



## **ANIMAL FEED AND MODERN BIOTECHNOLOGY**

### Introduction

Since 1996, agricultural crops have been brought on the market that have been developed using modern biotechnology, so-called genetically modified crops (GM crops). In the first generation of GM crops, the modification concerned the agricultural characteristics of the crops. Examples are Roundup Ready soybeans and Bt maize. GM crops of which the composition has been modified have also been developed, the so-called second generation. This improves, for instance, the efficiency of the processing method, as well as making it more environmentally friendly. An example is potatoes of which the starch composition has been modified.

The introduction of GM crops also meant that genetically modified feed materials became available. This generally concerns by-products of processing. Several GM crops are currently permitted worldwide, of which (by-products of) maize, rapeseed, soya beans, sugar and fodder beets, cotton(seed) and potatoes are particularly relevant to the animal feed sector.

At present, the following genetically modified crops that provide raw materials for animal feed are permitted in the European Union:

In the appendix an overview of the authorized (within and outside the EU) genetically modified crops and whether these products are used in Dutch animal feed is included.

The main ingredients for European animal feed are the by-products of soya beans and maize, particularly soya beans, extracted and maize gluten feedmeal. The United States is by far the largest supplier of maize gluten feedmeal and soya beans (of which the soya beans, extracted is used in Europe, after processing). GM soya beans and GM maize have been cultivated and processed on a commercial scale in the United States since 1996.

So far, GM crops have not been cultivated for commercial purposes in the Netherlands. When this is done, those crops and their products will only be used for animal feed in the Netherlands after consultation with the animal products sector(s) involved and on the basis of the pertinent introduction conditions and the commercial policies of the companies involved.

### Safety

One of the most important criteria for the use of products in animal feed is that they must be safe for humans, animals and the environment. That also applies to products from genetically modified crops. Food safety has the highest priority in the Dutch animal feed sector. The animal feed must meet the requirements laid down by the Dutch government and the EU.

In April 2004, Regulation (EC) No. 1829/2003 on genetically modified food and feed came into force. Under this regulation, all genetically modified organisms (GMOs) and products of GMOs must be assessed for safety to humans and animals. In addition, all products of

GMOs that were on the market in the EU before the regulation came into force will be assessed within a year.

For living or viable GMOs, or products thereof, to be allowed on to the European market (import and/or cultivation), they must meet the requirements laid down in Directive 2001/18/EC, on the deliberate release into the environment of genetically modified organisms. Permission to import, store and process viable plants, parts thereof, or seeds destined for human food or animal feed in the EU can only be obtained if they have also successfully passed the environmental-safety assessment.

### Consumer concern

With a view to consumer acceptance, an analysis is being carried out, in cooperation with the chain partners, of the social and commercial aspects of the products and particularly of any characteristics or consequences that are not assessed as a result of the legislation and/or spark public debate (consumer concern document: CCD). The assessment on the basis of this analysis must have a positive result.

The CCD is complemented by current developments. Buyers, the media and consumers are informed on the basis of the CCD. At present there are consumer concern documents available (only available in Dutch) for [Soya beans](#), [Maize](#) and [Wheat](#).

In view of the social implications, the animal product chains in the Netherlands set the condition that the GMO raw materials for animal feed must have been subjected to an environmental assessment under Directive 2001/18/EC, even if those raw materials were not viable and therefore not required by law to be subjected to such an assessment.

It will not always be possible to maintain that condition in the future. The number of products of which the crops has not been tested (fully) for environmental safety in the EU is expected to increase. This particularly concerns products that can not be cultivated within the EU because of climatological or other reasons.

In view of the introduction policy the genetically modified crop of a product destined for animal feed that has not been assessed for cultivation there will be a review of the environmental-safety assessment of the crop in the country of origin. This will be done with reference to the biosafety protocol of the United Nations (Cartagena Protocol on Biosafety to the Convention on Biological Diversity) and particularly the compliance with the conditions in this protocol for the risk assessment in the country of origin. It has been agreed with the suppliers of raw materials that GMOs (and products thereof) of which it cannot be determined for certain that the environmental safety has been assessed in accordance with these directives cannot be supplied to the Dutch animal feed sector.

## Separation of prohibited GMOs and products thereof

In the US it is common practice to sow several varieties (both GMOs and conventional varieties) in order to avoid diseases and pests. The harvested products are generally not kept in separation at the farm. The reason for this is that the extra employment of labour and the greater storage capacity required are not compensated by a higher price.

Depending on the market price and the storage capacity at the farm, the products are offered to traders (collectors/transporters) either directly or later in the season. The products are transported by road, rail and over water to the processing industry in the US and to the export ports. Both before and after processing, batches can change owners several times in the chain and mixing can occur regularly.

Eventually large amounts of raw materials, such as soya beans, and by-products, such as maize gluten feedmeal, are shipped to Europe. They are transferred via Rotterdam and Amsterdam to the production companies in the Netherlands and other EU member states.

In consultation with the animal product chains, the animal feed sector has taken measures to ensure that only GMOs and products of GMOs are used in Dutch animal feed that have been accepted on the basis of the pertinent introduction conditions of the Dutch animal product chains.

The companies in the animal feed sector demand that their suppliers of raw materials declare that they will take all measures to ensure that they do not import any GMOs and products of GMOs that do not meet these requirements.

Within this context, the Royal Dutch Grain and Feed Trade Association (Het Comité) has been making agreements since 1996 with the maize processing industry in the US that produces feed materials for the Netherlands. These agreements entail that, besides conventional varieties of maize, these companies only supply and process those genetically modified maize varieties that have been accepted for Dutch animal feed and that they carry out the agreed separation measures in this respect.

Despite all the efforts and measures, it cannot be ruled out that small amounts of product of GMOs that are not permitted in the EU may find their way into the product. That is why in the past all varieties that were cultivated in the US, and to some extent still are, and which were not allowed into the EU under Directive 90/220/EEC, or the successor to that directive, Directive 2001/18/EC, were nonetheless tested for animal feed safety in the Netherlands. This was done by RIKILT-DLO in cooperation with the national government.

GMOs and products of GMOs for animal feed that come onto the market after April 2004 and which are not permitted in the EU under Regulation 1829/2003/EC, may not be present in the imported animal feed raw materials under that Regulation, not even in small amounts as a result of inadvertent mixing in the production areas and supply chains (zero tolerance). In a number of cases this can mean that these GMOs cannot be cultivated in areas where crops are being cultivated, which are partly destined, either in their basic form or processed, for the Dutch animal feed industry. In addition, the supply channels to the Netherlands will need to be entirely free of these GMOs and products of GMOs. Therefore, the separation measures that have been agreed with the raw material suppliers are being tightened.

## Labelling and traceability

In addition to Regulation (EC) no. 1829/2003, in April 2004 Regulation (EC) no. 1829/2003 came into force. This regulation concerns the labelling and traceability of GMOs in food and feed.

With the entry into force of these regulations, animal feed companies are obliged to indicate on the label when an ingredient of the animal feed contains genetically modified material or is derived from a GMO. If the individual ingredient contains less than 0.9% of genetically modified material, it is not necessary to indicate it on the label as long as the presence of that material is unforeseen or technically unavoidable.

## Conclusion

The European animal feed sector uses ingredients that come from crops of which genetically modified varieties are already permitted. Important raw materials in particular are maize gluten feedmeal and soya beans, which are transported in large quantities as bulk products from the US to Europe (in soya beans this mainly concerns the soya beans, extracted, after processing of the soya beans in Europe)

The number of GMO varieties in the world is constantly increasing and with a view to safety and consumer acceptance, the animal product chains in the Netherlands have developed an introduction policy for GMOs and products of GMOs in Dutch animal feed. The first condition is that the product is permitted in the EU for use in animal feed under Regulation 1829/2003/EC on genetically modified food and feed. In addition, consumer concern analyses are carried out in cooperation with the chain partners. These are analyses of the social and commercial aspects of the product and in particular of any characteristics or consequences that are not assessed as a result of the legislation and/or spark public debate. The result of this analysis must be positive. In this context, conditions have been set, including the condition that only products of GMOs are supplied to the Netherlands that have been accepted in the EU on the basis of an environmental assessment under Directive 2001/18/EC, even if those raw materials are not active and therefore not required by law to be subjected to an environmental assessment.

On the basis of the analyses, consumer concern documents (CCDs) are drawn up. Buyers, the media and consumers are informed on the basis of those documents. At present there are CCDs available (only available in Dutch) for the genetically modified varieties of [Soya beans](#), [Maize](#) and [Wheat](#). These documents are regularly adapted to current developments.

In order to guarantee proper separation of the prohibited GMOs, the Dutch animal feed manufacturers require a declaration from their suppliers of raw materials. The declaration states that suppliers of raw materials will take all necessary measures to ensure that they only import GMOs and products of GMOs that have been accepted under the introduction conditions of the Dutch animal product chains. In this context the Committee of Grain Traders has made agreements with the American maize processing industry so that, besides conventional maize varieties, their companies only supply and process those genetically modified maize varieties that meet that condition. For this purpose, specific separation measures have been agreed upon.

It will not always be possible in the future to uphold the agreement with the raw material suppliers that only products of GMOs will be supplied to the Netherlands that have been accepted in the EU on the basis of an environmental assessment under Directive 2001/18/EG. The number of products of which the crops has not been (fully) tested for environmental safety in the EU is expected to increase. This particularly concerns the non-vigorous GMOs and products of GMOs that are not viable in the EU. If this is the case, there will, however, be a review of the environmental-safety assessment of the crop in the country

of origin. This will be done with reference to the biosafety protocol of the United Nations (Cartagena Protocol on Biosafety to the Convention on Biological Diversity) and particularly the compliance with the conditions in this protocol for the risk assessment in the country of origin. It has been agreed with the suppliers of raw materials that GMOs (and products of GMOs) of which it cannot be determined for certain that the environmental safety has been assessed in accordance with these directives cannot be supplied to the Dutch animal feed sector.

#### More information

Should you have any questions, please contact the Product Board Animal Feed.

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**Appendix: Overview authorized genetically modified crops and usage in Dutch animal feed**

	Authorized outside the EU	Commercially cultivated	EU authorization			Usage in Dutch feedingstuffs <sup>1</sup>
	Cultivation		Cultivation	Feedingstuffs		
				Vital	Non vital	
<b>MAIZE</b>						
<i>E176 (Bt176)</i>	Yes (not in the USA)	Yes (not in the USA)	Yes	Yes	Yes	Yes
<i>Bt11</i>	Yes	Yes	No	Yes	Yes	Yes
<i>MON810</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>T25</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>MON NK603</i>	Yes	Yes	No	Yes	Yes	Yes
<i>MON810+T25</i>	Yes	No (fased out)	No	No	No	No
<i>MON810+NK603</i>	Yes	Yes	No	No	Yes	Yes
<i>MON863</i>	Yes	Yes	No	Yes	Yes	Yes
<i>MON863+MON810</i>	Yes	Yes	No	No	Yes	Yes
<i>TC1507 (Herculex I)</i>	Yes	Yes	No	Yes	Yes	Yes
<i>MON NK603+TC1507</i>	Yes	Yes	No	No	No	No
<i>TC 6275</i>	Yes	No	No	No	No	No
<i>59122 (Herculex RW)</i>	Yes	Yes	No	No	No	No
<i>TC1507+59122</i>	Yes	Yes	No	No	No	No
<i>MON88017</i>	Yes	No	No	No	No	No
<i>LY038</i>	Yes	No	No	No	No	No
<i>MON810+MON863+NK603</i>	Yes	Yes	No	No	No	No
<i>MON GA21+Bt11</i>	Yes	Yes	No	No	No	No
<i>MON GA21</i>	Yes	Yes	No	No	Yes	Yes
<i>MON810+GA21</i>	Yes	No	No	No	Yes	Yes
<i>MON863+NK603</i>	Yes	Yes	No	No	Yes	Yes

<sup>1</sup> In the Netherlands vital raw materials of genetically modified crops are not used in animal feed

	Authorized outside the EU	Commercially cultivated	EU authorization			Usage in Dutch feedingstuffs <sup>1</sup>
	Cultivation		Cultivation	Feedingstuffs		
				Vital	Non vital	
<i>MIR604</i>	No	No	No	No	No	No
<i>3272 (SYN-E3272-5)</i>	No	No	No	No	No	No
<i>59122+MON NK603</i>	Yes	Yes	No	No	No	No
<i>TC1507+59122+NK603</i>	Yes	Yes	No	No	No	No
<i>MON88017+MON810</i>	Yes	No	No	No	No	No
<i>LY038+MON810</i>	Yes	No	No	No	No	No
<i>LY038+MON863</i>	Yes	No	No	No	No	No
<i>LY038+MON NK603</i>	Yes	No	No	No	No	No
<i>MIR604+Bt11</i>	No	No	No	No	No	No
<b>RAPE SEED</b>						
<i>Topas 19/2 (HCN92)</i>	Yes	No (fased out)	No	Yes	Yes	No
<i>T45</i>	Yes	No (fased out)	No	No	Yes	No
<i>GT73</i>	Yes	Yes	No	Yes <sup>2</sup>	Yes	No
<i>MS1, RF2</i>	Yes	No (fased out)	Yes	Yes	Yes	No
<i>MS8, RF3</i>	Yes	Yes	No	No	Yes	No
<i>Falcon GS40/90pHoe6/Ac</i>	No	No	No	No	No	No
<i>Liberator pHoe6/Ac</i>	No	No	No	No	No	No
<i>MS1, RF1</i>	Yes	No (fased out)	Yes	Yes	Yes	No
<b>SOYA</b>						
<i>GTS40-3-2</i>	Yes	Yes	No	Yes	Yes	Yes
<i>A2704-12</i>	Yes	No	No	No	No	No
<i>G94-1, G94-19, G168</i>	Yes	No	No	No	No	No

<sup>2</sup> Method of detection has not been validated jet by the JRC

	Authorized outside the EU	Commercially cultivated	EU authorization			Usage in Dutch feedingstuffs <sup>3</sup>
	Cultivation		Cultivation	Feedingstuffs		
				Vital	Non vital	
<b>COTTON<sup>4</sup></b>						
<i>Event 31807, 31808 (BXN+Bt)</i>	Yes	<i>No (fased out)</i>	No	No	No	No
<i>Lijn 19-51a</i>	Yes	No	No	No	No	No
<i>MON1445</i>	Yes	Yes	No	No	Yes	No
<i>MON531</i>	Yes	Yes	No	No	Yes	No
<i>MON1445+MON531</i>	Yes	Yes	No	No	Yes	No
<i>MON15985</i>	Yes	Yes	No	No	Yes	No
<i>Event 10215, 10222 (BXN)</i>	Yes	<i>No (fased out)</i>	No	No	No	No
<i>LLCotton25</i>	Yes	Yes	No	No	No	No
<i>{MXB-7+MXB-9}</i>	Yes	Yes	No	No	No	No
<i>COT 102</i>	No	No	No	No	No	No
<i>MON88913</i>	Yes	Yes	No	No	No	No
<i>MXB-7</i>	Yes	No	No	No	No	No
<i>MXB-9</i>	Yes	No	No	No	No	No
<i>MON1445+MON15985</i>	Yes	Yes	No	No	Yes	No
<i>MXB-7+MXB-9+MON1445</i>	Yes	Yes	No	No	No	No
<i>MON88913+MON15985</i>	Yes	Yes	No	No	No	No
<i>LLCotton25+MON15985</i>	Yes	Yes	No	No	No	No
<i>MXB-7+MXB-9+MON88913</i>	Yes	Yes	No	No	No	No
<b>POTATO</b>						
<i>NewLeaf (Russet Burbank, Superior en Atlantic)</i>	Yes	No	No	No	No	No

<sup>3</sup> In the Netherlands vital raw materials of genetically modified crops are not used in animal feed

<sup>4</sup> Excluding events that are only authorized in China

	Authorized outside the EU	Commercially cultivated	EU authorization			Usage in Dutch feedingstuffs <sup>3</sup>
	Cultivation		Cultivation	Feedingstuffs		
				Vital	Non vital	
<i>NewLeafPlus (Russet Burbank)</i>	Yes	No	No	No	No	No
<i>NewLeafY (Russet Burbank en Shepody)</i>	Yes	No	No	No	No	No
<i>Apriori en Apropos</i>	No	No	No	No	No	No
<i>EH 92-527-1</i>	No	No	No	No	No	No
<b>RICE</b>						
<i>LLRice06/LLRice62</i>	Yes	No	No	No	No	No
<b>SUGARBEET/FODDERBEET</b>						
<i>T120-7 (LibertyLink)</i>	Yes	No	No	No	No	No
<i>GTSB77 (RoundupReady)</i>	Yes	No	No	No	No	No
<i>A5/15 (RoundupReady)</i>	No	No	No	No	No	No
<i>H7-1 (RoundupReady)</i>	Yes	No	No	No	No	No
<b>ALFALFA (LUCERNE)</b>						
<i>J101 (MON-00101-8)</i>	Yes	No	No	No	No	No
<i>J163 (MON-00163-7)</i>	Yes	No	No	No	No	No
<i>J101+J163</i>	Yes	Yes	No	No	No	No