EFFECTIVE USE OF SYNERGIES: COMPANION CROPS SUPPORT OILSEED RAPE PRECISION SEEDING

Precision seeding in oilseed rape offers advantages, but also requires adjustments to the cultivation system. For example, more soil space remains unused. This article shows how this space can be utilised ecologically and economically in a meaningful way by means of careful selection of specific companion crops.

Precision seeding, especially in oilseed rape, has gained popularity. But will this trend continue? An internal, though not representative, survey conducted by RAPOOL-Ring GmbH among around 300 farmers on the cultivation methods used on their winter oilseed rape areas for the 2025 harvest shows that approx. 20% of growers use precision seeding with an average sowing density of 33 grains/m².

However, the majority (80%) continue to grow winter oilseed rape using the drill seeding method, with an average of 45 seeds/m². Advantages of drill seeding include the existing technology for this method. In addition, the higher seeding density in drill seeding means that a certain number of plant losses can be tolerated, for example due to flea beetle infestation or difficult seeding conditions.

Precision seeding offers the following advantages, particularly with regard to the development of individual plants:

- A highly pronounced leaf system
- Deeper and denser root development
- Greater resistance to biotic and abiotic stress factors

Precision seeding vs. drill seeding: the space comparison

A key difference is and remains the space between the plants, which results from their placement in rows.

Within a row, the plants are closer together, but have more space to the adjoining rows and a larger root space available.

With precision seeding at 33 seeds/m² and a row spacing of 45 cm, there is one oilseed rape plant every 6.7 cm. This oilseed rape plant has a root space of 302 cm² (Fig. 1). While the space in the row is already largely filled from the 2 – 4-leaf stage, the space to the adjoining row is not completely filled with sufficient leaf mass until BBCH/EC 16 – 18. In contrast, oilseed rape sown with a drill at 45 seeds/m² and a row spacing of 12.5 cm has a distance of 17.8 cm to the next plant, but only a root space of 223 cm². In this case, crop density is mainly achieved from BBCH/EC 16.

Risks of uncovered soil surfaces

If seeding rates are reduced further in order to produce stronger individual plants, this also results in fewer plants per square metre.

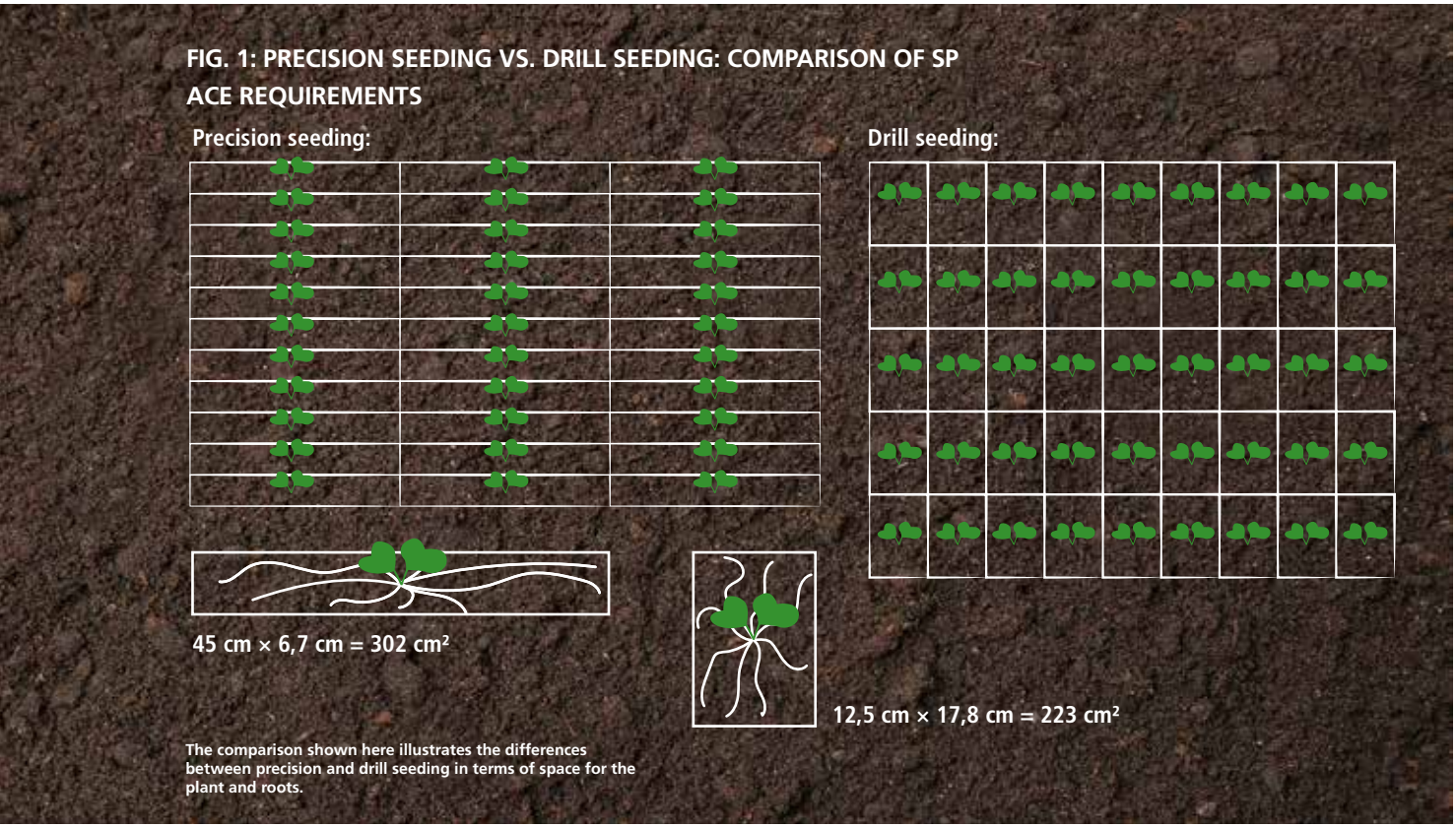

FIG. 1: PRECISION SEEDING VS. DRILL SEEDING: COMPARISON OF SP ACE REQUIREMENTS

The comparison shown here illustrates the differences between precision and drill seeding in terms of space for the plant and roots.

However, every part of the uncovered field provides weeds with space and light to establish and develop and must be controlled by means of crop protection products. Wind and water erosions can also damage the area in this way and cause soil loss. Furthermore, no plant material/assimilates are produced on this uncovered soil surface to protect the soil and nourish and maintain soil life.

Use of uncovered spaces: companion crops in oilseed rape

In order to make use of this „unproductive“ spaces, companion crops can be sown, which capture the autumn assimilation and disappear in early spring, giving the oilseed rape the space it needs for strong individual plants. It is important to ensure that biodiverse mixtures and mixtures specially developed for oilseed rape cultivation are selected. This offers numerous advantages for the soil, the plant and also for economic efficiency.

Companion crop for oilseed rape pays off

Depending on the herbicide strategy, costs can be halved or even eliminated entirely. Trials also show a nitrogen replenishment potential of up to 15 to 30 kg N/ha. Soil protection is also measurably improved – soil degradation costs are significantly reduced for soils subject to erosion. The final result is that the contribution margin calculation is usually positive. However, the development of the companion crop always plays a decisive role. In the long term, greater biodiversity in crop rotation is the most beneficial for soil health.

The right oilseed rape companion crop and its functions

Based on its many years of experience in cover crops and the latest scientific findings, for example from the CATCHY project, Deutsche Saatveredelung AG (DSV) has developed

TerraLife®-BrassicaPro, which is the ideal solution for oilseed rape cultivation. With reference to cultivation of cover crops between two main crops, companion crops on „still“ unproductive land improve the soil structure and nutrition of soil life without competing with the oilseed rape. This can be achieved by using biodiverse oilseed

Oilseed rape in precision-seeding from 07.10.2024 with 35 seeds/m² in 45 cm rows. Crop density is not achieved before winter!

rape companion crop mixtures such as TerraLife®-BrassicaPro. The combination of crops have been carefully selected and combined: legumes increase the

nitrogen availability, deep-rooted plants (blue lupin) access additional nutrient reserves and loosen the soil, while dense plant cover (clover, serradella) prevents erosion and weed growth. This not only reduces the use of crop protection products, but also the risk of soil loss and groundwater pollution.

Advice on establishing companion crops

One of the most important points is rapid establishment in the field and dense ground cover by the companion crop in order to maximise the effects described. Seeding the companion crop slightly earlier can also be beneficial: the companion crop prevents the emergence of weeds. As a result, the use of crop protection products can be reduced, making it possible to completely dispense with the control of dicotyledonous weeds before winter. The remaining weeds can be easily controlled in spring

Oilseed rape & companion crops in balance

Of course, it is also important to consider the profile of the winter oilseed rape variety. Factors such as low stem development before winter and a strong health profile are advantageous. However, early seeding suitability and very good nitrogen uptake efficiency, in order to absorb the nitrogen provided by the legumes, also play an important role.

The specific combination – precision seeding in winter oilseed rape with companion crops in intermediate rows – reveals synergistic potential. A stronger root system, more pronounced leaf development and increased stress resistance, coupled with sustainable benefits for the soil and soil organisms in the „unproductive“ areas between the rows.

Conclusion

Overall, the combined use of precision seeding and specialised companion crops shows great potential in terms of efficiency, environmental sustainability and profitability. It offers farmers the opportunity to grow winter oilseed rape that are not only high-yielding but also more sustainable and resource-efficient, paving the way for viable, evergreen cultivation systems.

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More about companion crops

ADVANTAGES OF OILSEED RAPE COMPANION CROPS

Intelligent crop mixtures promote water infiltration and oxygen plus gas exchange in the soil.

An open-pored soil leads to ...

- ... better root development due to a high oxygen content.
- ... improved nutrition of the soil microbiome.
- ... increased nutrient availability.
- ... greater root performance and thus better stability.

Companion crops complement precision seeding sowing by ...

- ... promoting soil health.
- ... reduce soil-borne diseases.

Oilseed rape (45 grains/m²) with TerraLife®-BrassicaPro (20 kg/ha) in drill seeding in the Eichsfeld district. Sowing on 12 August. Photo taken on 21 October 2024.