

Rapeseed regrowth and white clover cover crop valorisation through sheep grazing

Problem

The period between the rapeseed harvest and winter cereal sowing is too short to grow a summer cover crop. The regrowth of rapeseed can also be a problem, and therefore needs to be controlled following the rapeseed harvest. Moreover, carbon from the rapeseed crop residues returning to the soil need to be managed. To do so, there is often a need to increase soil nitrogen availability following the rapeseed crop.

Solution

Rapeseed is usually sown in August together with winter sensitive legumes (Alexandrian clover, lentils, field beans and peas) acting as companion plants limiting weed development (picture 1). In our case, we add white clover (WC) to the seeds mixture as a winter persistent legume that will grow slowly under the rapeseed and other companion plants mixture. Due to the increase in light availability its growth will increase with the loss of the first rapeseed leaves reaching maturity. Within 2-3 weeks after the rapeseed harvest full ground cover will have been achieved by the WC and rapeseed regrowth mixture. Sheep grazing should then take place. The mix is a very good sheep feed and the incorporation of nitrogen from the sheep manure into the soil balance the carbon rich residues from the harvested rapeseed (maintaining the carbon:nitrogen ratio in the soil at low level).

Benefits

Sheep grazing allows for the valorisation of permanent ground cover while quickly returning nitrogen fixed by WC (up to 100 Kg N ha⁻¹) to the soil. In this way, the carbon:nitrogen balance is maintained below 15 and the nitrogen deficiency risk for the following crop is reduced. Moreover, sheep grazing regulates vole and slug populations. Under such a scheme, there is no more requirement for interventions or inputs between



Picture 1- Rapeseed, companion plants and white clover seeds mixture (Photo:Greenotec)

Picture 2- Rapeseed harvest with white clover growing at the feet of the crop (Photo:Greenotec)

Picture 3- Sheep grazing white clover and rapeseed regrowth (Photo:A. Lecuyer, sheep farmer)

the rapeseed sowing and the winter cereal sowing. From the cropping system perspective, the only additional cost associated with this is the WC seeds cost.

Practical recommendation

- Rapeseed is sown between 10-15 August, to establish 30 plants/m². Frost sensitive legumes (such as Alexandrian clover, lentils, field beans and peas picture 1), are used as companion plants, and die off during the winter. The white clover seeds are added at rate of 4-5 kg/ha to the seed mixture. Sowing in 2 stages is best : companion plants with WC and then rapeseed. Alternatively only one sowing with a mix of all the seeds can be used.
- Either don't apply herbicide or if necessary apply a herbicide suitable for WC.
- Do not over-fertilize the rapeseed otherwise the rapeseed can outcompete the WC and prevent its development. Furthermore, as the legumes companion plants supply nitrogen, 30 to 40 Kg.ha⁻¹ less nitrogen is required compared to a sole crop of rapeseed. This reduction in fertiliser use has no impact on yield.
- Harvest the rapeseed with a combine harvester, as usual around July the next year (picture 2).
- As soon as the WC and the rapeseed regrowth cover the ground (about 3 weeks after the harvest depending on rainfall) sheep grazing can start (picture 3).
- The best way to graze is to use rotational grazing. The number of sheep/ha must be adjusted by adapting the size of the plots in order to limit residence time to about a week (or less) and by taking the sheep out when they have consumed around 75% of the biomass present. In this way there is still some ground cover, the trampling is not excessive and the sheep do not undergo sudden dietary variation at each change of plot. On average, this balance can be reached with around 75 ewes/ha. However, it is necessary to be flexible since the biomass of the cover, the weather and the agreement between the sheep farmer and the grower can all affect this balance.
- Generally, everything concerning the sheep (surveillance, fence, care, change of plot, etc) is the responsibility of the sheep farmer and the agreement is concluded without financial transaction, with each partner adjusting themselves to satisfy the needs of the other.
- After grazing, remove the sheep and let the WC grow back. Then start a new cycle of grazing. The last grazing before planting winter cereals needs to be complete (getting rid of all of the rapeseed, WC and companion crop).
- Lastly, the winter cereal can be sown through either no-till or traditional methods.

Further information

Video

- Video RWDR - DiverIMPACTS <https://www.youtube.com/watch?v=ljbZPeN9yQE&t=3s>

Weblinks

- Filagri: <https://filagri.be/wp-content/uploads/sites/2/2019/10/Des-couverts-et-des-moutons-WE-02-19.pdf>
- Greenotec: <http://www.greenotec.be/>

About this practice abstract and DiverIMPACTS

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Authors: Daniel Jamar, Christel Daniaux and Cyril Régibeau

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Project website: www.diverimpacts.net

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