



# Lidea

FRESH IDEAS FOR AGRICULTURE

## **THE ESSENTIAL GUIDE TO SUCCESSFUL OILSEED RAPE CROPS**



# Lidea

## IN KEY FIGURES



More than  
**2,000**  
employees



A turnover of  
**376 M €**



**15**  
research stations across  
Europe and South America



More than  
**34 M €**  
devoted each year to  
industrial and R&D  
investments



**55,000 HA**  
of production  
across 8 countries



**8**  
Production sites in France,  
Romania, Ukraine, Spain  
and Russia

EURALIS Semences and CAUSSADE Semences Group formalised their alliance in September 2020 with the creation of LIDEA. By building on their complementary strengths in terms of crops, research, industrial tools and markets, the alliance of the two companies aims to achieve leadership positions in certain crops in wider Europe, Ukraine and Russia.

## OUR MISSION

In proximity with our ecosystem, Lidea creates and provides **customised, sustainable multi-crop** seed solutions that generate **added value** for producers **throughout the year**.

## Quality production for **certified seeds**

Lidea's objective is to offer high quality seeds, guaranteeing full traceability to ensure customer satisfaction. Lidea uses high-performance top-quality laboratories, located as close as possible to the industrial facilities, making it possible to guarantee quality from harvest, throughout the industrial process, right up to the bagging of seeds. To meet the expectations of different countries, Lidea offers a wide range of conventional, organic and untreated crop seeds.

## Expertise in a wide **range of crops**





# A continuous BREEDING PROCESS

LIDEA has been breeding winter oilseed rape for over 30 years. Its main objective: to improve performance by increasing yield potential and stability through good behaviour of crop varieties throughout the life cycle.

## HOW DO WE SELECT NEW VARIETIES?

In order to meet farmers' needs, we collect and select genetic material based on various criteria:

### MAIN CRITERIA:

- ✔ **High and stable yield:** to ensure crop performance.
- ✔ **Quality:** for productive, competitive and efficient production.
- ✔ **Phoma tolerance:** a crucial criterion since phoma resistance can be achieved only through a varietal choice.
- ✔ **Stem elongation:** an important trait to ensure cold tolerance.
- ✔ **Pod shattering resistance:** a critical factor for mechanised harvesting.

### COMPLEMENTARY CRITERIA TO ADAPT TO DIFFERENT CONDITIONS:

- ✔ **Earliness:** to protect plants against environmental influences.
- ✔ **Disease resistance:** tolerance to diseases such as Verticillium, Cylindrosporium, etc. whose presence depends on location and conditions.
- ✔ **Clubroot resistance:** to address cabbage hernia.



**SANDRINE LEGROS**  
WINTER OILSEED  
RAPESEED  
BREEDING LEADER



**MATHIAS FRONTINI**  
BREEDING  
PROGRAM  
MANAGER



**PRZEMYSŁAW WIAZ**  
OILSEED RAPE  
SELECTION  
MANAGER

## Oilseed rape R&D **key figures**

**LIDEA**

is the **first breeder** combining genetics and innovative varietal blending ideas:

**PROTECT**  
**SYMBI**

**ES CAPELLO**

was the number one variety in France in 2021 in terms of sown area

**IN VITRO  
CULTURE LAB**

with doubled haploid breeding method

**3 MAIN**  
breeding stations

## Extensive research and development network covering **different growing conditions**

78 locations: trials, breeding centres, seed factories





# Why choose OILSEED RAPE?



## DID YOU KNOW?

1 ha of rapeseed

=

1,900 kg of meals

1,000 L of biodiesel

500 L of culinary oil

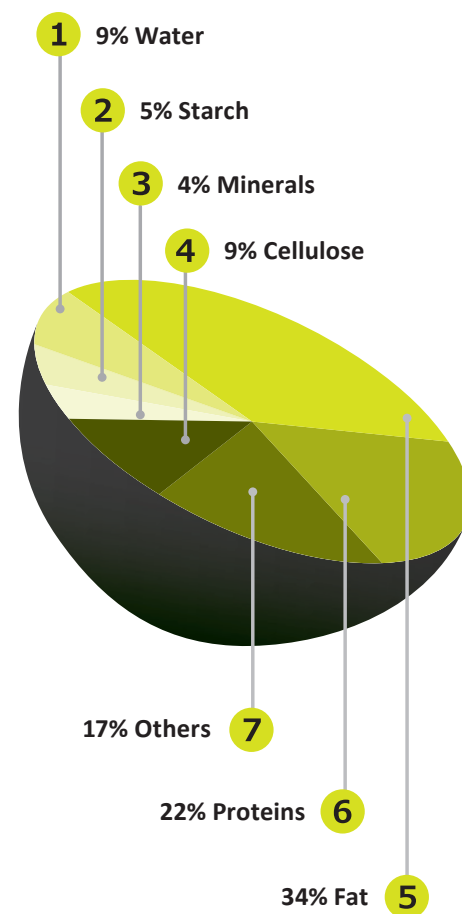
## A KEYSTONE IN A CROP ROTATION STRATEGY

Winter oilseed rape is a suitable crop for arable rotations and one of the best break crops. A break crop brings numerous benefits to soil structure and fertility, and provides diversity to help reduce disease, weed and pest levels for a subsequent crop. For example, oilseed may reduce the risk of mycotoxins when rotating with cereals.

Oilseed rape is the best crop to store carbon in soil and to improve soil organic matter content (composed of 50% carbon). Organic matter is essential for mineralisation, improving soil structure (less settlement and erosion) and capacity to store water and mineral elements.

Oilseed rape has very high nitrogen uptake potential, especially during autumn and winter. It substantially reduces the risk of leaching at critical moments of the year. It also covers and protects the soil for 11 months of the year, from sowing to harvest, and plays a crucial role against erosion thanks to its tap root system.

Moreover, oilseed rape crop is a significant support for beekeeping and other pollinators. It is often the first flowering food source available for bees after hibernation.



## Comprehensive product offer for various industrial issues



### BIOENERGY

**Oilseed rape is the main source of biodiesel. Biodiesel represents 60% of oil production.**

Compared to palm oil, rapeseed oil has numerous benefits:

- 🌱 The green aspect: carbon capture, less deforestation, local production.
- 🌱 The technological value of biodiesel: biodiesel made from rapeseed gels at a lower temperature than biodiesel produced from other feedstocks, making rapeseed biodiesel a more suitable fuel for colder regions (with temperatures as low as -9°C).
- 🌱 Rapeseed biodiesel can be blended with other fuels (diesel 100% vegetable / Oleo 100).





## FOOD USE

**40% of rapeseed oil is intended for culinary oil.**

Rapeseed oil is composed of 60% mono-unsaturated fatty acids, vitamin E, and above all is one of the richest sources of OMEGA 3 (with 10% content), known for its positive influence on cardio-vascular and cerebral systems. There is a specific market for rapeseed oil to produce rapeseed frying oil. The main benefit of this oil is that it can be cooked to high temperatures because of its high smoke point. Only varieties from high oleic segments (HOLL) which are poor in linoleic acid are used for this purpose.



## GUARANTEED SOURCE OF PROTEIN

Rapeseed meal (what remains after the oil is extracted) is rich in protein content for livestock. It is an excellent alternative to soybean meal: in addition to agronomical advantages, it contributes to protein autonomy, non-GMO production and helps to limit deforestation.

**The price is an attractive factor for livestock farmers among its others benefits:**

- ✓ Rapeseed meal is rich in phosphorus and calcium, leading to significant economy in terms of mineral input.
- ✓ Unsaturated fatty acids contribute to improving milk quality (reduced atherogenic risk).



## OTHER UNEXPECTED USES



### PAINTING

rapeseed oil acts as a solvent for oil paint.



### COSMETICS

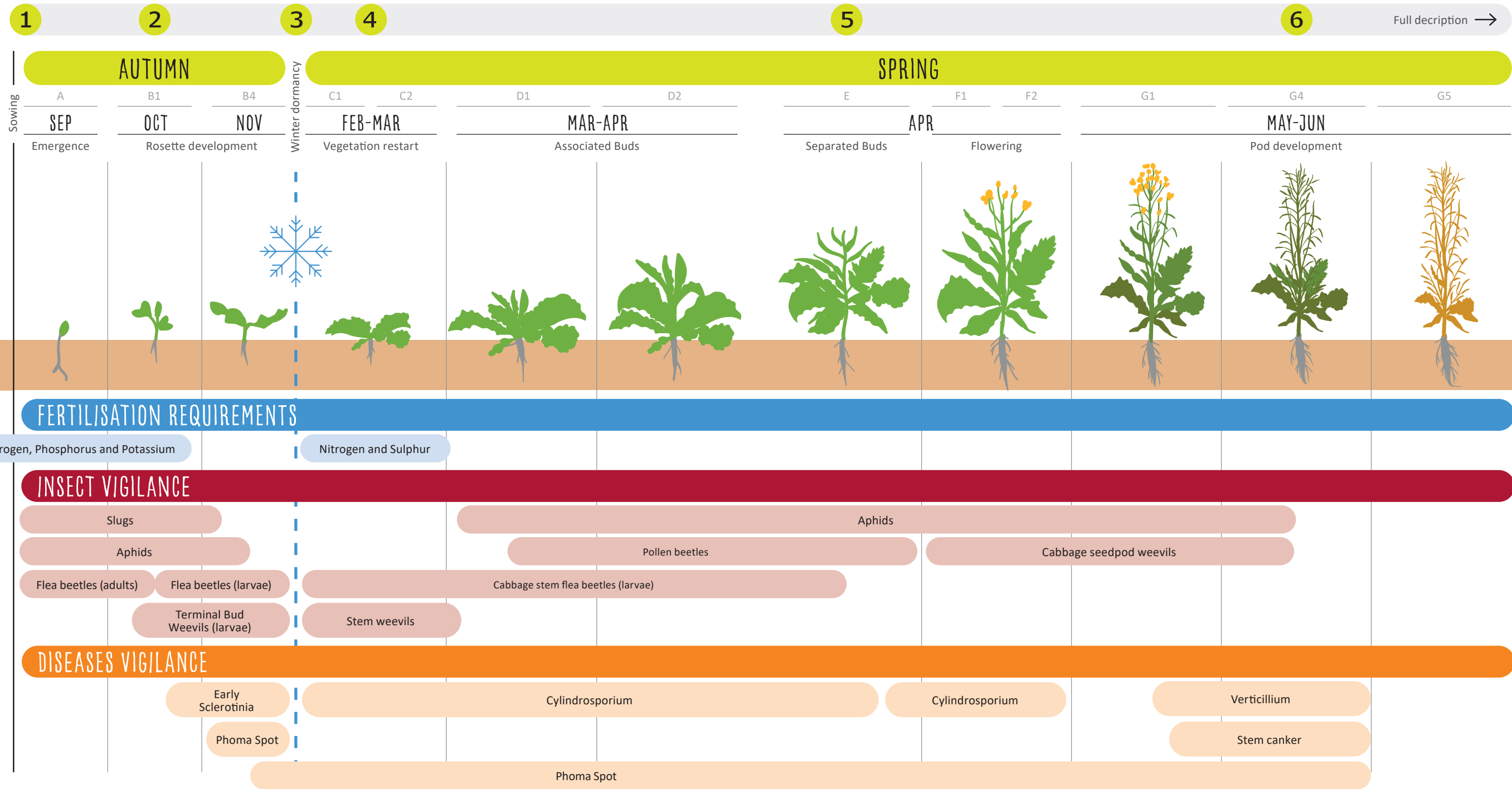
lip gloss, creams, shampoo, soap, lipstick, massage oils.



### CRUDE GLYCERIN

generated in biodiesel plants can be refined into pure form and used in food, pharmaceutical, or cosmetics industries. Compared to petroleum-based synthetic glycerin, vegetable glycerin contributes to the production of more sustainable products.







## 1 SOWING: TIPS FOR RAPID AND UNIFORM EMERGENCE

- 🌱 **Sowing.** It is advised to sow oilseed rape at a depth of 2 cm in a seedbed, to enable retention of soil moisture. If soil is compacted, and provided there is no risk of slugs, it is recommended to sow at a depth of up to 20 cm. To do so, it is essential to prepare the soil just after the harvest of a preceding crop.
- 🌱 **Weather conditions.** Oilseed rape requires some cold conditions at initial stage development. Thus, the main challenge is to find an optimum sowing window (between mid-August and mid-September). Sowing before rainfall is preferred, except in the case of compact silt chalky soil.
- 🌱 **Soil.** For clay soil, rolling after sowing is essential to retain soil moisture. For compact silt chalky soil, it is not recommended to sow in proximity to rainfall.
- 🌱 **Weed control.** Mechanical weed control - recommended after emergence in dry weather conditions. Herbicide application - at a post-sowing/pre-emergence stage.
- 🌱 **Plant population.** The aim is to establish a target plant population of 30 to 35 plants/m<sup>2</sup>. Care must be taken to avoid excessive plant population, as they are associated with reductions in yield (elongation and strong tap roots).

## 2 AUTUMN AND PREPARATION FOR WINTER

- 🌱 **Weed control.** The oilseed rape plot should be checked for weed presence before winter to assess risk. The plot may require further herbicide treatment.
- 🌱 **Pest control.** A useful instrument in integrated pest management is the yellow bowl. The yellow bowl enables verification of the numbers of pest insects that have flown into the plant population. Information obtained in this way can serve as a basis for decision-making as to whether chemical plant protection measures are necessary.
- 🌱 **Plant check-up.** A good biomass with a healthy root system ensures good plant behaviour, frost and drought resistance, and yield optimisation. The goal is to have a biomass of 25 g/plant (>0.8 kg/m<sup>2</sup>) by the end of October.

## 3 WINTER ENTRY AND FROST TOLERANCE

- 🌱 The majority of WOSR varieties are tolerant to low temperatures during winter. However, this tolerance is strongly correlated with the stage of development of the plant before winter.
- 🌱 To obtain optimum frost tolerance, an oilseed rape plant needs to be well established, without stem elongation (an important criterion when choosing a variety).
- 🌱 **Plant check-up.** Stronger plant establishment means higher tolerance. The goal is to obtain a biomass of 45 g/plant (>1.2 kg/m<sup>2</sup>), the main root with a length of 15 cm and a diameter of approximately 8 cm.

## 4 RESTART OF VEGETATION: SECURING YIELD

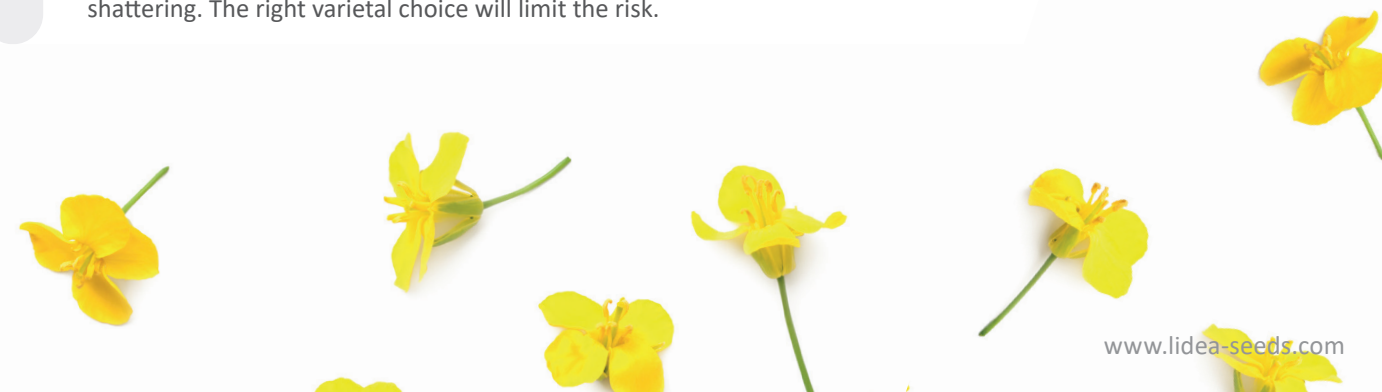
- 🌱 After winter, the restart of vegetation is another important period in the oilseed rape lifecycle. Branching capacity is determined at this time. Hybrid technology offers a high branching capacity that secures yield.
- 🌱 To create favourable conditions for branching, it is important to ensure sufficient nitrogen nutrition just before the restart of vegetation. Evaluation is crucial (for reasons of economy as well as efficiency) and the nitrogen input should be split into 2-3 applications.

## 5 FLOWERING: PROTECTING YIELD POTENTIAL

- 🌱 In general, the highest risk of pest and disease attacks occurs around flowering time.
- 🌱 **Diseases.** Sclerotinia is one of the most harmful diseases for oilseed rape. Favourable conditions for sclerotinia are humidity of more than 90% for over 3 days at the flowering stage and an average daily temperature of under 12°C. Ventilated vegetation and adapted density limit the risk. If necessary, fungicide treatment should be administered during the G1 stage, first leaf fall or 6-10 days after flowering.
- 🌱 **Pest control.** It is important to survey pests, especially pollen beetle which can seriously affect yield potential (abortion and bud reduction).

## 6 MATURITY AND POD SHATTERING RISK

- 🌱 **Maturity.** At the end of a plant life cycle, the colour of the grain gradually changes from green to brown, then black. Grain maturity differs slightly between the pods at the top of the plants and the ones on the bottom branches. Optimal harvest time is when the maximum number of pods on the upper part of the plants are over-matured.
- 🌱 **Humidity.** Optimum maturity is between 12% and 8%. A lower rate presents a risk of significant loss.
- 🌱 **Pod shattering.** If rapeseed is over-matured, the pods may open causing the seeds to fall. This phenomenon is called pod shattering. The right varietal choice will limit the risk.





# Fertilisation REQUIREMENTS

## OILSEED RAPE REQUIRES HIGH NITROGEN SUPPLY

100 kg of grain requires 7 kg of nitrogen. This is a simple formula to calculate required nitrogen input.

The formula should be adjusted according to the average yield potential of the plot in the previous 5 years (excluding the results of the best and the worst years).

100 KG OF GRAIN  
REQUIRES  
7 KG OF NITROGEN



## Nitrogen fertilisation in 3 steps

### 1 ENSURE AVAILABILITY OF NITROGEN AND PHOSPHORUS IN AUTUMN (CRITICAL STAGE AT 5-6 LEAVES)

If soil is low in plant-available nitrogen and phosphorus, incorporation of 20 to 40 units is recommended. Use quickly assimilating fertilisers, like manure. Ensuring healthy plants with improved biomass before winter is key to high yield.

### 2 ENSURE SUFFICIENT NITROGEN IS ABSORBED BY PLANT DURING WINTER: BIOMASS ESTIMATION METHOD

Before restarting vegetation, it is important to evaluate a plant's nutrient demand in real conditions. The biomass estimation method involves cutting oilseed rape plants at ground level on 2-3 plots of 1 m<sup>2</sup>. Removed fresh green mass is weighed and measured in kg/m<sup>2</sup>. This represents an average field's green mass. Use the table to find the required nitrogen input quantity according to the average green mass weight.



EVALUATE THE QUANTITIES OF NITROGEN

Plant size	kg of fresh plant/m²	Target of yield				
		3 T/ha	3,5 T/ha	4 T/ha	4,5 T/ha	5 T/ha
Small	<0,4	200				
	0,4	180	220			
	0,6	170	210			
	0,8	160	190	230		
Medium	1	150	180	210		
	1,2	130	170	200	210	
	1,4	120	150	190	195	
Big	1,7	100	130	170	175	
	2	80	110	150	165	185
	2,3	60	100	130	145	165
	2,6	40	80	110	120	145
	2,9	20	60	90	105	120
	3,2	0	40	70	80	100

Source: CETIOM

Quantity of Nitrogen to apply in kg/ha

3 SPLIT NITROGEN SUPPLY ACCORDING TO PLANT DEVELOPMENT STAGE DEMAND

Quantity to bring (kg/ha)	Restart of vegetation (C1-C2)	Associated buds (C2-D1)	Separated buds (D1-D2)	Separated buds (E)
<100			<100	
100 to 170		60 to 80	40 to 90	
>170	40 to 60	50 and +		40 to 60

\*Do not bring more than 100 kg/ha of Nitrogen at once.

Demand for other fertilisers

PHOSPHORUS (P), POTASSIUM (K), SULPHUR (S) AND MOLYBDENUM (MO) ARE ESSENTIAL OILSEED RAPE PLANT NUTRIENTS IN AUTUMN

Phosphorus (P):

required at cotyledon stage. Yield target = 3.5 T/ha => 90 units required. Application before sowing during soil preparation.

Potassium (K):

required during spring restart. Total consumption: 300 units/ha => 90% returns in soil during harvest. Application is possible before sowing with phosphorus.

Sulphur (S):

required during stem elongation, mid-February. Demand is 75 units after winter in association with second nitrogen application.

Boron (B):

required during vegetation restart, mainly in sandy soils. In case of high risk, 500 g/ha of sodium pentaborate at the stage of vegetation restart.

Molybdenum (Mo):

required during vegetation restart, mainly in light and acid soil content. In case of high risk, 50 g/ha of ammonium molybdate.



Phosphorus Deficiency



Sulphur Deficiency stage D1



Sulphur Deficiency stage F2



# Main insect PESTS

## AUTUMN

### SLUGS

#### DESCRIPTION

Adult: 35 to 50 mm in length, grey-beige colour. Whitish mucus. Young: 4 to 5 mm in length, pink or wine brown body. Whitish mucus.

#### DAMAGE

The critical period for seedlings is from the emergence to the 4-true-leaf stage. Slug attacks during this period can kill plants.

#### SOLUTION

- Seedbed preparation before sowing can significantly reduce the number of slugs. Uncultivated soil may contain residues from previous crops which can provide a haven for slugs.

- Examine the field for slug presence before sowing. Leave traps overnight and examine early the following morning when soil is visibly moist.
- The application of a pesticide at sowing time is another effective method to avoid damage. Monitor crops throughout the early susceptible growth stages.



*Deroceras reticulatum*

Source: Terres Inovia

### APHIDS

#### DESCRIPTION

Winged: 1.5 to 2.5 mm in length, slender, green to pale yellow abdomen, black head and thorax. Wingless: 1.5 to 2.5 mm in length, ovoid and naked body, often greenish. Legs, antennae and cornicles are relatively long.

#### DAMAGE

Rarely reaches levels causing direct feeding damage. Can cause significant yield loss through diseases introduced by viruses. Mosaic viruses are less frequent but more harmful compared to turnip yellows virus (TuYV). In autumn, symptoms can be observed on leaves, including purple tingeing of leaf blades and pods.

#### SOLUTION

Regular plant examination from the emergence until 5-6 leaves stage. In case of more than 20% infestation, further action is required.

Aphids are resistant to a number of insecticides, so options for chemical control are limited. Insecticide application after the 6-leaves stage is not efficient. For effective aphid control, it is recommended to use varieties with TuYv resistance.



The most common: *Muzus persicae* Sulzer



Less common: *Brevicoryne brassicae* L.

Source: INRAE



## FLEA BEETLES

Larvae

### DESCRIPTION

1.5 to 1.8 mm in length, white colour, elongated form. Dark brown head, three pairs of legs and dark plate at the tail end.

### DAMAGE

The larvae undermine the petioles during autumn and winter. Attacks are highly detrimental to stunted plants, with late recovery, because larvae feed in 'mines' within the plant tissue and destroy the terminal bud.

### SOLUTION

There are various agronomical levers to foster continuous growth of oilseed rape in autumn:

- planting seeds early to allow establishment before the beetles become a problem.
- companion planting.
- sufficient fertilisation.

Monitor the presence of larvae using the Berlese-Funnel-Method, which makes it possible to extract flea beetle larvae and eliminates the need to dissect the petioles of the oilseed rape. Another method is to cut a plant stem lengthwise to check for larvae. Cutting open the stem of an infested plant may reveal tunnels and larvae.

If infestation reaches 5 larvae per plant, intervention with an insecticide is recommended.



Larvae  
*Psylliodes chrysocephala* L.

## FLEA BEETLES

Adult

### DESCRIPTION

3 to 5 mm in length, adult beetle is a jumping insect, coleoptera, metallic blue-black colour. Tips of legs, antennae and head are golden red.

### DAMAGE

Multiple circular bites ('shot-holing') of 1 to 2 mm diameter, with or without perforation, in cotyledons and leaf edges (similar to Phyllotreta attacks). If a quarter of plant's leaf is damaged up to the 3-leaves stage, it can severely impact crop establishment.

### SOLUTION

Early sowing to reach the emergence stage by the beginning of September and 4-leaves stage by mid-September. Monitor flea beetle presence by installing a yellow bowl, starting from sowing until the 3-leaves stage. Intervene with an insecticide in case of "shot-holing" of 8 out of 10 plants and/or 25% of damaged foliar surface.



Adult  
*Psylliodes chrysocephala* L.

## TERMINAL BUD WEEVILS

Larvae

### DESCRIPTION

4.5 to 6.5 mm in length, legless, white with black-brown head (young larvae), yellow (older larvae).

### DAMAGE

Larvae migrate to the heart of the plant and destroy the terminal bud. Attacks are detrimental to stunted plants, with late recovery.

### SOLUTION

Management of terminal bud weevils is similar to that of flea beetles. Monitor the presence of adult insects using the yellow bowl.



*Ceutorhynchus picitarsis*



# Main insect PESTS

SPRING

## STEM WEEVILS

### DESCRIPTION

Adult: 3 to 4 mm, oval shape, ash grey colour with black legs. Young: 7 to 8 mm, legless, white body with black head in the beginning of life cycle, later body changes to yellow with light brown head.

### DAMAGE

Insects lay their eggs in the petiole, which may disrupt cell multiplication. Can lead to stem deformation and dissociation of the cortex from the pith. Dry conditions

increase the risk of yield losses.

### SOLUTION

Frequent field monitoring with the yellow bowl helps to detect insects earlier. It is important to intervene with the verification method during the first eight days after detection. In case of early attacks, it is recommended to wait until the stem elongation stage before treatment.



*Ceutorhynchus napi* Gyll.  
Source: Herbea



## POLLEN BEETLES

### DESCRIPTION

Adult: 1.5 to 2.5 mm, flattened shape, shiny black with metallic green reflections. Antennae and legs can be black or red.

### DAMAGE

Adult beetles feed on pollen and pierce flower buds causing bud abortion and pod reduction. Susceptible stage is at button evolution (D1-F1). In severe attacks, yield loss can reach up to 30%.

### SOLUTION

- Frequent crop monitoring

from green to yellow bud phase.

- Varietal association may make it possible to avoid insecticide intervention. Consider early flowering varieties sown together with the main variety to create a natural trap attracting pollen beetles and to narrow the window for main variety susceptibility.
- If the threshold exceeds 7 to 9 pollen beetles per plant before flowering stage, insecticide application is inevitable.



*Brassicogethes* sp.

## CABBAGE SEEDPOD WEEVILS

### DESCRIPTION

Adult: 2.5 to 3 mm in length, slate grey colour with black tips on legs. Larvae: 4.5 to 5.3 mm in length, white body with yellow on the lower side. Legless, with a brown head.

### DAMAGE

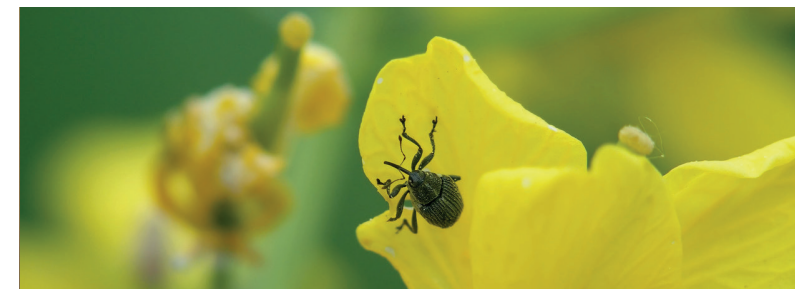
Although larvae can destroy 4 to 6 kernels per pod, this damage remains relatively minor. More significant damage may occur with midge attacks.

### SOLUTION

Damage caused by this insect is generally low, making insecticide intervention unnecessary, except where the threshold exceeds 0.5 weevils per plant at the beginning of pod evolution.



Larvae: *Ceutorhynchus obstrictus* Marsham



Adult: *Ceutorhynchus obstrictus* Marsham

## APHIDS

### DESCRIPTION

Winged: 2.1 to 2.6 mm, globose, with rather short antennae, legs and cornicles. Wingless: 1.5 to 2.5 mm, yellowish on molting, waxy secretion gives them an ashy grey appearance. Grouped in very tight colonies.

### DAMAGE

Insect multiplication leads to development of colonies and causes growth difficulties, abortions of information or reproductive plant parts. The earlier the attack in spring, the higher the risk, in particular during vegetation restart..

### SOLUTION

Regular field checks on aphid presence until one month before harvest. Mild weather conditions are favourable to aphids. Treatment threshold: from 2 colonies/m<sup>2</sup> at flowering stage.



*Brevicoryne brassicae* L.



# Main DISEASES

## SCLEROTINIA

### DESCRIPTION

White mould, or sclerotinia infection symptoms occur on plant's leaves, crown, stem and pod.

At the end of winter, at the stage of vegetative restart, leaves of plant's rosette may become soft and translucent, gradually covered with white compact mycelial growth, often arranged along the petiole. White encircling spots appear on the stem at the level of petiole insertion and in the leaf axils. As stem lesions develop, the upper part is no longer fed and hot. Often at this stage lodging may appear.

In humid conditions, spots become covered with a fungal white growth that can form sclerotia: clusters of black mycelium outside and white inside, various shapes and sizes (from a few mm to more than 1 cm).

In less favourable climatic conditions, there is no sclerotia formation. The attack takes on a parchment appearance with concentric mauve streaks centred around the insertion of the petiole. During flowering, discoloured spots appear at one or more nodes. At the attacked nodes, characteristic mycelium and sclerotia may appear.

Severe infection can cause stem splitting displaying a string

of sclerotia. Siliques can be affected: they turn white and dry out. Sclerotia can also form there.

### DAMAGE

Sclerotinia is a major disease, causing yield losses of 30% to 50% in severely affected crops. Yield loss results mainly from scalding which causes a reduction in the weight of a thousand grains and more or less ginning depending on the time of the attack and the percentage of plants affected. Strong nuisance: above 20% of plants attacked, every 10% of additional attacks cause a loss of 1.5 to 3 q/ha.

### SOLUTION

- **Variety.** There is no varietal resistance to this disease.
- **Sowing.** Avoid high density sowing and reduce nitrogen input.
- **Preceding crop.** Frequent use of rapeseed, sunflowers, soybean, peas, field bean or alfalfa in rotation favour the disease, as do crops susceptible to disease irrigated near the plot.
- **Chemical control.** Preventive chemical treatment in plots at risk in stages F1, F2 of oilseed rape. Curative treatment in conditions favourable to contamination (petals stuck to leaves, very high and persistent relative humidity, average temperature above 12°C). Any treatment is ineffective once the first symptoms appear on the stem.



*Sclerotinia sclerotiorum*



## STEM CANKER PHOMA

### DESCRIPTION

Symptoms mainly occur on the leaves and crown. From emergence to the rosette stage, damping-off and leaf spots are the main symptoms. Ashen grey, rounded macules or spots with black dots (pycnidia) appear on cotyledons and leaves in the autumn. They can appear later on stems. Not to be confused with pseudocercospora spots, brown to white, which do not have black spots. At the end of winter, a grey to black cavernous necrosis can appear at the neck. Plant death from crown severing can occur from early winter until the end of flowering.

### DAMAGE

Root collar necrosis prevents the plant from being nourished normally; it can even cause the taproot to sever and the plant to lodge. Yield losses can reach several q/ha (strong nuisance).

### SOLUTION

**Variety.** Choose a variety not susceptible to the disease.

#### Sowing

- Aim optimal plant establishment to avoid stem elongation during autumn.
- Limit sowing density by sowing fewer than 40 seeds/m<sup>2</sup>.
- Depending on space, do not exceed 15 feet per linear meter.

#### Agonomic measures

- Crush and bury colza residues from previous year.
- In the event of no ploughing, export straws from preceding crops (cereals) or reduce the thickness of mulch by crushing or stubble cultivation to avoid elongation.
- Limit the application of organic fertilizers in summer (objective: fewer than 100 units of nitrogen available in the soil in the autumn).

**Preceding crop.** Avoid rotations with crucifers.

### DAMAGE RANKING

2: <25% 3: <50% 4: <75% 5: <100% 6: 100%



*Leptosphaeria maculans*

Source: Terres Inovia



## CYLINDROSPORIUM

### DESCRIPTION

**On leaves.** Light green spots, often going unnoticed, appear on the upper surface of the leaf blade. Small white dots on the edge of spots, acervuli, allow the disease to be identified with certainty. As they age, spots take on characteristic appearance: 0.5 to 2 cm in diameter, beige to tawny, often surrounded by acervuli, with appearance of scabs or burns. Leaf thickens, cracks and deforms. On confluence, spots form large patches and cause leaf to wilt.

**On stem** and peduncles of elongated pods, beige to light brown, corky, transversely cracked spots are formed. In case of early attack, stems can be deformed.

**On siliques.** Whitish, elongated, corky spots, sometimes surrounded by acervuli appear. Pods deform and open prematurely.

### DAMAGE

On leaves, spots and deformations deprive the plant of part of its photosynthesis. On floral organs, attacks directly reduce production of pods and seeds. Attacks on pods or peduncles cause pods to open prematurely. Yield losses can reach 6 q/ha (moderate nuisance).

### SOLUTION

Eliminate contaminated crop residues: crush them and bury them to limit spread of the fungus from year to year. Broad-spectrum fungicide treatment targeted at G1 stage sclerotinia may also reduce pressure. However, these two agronomic practices will often insufficiently reduce damage in years of heavy presence. For integrated disease management, consider a crop variety resistant to the disease.



*Cylindrosporium concentricum*



Source: Terres Inovia

## ALTERNARIA

### DESCRIPTION

Initial symptoms are small black spots about 1mm in diameter. Mostly seen on leaves and pods, sometimes on stems at the end of flowering stage.

### DAMAGE

Yield loss depends on intensity and earliness of symptoms. In the majority of cases, this disease has minor impact,

except when Alternaria spreads to pods causing premature ripening and pod shattering.

### SOLUTION

There are no varieties with resistance to Alternaria. Chemical control only plays a preventive role at stage G4. Crop residues of oilseed rape, or contaminated cruciferous plants in nearby fields, should be buried. Germination occurs in spring and is favoured by warm temperatures (+18°C) and alternation of rainfall and dry weather conditions.



*Alternaria brassicae*



## VERTICILLIUM

### DESCRIPTION

Verticillium is polyphagous. It is preserved in the form of micro-sclerotia in crop residues buried in the soil. The mycelium attacks roots making colonization of plant systemic.

Symptoms appear on raps towards end of the cropping season. Yellowing of the leaf, usually the stem on one side of the leaf or part of the stem. Progresses to browning and necrosis of the affected tissues. Presence of micro sclerotia in affected stems. An average temperature of 21 to 25°C favours infection.

### DAMAGE

Causes early senescence (aging) and decreased performance. Yield losses in severe infestation can reach 10 to 50%, yet experimental proof of such estimations is lacking (and conditions can vary from year to year). TKW and pod shattering tolerance can be affected by this disease.

### SOLUTION

There are no fungicides with proven effect against this disease. Consider choosing a variety with tolerance in addition to agronomic practices like rotation with non-host crops. Bury crop residues deeply to avoid further contamination.



*Longisporum*



# Portfolio

\*\*\* HIGH  
\*\* MEDIUM  
\* LOW

HYBRID				
	VARIETY	OIL CONTENT	PROTEIN CONTENT	DESCRIPTION
EARLY	ES AMADEO	***	***	The earliest variety from the portfolio delivering high quality and yield.
	NEW ES DESIRIO	***	***	An early variety combining outstanding yield potential and high oil content.
	ES IMPERIO	**	*	A high yielding and stable variety with double phoma resistance.
	NEW ES JUVENTO	***	**	A variety developing high biomass before winter combined with strong spring vigour and good yield potential.
	ES DARKO	***	**	An early variety with high cold tolerance.
	ES CESARIO	**	*	A variety with vigorous establishment and good winter hardiness and pod shattering.
MID-EARLY	QUANTIKO	**	*	Strong reliability in performance and good yield potential combined with double phoma resistance.
	ES CAPELLO	***	**	Bestselling variety with outstanding yield potential suited to various conditions. Strong early vigour and good autumnal insect behaviour.
	ES NAVIGO	**		A variety suitable for all conditions, that yields consistently at a high level. Vigorous establishment, high biomass before and after winter, and good insect behaviour.
	ES AZURIO	**	**	A variety with good phoma tolerance and winter hardiness.
	ES RYTMO	***	*	A variety with high yield potential in Eastern part of Europe and well adapted to continental climate as it can tolerate extreme weather conditions.
	ES VITO	**	**	High yield potential in continental climate.
	ES MERCURE	**	*	Good disease and pod shattering tolerance.
	HYDROMEL	***	*	Well adapted to continental climate variety with good winter hardiness and high performance.

	VARIETY	OIL CONTENT	PROTEIN CONTENT	DESCRIPTION
MID-LATE TO LATE	NEW LID ULTIMO	***	**	Consistency and reliability of performance combined with outstanding yield potential. Plant has high above-ground biomass entering winter and at spring regrowth. Good disease tolerance at end of the life cycle.
	ES GRACIO	***	***	A variety offering high yield and consistency. One of the best hybrids of the portfolio in quality, oil and protein content. High biomass before winter and at spring regrowth.
	ES LATINO	***	**	A good alliance of quantity with quality. Possesses good cold and pod shattering tolerance.
	ES MOMENTO	**	*	A variety with an excellent yield profile and agronomical behaviour throughout the life cycle. Exceptionally healthy plant has high biomass before winter and high cold tolerance.
	MEMORI CS	**	**	A variety with high yield potential, rapid establishment and high biomass before winter and at spring regrowth.
	CELEBRITI CS	*	*	This variety has a very good disease resistance profile, especially to phoma, in addition to rapid establishment.
	ES PALERMO	***	*	A variety with good pod shattering resistance and good all round disease package, especially at end of the life cycle.
	MAZARI CS	**	**	A variety with good resistance to lodging and winter hardiness.
	KADJI	*	*	A high yielding variety with an excellent disease resistance profile and no stem elongation.

## CROP GUIDANCE

### SEEDBED PREPARATION: SEE P. 12

- Emergence target:** around 30-35 plants/m<sup>2</sup>  
(not too dense to avoid elongation and strong roots).
- Density depending on soil depth  
**Deep soil:** 35 kernels/m<sup>2</sup>  
**Medium soil:** 40 kernels/m<sup>2</sup>  
**Superficial soil:** 45 kernels/m<sup>2</sup>
- Consider the susceptibility of varieties to stem elongation:**  
it is not recommended to sow early varieties susceptible to stem elongation.



VARIETIES WITH GOOD TOLERANCE TO IMAZAMOX

allow the use of an effective post-sowing weed control program on complicated flora.



VARIETY	OIL CONTENT	PROTEIN CONTENT	DESCRIPTION
ES AQUAREL	**	**	An early variety in the Clearfield® segment with high quality and well adapted to dry conditions thanks to early flowering.
DECIBEL CL	*	*	A Clearfield variety with high yield potential, very good phoma and pod shattering tolerance and no stem elongation.
THALEL CL	*	**	A Clearfield variety with good yield potential, well adapted to the continental climate thanks to its frost tolerance and no stem elongation.
CALCULATI CL	**	**	A Clearfield variety delivering quality and yield. Plant with high biomass before winter and strong health at the end of the life cycle.
ETENDAR CL	*	**	A Clearfield variety offering consistently good results thanks to its good disease resistance profile.



LINE			
ES MAMBO	**	*	An outstanding yield potential variety delivering a combination of good cold tolerance and high TKW. Suitable for early sowing because of the low cycle.
ZAKARI CS	**	**	Balanced variety with excellent disease resistance profile. Suitable for early sowing because of the low cycle.

Inbred lines compared with hybrids require denser stands to maximize yield (44-55 kernels/m²). Early sowing is recommended.



CLUBROOT			
CRAMBERIO		**	An outstanding yield potential variety delivering a combination of good cold tolerance and high TKW. Suitable for early sowing because of the low cycle.

Clubroot varieties contribute to management of cabbage hernia. Preference for sowing in acidic soils.

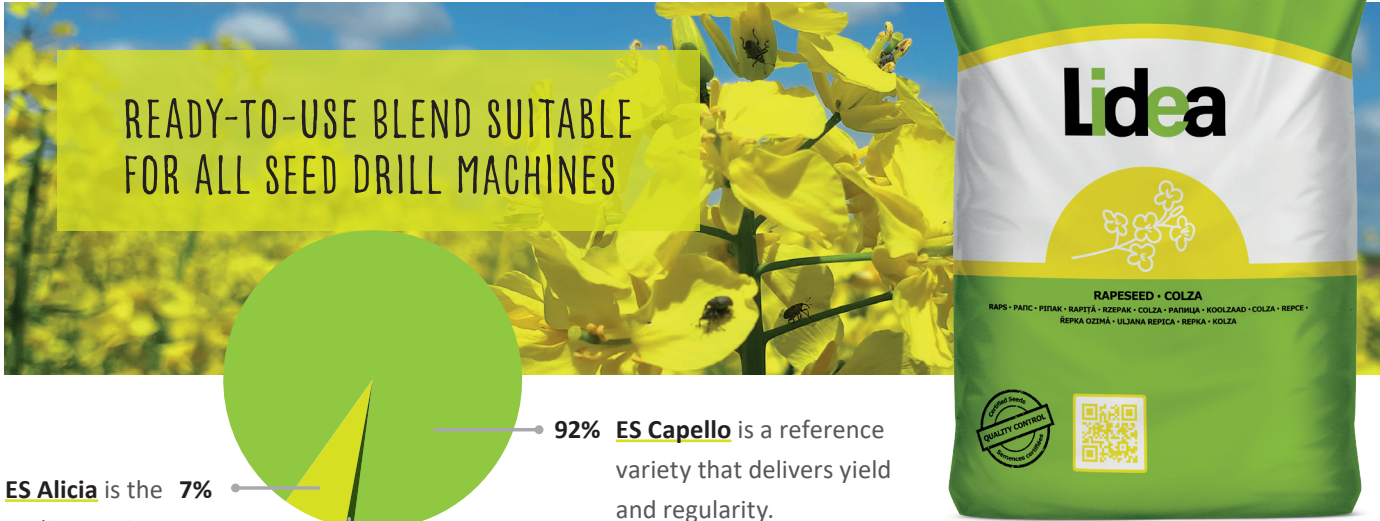


HIGH OLEIC			
ES VIVARO OL	**	*	New variety selected to this segment to bring yield with stability. Good oleic content.

This variety is selected for the food market to produce frying oil thanks to its low linoleic acid content.

The best combination for  
POLLEN BEETLE CONTROL

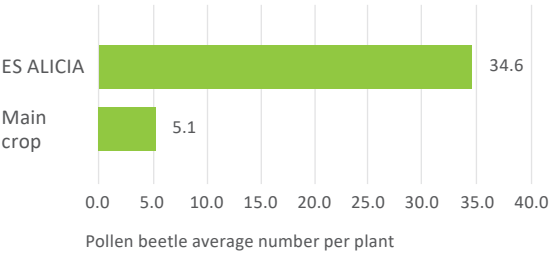
ES CAPELLO PROTECT



HOW DOES IT WORK?

The ES Alicia variety flowers approximately seven to ten days before the main variety. In spring, pollen beetles are attracted to the ES Alicia flowers where pollen is accessible, and therefore do not attack the main ES Capello variety. ES Alicia acts as a natural trap, helping to identify insect presence in order to adapt insect management strategy.

STUDY TO COMPARE THE EFFECT OF  
ES ALICIA VS MAIN CROP:





# ES CAPELLO SYMBI

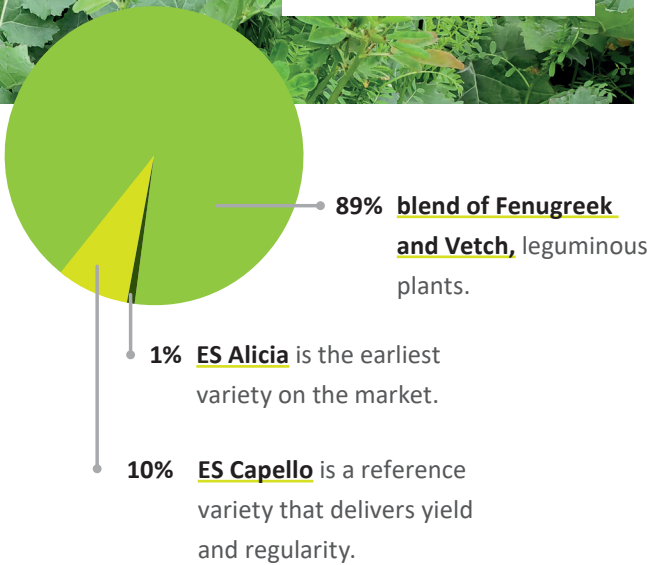
1 BAG (20 KG)  
= 1 HA OF OILSEED  
RAPE



READY-TO-USE BLEND OILSEED RAPE  
+ COMPANION CROP: A BENEFICIAL SYMBIOSIS  
BRINGING + 2 QUINTALS PER HA\*



SUITABLE FOR  
CLASSIC DRILL  
MACHINES



## Companion cropping chosen for following criteria:

- capacity to fix atmospheric nitrogen.
- high frost resistance (-4°C), suitable to mild winter.
- disruption of insect pests.
- protection of soil from weeds while not competing with oilseed rape crop.

\*Information based on an internal study.

## PLANT MIXTURE BENEFITS FOR OILSEED CROP

- Pest control:** insect pests are repelled - in autumn by the presence of a companion plant with a repulsive smell, in spring by attracting them to the ES Alicia flowers.
- Weed control:** soil cover contributes to weed suppression.
- Nitrogen input:** companion plants increase oilseed rape

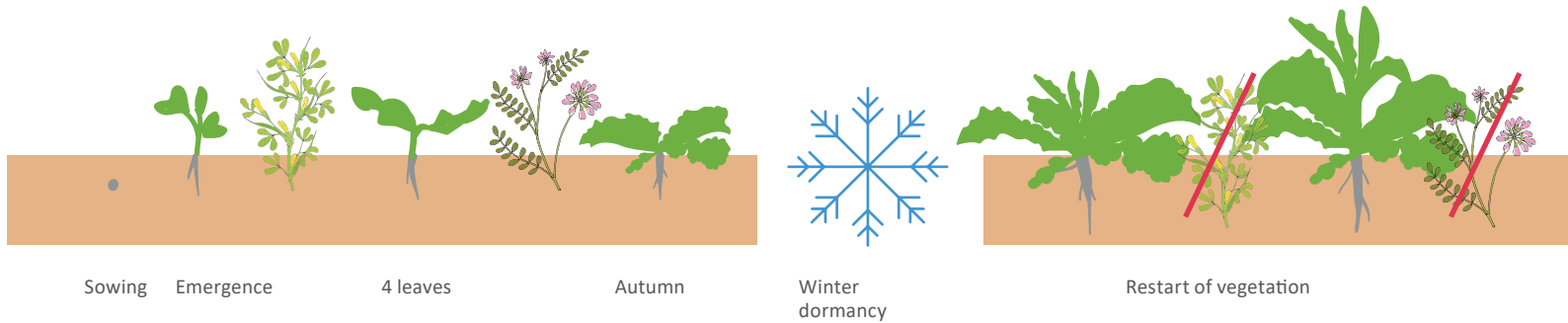
nitrogen nutrition by 30U if well-developed, thanks to ability to fix atmospheric nitrogen and to release it when destroyed.

- Soil health:** companion plants have positive effects on soil health by improving soil structure: lower risk of erosion, deep root penetration.

## HOW TO MANAGE COMPANION PLANT

- Early sowing is highly recommended: at least 1 week earlier than traditional sowing.
- Avoid plots with high weed pressure (especially geranium, gaillet, etc.). Use of herbicide with clomazone or napropamide as active elements is prohibited, as it will destroy the cover crop.

- 1 AVOID USE OF PRE-EMERGENCE HERBICIDES.
- 2 ADAPT HERBICIDE USE ACCORDING TO COVER CROP AND WEED PRESSURE (FROM 2-4 LEAVES STAGE OF OILSEED RAPE).
- 3 COVER CROP GENERALLY DIES OFF OVER WINTER. IF IT SURVIVES, IT MUST BE DESTROYED.



The information provided in this document is indicative only and advice may vary depending on agro-climatic conditions and farming practices.

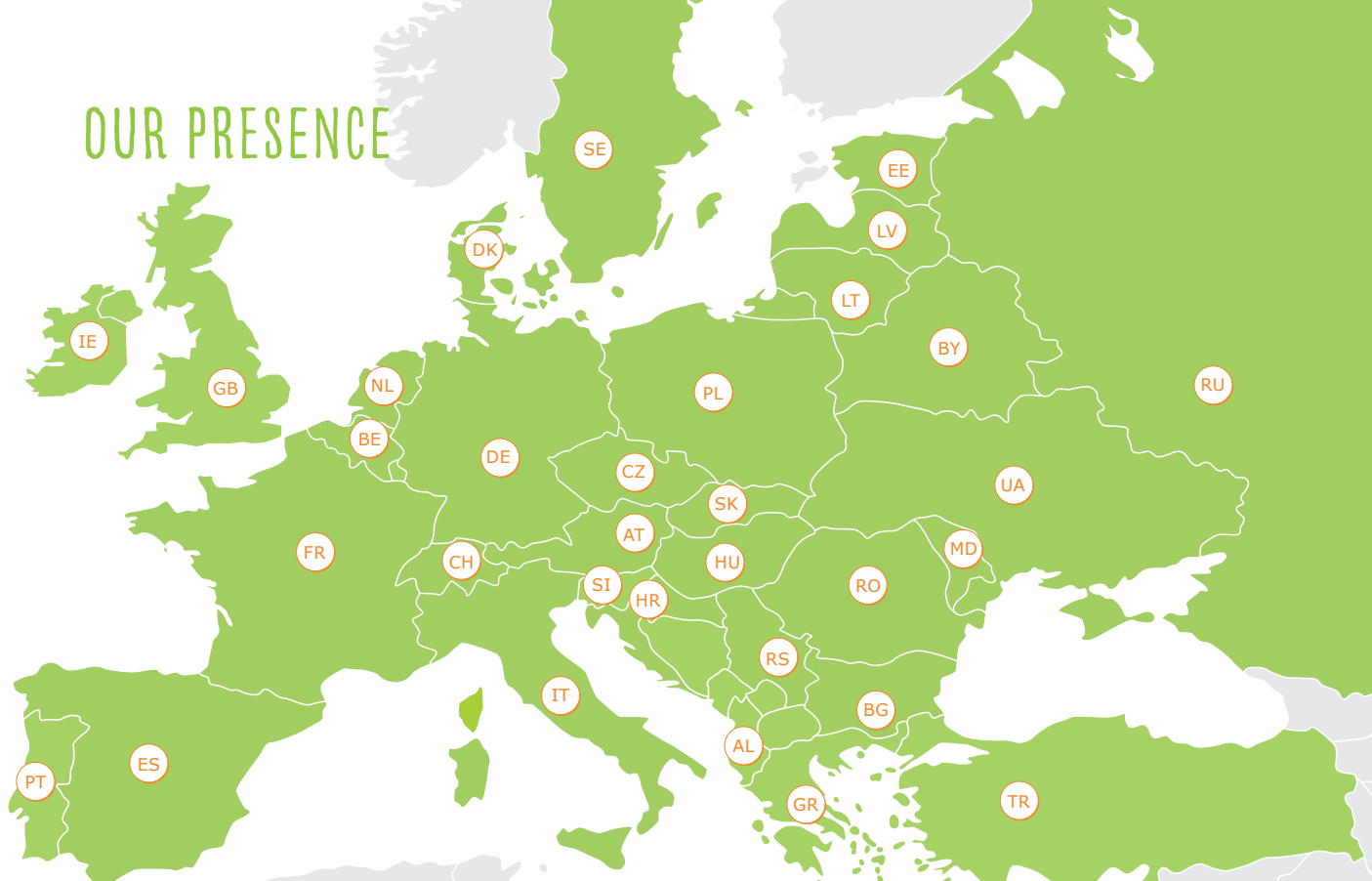


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**ORIANE BRUNAUD**

MARKET DEVELOPMENT  
MANAGER OILSEED RAPE

[oriane.brunaud@lidea-seeds.com](mailto:oriane.brunaud@lidea-seeds.com)

[www.lidea-seeds.com](http://www.lidea-seeds.com)

