

THE IMPACT OF THE NEONICOTINOID BAN ON THE ROMANIAN SEED INDUSTRY

Summary

Certified seeds are one of the most important factors impacting a crop's production potential. One of the most critical decisions that a farmer needs to make is choosing the varieties they will grow.

Seed production: After Romania's accession to the EU, the Romanian farmers' interest in quality inputs has grown noticeably, alongside the demand for certified seed of high-performing varieties both in terms of quality and quantity. In 2012, Romania produced a total 359 thousand tons of certified planting seed, on an overall 144 thousand hectares.

Since 2007, Romania has become attractive for seed multiplication - especially for corn and sunflower - for subsequent sale in other countries, an activity that was worth a total of EUR172950 thousand in 2012, of which exports to non-EU countries represented EUR89418, with Russia and Ukraine as main outlets.

Trade balance: In recent years, the volume of the Romanian trade in corn, sunflower, and rape, seed has grown significantly. Thus in 2012, foreign currency contribution reached EUR150201 thousand.

Consequences of the Neonicotinoid Ban for the Seed Market

The Regulation CE 485/2013 bans the use of insecticides containing active ingredients belonging to the neonicotinoid family (clothianidin, imidacloprid, thiametoxam) in seed treatments – except for winter cereals. The restriction is to be effective for two years, in order to enable an assessment of the impact upon bee populations.

In Romania, the ANSVSA (the National Sanitary Veterinary and Food Safety Agency) has not recorded any beehive deaths as a result of neonicotinoid treatments on seeds. The number of bee hives, as well as honey production and exports have increased lately.

The regulation carries a negative impact for Romanian agriculture, since the insecticides are used to control dangerous pests such as: *Tanymecus dilaticollis* (commonly called the corn leaf weevil), *Agriotes* spp. (wireworms), and *Diabrotica virgifera virgifera* (Western corn rootworm), as well as *Athalia rosae* L. (rapeseed sawfly), *Phyllotreta* spp. (garden flea beetle), and *Phylloides* spp. (earth beetle fleas).

Tanymecus dilaticollis is a frequent occurrence in the south and southeastern part of the country, where it is a limiting factor to corn crops. Its general area of impact is limited to the countries surrounding the Black Sea (Romania, Bulgaria, Turkey, Moldova, Ukraine, and Russia), with noticeably higher populations and damage levels in Romania – also due to the larger areas planted to corn and sunflower there, which take up about 35 percent of the country's arable land every year.

Thus, corn cannot be grown in the areas vulnerable to *Tanymecus* without serious measures to prevent and control the pest. In the third and fifth decades of the previous century, before chemical methods came into use, tens of thousands of hectares of corn were reportedly compromised each year and even as many as hundreds of thousands in dry springs. Once

chemical pesticides started being used, some areas would be replanted even two or three times, since at densities of 80-100 insects per square metre, the crops would be compromised. Experts estimate that this pest species attacks during the crop's early development, damaging about 1 million hectares, as a result of an existing biological "stock" in the soil, of 40-70 adults per square metre.

After 1998, the methods to prevent and control *Tanymecus dilaticollis* have become more and more efficient, both in terms of effectiveness and particularly environment protection, due to the lower impact of the products used (systemic products of reduced toxicity, declining doses, and targeted application – which protects useful fauna). Compared to the 25-30-kg/ha application rate practiced up to the last decade of the previous century, in the case of neonicotinoids, a maximum of 250 grams of active ingredient per hectare is used for corn, and even less for sunflower.

Renouncing these insecticides will lead to a development of pest populations such as *Tanymecus dilaticollis*, wireworms of the genus *Agriotes* or, more recently, *Diabrotica virgifera virgifera* and to population booms that characterised the years preceding the use of chemical methods; needless to say, a heightened level of pest damage may seriously affect Romania's agriculture.

Measurements have been conducted to assess the economic impact on corn, sunflower, and rapeseed crops, both on seed plots and food use crops. We have calculated the losses caused by a 20-percent and 40-percent production drop, respectively, taking 2012 as a baseline year. Thus the losses are triggered both by the decline in the areas planted and by lower yields, reduced seed processing, and lower income to the state budget.

Item	Production losses (tho. €)	
	20%	40%
Corn	-571831	-855435
Sunflower	-45455	-58514
Rapeseed	-6602	-8810
Total	-623889	-922759

Added to the above costs are crop re-establishment costs (representing about 15 percent of the area planted), which total EUR562 million every year.

Conclusions

1. There are currently no other authorised efficient products for seed treatments that could substitute the banned insecticides belonging to the neonicotinoid family (clothianidin, imidacloprid, and thiametoxam).
2. No bee colony deaths have been recorded in Romania as a result of neonicotinoid treatments.
3. In Europe, the general area vulnerable to *Tanymecus dilaticollis* is limited to the countries surrounding the Black Sea (Romania, Bulgaria, Turkey, Moldova, Ukraine, and Russia), with notably higher populations and damage levels in Romania, especially in the country's corn and sunflower production areas.

4. To the overall agriculture, annual losses will range between EUR623889 thousand (if production drops by 20 percent) and EUR922759 thousand (if production drops by 40 percent), plus the costs of crop re-establishment (15 percent of the area), which will represent EUR562 thousand. Farmers demand the decision-makers to grant compensation payments, to cover their annual losses as a result of this measure.
5. The additional areas that should be planted in order to make up for the production losses (in the 20 percent and 40 percent scenarios) are: 1089-2227 thousand hectares (corn); 424-490 thousand hectares (sunflower), and 64-87 thousand hectares (rapeseed).
6. In the overall loss structure, farmers represent 72 and 80 percent, respectively. The losses by crops are: EUR571831-855435 thousand (corn); EUR6602-8810 thousand (rapeseed); EUR45455-58514 thousand (sunflower).
7. Important losses will also be incurred by input suppliers (seed & plant protection product processors and traders) as well as by the state budget (profit tax and revenues from seed certification).
8. In the future, Romania may become an unattractive country for multiplying seeds for non-EU countries (Ukraine and the Russian Federation), despite its 2012 record level in that sense.
9. At the European level, HFFA (the Humboldt Forum for Food and Agriculture) has carried out a study on the social, economic, and environmental impact of neonicotinoid seed treatments in the EU, which concluded that in five years' time, the loss of this technology could cost the EU agriculture and related economy up to EUR17 billion, while 50 000 jobs will be affected, especially in Eastern Europe.

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