion: there is negligible potential for adverse environmental effects of Bt corn on non-target invertebrates, through their direct or indirect ecological interaction with GM crop or through contact with the expressed Bt protein (Badea et al., 2004).

No significant effects of glyphosate, if used recommended technologies.

2.5 Transport/use of energy

Use of energy (fuel) impacts (decreased use) associated with the adoption of biotech crops globally are summarised in section 2.4 above – derived from Brookes & Barfoot (2009).

3.Other implications

We believe that the use of biotechnology in agriculture creates premises to achieve production at lower cost per unit area, obtain higher returns from crops, improve farmers' income and not least the environmental protection through significant reduction of the number of active formula (chemical compounds) and quantities of products to combat diseases / pests and weeds applied to unit area.

By aligning on the communautaire acquis, in Romania area cultivated with soybeans (conventional) has fallen drastically in the last three years. The area fell in 2009 to 47 thousand ha compared to 199 thousand ha in 2006. This brought with it both increased imports of soybeans and soybean meal produced on the majority of GM varieties, in order to ensure requirements of domestic consumption and exports of these assortments.

A possible solution to the current impasse on decisions approving the cultivation of genetically modified crops with different transformation events is changing the EU regulatory law, to include a waiver by the decision of the cultivation of GM events, already approved for marketing on EU, to be left to Member States, when the EFSA scientific opinion is favorable.

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Director

Aurel-Florentin BADIU