COMMISSIE COGEM GENETISCHE MODIFICATIE

SOCIO-ECONOMIC ASPECTS OF GMOs

BUILDING BLOCKS FOR AN EU SUSTAINABILITY ASSESSMENT OF GENETICALLY MODIFIED CROPS

Summary

The minister of Housing, Spatial Planning and the Environment (VROM), Jacqueline Cramer, asked COGEM to draw up socio-economic criteria for the application of GMOs in agriculture. In her letter commissioning the assignment, the minister asks COGEM which socio-economic themes, including in any event, sustainability, play a part in activities involving GMOs in agriculture.

Building blocks for an assessment framework of the sustainability of GM crops

COGEM has identified and describes in this report a number of building blocks which could play a part in assessing the contribution that GM crops could make towards 'more sustainable' agriculture. Where this report refers to sustainability aspects this relates to social, economic and environmental aspects. These aspects are closely interrelated and cannot be seen as separate from one another.

While drawing up this report COGEM aimed to involve a broad range of expertise to throw light on the differing approaches and perspectives. In arriving at this report, existing sustainability criteria were also looked at, such as those for palm oil, soy and biomass. The results of the Ministry of Agriculture, Nature and Food Quality (LNV) seminar on 9 June 2009 on re-evaluating the GMO assessment framework, have also been incorporated in this report and interviews were conducted with a number of experts in the area of agrarian development and sustainability.

Sustainability criteria specific to GMOs

Sustainable development is not a clear-cut, static concept but a dynamic one, and depends on the context (e.g. society, culture and religion) and the spirit of the age. What sustainable development means will also depend on what is considered to be acceptable from a socio-economic point of view and this can evolve over the course of time. How sustainability is defined changes as society changes, and as our knowledge and technological capabilities increase. What form sustainable agriculture takes can thus also differ from one country or region to another because different cultural and other values may be involved or because it is at a different stage of development.

All forms of sustainable development, however, relate not so much to the product, in this case the plant or agricultural crop itself, but to its application and use at a certain time and place. Because in many areas there is little or no difference between the application (production, cultivation) and use (import, processing, end product) of GM crops and conventional crops, this could mean that criteria applied to sustainable agriculture could also be applied to GMOs, because these are the criteria which a crop must meet to be able to make a contribution towards a more sustainable form of agriculture. Unfortunately, sustainability

criteria for agriculture have not yet been developed in a way which can be drawn upon here. Furthermore, this would be to overlook the exceptional position which GMOs have in relation to conventional (agricultural) produce in Europe. The reason for this exceptional position is the ethical and public objections which have been raised by certain groups in society regarding the process by which GMOs are created: the use of genetic modification. This is why criteria for the application of GMOs in agriculture have been specially formulated.

COGEM notes here that the introduction of an assessment of the sustainability aspects of GM crops could raise questions concerning the sustainability of certain conventional crops and cultivation methods which at present, are not assessed in this way. COGEM notes also that the rejection of a GM crop on the basis of socio-economic arguments, while these equally apply to conventional crops that are not subject to such criteria, could be met with incomprehension.

Conventional agriculture as a frame of reference

In the minister's letter to COGEM it is suggested that conventional agriculture be taken as a frame of reference. The term conventional agriculture does not refer to a form of agriculture which can be unequivocally defined and exists only in relation to so-called 'non-conventional' forms of agriculture, such as organic farming. What constitutes conventional agriculture may also differ from one country to another depending on what stage of development they are at and what techniques are available.

Although there are major differences between existing agricultural systems (organic and conventional), there are also similarities. In all cases it is essentially a matter of controlling (or trying to control) biological processes. Agriculture can generally be defined as the entirety of economic activities in which the natural environment is modified for the production of plants and animals intended for human use. Depending on the product, the production method and the level of prosperity and underlying values, a wide range of techniques and types of solutions are used to deal with agricultural problems. Whatever form of agriculture is applied this generally has an adverse impact on the existing environment and ecosystem, depending on the crop and the cultivation method used. This impact is largely accepted because the business of farming directly or indirectly provides society with food and is therefore seen as a necessity. Both conventional and organic forms of farming aim for sustainability, but do this in different ways.

In this report conventional agriculture has been taken as a frame of reference because this form of agriculture is most common. A general principle in drawing up these criteria was that GM crops in agriculture should meet as well, if not better, the criteria which apply to the present non-GM variants in conventional agriculture.

Nine criteria for the sustainable application of GM crops

COGEM has formulated nine themes and associated criteria which could serve as building blocks in an assessment framework on the socio-economic and sustainability aspects of GMOs:

The production and use of GM crops must contribute to more sustainable agriculture in the form of:

Benefit to society

1. The production of GM crops leads to an increase in yield, contributes to harvest security or offers some other form of general benefit to society.
The elements involved here include: harvest security, food security, food quality, environmental benefit, cost saving, recreation.

Economics and prosperity

2. The production and use of GM crops contributes equally to local and overall prosperity and the economy and, where possible, leads to an improvement.
The elements involved here include: employment, efficiency of the production process, productivity and profit.

Health and welfare

3. The production and use of GM crops means that the health and welfare of workers, the local population and consumers remains at the same level and, where possible, improves.
The elements involved here include: human rights, the working environment and terms of employment.

Local and general food supply

4. The production and use of GM crops means that the local food supply remains at the same level and, where possible, improves.
The elements involved here include: food security and fair trade.

Cultural heritage

5. The production of GM crops offers the country or region concerned, if so desired, room to conserve and continue specific cultural heritage aspects or other local applications (such as building materials, medicines).
The elements involved here include: local applications and traditions, autonomy of the local population.

Freedom of choice

6. The consumer and the manufacturer's freedom of choice regarding GMO (or GMO-free) is safeguarded in the production and import of GM crops.
The elements involved here include: GMO (or GMO-free) labelling of products, product information, co-existence and innovation, and research freedom.

Safety

7. The admittance and assessment of GM crops in terms of safety to humans and the environment takes place in the country concerned in accordance with the legislation, on the basis of the international agreements in force concerning human and environmental safety.
The elements involved here include: food safety and environmental safety.

Biodiversity

8. The production of GM crops does not **a)** lead to a reduction in the agrobiodiversity of the agricultural environment and where possible strengthens it, and **b)** damage protected or vulnerable biodiversity.
The elements involved here include: agrobiodiversity, protected or vulnerable biodiversity, places of origin of agricultural crops.

Environmental quality

9. The production and processing of GM crops means that **a)** the quality of the soil, surface water and groundwater, and air, does not deteriorate and, where possible, is improved and **b)** the emission of greenhouse gases along the entire chain (development, production, processing and transport) remains neutral or declines relative to conventional agriculture.
The elements involved here include: emissions of hazardous substances to the soil, surface water and air, soil fertility and resistance.

Practical considerations

Operationalization of the criteria drawn up goes beyond the scope of this report. In the preparation of this report COGEM has, however, indicated some points which should be taken into account when the criteria are further developed into an assessment framework at a later stage.

Measurable criteria

For the operationalization of the sustainability criteria it would be desirable that the indicators used to measure the criteria: **a)** are objectively measurable, and **b)** can be estimated in advance. Some of the aspects referred to will be more difficult to operationalize, such as the themes cultural heritage, or welfare. Welfare and prosperity are general terms which on further consideration may well differ per country, culture or even religion. Initially, a reporting requirement could apply for these aspects so that more information can be gathered. With the aid of this information a system can eventually be drawn up by which these aspects can be quantified. When European member states can decide individually about cultivation on their own territory, this step will be essential to limit major differences between the member states in the admittance of GM crops for cultivation.

To test the safety of GM crops, the EU and many countries outside Europe already have a risk assessment in which largely objectively measurable data are evaluated with regard to safety to humans and the environment. The results of these studies in terms of the impact of GM crops on the environment and the significance of the measured values in this research are still regularly the subject of discussion. This applies to various scientific studies which contradict one another as well as to any one study which can be interpreted in different ways. COGEM notes that when people already cannot agree on measurable facts, in practice the introduction of socio-economic criteria will be a complex task in which wide differences of interpretation could arise between EU countries.

Besides this, it is open to question whether the impact of the cultivation of a GM or non-GM crop on social, economic and environmental aspects, the three essential elements of sustainability, can always be predicted in advance. In estimating risks to health or the environment it is, to a certain extent, possible to make use of scientific studies and research. Other aspects, however, are more difficult to quantify in advance, particularly when they are closely connected, as with the three basic components of sustainability. Often assumptions have to be made with regard to one or more aspects of these elements. For GM crops which have already been cultivated for some time, such as soy and maize, there is already empirical data upon which such assumptions can be based. For new GM crops with different properties, the impact on socio-economic aspects, such as welfare, employment or local food production, will generally be much more difficult to estimate or quantify. Furthermore, the impact of the cultivation of a particular crop will also depend on the region or area where this takes place. The economic, environmental and social situation may vary per region. The present admittance procedure relates to permits for cultivation or import, irrespective of the location. The question is, therefore, whether a sustainability assessment for new crops can be carried out in advance or whether new applications must first be introduced on the basis of a qualitative estimate of the sustainability aspects in which monitoring of the socio-economic impact takes place to provide a more quantitative picture.

Distinction between import and cultivation

In this report a distinction has been made between those criteria which are mainly relevant to the cultivation of GM crops in Europe, and the cultivation of GM crops elsewhere in the world followed by import into Europe. The are several reasons for making this distinction. A particular theme may be less relevant because there is already legislation or regulations on that specific topic, as with safety for example, or because the theme is not (or no longer) a current topic of discussion, as with welfare and prosperity in Europe. The practical application of the criteria is another reason for making this distinction.

Criteria relevant to cultivation in Europe

The themes and discussion points which are most relevant to the debate on GM crops in Europe which have not yet been included in an assessment framework or regulated in any other way, are as follows:

- Benefit to society
- Economics and prosperity
- Cultural heritage

Safety, freedom of choice, biodiversity and environmental quality are also still topical and relevant to Europe. These aspects have already been laid down in legislation. Safety is the fundamental principle in the assessment of GM crops in Europe and will continue to be so. Freedom of choice is covered in the legislation through a labelling requirement, among other things. Biodiversity and environmental quality too, are largely laid down in the legislation. There are various initiatives on biodiversity, such as Natura 2000, which are intended to protect vulnerable areas of natural beauty in EU member states. The themes benefit to society, economics and prosperity, and cultural heritage are not covered in the legislation or regulations on GMOs. These can be further developed and operationalized if it is decided that

they could play a part in the individual assessment by member states on the admittance of GM crop cultivation in their own territories. The themes health and welfare, and local food supply are generally no longer discussion topics in Europe.

Criteria relevant to cultivation elsewhere followed by import into Europe

All nine themes are relevant to cultivation outside Europe followed by import into Europe. The operationalization of a sustainability assessment for cultivation in Europe is less complex than the imposition of such requirements on countries outside the EU which export to Europe. In view of trade relations, as well as politically and legally, it is much more complex to draw up an assessment framework for sustainability for import, because other laws and rules apply outside Europe. A more ethical and political issue related to the introduction of an assessment framework for sustainability for countries outside the EU is the matter of whether this is actually desirable. Is the conservation of cultural heritage a choice to be made by the country itself or can it be used by importing countries as an argument?

In order to estimate the potential impact of the introduction of GM crops into the agriculture of other countries, the involvement of local stakeholders will always be very important. This is already done in a number of existing international initiatives such as the Round Table on Responsible Soy (RTRS) in which both experts and local stakeholders are involved. One option might be to support these initiatives and get involved in them until more experience has been gained within the European member states with regard to the use of sustainability criteria in the assessment of GM crops.

COGEM notes that if the various European member states were to gain experience in the operationalization of a number of sustainability criteria for crops cultivated in their own territories, this could be a useful step in the process of moving towards a broader assessment in which import is also assessed in terms of sustainability.