

NEONICOTINOIDS IN PELLETTED SUGAR BEET SEEDS: WHY SUGAR BEET GROWERS CALL FOR A SPECIFIC CONSIDERATION WITH REGARDS TO NEONICOTINOIDS



1. Does neonicotinoid seed treatment in sugar beet endanger non-target organisms (including pollinators) and the environment? NO

- **Sugar beet is not attractive to pollinators** since it does not flower/produce pollen during the growing period used for sugar production.
- The **release of neonicotinoids** to the environment **via guttation or harvest residues** is **very low** because:
 - sugar beet is a **very low guttation crop** with few and small droplets, and only at high humidity level (>90%);
 - neonicotinoids and their metabolites occur in **very low concentrations** in the soil after harvest. This low concentration, combined with the fact that practically no flowering plants are found in a beet field during the early stage of crop development and especially after harvest, makes it unlikely for non-target organisms in general and pollinators in particular to be at risk of being exposed to neonicotinoids.
- **Exposure of non-target organisms to neonicotinoids in sugar beet seed treatments at sowing is unlikely:** both seed pelleting procedure and drilling technique (mostly mechanical, causing far less dust drift than pneumatic drilling) conform to the highest technical standards in terms of abrasion and drift of insecticides. In pelleted beet seed, the insecticide **is not on the surface but underneath the outermost layer of the beet seed pellet** and thus a **low risk for dust emission**.

- During sowing, beet seeds are covered with about 2 to 2.5 cm of soil during placement of seeds in the seedbed to avoid pellets being left on the surface. Hence, **the risk of the seeds being spotted and eaten by birds is negligible**.
- The insecticides applied as **seed treatments to the sugar beet have little or no effect on non-target invertebrates within the soil environment**.
- **In most crop rotations including sugar beet** (in many countries above 90%), **sugar beet are followed by cereals** (regarded as a **non-bee-attractive crop**) as the first succeeding crop.
- Furthermore, **the issue of neonicotinoids residue in soil and crops following sugar beet is being investigated**. The results obtained so far for flowering and non-flowering succeeding crops do not indicate a high risk for pollinators. Given the numerous dilution effects (degradation processes of active substance in soil and plant, soil tillage, number of years between sugar beet in crop rotation) as well as the fact that in most cases the crop succeeding sugar beet is not a flowering (i.e. pollinator attractive) crop, a risk to pollinators can be considered **negligible**.
- Be it via residues from seed treatment of winter cereals or via residues from a seed-treated sugar beet crop of the previous year, **the bees' exposure to neonicotinoids by cereal guttation is a negligible route and has no remarkable effect on their populations**.

2. Has neonicotinoid seed treatment a low environmental impact compared to post-emergence spraying? YES

- The systemic uptake of neonicotinoids in plants leads to sufficient protection of all parts of the plant against many harmful pests **only during the early stages of crop growth (up to 12 weeks after sowing)**, which is the reason for their widespread use in seed treatments.
- The **amount** of neonicotinoid active substance in a seed treatment per hectare is **very low** (between 30 and 90 g per unit of 100 000 beet seeds, with sowing rates ranging between 1.1 and 1.2 units/ha), with the percentage of area treated in a given field being much lower compared to foliar whole area applications (sprays). **Adopting the neonicotinoid-treated beet seed has allowed a reduction of insecticide application per hectare by over 95%**.

- The introduction of neonicotinoid seed treatment has allowed:
 - **phasing out** the comparatively less efficient **carbamate** seed treatments;
 - **phasing out additional insecticide applications in furrow at sowing** to supplement the carbamate seed treatments;
 - strongly decreasing insecticide applications against aphids or other foliar pests from May to July (ex.: now needs to be used on < 10% of beet area in Germany, < 5% in Belgium, the Netherlands, Denmark & Sweden).
- **The advantages of using neonicotinoid beet seed treatment as opposed to returning to repeated foliar insecticide treatments or resorting to treatments which have not yet been tested** include:
 - a much **lower risk of exposure** for humans and the environment, as well as for neutral, useful or pollinating insects.
 - using **less active substances per hectare**,
 - avoiding using active substances which have not undergone thorough scientific research as to their efficacy in sugar beet;
 - thus **avoiding resorting to less efficient treatments**.

3. Is there currently a sustainable alternative to neonicotinoid seed treatment in sugar beet? **NO**

- Neonicotinoids in seed treatments cannot be replaced because the most damaging pest *Myzus persicae* which transmit **virus yellows** is **resistant to organophosphates, carbamates** (most of which are no longer authorised anyway) and **pyrethroids** (whose efficacy currently ranges from 0 to 20%). Furthermore those resistances can have opposite effect to our goals by emphasising resistant vectors population and limiting their predators.
- In addition, for the main pests in sugar beet:
 - **no non-chemical alternatives are currently available**,
 - **the chemical alternatives available pose a high risk for pollinators and have a high environmental impact**, not least because most of them are applied as spray and therefore more likely to directly affect non-target organisms (including the pests' natural enemies).

4. Would a ban of neonicotinoid seed treatment in sugar beet jeopardize sugar beet production in Europe? **YES**

- According to recent work carried out by the **French Beet Research Institute ITB**, it is estimated that stopping the use of neonicotinoids in beet seed treatment would lead to an average **national yield loss of 12%** compared to the current level. This would eliminate beet growers' margin. Moreover, **in the regions which are particularly vulnerable to virus yellows epidemics due to mild winters** (all regions close to the sea) and large aphid populations during the early stages of beet growth, **yield losses can be up to 50% in the most affected plots**.
- In other countries/regions, yield losses due to virus yellows alone in the absence of effective protection may be considerably higher (e.g. in **Austria between 10 and 20%**, in **Belgium between 20 and 40%**, in the **UK up to 49%**).
- Moreover, the resulting **increased instability in yield will endanger the efficiency of the whole sugar value chain**. The ban of neonicotinoid seed treatment would thus jeopardize an entire sector that contributes positively to the EU agri-food and bioeconomy.

Conclusion

The use of neonicotinoids seed treatment in sugar beet growing is the best environmental solution, in particular *vis-à-vis* pollinators, against virus yellows and other areal and soil pests which affect sugar beet. Therefore, it should not be banned until sustainable alternatives become available to beet growers.

Sugar beet growers are committed to improve their good practices (see www.sustainablesugar.com), to develop new alternatives to the use of neonicotinoids and to implement them when they will be available. They are engaged in research work, together with public authorities as well as with the numerous national beet research institutes, which will pool and share their findings and results.