

## **GENETICALLY MODIFIED SOYBEAN IN THE FEEDING OF CATTLES IN SOUTH-TRANS-DANUBIAN REGION**

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### **ABSTRACT**

Though in Hungary the cropping of genetically modified (GM) plants is not allowed the processed products containing them are already present in the country. The scheme is shown in the article through a case study. As much as 20 dairy farm managers from the region were asked and the data obtained show that in cattle feeding GM soy is widely used because this is the only forage that can be purchased at a reasonable price. As an alternative the promotion and propagation of using non-GM protein crop can be enlisted representing a comparative advantage on European markets.

Key words: cattle / dairy cows / animal nutrition / genetically modified soybean

## **GENETSKO SPREMENJENA SOJA V PREHRANI GOVEDA V JUŽENEM PODONAVJU**

### **IZVLEČEK**

Čeprav na Madžarskem gojenje gensko spremenjenih rastlin ni dovoljeno, pa v državi najdemo proizvode, ki vsebujejo takšne rastline. V članku v študiji primera predstavljamo takšno uporabo. Iz odgovorov dvajsetih vodij mlečnih farm smo izvedeli, da se v prehrani goveda uporablja gensko spremenjena soja, ki jo je edino možno dobiti na trgu po sprejemljivi ceni. Kot alternativo navajamo uvajanje in oglaševanje uporabe gensko nespremenjenih rastlin z veliko beljakovinami, kar bi bila prednost na evropskih trgih.

Ključne besede: govedo / krave / molznice / prehrana živali / gensko spremenjena soja

### **INTRODUCTION**

Nowadays the topic of genetically modified (GM) crops gets an ever increasing popularity. Most of the consumers have heard about these forages. While in a countrywide, representative survey it turned out that not less than 84% of the people heard about the fact that the genetic base of some organisms had been modified, for the question, whether the products they consumed could have contained such organisms, one third of the people said that they were unsure about it and 18% of them stated that there were no such crops in the country (Bánáti, 2007).

The numbers show that consumer information still has some gaps. Therefore it is a key factor that all actors of the market could get the chance for obtaining detailed, understandable and relevant pieces of information concerning the given issue.

The main objective of the survey presented here was to deliver background data on the fact that GM crops were available in the country even despite the actual regulations do not permit the production of them (Bánáti, 2007).

As an example soybean was chosen because it is the most widely cropped GM plant, in 2006 its cropping area was 58.6 million ha in the world (Clive, 2006). Biggest producers are the United States, Argentina and Brasil. Most consumers do not even think that most foodstuffs

contain soybean. Let's take as example the chocolate. If it is produced in the United States we can be quite sure that it contains GM ingredients e.g. in the form of soy lecithin. Or let's take the example of animal feeding where soy plays an important role as a protein source. The average rate of seed protein is 40% and 28% of it is digestible ([www.omgk.hu](http://www.omgk.hu)). The European Union imported 23 million tons of soy grit and 15 million tons of soybean in 2005. Most of this quantity came from Brasil and Argentina. It is to be proven through some data from the South-Transdanubian region.

## METHODS

In Hungary there are 794 controlled dairy farms as it comes from the March 2008 Newsletter of the Animal Breeding Performance Testing Ltd. As for the region, there are 19 in Somogy, 38 in Tolna and 25 in Baranya counties. According to this particular distribution there were 20 dairy farms selected in a geographical composition shown in Table 1. Farms were contacted through phone. There were some cases when no data could be collected either because the managers were not available or simply they did not want to give any information on the topic. Their occurrence is indicated in the tables (NA).

The following data were recorded: annual average cow headcount, quantity of yearly purchased soybean, quantity of any food containing soy, place of origin of the soy, yield of own cropped soy. So data collection focused exclusively on the soybean and not for the feeding since it has nothing to do with this partial study.

Table 1. Number of dairy farms involved per counties

County	Number of dairy farms
Somogy	5
Tolna	9
Baranya	6

## RESULTS AND DISCUSSION

Data on purchased soy quantities and places of origin are shown in Table 2. It can be clearly seen that in case of 11 farms out of the 20 the purchased soy through different channels came from South-America, mainly from Brasil but also from Argentina and from the United States. It is interesting in this respect because as much as on 89% soy crop area GM soy is produced in the United States and on 98% in Argentina. In these areas there is no separated storage of GM and 'conventional' soy. The same is true for transportation and processing. On the basis of contracted production (including separated storage and transport) it is possible to obtain non GM soy, of course, for additional costs. Therefore the non GM soy became a niche market product (Bánáti, 2007). It is justified also by the manager of a 120 cows dairy farm in Tolna county, who said that their soy came from Brasil and it was non GM product and cost 10 HUF/kg more than the other stuffs. For him it is important to feed his animal with non GM feeds since he rejects the usage of transgenic crops.

On two farms the purchased soy is from Austria and Slovenia. In these countries there is no sign of cropping GM plants.

On four farms no soy is purchased. In case of two farms the purchased concentrates contained soy and in case of the other two farms the management decided to use rapes since they did not see any advantage of using soy. Surprisingly their decision was not affected by the fact that

imported soy could eventually be of GM type. It turned out that milk processing facilities prohibit the usage of proteins of animal origin.

It is a general observation that the certificates of purchased feeds contain the fact of presence of GM plants.

Some managers expressed that it was not their table to know if the soy was GM or not, they bought what the market offered at reasonable price. It occurs mainly in the case of smaller dairy farms where cost management does not allow to buy the more expensive non GM products.

Table 2. Data on purchased soy

County	Annual cow headcount	Purchased soy (t/yr)	Place of origin
Somogy	456	280	Brasil
		140	Hungary
	560	193	Austria
	360	0	-
	1 000	864	Brasil
	360	250	South- America, mainly. Brasil
Tolna	699	2146	NA
	120	18	Brasil
	310	1 320	NA
	268	0	-
	2 300	1 190	Brasil, USA
	366	547	Brasil
	360	96	NA
	200	0	-
	410	0	-
Baranya	2 650	26 000	Argentina, Brasil
	650	300	Brasil, USA
	465	540	Brasil Argentina
	671	360	Slovenia
	498	300	USA, Brasil
	400	180	Argentina

Table 3 shows the farms with own soy production. Only 35% of the 20 farms interviewed cropped the plant. But the quantities are quite low (15 tons per year) even in the case of the dairy farm with 2 300 cows. It is obvious that soy production occurs in Baranya county, there is only one farm without soy production out of the six farms. Probably it can be explained by climatic conditions since soy needs high temperature and high precipitation level. In some areas it can be produced only with irrigation.

Promoting soy cropping in Hungary is an important objective offering direct economic benefits. Climatic conditions are favourable for cropping the soy. If own production could cover the need, the import could be cut back. It could lead to a comparative advantage on European markets if Hungarian cows were not kept on feeds with GM components. In some cases the GM rejection of some farms does not have obvious advantage because the milk and meat of non GM fed animals are not handled separately.

Why is it so important not to feed the animals with GM crops? There are phrases stating that GM feeding causes no changes in the animal product, but scientific results are not yet available to prove the former statements. It is not sure that the consumers (being confused about the given

topic) would be keen on buying such product especially if the products were given to babies and children. It would be worth making some efforts to map the opinion of the customers on this specific issue. Would they require any information on the product labels indicating that the animals were GM fed? According to the available results and the market situations dairy products should deliver such pieces of information.

Table 3. Own produced soy

County	Annual cow headcount	Soy (t/yr)
Tolna	120	40
Tolna	2 300	15
Baranya	2 650	9 600
Baranya	650	250
Baranya	465	230
Baranya	671	850
Baranya	498	1 600

Other feedstuffs purchased from local producers e.g. concentrates like Starter, Super Power etc. contain soy in certain quantities and also bypass proteins (not decomposing in the rumen but in the intestines) that are required by the intensive production (Kisjuhász).

According to the words of a manager working for one of the biggest feed company in the region their company does not pay attention to by non GM soy. They purchase from Brasil and it is GM. They indicated on the package that the feed contains GM crops. They purchase in large quantities and it is handled by the executive manager. They have stable partners and the purchased lot is contracted for flat prices.

Table 4. Soy sold monthly for dairy farms

Farms	t/month
1.	25
2.	15
3.	25
4.	40
5.	100
6.	25
Total	230

The monthly sold soy quantities through their regional distributional channels are shown in Table 4. It is 230 tons per month. The soy comes mainly from Brasil (70%, 350 t<sup>\*</sup>), then from Argentina (30%, 150t<sup>\*</sup>) – due to the recent strike activities in Argentina the import is cut off. Main factors of choosing the seller partner are: reliability, price and flexibility. The members of the distribution network can decide to order non GM soy. The Hungarian price of soy grit is influenced in 60% by the Chicago Exchange and in 40% by the costs e.g. transport and the different premiums (Brasil, Argentina etc.) So it is a daily changing price. The network can opt for the quantity for a year in advance but the monthly options are also frequent. The first quarterly mean price of GM soy in 2008 was 92 000 HUF/ton. The feed company can not

\* The numbers refer to the total imported soy, not only the quantity used by dairy farms.

mention a single partner that requires non GM soy this year. The explanation is the price. Formerly the non GM soy was 8–10 USD more expensive per tons, today the difference is 40–50 USD. The need for non GM soy is continuously decreasing, so less and less feed companies are dealing with it because the separate handling is rather difficult and in case of small quantities it is extremely expensive.

## CONCLUSIONS

The results indicate that although in Hungary the production of GM crops is not allowed such products are present on the market. According to the above data the majority of the customers does not know about it. Some of them assume that they already consumed GM products but they cannot mention actual examples.

The data show that in the cattle feeding scheme of the South-Transdanubian dairy farms GM soy is deeply involved. The main reason for this is that basically it can be bought on the European markets. The farms do not have a full range of choice to buy and feed non GM soy and even the price presses them to choose the GM one.

The answer for the problem – if it is a problem at all, because the managers of the interviewed farms did not seem to bother themselves with it, they look at the price– can be the promotion and extension of Hungarian soy production which could bring market advantages in the European Union.

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