In brief

FORECAST FROM ODA: PRICE FOR RAPESEED HARVEST 2016 PROMISES AN INCREASING TREND

In Europe, as well as in Black See zone, the surface of the winter oilseed rape have clearly decreased in 2015. European production would decrease till 20-21 Mt and in Black see region till 3.75-4MT. As a result, the balance of the crop should fall off and the rapeseed grain will offer a good potential of the growth for the next campaign.

EURALIS LAUNCHES 5 NEW RAPESEED VARIETIES, INCLUDING 3 CLEARFIELD RAPESEED HYBRIDS

This year Euralis has obtained good results of varietal inscriptions all over the Europe for all its crops, including the renewal in rapeseed offer:

• New op-line: ES Mambo
• New hybrids: ES Gaëlis
• New Clearfield® hybrids: ES Angel CL, ES Aquarel CL, ES Curliel CL

INNOVATIVE SOLUTIONS FOR OILSEED RAPE: CLEARFIELD® TECHNOLOGY

Clearfield® technology, originally found in sunflower hybrids, now exists for the Oilseed rape. Euralis is launching three Clearfield® hybrids on that occasion: ES Angel CL, ES Aquarel CL, ES Curliel CL.

The innovative technology offers:

• Flexibility of application and efficient fractioning of the treatment, even in difficult climatic conditions, especially in dry conditions during fall period
• Good control of the difficult weeds: geraniums and brassicas (Ravenelle and Sanve)
• Very good in rotation and facilitate the control of weeds for future crops.

In brief

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Doubled haploid breeding method: a booster for the yield potential of the oilseed rape

Due to the very long vegetation cycle of the crop, creating a new winter oilseed rape hybrids usually takes 10 years. The Doubled haploid innovative technology, fully mastered by Euralis, allows the company to faster significantly the genetic progress. Farmers can now see the results in their fields of a breeding program started in 2008, giving new high yielding hybrids launched recently.

The advantage of the doubled haploid method is that we obtain a desired parental line with the needed characteristics for the production of hybrids in only 13 months, instead of 4 years required by the classic breeding scheme. This is an non GMO technology.

But what are the exact stages of the rapeseed selection?

At the beginning, a breeder is crossing two genetic sources which have the needed characteristics (yield potential, oil content, resistance to diseases, winterhardering etc.). In a year, harvested grains, called F1 generation, will be obtained.

Some of them would have inherited the desired characteristics. The next step is to replant the grains of F1 and insure the self-fecundation of the plants (F2). In a traditional scheme a breeder shall continue to do the self-fecundation for tree cycles in plus, in order to obtain the homogenous line (F2–F5), but with the doubled haploid method it can be skipped.

A researcher will plant F2 line in phytotron[1] which will help to accelerate the cycle of the plant by influencing the vernalization. So, he’ll get flower buds quicker to start work by this new method.

Out of the produced flower buds it would be necessary to get the cells containing the microspores which will have at that stage of development one set of chromosomes (n), which means it is haploid. Then, with the help of liquid solution the researcher will let the microspores to continue its development and growth and it will reach the stage of a real plant. By changing the environments from in vitro till the greenhouse, the breeder gets from a haploid spore a haploid plant. At the end of 4 months’ work, the next step would be to create a natural doubling of the chromosome in the plant, mean to transform a haploid into diploid plant.

Later, by the decrease of the temperature a vernalization process provokes flowering and on the maturity level we obtain a seeds of a parental line is get after one month of the vernalization of the diploid plants. After 4 months the next step is to transfer to greenhouse the produced flower buds.

Homozygous fixed line is get after one lifecycle, instead of 4.
Key points of winter oilseed rape lifecycle

The development of the winter oilseed rape is considered to have two main periods:

- From the sowing until winter. **Objective:** to ensure the planting
- From the restart of vegetation till the harvest. **Objective:** to create a favorable conditions to reveal the yield potential.

1. **Sowing. Objective:** quick and homogenous emergence

To ensure the soil implantation means to get a quick and homogenous emergence, strong and covering rape-plants which repress the weeds. It is essential to reach the 6-10 leaf stage before winter comes.

- Foster the rooting by soil preparation: the main root is receptive in the compacted soil zones. In this case the objective is to create a good soil structure on 20 cm depth in order to foster the rooting and roots development. It will also limit the impact of frost and drought before the harvest. For the continental zone it is recommended to prepare the soil just after the harvest to preserve the humidity level and to get the excellent seeded.
- Sow at the right date: The optimum period of sowing is between 15 of August and 15 of September depending on the geographical zone. The timperatures might be conserved in the ground with a risk of germination quality risk, which means that it is possible to sow in a dry soil and wait the precipitation to observe the germination. Optimal sowing depth is around 2cm.
- And care with a "good density" with nowadays hybrids it is highly important to sow the seeds with the density to optimize the yield: target is to have 45 - 45 plants/m² after winter.

2. **Autumn and preparation for the winter**

The fall stage of the development is vital as it concerns the development of the main root.

- Literally, the root is a heart of the rapeseed. A healthy main root ensures a good plant behavior, frost and drought resistances, yield optimization.

Check-in point: before the winter a good rapeseed has to have from 6 to 8 leaves and a main root of 15 cm long, with a diameter of 6 mm.

3. **Winter entrance and frost tolerance**

The varieties are more or less tolerant to low temperatures during the winter. However this tolerance is strongly correlated with the stage of development of the plant before the winter. In order to get an optimum tolerance the rapeseed plant have to be well rooted, without stem elongations, with a long main root of 8mm in diameter and on the stage of 8-10 leaves.

4. **Restart of vegetation: building the yield**

- After winter, the restart of vegetation is another important period on the lifecycle of the rape. At this moment, the branching capacity is determined. The hybrid technology offers a high branching capacity that secure the yield.

- The objective is to estimate the quantity of oil and protein per ha which will allow getting the planned yield.

5. **Flowering: protect the yield potential**

In general, the highest risks of parasites and diseases aggressions are faced around the flowering time.

- Diseases: Sclerotinia is one of the most harmful disease for the oilseed rape. The loss may be more than 10% per ha during the hand attacks). The favorable condition for Sclerotinia is a humidity of more than 90% for more than 3 days. If the rapeseed is over-matured, the pods may open and the seeds will fall down. The phenomenon is called pods shattering. A good varietal choice will limit this phenomenon.

- Solutions proposed by Eurasis: Eurasis develops a unique screening process to choose the varieties with a high pod shattering tolerance to conserve the seeds and to give more flexibility in the harvesting time.

ES NEPTUNE, ES NATALIE and ES HYDROMEL have a very good shattering tolerance.

- Insects: The insects of the rapeseed are numerous during flowering (maggots, avenae, aphids...). It is recommended to use yellow cups in order to attract the insects. If necessary, the fungicide treatment should be done during the C2 stage, first leaf fall or 6-10 days after the flowering.

6. **Maturity and pod shattering risks**

At the end of the plant lifecycle, the color of the grains changes from green to brown, then black. The grain maturity differs slightly between the pods on the top of the plant and the ones on the bottom branches.

The optimal harvest is time is obtained when the maximum grains have turned black on bottom pods and the minimum pods on the upper part of the plant. The variety is recommended to harvest the pods which are brown or black. For the continental zone it is recommended to harvest the pods which are brown or black.

- Solutions proposed by Eurasis: Eurasis breeds hybrids varieties with a high branching capacity.

7. **Evaluate the quantities of Nitrogen**

For the continental zone it is recommended to prepare the soil just after the harvest to preserve the humidity level and to get the excellent seeded.

- The objective is to obtain 3.5 t/ha, how much nitrogen should you apply? The plant will need 130 units of nitrogen in the winter in order to develop the rapeseed with 1.2 kg/m² of green mass. Your objective is to obtain 3.5 t/ha, how much nitrogen should you apply? The plant will need 130 units of nitrogen in the winter in order to develop the rapeseed with 1.2 kg/m² of green mass. Your objective is to obtain 3.5 t/ha, how much nitrogen should you apply? Then with the help of the table below you can define the dose of nitrogen to apply according to the planned yield.

8. **Nitrogen fertilization**

- **Weight to fertilize in spring**
  - The objective is to estimate the quantity of the nitrogen absorbed by the plant during the winter. You need to cut the stem at the level of the soil and then weigh it. The nitrogen input should be divided to be applied as a fertilizer the next spring. It will show estimating the average amount of nitrogen absorbed by the plant (in kg/ha x 1.2 kg/m²). Then with the help of the table below you can define the dose of nitrogen to apply accordingly to the planned yield.

- **Quantity of n to apply in kg/ha**

<table>
<thead>
<tr>
<th>Nitrogen input</th>
<th>Applications</th>
<th>(in units)</th>
<th>(times)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>Early</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>60</td>
<td>Mid-Early</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>90</td>
<td>Mid-Late</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

**ES MERCURE** has an excellent branching capacity.
Excellent pod shattering resistance: uncontested advantage of Euralis

Dehiscence of pod is commonly known as pod shatter. It is a natural process by which many plant species disperse their seed in order to survive and spread in the wild. Shatter resistance is usually an early consequence of domestication, but rapeseed has a relatively short history of cultivation and selection. Normally while harvesting rapeseed farmers lost from 10% to 25% of the yield caused by the pod shattering. In the severe cases of the over maturity harvest the loss of 50% were registered(1).

Since the beginning of its rapeseed research program in early 90s, Euralis put the accent on the problem of pod shattering. Our researchers had chosen to select rapeseed hybrids coming from the cytoplasmic male sterility OGURA (non GMO breeding)(2), obtained from interspecific crossing with the black radish. That is why Euralis rapeseed genetics had inherited a good resistance to pod shattering.

In addition to the good genetic background a specific selection program was established. All existing genotypes are tested by a machine in order to measure the strength (in Newton) of the resistance of the pods. For that, 100 pods of each hybrid are harvested in the fields, conserved in cold at 5°C until the test day. Then, pod per pod, each sample is position in the machine (see graphic) and checked for the resistance.

The machine submits the pod to traction till the opening and measure the maximal strength necessary for it.

Due to the statistics methods, the researchers of Euralis are able to propose very good rapeseed hybrids with excellent pod shattering resistance.

N.B. Diseases susceptibility (phoma, sclerotinia, verticillium...) might decrease pod shattering resistance, as well as badly adjusted harvesting machine. That is why it is strongly advised to follow good agronomical practices to cultivate rapeseed.

How to choose correctly Your Rapeseed variety?

WORS CLIMATIC AREAS

A good choice of rapeseed variety helps to ensure the aimed yield. That is why we propose here some useful advices of how to manage correctly this question.

To answer explicitly, we have defined six zones in Europe, where the climate and crop behavior are crucial for the choice of an adapted variety. Based on a set of varietal characteristics, we can determine the most suitable variety.

First of all, there are varietal characteristics that are essential in all rapeseed areas in Europe:
- Yield – essential for profitability;
- Strong capacity of branching: with the sowing density of 300 and 450 000 kernels/ha the capacity of Op lines are much more lower compare to hybrids;
- Pod shattering resistance: hybrids are more resistant than Op lines.

Then, depending on the climatic zone, some criteria may be very different to succeed. Here we present Euralis Semences’ recommendations for diverse areas:

• #1 AREA: Spain, Italy, Greece and Turkey
  Early flowering type is very important to avoid periods of high temperature that causes large number of abortions. We propose the varieties with high primary branching in addition to the secondary branching, due to high density of planting in this area. In the nearest future, we expect the density should decrease.

• #2 AREA: Romania, Bulgaria, Hungary, Serbia, Croatia, Moldova
  Winter hardiness with late restart of vegetation is an important factor in the choice of varieties. As in the area #1, planting densities are often too high. So Euralis Semences recommends, in addition to hybrids with high primary and secondary branching, the one with an excellent frost resistance. In terms of maturity the hybrids with early or mid-early profiles are proposed. It is interesting to know that if we reduce the densities, we increase the roots system’s capacity to better resist frost and a possible water stress in spring. It also helps to improve the soil structure.

• #3 AREA: France, Belgium
  Here, phoma resistance will be an essential factor with quantitative resistance type (polygenic) or double resistance type (additional specific and quantitative resistance). The density of planting is much lower than in all other areas (250 000 to 350 000 kernels/ha depending on climatic conditions during the planting period). It allows a better roots development and very strong enhancement of the ability of branching – a main yield component. Growth fungicide regulators are rarely applied in autumn in this area.

• #4 AREA: Germany, Poland, Czech Republic, Slovalia, Austria, Ukraine, Russia, Belorussia
  In this area, early dates of planting and early vernal adaption are the important factors for a short growing period between planting and beginning of winter. Periods with dry condition are particularly frequent in this continental climate. So the objective with dry condition is to reach an optimum stage before entering winter – the + rosette stage. It is also important to remember that the frost resistance is not only related to the speed of implementation in autumn, but also has to be expressed by late restart of vegetation in spring. Here the density of the emergency is similar as in area #2. Moreover, in the north continental climates, like in Germany and Poland, genetic resistance to verticillium has to be particularly high in early to mid-early offer, as the vegetation cycle can be more prolonged (sometimes 12 months).

• #5 AREA: Great Britain
  In this in Oceanic climate with a low frost risks, the earliness of flowering and of the maturity are particularly important. In this zone planting densities are high (up to 800 000 kernels/ha). Significant damages are caused by migratory birds, like pigeons. So, the market requires varieties adapted to high densities which reduce the branching capacity, and increase the stem elongation in autumn. Light leaf spot pressure is high sometime with significant yield losses, so fungicide application is necessary (sometimes more than once). The phoma risk is also present, where the necessity of genetic resistance to the disease (quantitative or double resistance). It is interesting to know that growth-regulator fungicide application in autumn can reduce stem elongation, as well as light leaf spot and phoma pressures. In this zone a lifecycle of the rapeseed can be very long, between 11 to 12 months. Nevertheless, Euralis Semences, offers short-cycle WORS hybrids that can give the time for the next crop.

• #6 AREA: Denmark, Lithuania, Sweden, Latvia
  In countries where the temperatures go below -18°C, a thermal protection by snow cover (≥ 20 cm) is necessary. In this zone, the implantation rate is also very important together with quick emergence and early vigor. Here, we have the same density problematic, as in zone #2. Market needs varieties of early to mid-early maturity.

(1) Op lines = open pollinisation lines
(2) Growth regulator are efficient if application is made before or on the stage of 8 leaves.