QUESTIONNAIRE about the socio-economic implications of the placing on the market of GMOs for cultivation

Contact Details

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Lead questions per area and stakeholder

1. - Economic and social implications

Upstream

1.1. Farmers

Has GMO cultivation an impact regarding the following topics? If so, which one?
- Farmers' revenues (output prices and agricultural yields);
- Farmers' production costs;
- Labour flexibility;
- Quality of the harvest (e.g.mycotoxines);
- Cost of alternative pest and/or weed control programmes;
- Price discrimination between GM and non-GM harvest;
- Availability of seeds and seed prices;
- Dependence on the seed industry;
- Farmers' privilege (as established by Article 14 of Regulation (EC) No 2100/94 on Community plant variety rights) to use farm-saved seeds;
- The use of agriculture inputs: plant protection products, fertilisers, water and energy resources;
- Health of labour (possible changes in the use of plant protection products);
- Farming practices, such as coexistence measures and clustering of GMO and/or non-GMO production;
- cost of coexistence measures;
- Conflicts between neighbouring farmers or between farmers and other neighbours
- Labour allocation- insurance obligations;
- Opportunities to sell the harvest due to labelling;
- Communication or organisation between the farmers;
- Farmer training;
- Beekeeping industry.

Any other impacts you would like to mention:

The possible impacts from GMO cultivation have been identified as follows:

The total cost of GMO cultivation may be reduced or increased depending on the prices of seeds and fertilisers to be used. In the case of GMO cultivation, there will definitely be a shift in the type and amount of fertilizers, insecticides and herbicides used. Sometimes, the usage of different fertilizers, insecticides and herbicides has adverse impact to the productivity of the soil and its biodiversity. Countries that cultivate GMOs have increased their usage in insecticides, but it is difficult to assess the risk and gain specific knowledge on this issue since in the EU only Spain cultivates GMOs commercially and not adequate studies have been published.

Sometimes, GMO seeds have lower prices, but the profit of the farmer can be uncertain, due to other conditions in each country, for example climate conditions, water usage etc. There is also a possibility to impact beneficial insects and therefore this will increase the need for further use of insecticides. This has to be further studied.

It is important in the cases of GMO cultivation, to apply buffer areas / zones in order to protect conventional or biological crops. This is probably not feasible for Cyprus due to the small distances between crops and the high fragmentation of land, consisting of very small land parcels. In addition, there are experiments showing that bees can travel a distance with radius 4.5 kilometres, showing that GMO cultivation would devastate bee cultivation and contaminate crops in larger distances than the "buffer zones" established in some cases. Even small-scale GMO cultivation will have devastating results due to high risk of contamination caused by the specific circumstances of Cyprus such as small land fragmentation, high endemic flora, special climatic conditions etc. It is estimated that farmers as well as other stakeholders will have high costs in implementing co-existence measures for their crops.

Also, with coexistence there will be a need for more coordination between farmers that cultivate GM and non-GM crops. This will also be a problem since the majority of farmers, individually or through their unions, do not accept GMO cultivation. The rights of the farmers that do not want to cultivate GMOs need to be protected from GM contaminations.

On the other hand, with GMO cultivation, there will be a reduction in the cultivation of conventional and organic crops, decreasing the market share of conventional or organic products.

Also, the impacts on conventional seed imports when contaminated by GM seeds is very important since there will be an additional cost of inspection of these imports. Since in EU there is no threshold of GM seeds in conventional seeds, Cyprus is taking the precautionary approach with zero tolerance, thus increasing administrative and lab costs for the public authorities, the importers and the final consumers.

In addition, there is concern regarding the health of the labour resulting from the change in practices in the case of GMO cultivation, and the use of new fertilizers and insecticides with unknown practices.

1.2. Seed industry

Has GMO cultivation an impact regarding the following topics? If so, which one?
- Employment, turn over, profits;
- The production of seeds (easiness/difficulty to find seed producers, easiness/difficulty to find areas to produce these seeds…);
- Marketing of seeds;
- The protection of plant breeders rights; - the protection of plant genetic resources.

Does the marketing of GM seeds have an impact on the seed industry and its structure in the EU (size of companies, business concentration, and competition policy)? Please specify per sector.
- For plant breeders;
- For seed multiplication;
- For seed producers;
- For the availability of conventional and organic seeds;
- Creation/suppression of barriers for new suppliers;
- Market segmentation.

Any other impact you would like to mention:

There is not enough data or experience to evaluate the impacts of GM seeds in the local market. It is inevitable that when part of the market is taken over by GM seeds, it will reduce the percentage of conventional or biological seeds in the local market. In Cyprus, the seed industry consists of small and medium companies, and a possible increase in market share of GM seeds will probably have an adverse impact to the turnover, employment and profits of these small local companies.

Regarding the prices of GM seeds, these are controlled by multi-national companies and can be artificially set lower than the prices of conventional seeds; this will eventually reduce the income of conventional and biological seed producers. Multi-national companies many times create oligopolies and control prices. Many middle-sized and small companies will have a reduction in profits.

Biotechnology companies will be able to hire specialized professionals with high salaries, but in Cyprus the public will be against these companies since GMOs are not accepted by the majority of the citizens.

Regarding the plant genetic resources, measures need to be taken to conserve their structure in the natural ecosystems. It is important to conserve and protect conventional seeds since they will be the base for the production of new developed crops. The domination of GMO seeds will reduce the choices of farmers, especially regarding conventional crops. The patents of the GM crops will be paid to the multi-national companies, creating again oligopolies. There is also additional risk of contamination of conventional seeds and crops.

Downstream

1.3. Consumers

Has GMO cultivation any impact regarding the following topics? If so, which one?
- Consumer choice (regarding quality and diversity of products);
- The price of the goods;
- Consumer information and protection;

Any other impact you would like to mention:

The current situation states that labeling is mandatory for food and feed with 0.9% or more GMO content, and regular inspections are made for the necessary compliance. Consumers have the right to choose which product to buy depending on its labeling. Currently, consumers in Cyprus are against GMOs, therefore products that contain GMOs represent less than 1% of the total products in the Cyprus market. Citizens have expressed their preference to lower the percentage for labeling, and in addition to have GMO-free products with official labeling. Also, another request is that labelling should be more clear, precise and easier to read for the consumer. In addition, placing GMO products on different shelves would be preferable for the consumers. Regarding their price, there does not seem to be a major difference between prices of products containing GMOs and those not containing GMOs.

1.4. Cooperatives and grain handling companies

Has GMO cultivation any impact regarding the following topics? If so, which one?
- Work organisation;
- Handling and storage;
- Transport;
- Administrative requirements on business or administrative complexity.

Segregation of GMO cultivation from conventional or biological cultivation will increase the costs of storing, handling and transferring of GMOs for the grain companies, as well as additional administrative costs. The current system of the handling grain, including production and marketing of seeds is quite complicated, decentralized and fragmented. When shifting to GM seeds and the need for a separate system of managing these seeds, the costs will increase considerably and probably the national corporate companies will have little or no interest in dealing with these seeds. It is difficult, if not impossible, to manage the two parallel systems, i.e. handling GM and handling conventional seeds.

1.5. Food and feed industry

Has GMO cultivation any impact regarding the following topics? If so, which one?
- Range of products on offer;
- Employment, turn over, profits;
- Work organisation;
- Crop handling (drying, storage, transport, processing, etc...);
- Administrative requirements on business or administrative complexity;

Any other impact you would like to mention:

Regarding feed, Cyprus is in full compliance with Regulations 1829 and 1830 of 2003, and only GM feed that have been authorized under this legislation can be imported in the island. About $1/7^{th}$ of the feed that are imported in Cyprus are GM soy. Regarding the system used for monitoring and controlling the quality of feed, there is a national program that takes into consideration the risk assessment (through RAS), analyses and the determination of the quantitative and qualitative substances and nutrients in the feed. The analyses are completed in corporation with labs abroad, especially in Germany. In case there is an interest for production of GMOs for feed in Cyprus, the applicant needs to invest large amounts of money to comply with all the above requirements. In the case where GMO feed dominate the market and their price drops, there is a risk to reduce the percentage of conventional feed in the market entirely. In the case of local production of GM feed, there is a risk of mixing GM with non-GM raw materials, with adverse impacts to the final product and it's placing on the market. The same can be said for GM food, although there is now interest currently in Cyprus to produce GM food by the industry.

1.6. Transport companies

Has GMO cultivation any impact regarding carriers (insurance, cleaning, separate lines...)? If so, which one?

In the case where there is a need to transport GM products, the segregation of lines of transport will increase the costs and the quality of the products will be questionable since there will always be the possibility of mixing raw materials.

1.7. Insurance companies

Does the GMO cultivation have any impact regarding insurance companies (e.g. in terms of developing new products)? If so, which one?

There is no precise legal framework to deal with the damages caused by GMOs so that insurance companies will be able to set a price for insuring the companies that deal GMOs. It is certain that GMOs need to be handled differently as far as insurance is concerned. Regarding the insurance companies, there is a need to provide guidelines so as to be able to deal with GMO companies and cover the cases of contamination.

1.8. Laboratories

Has GMO cultivation any impact regarding the following topics? If so, which one?
- Employment, turn over, profits;
- Feasibility of analyses;
- Time necessary to provide the results;
- Prices of the analyses.

Any other impact you would like to mention:

Currently there is no GMO cultivation in Cyprus. The state labs perform analyses for imports of GM seeds, feed and food. In the case of an increase in needs due to GMO cultivation or increase in imports, more analyses need to be conducted, more time will be needed to provide the results, with no guarantee whether the prices will decrease or increase under these new conditions. Already, the economic burden of a lab to be able to comply with GMO analyses is very high, and increased demand will create an additional financial burden to them. Also, analysis from impacts from possible horizontal contamination needs to be performed, with an increased need for more labs and investments in new technologies.

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);
- Investment in research in minor crops;
- Employment in the R&D centres in the EU;
- Use of non-GM modern breeding techniques (e.g. identification of molecular markers);
- Access to genetic resources;
- Access to new knowledge (molecular markers, use of new varieties in breeding programmes, etc.).

There are no experiments done in Cyprus regarding GMOs. The costs for researching for GMOs are very high; these investments mostly are done by industries, with no direct benefits to the public. The research institutes of Cyprus are not involved with GMO research, since other priorities are set regarding the agricultural sector in Cyprus.

1.10. Public administration

Has GMO cultivation any impact regarding the actions of the national public administrations and the necessary budget (national and local level) for example policing and enforcement costs

Any other impact you would like to mention:

In order to implement the GMO legislation, the public administration needs to comply with the all specific provisions set. Thus, a whole system has been created consisting of inspectors with specific duties on issues regarding labelling, traceability, informing the public etc, as well as implementing the procedures for sampling, analyses etc. This implies a substantial cost for the public administration. In the event of GMO cultivation the administrative costs will increase substantially since more monitoring and control will be needed in various sectors of the public administration.

Economic context

1.11. Internal market

Does the placing on the market of GMO seeds have an impact on the functioning of the EU internal market on seeds? If so, which one?

Does it have an impact on the internal markets for services (if so which impact and which services), for agriculture products and on workers' mobility? If so, which one?

Does GMO cultivation have an impact on monopolies? If so, which ones (emergence/disappearance)?

Does it provoke cross-border investment flows (including relocation of economic activity)?

Any other impact you would like to mention:

It is difficult to evaluate the potential impacts of GMOs in the internal market of Cyprus, but negative impacts are foreseen regarding the local seed producers, as well as the producers of conventional and biological products. The issue of unequal competitiveness will rise, since GMO companies are able to manage the prices of their products, and when their market share is large, control the market. Definitely, there will be an increase in monopolies of GM seed and feed companies, with adverse effects to small and medium companies that deal with conventional or biological seeds and feed.

1.12. Specific regions and sectors

Answers can be broken down on the purpose of the level (national, regional, local) and according to region.

Has GMO cultivation any regional and local impact in those regions regarding the following topics. If so, which one?
- Agriculture incomes;
- Farms' size;
- The farm production practices (e.g. increase or decrease of monoculture);
- The reputation regarding other commercial activities of the region/localities.

Any other impact you would like to mention:

With possible GMO cultivation, fewer and larger farms will need to be established so as to be able to implement the coexistence rules regarding the buffer zones. In addition, monocultures will increase, limiting the production of other products in specific areas. Regarding the reputation of some regions, GMO cultivation will possibly affect the good reputation of an area since GMOs are not accepted by the majority of the public. Areas with good reputations as far as their products are concerned will be negatively affected by GMO cultivation. There will also be an additional negative impact to agrotourism since monocultures will decrease biodiversity and natural ecosystems, issues especially important for a small country with limited land such as Cyprus, which promotes biodiversity and natural habitat in its tourist campaigns.

With GMOs in the market, conventional products will have a disadvantage, since GMO prices can be adjusted by the multi-national companies. Also, monocultures change the market giving advantage to few farms, producers and specific crops.

Regarding the income of the farmers, statistics show that the cultivation of GM seeds can be more costly to the farmers than conventional seeds, thus decreasing their income. Also, with GMO cultivation there will be a change in the types of pesticides or fertilizers used by farmers, meaning that these costs will probably remain constant. Depending on the weather or soil conditions, many times more pesticides of fertilizers will be needed for GM cultivation, thus increasing costs.

2. - Agronomic sustainability

2.1 Agricultural inputs

Does the cultivation of EU approved GMOs for cultivation has an impact regarding the use of pesticides against target insect pests (i.e. corn borer)?

Does the placing on the market of GMOs have an impact, and if so which ones, regarding the use of pesticides or/and on the patterns of use of chemical herbicides?

Since in Cyprus there is no cultivation of GMOs, it is difficult to answer the above questions. Nevertheless, pesticides used for GMOs are most of the times produced by the companies that produce the GMOs, thus the same companies receive the income. The usage of pesticides against target insect pests will probably have a negative impact on other useful insects, on the biodiversity of the whole ecosystem, especially the fauna and the productivity of the soil.

2.2. Biodiversity, flora, fauna and landscapes (other impacts than the ones considered in the environmental risk assessment carried out under Directive 2001/18 and Regulation (EC) No 1829/2003)

Does the cultivation of EU approved GMOs have an impact regarding the number of non agriculture species/varieties?

Does GMO cultivation have an impact on agriculture diversity (number of plant varieties available, agriculture species, etc?)

New traits conferred by genetic engineering could offer advantages that could lead to the widespread use of only a few crop varieties – in other words, a loss of cultivar biodiversity. Reducing the diversity of cultivars found in agriculture could lead to problems such as higher susceptibility to widespread outbreaks of plant diseases and pests.

There is a possibility for bees to be impacted from the change in their diet (proteins) by GMO plants, which may have adverse effects in their health.

Does GMO cultivation have an impact, and if so which one, regarding:
- Protected or endangered species - Gene exchange from crop to wild resulting in extinction of rare plants and weedy relatives: GM seeds and plants could cause detrimental effects from ‘genetic pollution’, which occurs when an engineered gene enters another species of crop or wild plant through cross-pollination. This contamination may pose public health threats, create ‘superweeds’ which could require greater amounts of more toxic pesticides to manage, and threaten extinction for rare plants and their weedy relatives relied upon for crop and plant biodiversity.
- Their habitats;
- Ecologically sensitive areas: the destruction of neighbouring ecosystems that protect ecologically sensitive areas has negative impacts to these areas and decreases their ecological value.

Does GMO cultivation have an impact, and if so which one, regarding:
- migration routes: pesticides used have adverse impacts to ecological corridors of migratory birds.
- ecological corridors:
- buffer zones: taking into consideration the fact that bees transfer pollen for a distance of radius more than 4.5 kilometers, that air under natural climatic conditions and extreme conditions transfers pollen for large distances, and that land in Cyprus is highly fragmented, buffer zones will not be an effective way in protecting crops from contamination by GM crops.

Does GMO cultivation have an impact, and if so which one, regarding:

- Biodiversity: regarding impacts to biodiversity, there is not enough evidence for contamination, especially in Cyprus, since no GMOs are cultivated in its territory. However, there is a possibility for adverse impacts to the biodiversity, depending on the circumstances and the specific conditions of a territory. More serious impacts will be observed in protected areas, especially areas included the "Natura 2000" Network, where currently, GMO cultivation is not allowed. In these areas, additional buffer areas need to be established from any GMO cultivation. When a GMO is to be cultivated, any relative species that is endemic to the natural environment in the area needs to be examined, since the contamination risk is high.
- Flora: If GM plants pass their new traits on to their wild relatives, those relatives could be changed in a way that could make them play a different ecological role, potentially enabling them to out-compete other species.
- Fauna: there is potential decrease in the fauna biodiversity from the proximity of the GMO cultivation due to highly insect resistance plants which limits the insect population, thus limiting other organisms whose diet depends on insects (eg chukars, quails). This alternately changes farther the food chain of the area. It is also important to take into consideration the issue of bees and the risk of contamination of local flora and endemic species. Also, there is a high risk of horizontal contamination.

- Landscapes.

Any other impacts you would like to mention:

In addition, the activities of the public are affected by GMO cultivation such as small-scale agriculture, natural habitats protection and management and food production.

2.3. Renewable or non-renewable resources

Does the placing on the market of GMOs have an impact, if so which ones, regarding the use of renewable resources (water, soil…)? The use of soil will probably be affected since there is no community legislation that covers GMO residues from cultivation after the authorization of a product. This needs to be further handled since the GMO residues may have an impact to the productivity of the soil and the quality of conventional farming.

Regarding biofuels, the price of biofuels resulting from GMOs is lower than the price of biofuels from non-GMO plants, thus, placing in the market biofuels from GMOs lowers the final price of the fuel for the consumer. This will make it more profitable for suppliers of automotive fuels in Cyprus to include a certain percentage of biofuels in transport fuels, thus use any EU approved GMO produced biofuel. It should be noted that this applies only to the import of biofuels as a final product. We consider that the cultivation of GM plants in order to produce biofuels will have a number of negative impacts to renewable and non-renewable sources of Cyprus (land, water, biodiversity, soil), and should not be considered as an alternative.

Regarding water use in relation to GMO cultivation, the different climatic conditions need to be taken into consideration since experiments completed for GMO crops in some environments may show less usage of water and may not have the same results in other environments and climatic conditions, such as Cyprus.

Does the placing on the market of GMOs have an impact, if so which ones, regarding the use of non-renewable resources?

Any other impacts you would like to mention:

2.4. Climate

Does GMO cultivation have an impact regarding our ability to mitigate (other than by possibly reducing CO2 emissions from fuel combustion – see next section) and adapt to climate change? If so, which ones? Climate change forces many countries to adjust to these new conditions by changing cultivation crops. GMO cultivation does not necessarily help in adapting to the new climatic conditions since in the Mediterranean climate there is no evidence or information for specific GM crops that need less water of are tolerant to higher temperatures. Other conventional crops can be selected for the specific conditions in order to adapt to new climatic conditions of the island.

Also, the cultivation of GMOs for biofuels is a problem for Cyprus since, as mentioned above, monocultures will have adverse impacts and crops used for biofuels need more land and water to be cultivated.

Any other impacts you would like to mention:

2.5. Transport / use of energy

Does the cultivation of EU approved GMOs have an impact regarding energy and fuel needs/consumption? If so, which ones?

Does the cultivation of EU approved GMOs have an impact regarding the demand for transport in general terms? If so, which ones?

Any other impacts you would like to mention:

GM soya has proven that is not always efficient in biofuel production. For Cyprus biofuels are important, as long as there is no GMO cultivation in Cyprus, including for the purpose of biofuel production.