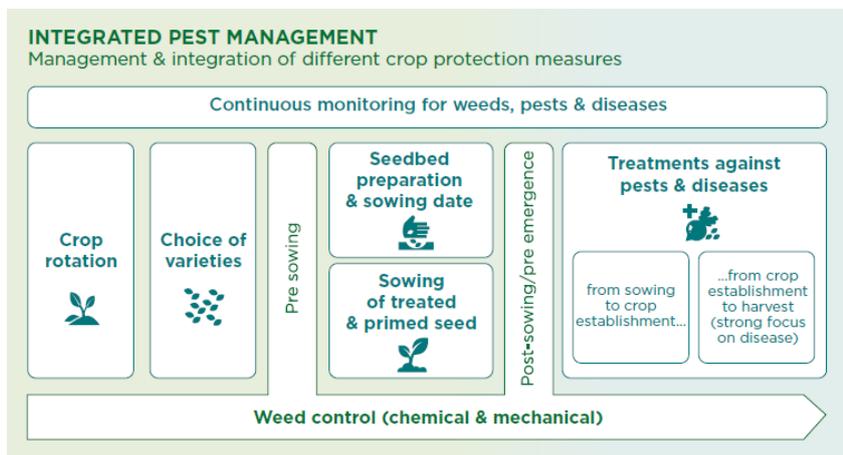


## Executive summary ‘Good Practices: Plant Protection’

### Making optimum use of all available crop protection techniques in the sugar beet sector

Sugar beet, like many other crops produced on European soil, is exposed to weather conditions, competition from weeds, damage from pests and diseases which make its cultivation challenging. To guarantee optimum quality and yield of the crop, to ensure farmers’ incomes, to secure raw materials for factories and to provide safe and good quality products to consumers, the crop needs to be protected.

To protect their crops, including sugar beet, farmers in general and beet growers in particular, rely on a broad range of tools, collectively referred to as **Integrated Pest Management (IPM)**, also known as Integrated Crop Protection. IPM includes the use of plant protection products, such as herbicides, insecticides and fungicides, but is certainly not limited to the use of PPPs (Plant Protection Products) when it comes to protection the crop.



#### ① CROP ROTATION

Crop rotation is the first step in Integrated Pest Management and naturally prevents the build-up of host-specific pests and pathogens causing diseases. By leaving several years between two successive beet crops in the same field, growers proactively reduce pests from occurring in their fields.

#### ② VARIETY SELECTION

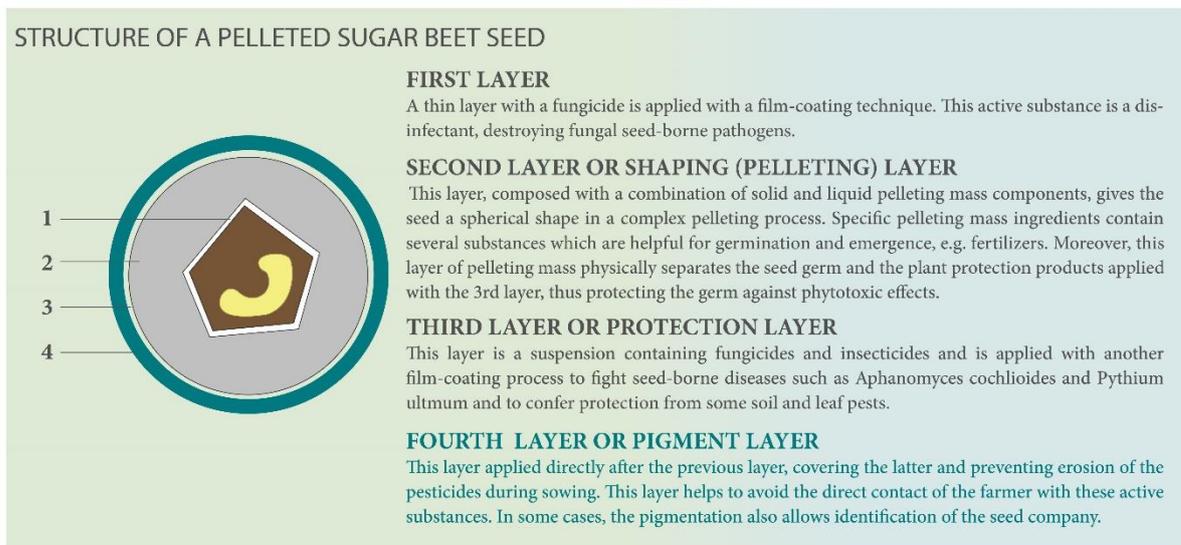
Step two in IPM is the adequate choice of varieties/cultivars. Integrated Production (IP) guidelines for sugar beet stipulate that cultivars must be resistant/tolerant to at least one major disease. Growers now also have increased access to - and use an increased number of - varieties that are double or triple resistant/tolerant. There are nevertheless diseases such as beet virus yellows for which so far researchers have been unable to find a resistant variety, despite significant R&D efforts. Controlling this disease therefore requires - at least for the time being - other tools of IPM.

#### ③ TREATED SEEDS & SEED PRIMING

The young beet are very susceptible to weeds, pests and diseases. Incorporating very low doses of an appropriate fungicide and/or insecticide during seed pelleting protects this young beet from certain diseases and/or numerous insect pests for around 90 days after sowing. Via this sustainable practice, a single preventive treatment can avoid having to spray the entire crop with a foliar insecticide 2 to 3 times.

Seed priming or activation accelerates the rate of seed emergence by up to 7 days. Early and uniform crop establishment reduces the risk of damage to the seeds due to adverse weather and pests and contributes to reducing weed. In combination with the correct use of PPPs, this increases efficiencies.

What about organic sugar beet? Organic beet growing started in the 2000s. While organic beet area has grown recently, it only represents a marginal fraction of beet production (less than 1%). Indeed, sugar beet is very demanding from an agronomic point of view notably weed control, but also pests and diseases, with high yield variability. At this still relatively early stage it is probably unrealistic to expect organic sugar beet growing to deliver sufficient beet to run even a single factory for an entire beet processing campaign.



Original source: "Structure of pelleted KWS Sugar Beet Seed" & "Kockelmann et al., 2010. "Seed production and processing", elaborated by CIBE

#### ④ INTEGRATED WEED CONTROL

Sugar beet seedlings are very sensitive to weed competition (for nutrients, light, water and space). To give the seedlings the capacity and room to grow, it is essential to control weeds before the establishment of the crop, i.e. before beet sowing/drilling, before and after crop emergence:

Prior to sowing	The <b>stale seedbed method</b> : a seedbed is created some weeks prior to the sowing making weeds germinate. The weeds can then be killed off by mechanical (hoeing) or other means (flame-weeder for example). This technique only works in certain weather conditions and may therefore not be applicable systematically.
After sowing	A <b>pre-emergence herbicide application</b> straight after drilling for moist soils and where troublesome weeds spread.
After crop emergence	<ul style="list-style-type: none"> <li>- <b>Mechanical weeding</b> (inter-row hoeing or harrowing may provide a solution in certain cases. However, this may increase water or wind erosion.</li> <li>- Post-emergence low-dose herbicide treatment</li> <li>- Combinations of mechanical and chemical weed control which are constantly being further developed and improved.</li> </ul>

## ⑤ POST-ESTABLISHMENT PEST AND DISEASE CONTROL VIA DIGITALISED MONITORING

When major pests and/or diseases hit the crop later in the growing season, growers often rely on a local/regional leaf-disease monitoring system. Based on these often digital monitoring and alert systems, they are informed of pests and disease development via control and treatment thresholds. Once these are reached, they receive alerts to start inspecting their fields to assess whether they should apply curative PPP treatment. This is a huge step forward with regard to avoiding unnecessary preventive spraying.

Growers use a range of tools to deal with consequences of weather conditions, weed, pests and diseases, not only PPPs.

Although continued efforts are put into further fine-tuning certain techniques and tools and in developing new ones, growing beet -as well as other crops - also requires the use of PPPs in a sustainable way based on training and certification schemes for farmers.

A rapid removal of currently available PPPs and a slow development of new ones (e.g. PPPs containing low risks active substances), without an appropriate transition to allow for the development of economically and environmentally sustainable crop, like we have witnessed in recent months and years, will jeopardise crop yields and quality. It will also impact the effectiveness of the few PPPs remaining in the growers' toolbox - and will have detrimental effects on the farming community just as much as on consumers.

To read the full brief: <http://www.sustainablesugar.eu/news>