



# HARDWARE REPLACES CHEMICALS IN OILSEED RAPE

The drastic reduction of chemicals is a political topic today. Furthermore, an insect protection program is currently discussed in Germany which calls for the reduction of herbicides and insecticides by amending the regulation on the use of agro chemicals.

Such discussions are clear signals for farmers and breeders and all that point in the same direction – it's time to rediscover alternative (and perhaps forgotten) methods of weed control. Since oilseed rape can also grow at wide row spacings, the use of cultivators for mechanical weed control becomes a viable option. Indeed, there are already innovative cultivators for beet and maize crops out on the market. Our editors talked to innovative farmers, contractors and breeders who are employing these new techniques, exploring innovative approaches and initial experiences.

Their reports confirm that it is possible to apply alternative methods in arable farming and reveal that it takes 'making' the experience and gaining confidence in the new equipment and procedures before it is possible to settle for a specific mechanical solution. There are a number of details that need considering:

- The drill and the cultivator must match up in terms of row spacings, for example.
- The cultivator must be high-capacity to complete the job in narrow time windows.
- Cultivators that are used in seed production must meet highest precision requirements.
- The primary goal is controlling volunteer oilseed rape and collecting experience. Farmers are quite hesitant about reducing their input of chemical weed control products.

**We thank our interview partners for sharing their experiences.**

## Experiences of the agricultural practice

### THE BREEDER

The DSV seed breeding station Thüle is situated in the village of Salzkotten in the north-eastern part of the federal state North Rhine-Westphalia. The station breeds winter oilseed rape and tests the crop extensively in their 170 ha trial fields. We talked to station manager Thomas Böhmfeld who is in charge of managing the trial plots and breeding gardens. In his opinion, cultivators are an intriguing option for weed control.

Yet, breeders and testers of crop varieties must proceed with greatest care to ensure variety purity of the pre-basic seeds and the seed breed. "Volunteer oilseed rape must simply not grow and pollinate in the plots," says Thomas.

» Volunteer oilseed rape should not grow up in the plots and pollinate there.«



Thomas Böhmfeld, Thüle

The demands on the variety purity are particularly high in breeding. The material that is sent in to the European Variety Offices, one of which is the Federal Plant Variety Office, must be of a 100% purity. Accordingly, Thomas makes sure he uses production techniques that are absolutely secure. "We prefer removing one plant too many in these plots rather than leaving one too many in the soil and risk it doesn't belong there", he explains, adding that



The hoe leaves a clean picture in the plots.





There is a clear difference between the chopped and non-chopped strips.

performance tests have shown that volunteer oilseed rape may make up to < 5% of the oilseed rape crop in a plot. By comparison, a percentage of more than 5% means the plot is no longer representative for the variety.

Oilseed rape continues to be germinable for decades, which is a huge problem. To minimise the amount of volunteer oilseed rape in a plot, the plot is not used for crop production for at least five years. After the oilseed rape is harvested, the plot is harrowed with tines and discs to encourage the volunteers to germinate, which reduces potential issues in the following years. Thomas and his team are in close communication with the farmers participating in the project, also swapping plots with them to respond quickly to any occurrence of volunteer oilseed rape in grain or beet. A good field hygiene is critical.

Cultivating is a very effective method of controlling volunteer oilseed rape and is usually done in September. If it is carried out late, the plants may be too wet and collect on the shares, making the hoeing job more difficult. Therefore, it takes high-capacity equipment to get the timing right. After all, volunteer oilseed rape will not go away and the number of plots that need hoeing will increase every year. In Thomas' opinion, cultivating will become a popular option for weed control in oilseed rape and reckons that there will be also feasible in-row technology for an even better control of volunteers.



## THE FARMER

Anne and Jan Springorum run an arable farm in the fertile 'Soester Börde' region in North Rhine-Westphalia. Oilseed rape has formed an integral part of the rotation for many years. In the last few years, volunteer oilseed rape has become a major problem.

"Our top priority is to keep oilseed rape in the rotation," says Jan. "Therefore, it is necessary that we fight volunteers effectively." The first time he watched a hoe at work was at a trial show carried out by the Chamber of Agriculture. This year is the second year he has been cultivating in autumn. The crop is drilled by a precision drill in contract work and cultivated when in the 6-8 leaf stage. Last autumn their oilseed rape crops were quite clean. They cultivate 25 hectares of their 80ha farmland. It seems that one single pass in autumn is fine at the moment. "In spring, this would probably be detrimental and not useful at all. We could probably consider it an emergency measure to improve ventilation," explains Jan. As nitrate pollution is an issue in the region, Jan aims to disturb the soil at the right time to give the oilseed rape a better start.

» Chopping may give us the opportunity to  
reduce the effort of herbicides«

Jan Springorum, Erwitte



He feels unable to comment on the effect of mechanical weed control on yields, but he hopes this will become possible in the long run. Right now, he finds that the crops are more uniform and develop well. This is clear to see in the fields that received a hoeing pass although the individual plants show no differences as to growth and features. The shallow and stony soils have not been a problem for the hoe so far. Its guidance system is neither bothered by the straw trash nor by the many stones. "As we cultivate at a slow forward speed the stones are simply pushed to the side by the shares", explains Jan who is convinced that hoes will play a bigger role in oilseed rape in the next few years. Perhaps mechanical weeding may enable us to reduce herbicides. We farmers will have to become more creative in this respect anyways," is his conviction.

## THE CONTRACTOR

The 'Soester Börde' region is situated in North Rhine-Westphalia between Sauerland in the south and Münsterland in the north and is characterised by very fertile soils. Here Christina und Thorsten Reinold run a contracting business that is located in the middle of the Soester Börde, in the Ampen district of Soest. The couple receives many major commissions from farmers and the local council. They have been into mechanical weed control in their own crops for a number of years now.

"Three or four years ago we carried out a number of field trials in collaboration with the Chamber of Agriculture. These field trials involved mechanical weed control in oilseed rape while trialling a number of machines from various manufacturers," tells Thorsten. Today they are using a Horsch Transformer 6 VF. The purchase decision was made on the criteria stability and compact size, which are important for easy guidance and close attachment to the tractor. This way, their 155hp tractor doesn't need a front weight, which in turn eliminates the need for extra wheel weights. For their customers they use a precision drill in sugar beet specification. Last year, they drilled sugar beet on 300 hectares. They only cultivate fields that they also drilled themselves. "This is important so we can



The number of oilseed rape plants is clearly reduced in the left plot.

be sure that the tramlines are correct and we can cultivate with great precision," says Thorsten.

The reason for cultivating the crop in autumn is the control of volunteer oilseed rape. This has become a huge problem in the region over the last few years following intensive oilseed rape growing. "In one field we counted more than 100 plants per square metre before we went in with the hoe," tells Thorsten. Hoeing is an effective method of fighting volunteer oilseed rape. The aim is to work very closely along the rows – at one or two centimetres from the plants. This is important to remove as many volunteer plants as possible from between the rows. The hoe is controlled by a camera and RTK (real-time kinematics). The accuracy of the camera guided



The precise technology enables accurate working.

system depends on the available light and the crop. „For the camera to work optimally, the crop plants must stand out from the weed and the light must be good. If this is not the case, the camera will not track the rows accurately," explains Christina. In heavy dewfall and heavy infestation with

» The goal is to get within one or two centimetres of the row.«

Thorsten Reinold, Ampen



Good lightning conditions are very important when using a camera-guided hoe.



Thorsten and Christina Reinold with their daughters

volunteers there is the risk of blockages and shares pushing up soil – to the effect that the camera will no longer recognise the crop rows correctly. Drilling, too, should be as accurate as possible to avoid blockages later on.

Although the customers of Christina and Thorsten Reinold's haven't reported any measurable savings on herbicides as yet, they do see potential in mechanical volunteer control: „In the long term, we reckon that cultivating will become more popular for a number of crops," Christina is convinced.