

Best Practices for Coexistence of GM Crops with Non-GM Crops in Ireland

(Response to request for submission by Department of Agriculture & Food)

Teagasc Advisory Service View

Jim O'Mahony, Programme Manager – Tillage Crops

Coexistence refers to the economic consequences resulting from adventitious (unintended) presence of material from one crop in another and is related to the principle that farmers should be able to cultivate freely the crops of their choice using the production system they prefer (GM, conventional or organic). It is not therefore a product/crop safety issue but relates solely to the production and marketing of crops approved for use.

Teagasc Role in GM Coexistence

1. Teagasc research has a key role in identifying the appropriate husbandry and separation practices.
2. Teagasc advisory and training have a major role in training and advising farmers and the trade on the skills and practices need to implement this new technology.
3. Teagasc has a major function in communicating developments to the public and in providing impartial guidance, advice and commentary to all stakeholders including consumers.

GM Potential

GM crops need to be given the opportunity to deliver on the developing scientific advances. GM crops have the potential to make a major contribution to improvements in living conditions for mankind in terms of provision of food, non food, energy and environmental sustainability. In addition, results from many analyses indicate that farmers can gain considerable economic benefit from adoption of the new biotec-GM crop technologies.

Best Practice for Coexistence of GM and Non-GM Crops

Given the need to provide consumer and producer choice on GM crops, best practice will need to be clearly established to provide produce within standards set for admixtures.

Coexistence of different agricultural production systems is being practiced for years. Farm level practices (e.g. separation of crops by space and time, communicating with neighbours, use of good husbandry, planting, harvest and storage practices) to enable successful coexistence have been practiced by many farmers (e.g. seed producers and growers of specialist crops) for many years.

The framework used for producing certified seed should be useful when deciding on segregation requirements for GM and non GM crops.

Coexistence measures are not limited to on-farm management practices. The downstream chain of grain storage, transport and processing will also add the possibility of admixtures. Whichever crop is grown, be it conventional, organic or genetically modified, genes will always to some extent be dispersed to other crops.

The major sources of dispersal are through:

- Seed (and propagating material, e.g. tubers).
- Pollen.
- Straw (containing seed).
- Seed within the crop rotation (the seed bank of the soil).
- Volunteers and feral plants.
- Sowing and harvesting machines.
- Transport equipment and storage.

The extent of dispersal depends on, e.g.:

- Crop biology including choice of variety.
- The extent of the growing.
- The size, position and shape of the fields.
- Existence of wild relatives.
- Pollinating insects.

The dispersal can, however, be reduced by adopting various crop-dependent control measures. The most important control measures are:

- Control and safeguarding of seed.
- Separation distances, buffer zones and the size of the field.
- Cropping intervals (years between the same species of crops on the same field).
- Control of volunteers and possible wild relatives.
- Cleaning of sowing, harvesting and transport equipment, as well as stores and the control of the use of straw.

Coexistence requires co-operation. Successful coexistence of different agricultural production systems requires mutual respect and shared responsibilities by all parties. Responsibility for implementation of coexistence measures should involve both GM and non-GM growers implementing appropriate management practices.

There are five key principles to good coexistence practice

1. **Context:** It is important to determine the relative commercial and agronomic importance of different crop production systems based on planted area, production and economic value. These properties are important considerations when assessing the likelihood of adventitious presence of material from one production system affecting another and the potential economic impacts. Context is particularly important to the third principle of proportionality.
2. **Consistency:** Producers and those overseeing the integrity/purity of crops/derivatives should be consistent in their behaviour toward the adventitious presence of all unwanted material, including GM derived material. It is unrealistic to expect 100% purity for any crop/product and this is why thresholds are set for adventitious presence of unwanted material. These (thresholds) should be proportionate to the risks attached to the presence of the unwanted material:
 - a. For the adventitious presence of (unwanted) material that pose known health and safety risks (e.g. mycotoxin levels in cereals), it is appropriate to operate to very low threshold levels (e.g. the limit of reliable detection);

- b. For adventitious presence of (unwanted) material that affect product integrity, purity, quality and functionality (e.g. impurities, weed/plant material, seeds/grains of off types), wider thresholds are appropriate. Whilst these (thresholds) vary by crop and use, they are typically set at levels between 1% and 5%.

In respect of the adventitious presence of GM material (which has been given regulatory approval for use) in non GM crops, the threshold set, by the EUs GM labelling legislation, at 0.9% falls into the second category referred to above.

3. **Proportionality:** All coexistence measures established should be proportionate, non discriminatory and science-based.
4. **Equity (fairness):** The issue of economic liability provisions that compensate non GM growers for adventitious presence of GM material is often raised in the coexistence debate. Historically, the market has adequately addressed economic liability issues relating to the adventitious presence of unwanted material in any agricultural crop by placing the onus on growers of specialist crops (e.g. seed, organic) to take action to protect the purity of their crops (such growers usually being rewarded by higher prices for taking such actions). If legislation was to be introduced that created new economic liability provisions for any negative economic consequences of adventitious presence of unwanted GMO material, it is reasonable to argue that the same principle should apply to all farmers regardless of their chosen production methods. On equity/fairness grounds, GM growers should have equal access to compensation for any negative economic consequences arising from the practices of neighbouring conventional or organic farmers (e.g. loss of quality premia for adventitious presence of non GM material in GM crops or losses from the spread of pests and weeds from neighbouring farms with poor levels of pest and weed control). No one sector should be able to veto another – access and choice work both ways.
5. **Practicality:** All coexistence measures should be based on legal, practical and scientific realities.

Developing good coexistence practices. The tools exist to facilitate good coexistence. These practices have been successfully enabling coexistence of GM and non GM crops

(including organic) in North America (and Spain). Effective coexistence practices can be developed by applying the five key principles and adapting these to local circumstances on a crop basis.



The Consumers' Association of Ireland

43-44 Chelmsford Road, Ranelagh, Dublin 6. Tel: (01) 497 8600

Subscriptions: (01) 497 8811 Fax: (01) 497 8601 www.consumerassociation.ie

consumer
choice

27th October 2003

Dr. Barry O'Reilly
Secretary
Department of Agriculture & Food
National Crop Variety Testing Centre
Backweston
Leixlip
Co. Kildare

Re: Coexistence of GM Crops with Conventional and Organic Farming.

Dear Dr. O'Reilly,

A GMO Committee was set up in the Consumers' Association of Ireland to examine the question "can GM crops coexist with conventional and organic crops". Submissions on this topic were also sent in by Council members. The discussion was somewhat hampered by the fact that no information had been given to the Consumers' Association of Ireland as to whether or not GM farms were already in operation or in the planning process.

Are there any GM farms at present in Ireland?

Issues and Implications

There was concern that if there were GM farms planned that farmers in adjacent farms must be warned in advance. Cross pollination of wind blown GM pollen into conventional or organic farms would create an ethical/legal problem. The organic farmer could lose his business if his crop was contaminated by GM pollen. The organic farmer must meet stringent governmental protocols and deserves some protection from and compensation for, any GM contamination.

The idea was also floated "why not have a GM free Ireland? A GM free Ireland could live up to Bord Bia's slogan "Ireland, the Green Island".

There was concern that there has been no public consultation. Will we have GM farm products by stealth? The consumer should be involved in these decisions.

Organic food products reached a profit of 38 million euros in 2003. Many consumers are prepared to pay a little more for organically produced foods. These consumers show the following characteristics:

they are health conscious, concerned about the environment and usually avoid processed foods.

These consumers would want to be certain that the food that they are buying is definitely GM free. To relieve consumer anxiety, organic produce could also be labelled "GM free".

Members of the committee also expressed grave concern about the loss of biodiversity in conventional crops if GM crops were dominant. The Phillipines lost 33 types of rice when GM rice crops were introduced.

On the other side of the argument one member expressed strongly held views in favour of GM crops. His arguments were based on the fact that "other countries have GM farming and these crops are safe for human consumption". Members of the group countered this argument with concerns about the lack of research on possible allergens present in GM foods. (When additives were added to conventional foods it took researchers years to confirm that many additives caused allergies in susceptible people and contributed to ADD - attention deficit disorder and hyperkinetic activity in young children).

Scientific researchers have reported some detrimental effects of GMO's on the environment, particularly on the soil.

Two members of the internationally known group "concerned scientists" describe some of these detrimental effects in their textbook "Environmental Risks posed by Transgenic Crops". (J. Rissler and J. Mellon).

"Where plants are engineered to manufacture pesticides it is to be expected that the plants and their novel products will harm organisms other than their intended target: They may kill nontarget and even beneficial insects and fungi". Ecological disadvantages are that there is potential to create invasive plants that become pests or plants whose genes escape into wild relative plants. Weeds can flourish as they become resistant to chemicals such as Roundup. Where viruses are used as vectors, there is possibility of the development of new viruses from virus resistant plants.

Another possible hazard comes from horizontal gene transfer from gene transfer vectors which can spread antibiotic resistance and create new pathogens.

In the U.S.A. the black potato beetle was found to contain enzymes from a GMO crop.

Economic concerns centre on the fact that big biotech companies maintain monopolies over seed production so farmers can not harvest their seeds. PROPOSALS FOR A NATIONAL STRATEGY AND BEST PRACTICE WHERE THERE IS COEXISTENCE OF GM CROPS WITH CONVENTIONAL OR ORGANIC FARMING.

It will be imperative to set up National and Regional Land Registers which must be readily accessible to the public. The French have had this type Register (the Cadastre) available to the public for years. It is important for the potential purchaser of rural property and farm land to know if the farm had produced GM crops previously. It is essential for farmers to know: that an adjacent farm has, or will in the future produce GM crops because as New Scientist magazine reported in September 2004, "GM pollen can contaminate crops 21km away". In 2001 EU directive 2001/18/EC recognized the right for some areas to be GM free and allowed for GM free buffer zones.

GM farms are designed for large scale production of single, uniform crops. This may mean that Bio-tech companies may buy up several farms in one area. The small farmer buyer is not likely to be able to compete on price. There should be some agreement to give a local farmer wishing to buy farmland some sort of advantage such as a subsidy. Big international Biotech purchasers of land could cut out the "family farm" entirely and also the variety of crops produced. "A report released on 28th July 2004 by a 13 member committee of the Institute of Medicine within the National Academy of Sciences proposes to extend voluntary

testing to all foods that have been modified. To assist in the process, the report urges industry and regulatory officials to build and integrate data bases that would include food sources that are subject to conventional breeding and cloning methods (not just GM food)" (Sept. 2004 Nature Biotechnology v.22 Jeffrey Fox)."

BEUC (the European Consumers' Organisation) writes in a document of 26/02/2002 that "it is important to consider seed, legislation on traceability and GMO food

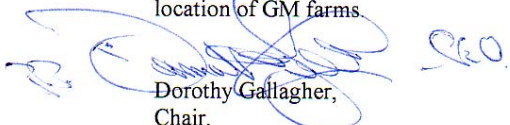
And labelling in one unity as it all contributes to the consumers right to exercise free choice of food based on honest labelling information."

BEUC is concerned that the thresholds for labelling GMO contamination of seeds be achieved at the lowest threshold possible – not exceeding 1%.

Greece's Stavros Dimas favoured a GMO detection level of 0.1%, (also favoured by Green Groups).

The consumer would like clear explicit labelling which would include labelling food produced from animals fed GM feed. There should be financial compensation for an organic farmer whose crop has been contaminated by GM pollen. This is an ethical concern.

Finally, the way forward is to focus policy on the rights of consumers and organic and conventional farmers for accurate information on labelling of food and information on location of GM farms



Dorothy Gallagher,
Chair,
GMO Committee,
The Consumers' Association of Ireland.

Dr. Barry O'Reilly, Secretary
Dept. of Agriculture
National Crop Variety Testing Centre
Backweston, Leixlip, Co. Kildare

9-12-2004

Barry, a chara

We run a commercial organic vegetable unit near Oughterard, Co. Galway. We sell our produce through a local delivery scheme. We also buy produce from other Irish Organic Growers. We are registered with IOFGA.

We are very concerned about the serious implications of the release of genetically modified crops & plants & animal feeds on to the Irish market & into Irish soil. We do not believe that the co-existence of GM crops & non-GM crops is possible, without cross-contamination occurring.

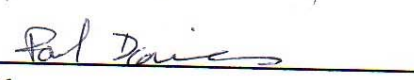
We could loose our organic licences & certification. This is our livelihood under threat.

Please find attached a submission on behalf of our project, outlining the reasons we believe that there are too many unknowns in releasing seeds to be grown in a scientific 'co-existence' manner. We believe that this is a serious risk that will be taken, with unknown consequences to humans, our food & wild flora & fauna.

Sinne le meas



Jenny Fahy



Paul Davies

The G.M. Debate- 10 Points of Concern

According to David Byrne (outgoing EU Health & Consumer Affairs) ` any member state may object to the marketing on their territory of any such GM variety if they consider there is a risk for human health, the environment or agronomic reasons.

Points:

1. The technology is unsafe & consequences unknown, as there is the real possibility of unstable horizontal gene transfer between species
2. It is controlled by multinational corporations - it is well known that the beneficiaries of this technology are the bio-technology companies, who also make the pesticide sprays for the crops, etc.
3. It reduces independence of family farms
 - Loss of right to save ,& plant own seed
 - Organic licences & certification will be lost
4. It runs counter to Agro-ecological farming
 - Contamination of organic & conventional crops & animal feeds alike
 - Permanent damage as we cannot recall GM genes that pass into the wild
5. It will mean Bio diversity loss
 - This loss will be irreversible
 - Loss of heritage seeds ,& plants
6. It presents a Wild life threat; cross pollination and super weeds will result.
7. No farmers want it
 - Reduces value of food exports
 - IFA, Irish Cattle & Sheep Farmers Assoc are amongst those opposed to release of GM seeds
8. No consumers want it
 - Strong opposition in Europe - 80% consumers are demanding GM free food & meat
 - What about consumer choice? - labelling is not satisfactory as there can be hidden GM ingredients below the threshold of mandatory labelling
9. Chefs do not want to use GM food in their restaurants - a large number of prominent chefs have opposed the introduction of GM crops, the slow food movement, etc.

10. It is not sustainable and is fertiliser dependant - this *cycle* is very damaging to the environment & human health

11. Labelling

- Is not sufficient
- Can be confusing to consumers

12. Lack of insurance

- Refusal by insurance companies to cover disaster risks

13. Tourism implications

- Ireland's 'clean green image' will be lost permanently
- Ireland could make a great selling point abroad that it is a GM free zone

14. Education

- Lack of awareness & educational campaign to show both sides of the argument

15. Public not consulted - no referenda

- Loss of right to choose GM free food
- No guarantee that other conventional & organic food is GM free

Please consider these enormous facts & the enormous implications of releasing any more GM seeds, plants or animal feeds on to the Irish market. More time is needed to consider the massive environmental, human, health, agricultural & economic issues directly related to this urgent issue.