

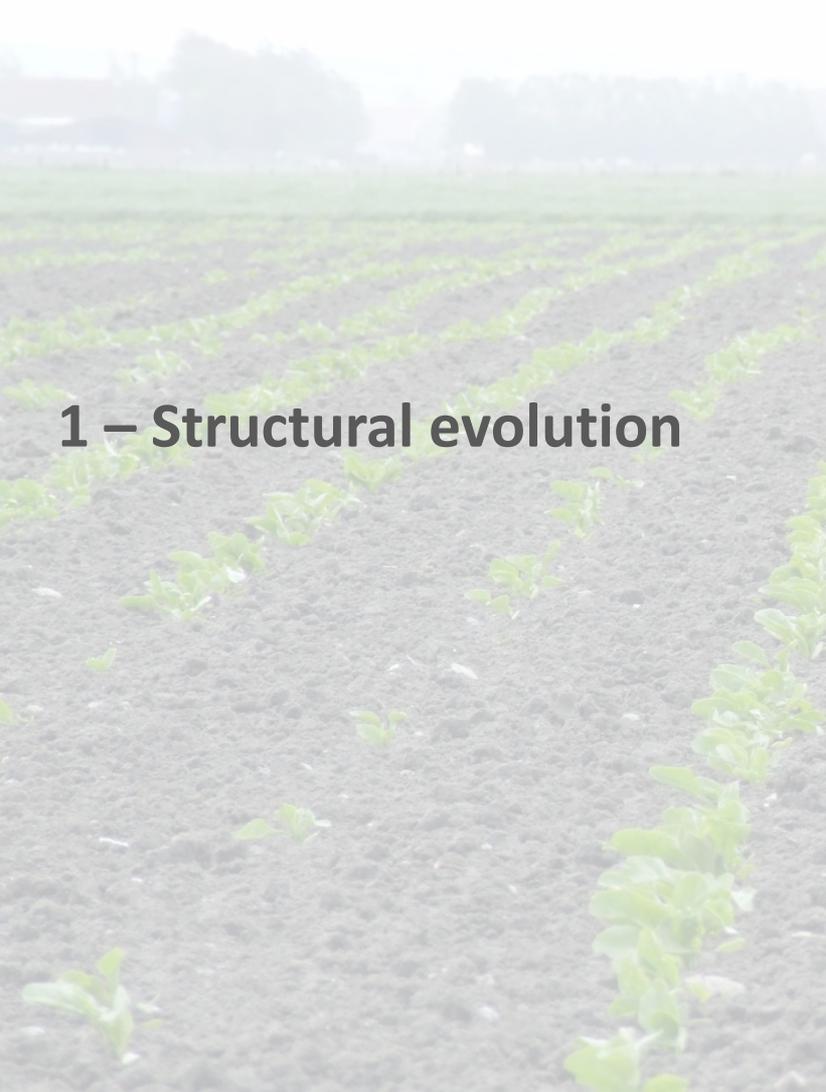
D.133/2.6.2021

# Sugar Beet production in the EU: Critical risks and threats of sugar beet cultivation

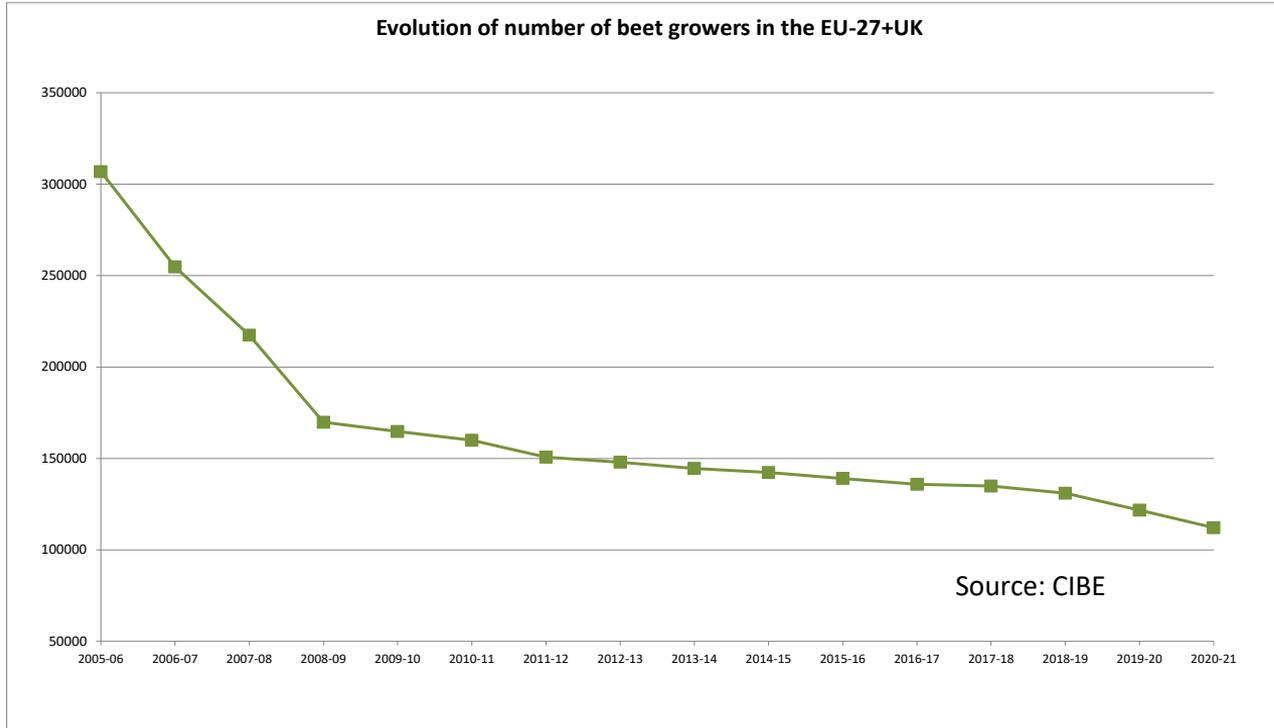
UNITING BEET GROWERS  
**CIBF**  
since 1927

Sugar Market Observatory Video Meeting – 2 June 2021

# 1 – Structural evolution



## ➤ A further reduction of the beet sugar sector



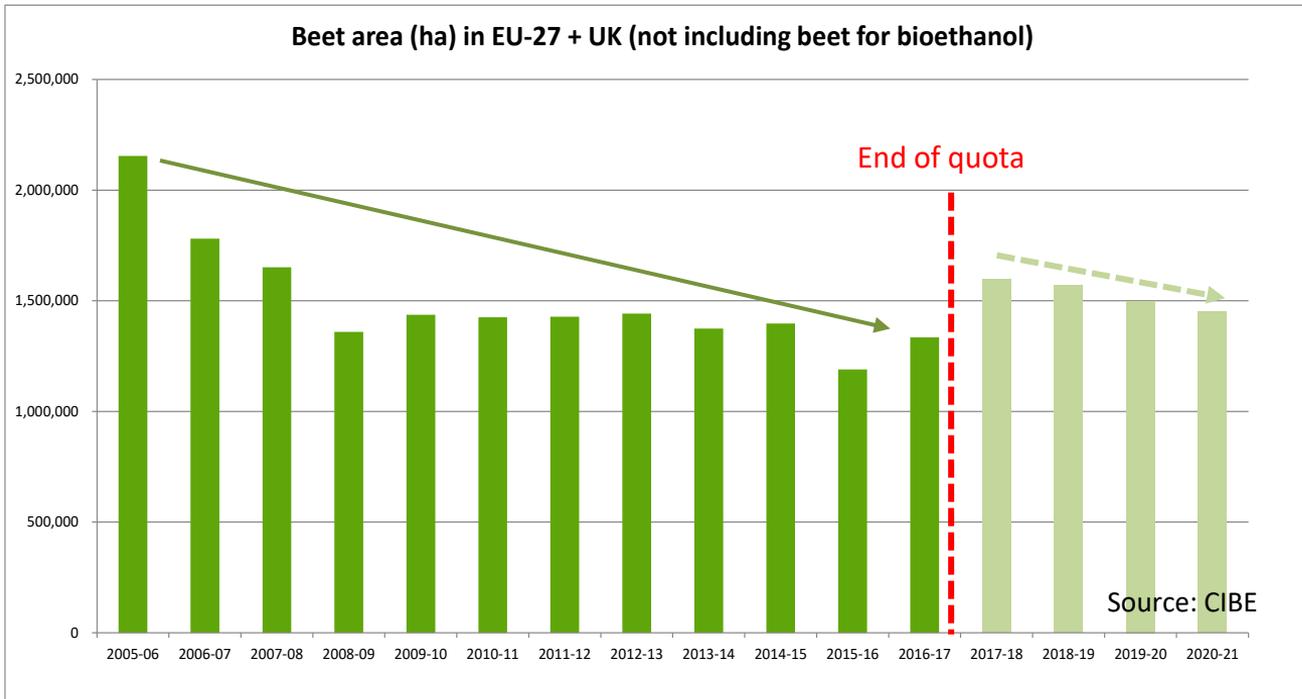
➤ Number of beet growers in the EU27+UK in 2020/21 was around 113 000

➤ a decrease of 8% in comparison with 2019/20

➤ a decrease of 17% compared with 2016/17

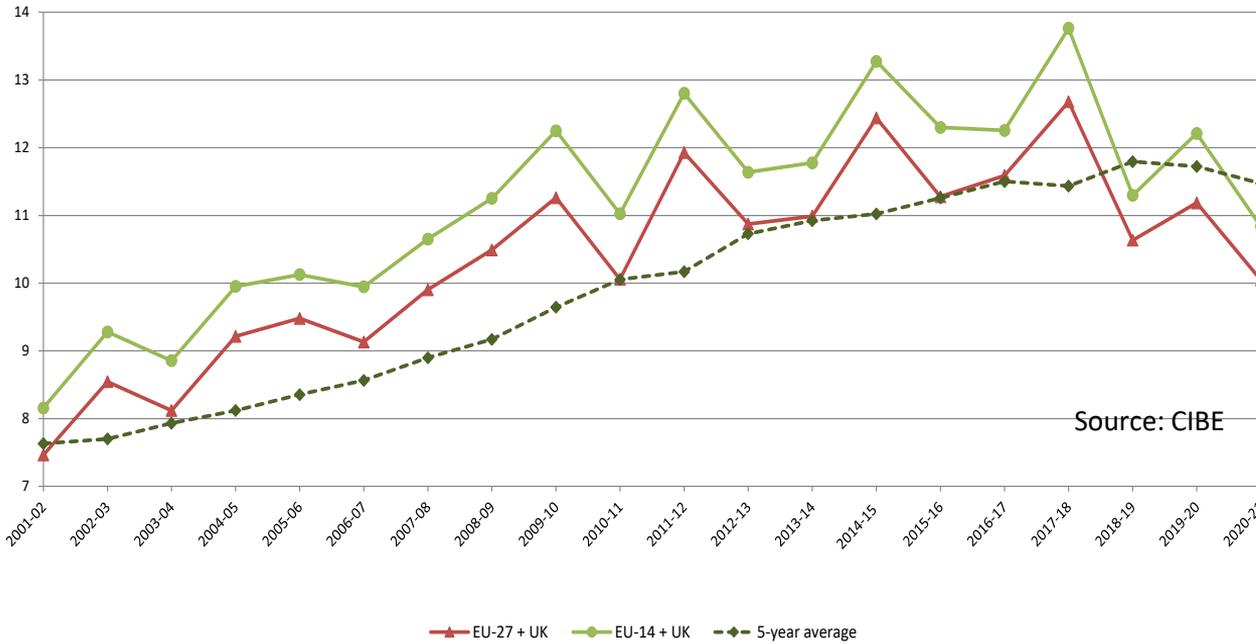
## ➤ A further reduction of the beet sugar sector

- Beet area (not including ethanol/alcohol production) in the EU27+UK decreased to 1.45 million ha in MY 2020/21, down 3% compared to 2019/20 and down 17% compared to 2017/18
- Beet area for ethanol was down by 3% in 2020/21 compared to 2019/20 at around 106 000 ha



## ➤ An alarming recent evolution in sugar yield

Evolution of sugar yield (tonnes of white sugar per ha harvested)



Source: CIBE

- Average yield per hectare in the EU27+UK plunged at 10.1 t/ha, a 7% decrease compared to 2019/20
- The 5-year average sugar yield in the EU27+UK has started to stall / decrease
- Growth in productivity beginning to stall

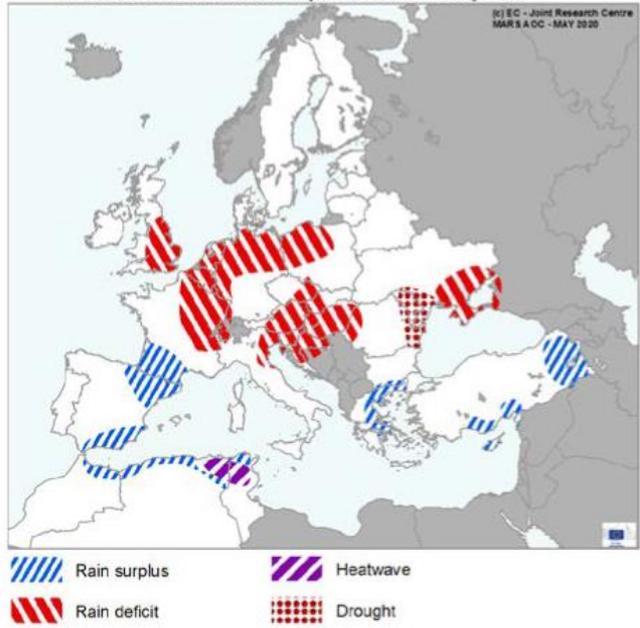
**2 – Increased climatic,  
agronomic and regulatory  
threats**



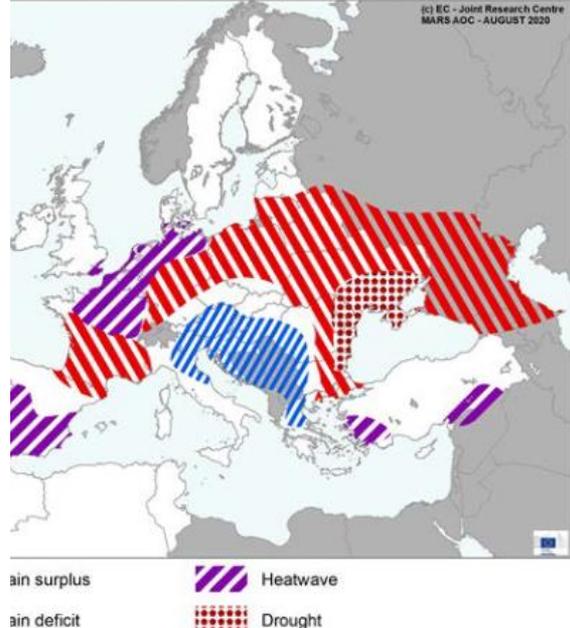
# Climatic risks

## A 3<sup>rd</sup> consecutive season with extreme & lasting weather patterns in many regions

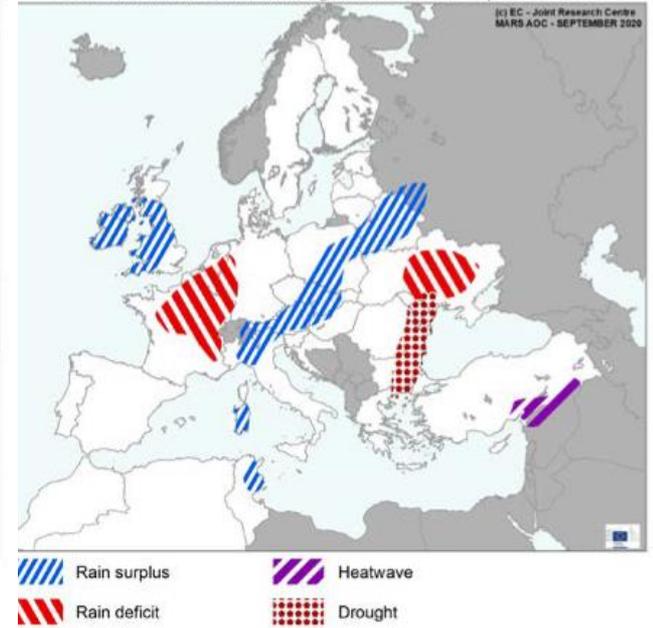
**AREAS OF CONCERN - EXTREME WEATHER EVENTS**  
Based on weather data from 1 April 2020 until 15 May 2020



**AREAS OF CONCERN - EXTREME WEATHER EVENTS**  
Based on weather data from 1 July 2020 until 29 August 2020



**AREAS OF CONCERN - EXTREME WEATHER EVENTS**  
Based on weather data from 1 August 2020 until 15 September 2020



Source: EU Commission, JRC Monitoring Agricultural Resources

## Tackling regulatory risks

- European sugar beet growers are already facing and managing a **very strict EU legislative framework for Plant Protection Products (PPPs)** based on the precautionary principle → **our objective: avoid technical deadlocks and losses in productivity**
  - Around 22 active substances used in PPPs in sugar beet have been banned recently and more or less the same number are under scrutiny
  - Decision made without full economic and environmental impact assessments
  - Dangerous shrinking of growers' toolbox, necessity of very rapid adaptation that is now extremely challenging (no sustainable alternatives today for the ban of NNIs in pelleted beet seed)

# Overview lost active substances (AS)

Note: not all AS authorised in all Member States for use on sugar beet



- **22 actives substances used in sugar beet cultivation lost during the past two years and withdrawn from sugar beet growers' toolbox**
  - For 2019 crop: **clothianidin, imidacloprid, thiamethoxam** (all seed-IN) ...
  - For 2020 crop: **diquat** (HB), **propiconazole** (FU), **quinoxifen** (FU), **thiram** (seed-FU)...
  - For 2021 crop: **chloridazon** (HB), **chlorpyrifos** (IN), **desmedipham** (HB), **dimethoate** (IN), **fenpropimorph** (FU), **thiacloprid** (IN)...
  - For 2022 crop: **beta-cyfluthrin** (IN), **epoxiconazole** (FU), **mancozeb** (FU), **metalaxyl-M** (seed-FU), **thiophanate-methyl** (FU)...
  
- Further confirmed losses in the pipeline or already no longer approved at EU-level:
  - **Haloxyfop-P** (HB), & **zeta-cypermethrin** (IN), approval expired 01/12/2020, allowing for 18 month grace period after expiry of approval, very likely that 2022 will be last crop year for these two AS.
  - **Alpha-cypermethrin** (IN), Commission Draft Implementation Regulation withdrawing approval was voted in March 2021 SCoPAFF, maximum grace period of 18 months after entry into force, so **2022 likely to be last crop year**.
  - According to EU Pesticides database, approval of **Cyproconazol** (FY) will expire 31/5/2021, so maximum grace period of 18 months will probably allow it to be used (until late May 2023).

- **27 active substances used in sugar beet cultivation to come up for renewal/extension of current approval by 31 July 2022** (expiry of current approvals), 9 of them are Candidates for substitution and therefore, are likely to come under regulatory pressure.
  
- **Threatened:**
  - **AS sulfoxaflor (SFF)** (IN) COM proposes a restriction to greenhouse uses only;
  - **AS triflurosulfuron-methyl (TFS)** (HB) concerns around Endocrine Disruptor, EFSA **will not** grant additional time for studies, EFSA will take 12-14 months to evaluate the submissions;
  - AS **Phenmedipham** (HB) assessment as Endocrine Disruptor ongoing;
  - Etc.

- Difficult rapid adaptation
- Losses of 2 or 3 tonnes of sugar per hectare (i.e. around 15-20%) represent a turnover loss of around €1000/ha (at average sugar price of €380/t)
- Example of ban on NNI-seed treatment, in combination with the higher costs linked to foliar applications, €50- €135/ha depending on the number of foliar applications, (the so-called alternatives, such as for example flonicamid, spirotetramat and pirimicarb, clearly showed their limitations in 2020) and the higher fixed costs for sugar manufacturers linked to a shorter processing campaign, this means that **more than one billion of Euros have been lost by the beet sugar sector in Europe**





## ➤ A 3<sup>rd</sup> season with poor & adverse conditions and a significant impact of the ban on NNI seed treatment

- Many regions which sown beet seed without NNI seed treatment had to tackle pest damages which affected the costs of production and the yields
- The most affected region was France: average sugar yield (9.3 t/ha) was around 27% below the 5-year average and the lowest at national level since 2001/02! Other regions affected by virus yellows or other pests were the UK with an average sugar yield around 9.8 t/ha, i.e. 25% below the 5-year average, Poland, the Czech Republic, Hungary, Romania (in areas without neonic seed treatment)

## France

- 2019: 3 to 5% of harvest lost, no significant impact on national average beet & sugar yields
- 2020: **27% of harvest lost**
  - beet yield 63.5 t/ha, compared to 5-year average (2014/15-2018/19) of 86.4 t/ha
  - sugar yield 9.3 t/ha, lowest level since 2001/02 and over 23% below the 5-year (2014/15-2018/19) average sugar yield of 12.1 t/ha.
  - Total loss to the French sugar sector: **600 – 700 million €, of which 280 million € gross loss to beet growers**

Approx. 110 million compensation + insurance (estimate)

**15 million € net additional treatment costs** (2 foliar insecticide treatments on average, allowing for the money saved by not using neonic-treated seed).

**Total cost to beet growers: 280 – 110 + 15 = 185 million €**

Average cost per ha in 2020: 185 million € for 421 000 ha = 440 €/ha

- In 2020/21 the impact of notably virus yellows can only be called devastating, with individual growers losing 50% and even 75% of their crop.
- Average sugar yield (around 9.8 t/ha) was some **25% below** the 5-year average - and indeed the lowest UK average since 2002/03!
- NFU Sugar estimate that **growers lost over £43 million in income from the base beet price alone compared to an average yield, on top of an estimated £6-£9 million additional cost of insecticide spray programmes.**
- This brings total extra cost (income loss plus additional costs) to £49-53million, or around £533-576/ha.

- Total **costs for crop protection against insect pests** 70.5 €/ha in 2019 and 103.75 €/ha in 2020.
- Given that in 2019, around 75% of beet area (i.e. around 42 450 ha) was not sown with NNI-treated seed while in 2020 over 85% (i.e. around 48 560 ha) of beet area was not sown with NNI-treated seed, the **costs for crop protection against insect pests in sugar beet in Belgium amounted to roughly 2.99 million € in 2019** and slightly over **5 million € in 2020**.
- Comparing the yield between an infected area and a healthy area in a field, on average the loss of sugar yield was 24% in 2019 and 28% in 2020.

- While in 2019/20 pest damage (principally virus yellows) had been mainly in the southwest of the country, in 2020/21 it was found in all beet growing areas of the country.
- **Average financial loss in 2020/21 is estimated at 73.5 €/ha** (38.6 € damage and 34.9 € extra costs, principally for additional spraying), slightly higher than the financial loss in 2019/20, estimated at 70 €/ha (20 € damage and 50 € extra costs).
- With beet areas of respectively 81 000 and 83 000 ha, **overall loss was around 5.65 million € in 2019 and 6.1 million € in 2020.**

- **Only 22% of total 2020 beet area was sown with neonic treated seed.**
- There were problems in fields without neonic-treated seed, with increased pest feeding already in the early growth phase. Such fields required additional insecticide protection - even a few additional foliar treatments. These foliar treatments were not always effective.
- Findings from the first two seasons of post-neonics show that inability to use neonics on the entire beet area makes it difficult (and in some conditions impossible) to effectively protect against pests. This was reflected in the 2020 national average sugar yield (7.9 t/ha) being almost **19% below** the 5-year (2014-2018) average.

- In **Romania**, around **23% of 2020/21 beet area was sown without neonic-treated seed** (due to supply problems caused by the Covid pandemic). The beet in the untreated fields suffered from attacks by soil insects (weevils, flea beetles) and aphids, causing **damage to plant stands estimated at 15-20%**. This contributed to national average sugar yield being almost **19% below** the 2014-2018 5-year average.
- In **Hungary**, no Emergency Authorisation (EA) was granted for 2020. Without the neonic seed treatment there was much more insect damage. Growers required much more field defences, the **cost of these defences was double the** cost in the previous year when neonic treated seed was sown. Insect damage was about 20% higher than in 2019 and there were areas where re-sowing was needed. There was a significant increase in the area infected by virus yellows, contributing to national average sugar yield being **14% below** the 2014-2018 5-year average.

**3 – Emergency  
authorisations**



# Overview of EAs for neonic-treated sugar beet seed since 2019

|      | BE | CZ | DK  | DE | GR | ES | FR | HR | IT | LT | HU | NL | AT | PL | RO | SK | FI | SE | CH | UK |    |
|------|----|----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 2019 |    |    |     |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | GR |    |    |
| 2020 |    |    | GVL |    | NA |    | NA |    | NA |    |    | NA |    |    |    |    |    |    | NA | NA | NA |
| 2021 |    |    |     | ST | NA | AC |    |    | NA |    |    |    |    |    |    |    |    |    | NA |    | NI |

 = EA granted

GVL = EA granted very late (March 2020)

ST = EA granted by Federal State (Baden-Württemberg, Bavaria, Hesse, Lower Saxony, North Rhine-Westphalia, Rhineland-Palatinate & Schleswig-Holstein)

AC = EA granted to Autonomous Community (Castile and León, Basque Country, La Rioja)

 = EA granted but not implemented (required threshold was not reached)

 = EA not granted.

GR = EA initially granted, then revoked.

NA = no application for EA submitted.

- Some conditions are more or less common to many (if not all) EAs:
  - Monitoring of pests
  - Not sowing the NNI-treated seeds into a field with flowering weeds
  - Preventing the flowering of weeds before and after sowing
  - Avoiding dust generation during sowing operations
  - Ensuring that NNI-treated seeds are buried in the soil, especially at the field edge and/or ends of rows
  - General safety measures to be respected when handling NNI-treated seed (protective clothing)
  - Obligation to record sowing of NNI-treated seed and communication to interested parties (including beekeepers)
  - Obligation to dispose of/return left-over NNI-treated seed (i.e. cannot be stored on farm for the next crop year)

- The difference between MS are in the conditions/restrictions with regards to succeeding crops:
  - In CZ, HU, PL, SK and RO, there do not appear to be any specific restrictions
  - In ES, FI, LT and DK, the conditions stipulate that in the year (two years in DK) following the cultivation of sugar beet, crops attracting pollinators must not be sown on the same field (although in ES maize is authorized since 2020)
  - In AT, the restrictions on succeeding crops are gradually being adapted – thanks to the results of the bee monitoring (part of the EA package)
  - In the UK only cereals can be sown within 22 months of the sugar beet crop being sown and no oilseed rape crop can be sown for 32 months

- The difference between MS are in the conditions/restrictions with regards to succeeding crops:
  - In BE, the restrictions are severe and go as far as five years after the sowing of the NNI-treated seed: a positive list is provided for the first two years, which is extended from the 3<sup>rd</sup> to the 5<sup>th</sup> year following NNI-treated beet seed
  - In DE (7 Federal States for a total of 126 900 ha) in the same (2021) and in the following year (2022), no flowering catch crops or bee attractive crops may be grown in a field sown with NNI-treated beet seed in 2021.
  - In FR restrictions on succeeding crops apply for up to 3 years after sowing NNI-treated seed, gradually expanding the positive list of crops which may be grown after sugar beet

- Some countries experienced some logistics/supply issues in 2019 and 2020 (and PL does not allow the import of NNI-treated seed, only a limited acreage is concerned)
- **CIBE estimates that less than 25% of EU beet area was sown with NNI-treated seed in 2019 & 2020**
- Assuming no supply issue, **CIBE estimates that EU27 beet area sown with NNI-treated seed in 2021 would represent a maximum of 50%**
- **EAs for NNI-treated beet seed are time-limited!**
- **EFSA final reports on EAs awaited in Autumn 2021**

## 4 – What strategies ahead?

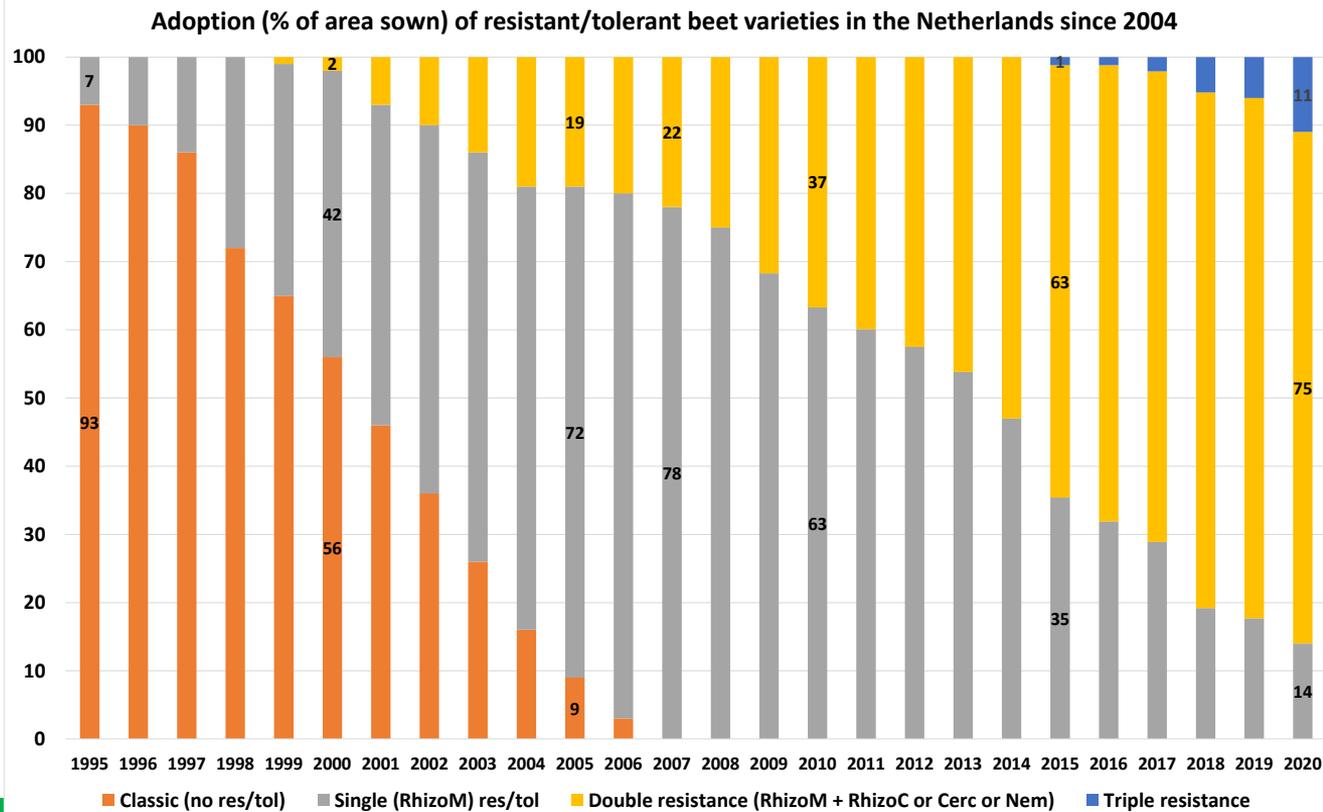


# Strategies and challenges for further reduction of insecticides & fungicides: many projects ongoing but support needed!

| Strategies   | Challenges  |
|--|---|
| <b>Further improvements for pest and disease <u>monitoring</u></b>   | <b>Loss of active substances</b> > increase in FTI & volumes of less efficient active substances, resistance<br><b>Appearance of new pests every year</b> (climate change, beet weevil, beet fly, beet moth, leafhoppers) |
| <b>More biocontrol</b> (macro- & micro-organisms, semio-chemicals & natural substances)<br><b>Ongoing development</b> in beet cultivation (projects at regional level) | <b><u>Global lack of registered biocontrol substances for sugar beet !</u></b><br><b>Only contact effect:</b> timing & repetition of applications crucial   |
| <b>More low-risk active substances</b> (LRAS)  | <b><u>Very few LRAS available</u></b> < 20 LRAS currently EU approved (10 fungicides, 1 insecticide)  |
| <b>Further development of beet varieties</b> resistant/tolerant to pests & diseases<br><b>Development of <u>New Breeding Techniques</u></b> (NBTs)                     | Breeding needs <b><u>time and investment</u></b><br><b>Stable and clear EU regulatory framework for NBTs!</b>   |

# Development of beet varieties resistant/tolerant to diseases

## Example: Beet varieties adoption in the Netherlands



# Beet varieties development in the EU 8-year (2021-2020) AKER Programme

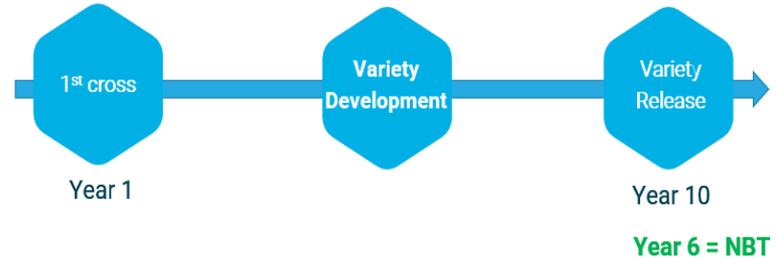
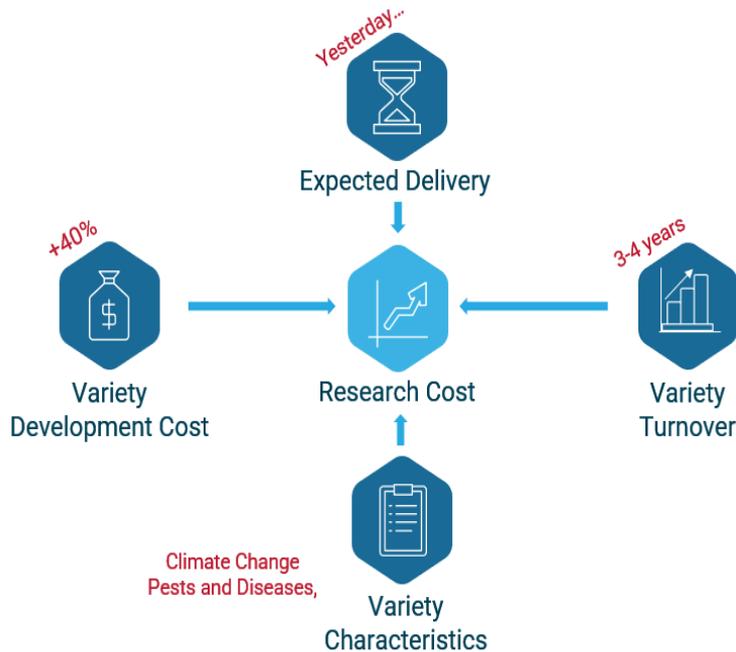


- [AKER 2020](#) was a € 18.5 million budget & 1 765 person-months of researchers, supported by **11 public & private partners** in the French beet-sugar-alcohol sector.
- Focusing on research, development & training, AKER aimed **to double the annual increase of sugar beet yield from 2% to 4%** & to contribute to the development of sugar beet as a crop & industry reference. 5 stages:
  1. 2012 & 2013: development of a core collection of 15 accessions from a collection of 10,000 wild genetic resources
  2. 2014-2016: implementation of the crosses from reference collections to elite material to obtain segregating source populations;
  3. 2017: advancing & multiplying individuals from these source populations
  4. 2018 & 2019: assessing & analysing the lines derived from the populations, taking account of year & location effects
  5. from 2020: selection of new varieties



- **New sugar beet varieties expected to be possibly commercialized at best only as from 2022**
- Since 2018/2019, following the rapid decrease of available active substances used in Plant Protection Products in beet growing, **additional objectives have been added to the AKER programme in terms of selection of new varieties tolerant/resistant to certain pests and diseases** (notably virus yellows transmitted by aphids).
- **National Beet Institutes** are currently working with breeders on a **protocol for testing varieties for tolerance to Virus Yellows** so as to establish one protocol which is the same for the method and for the evaluation over the different European countries :
  - In 2020, a first “protocol development trial” was initiated mainly on 1 virus yellows (BMYV)
  - In 2021, the work has been extended for 3 viruses yellows (BMYV, BChV, BYV)

# Plant breeding gets increasingly complex → speed and efficiency makes the difference



### Time

- Very rapid changes in requirements
- Variety development is too slow to cope with needs



### Access to genetic diversity

- Access and benefit sharing – Nagoya Protocol



### Detection, validation & exploitation of genetic diversity

- Pre-breeding using wild relatives
- Plant Breeding Innovation – Precision Breeding – **New Breeding Technologies**

Source: SES Vanderhave, April 2021

- 🌱 **Climate change and loss of PPPs** challenges variety delivery
- 🌱 NBTs support **more efficient and targeted** variety development
- 🌱 **Product-based regulatory approach**
- 🌱 **Heavy regulatory burden** will exclude small and medium size breeding companies
- **Appropriate regulatory framework is urgently needed!**

# IPM & Good Practices for Weed Control - strategies and challenges for further reduction of herbicides

| Strategies  | Challenges   |
|---|--|
| <b>Increase the number of crops</b> in the rotation                               | <b>Uncertainty:</b> will this reduce weed pressure or actually increase it?  |
| <b>Alternating</b> spring & autumn-sown crops                                     |  |
| <b>Soil tillage</b> - Ploughing   | Possible impact on soil structure & biodiversity<br>Incompatible with conservation agriculture                                 |
| <b>Stale (false) seedbed</b>  | Dependent on favourable weather conditions<br>Increases <b>risk of delayed sowing</b>  |
| <b>Varied herbicide strategy to avoid resistance</b>                              | Reduction of individual herbicides, not overall herbicide use  |
| <b>Mechanical weed control</b> between the rows<br>Ongoing development since 2009 | Dependent on specific weather conditions<br>Increased risk of erosion & <b>crop damage</b><br>No solution for weeds in the row |
| <b>Combined mechanical/chemical weed control</b>                                  | Necessitates substantial <b>investments and costs</b>  |

# IPM & Good Practices for Weed Control - strategies and challenges for further reduction of herbicides

| Strategies   | Challenges   |
|--|--|
| <p><b>Trailed manual weed control</b></p> <p><b>Weeding robots</b><br/>Computer-assisted mechanical &amp; robotic weed control</p> | <p>Extremely challenging, burdensome &amp; costly<br/>Currently limited to cultivation of organic beet</p> <p>In early stage of development<br/><b>Investment</b> costs<br/>Necessitate development of broadband covered areas with latest wireless technology</p> |



# The innovation and timing challenge

## Tackling the ambition of the European Green Deal

- Beet = a source for sustainable plant-based solutions for the future and a tool for decarbonation and circular economy that should be promoted
  - Food products; Animal feed; Bio-based products, Bioenergy
- Sugar beet growers need **rapid actions** to meet current and future challenges; climate change, new pests, new conditions/practices → **projects & initiatives are ongoing in the MSs (and with EIP) and EU but must scaled up projects with more:**
  - R&D programmes, notably in breeding (**New Breeding Techniques**) and **agronomy (New good practices)**
  - R&D programmes for innovation in bioeconomy
- **R&D must be supported with EU financing programmes**



THE MINISTRY OF AGRICULTURE AND FOOD ANNOUNCES A R&D PUBLIC/PRIVATE PROGRAMME FOR THE BEET-SUGAR SECTOR TO TACKLE THE VIRUS YELLOWS CRISIS



### ➤ Big uncertainties ahead

- What environmental conditionality?
- What impact of **Eco-schemes**?
- What **support for investments** for the transition?
- What tools for **risks management**, including market risks?
- What **safety net to deal with severe market crisis** (sugar eligible for public intervention?)?

➤ Further impacts on beet cultivation in Europe expected

### ➤ CIBE considers necessary:

- **Adapted timing/transition**
- **Appropriate toolbox to deal with standards while maintaining competitiveness**
- **Financial & regulatory support to innovation (NBTs) / to transition to new standard (R&D)**
- **Level playing field with imported products which should comply with the EU standards of production**

# Thank you for your attention!



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