Fig. 1:
Strip-Till in TerraLife® -BrassicaPro after winter barley 30.08.24.

PLANTING GREEN IN PRACTICAL TEST

Establishing oilseed rape in an evergreen system, saving on nitrogen fertilisers and herbicides and promoting soil life: These goals were realised at the Merklingsen experimental farm of the South Westphalia University of Applied Sciences in Soest by sowing oilseed rape with 45 cm row spacing in rolled cover crops and strip-till.

The South Westphalia University of Applied Sciences focuses its research on minimum tillage and crop protection reduction. An innovative approach that has been successful in maize cultivation for some time has also been tested in oilseed rape cultivation since 2023: The „Planting Green“ method. In concrete terms, this means that oilseed rape is sown in precision seeding in rolled cover crops after tillage.

The aims and advantages of the Planting Green method are:

- Suppression of volunteer cereals
- Reducing the use of herbicides
- Protection and promotion of soil life
- Reduction of nitrogen fertilisation
- Covering the soil with fast-growing and biodiverse cover crops mixtures, which is positive for erosion and evaporation protection on warm summer and late summer days after the grain harvest
- Nitrogen fixation and humus formation
- Equalisation of nutrient dynamics through diverse mixtures and support for weed suppression.

Bridging fallow land with cover crops

Winter barley or winter wheat are usually suitable as preceding crops before oilseed rape. In Merklingsen, the trial location of the University of Applied Sciences in Soest, winter barley is harvested on average around 10 July, leaving around 50 days unused until sowing from 1 September. After wheat it is 20 to 30 days. This represents wasted potential for root and biomass formation, especially during the radiation-intensive season. The aim is to establish an effective cover crop in precision sowing during this time, which suppresses volunteer cereals, roots the soil and fixes nitrogen. This is possible with the Planting Green method. A trial at the experimental farm in Merklingsen is intended to show how practicable this method is. The cover crop variants shown in Table 1 were tested as Planting Green methods on partial areas. The cover crop species for the Planting Green method must be able to establish quickly. This ensures good soil coverage, maximises root biomass production and collects nitrogen without provoking crop rotation problems. The cover crop was sown with a no-till drill (JD 750A) or the Müthing Coverseeder directly after the grain harvest. The harvest residues remained on the field as standard.

Sowing in rolled and loosened strips

For oilseed rape sowing, a folding roller was used in the front hydraulics to roll the biomass, depending on the cover crop development. After winter barley, the growth of the

B. 1: PRACTICAL TRIALS OF THE PLANTING GREEN METHOD

Cover crop variant	Pre-crop	Sowing rate	Sowing cover crop	Sowing technique	Strip-Till to oilseed rape	Problems
Own mixture: Field bean + Sunflower + Phacelia	WB	24++ 150 plants/m²	07.07.23	JD 750 A + Coverseeder	08.09.23	Snails
TerraLife®-BrassicaPro*	WB	20 kg/ha	09.07.24	Coverseeder	30.08.24	Overgrowth
Field beans in pure seed	WW	40 plants/m²	14.08.23	JD 750 A	08.09.23	Volunteer cereals
TerraLife®-BrassicaPro*	WW	20 kg/ha	11.08.23	Coverseeder	08.09.23	

* Blue lupin, linseed, serradella, Egyptian clover, niger, Persian clover

lush cover crop had to be slowed down to prevent it from overgrowing the oilseed rape later on. This was not necessary for the cover crop after wheat because, on the one hand, it should continue to grow parallel to the oilseed rape and, on the other hand, it slid through the strip-till unit without clogging, even without rolling.

Based on several preliminary trials, it is known that direct sowing with a single disc coulter without loosening cannot be expected to produce good oilseed rape development on the predominant arable soil (Ut2). For this reason, a strip-till implement for partial loosening, which can be seen in Fig. 1 (Kverneland Kultistrip), has also been used on the mulch sowing areas in Merklingsen since 2021. Depending on the setting, the clearing stars installed on this device enable biomass to be cleared in the seed slot. The following tine then loosens the soil to a depth of 15 cm. Depending on the soil moisture, crumbler rollers can also be swivelled in for seedbed preparation. After strip tillage, sowing is then carried out using the single grain technique on the pre-loosened strips. The soil is then approx. 2/3 covered with biomass and 1/3 loosened. Many years of our own exact trials at this location have shown that autumn fertilisation at this location does not produce any positive yield effects. For this reason, autumn fertilisation was not carried out, although this would still be conceivable for livestock-intensive farms until the end of September.

Lush cover crops after winter barley

The vigorously grown cover crop mixture TerraLife®-BrassicaPro after winter barley was not sufficiently damaged with a growth height of approx. 70 cm after rolling. Clover in particular caught up strongly in growth. Here, the herbicide Runway™ had to be applied at the beginning of October to prevent overgrowth. With the own mixture in 2023, consisting of field beans, sunflowers and phacelia, the growth height was approx. 100 cm and did not pose any problems after rolling. In general, the Planting Green method prevents overgrowth in established clover stands.

Less competitive pressure after wheat

For cover crops after winter wheat, the shorter time window between harvest and sowing results in a different picture than after winter barley. In 2023, after the late harvest, the cover crop was not sown until 14th August. The oilseed rape was then sown on 8th September 2023. The field beans, with an average growth height of 20 cm, had little weed control, so a graminicide was applied post-emergence. During oilseed rape sowing, the beans were overrolled by more than 50 % for technical reasons, but this did not affect their subsequent development. In mid-October, the intercrop mixture of field beans and undersown oilseed rape achieved good cover levels. The dominant beans and also the cover crop mixture TerraLife®-BrassicaPro froze off with the first frost in November and the oilseed rape was able to take off with the onset of spring.

Conclusion

As the trials are still in the testing phase, there are few precise results. The oilseed rape flowering in the Planting Green areas was delayed, which speaks in favour of better nitrogen availability. The pollinators were much more vigorous in the spring than in conventional cultivation. The increased occurrence of slugs and mice is problematic. However, initial practical tests show that oilseed rape cultivation using the Planting Green method can be successful. The choice of cover crop, seed rate and herbicides depend on the previous crop. Another project, „RaBe“ (oilseed rape companion crops), is continuing to investigate the Planting Green system (referred to as the living mulch variant) and will be published later this year with results from several years (see pages 4–5).

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