IWMPRAISE — H2020-SFS-2016-2017/H2020-SFS-2016-2 – Inspiration sheet no.28
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 727321

MANAGING WEEDS WITHOUT GLYPHOSATE

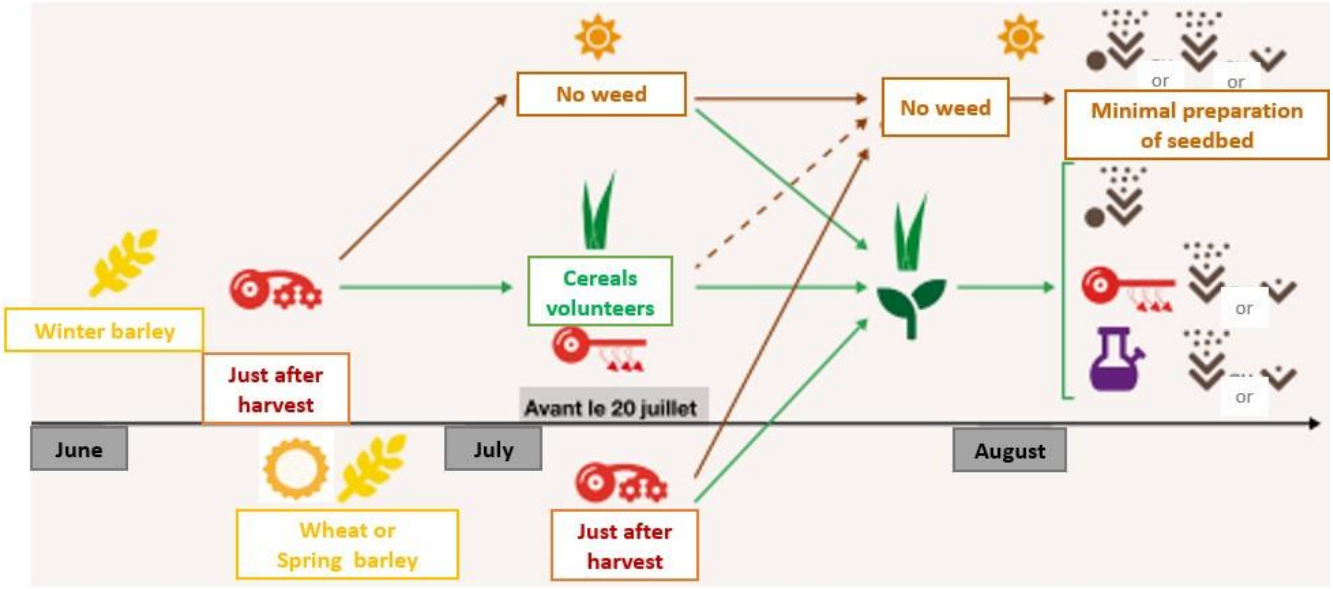
Limiting the use of glyphosate requires mechanical, chemical or agronomic alternatives. The effectiveness of the main ones will depend on the targets (e.g. broadleaf weeds, grasses, perennials, etc.) and, of course, on the conditions under which they are used (soil and climate). These alternatives all have advantages and limitations that should be well understood. A few typical cases have been studied and detailed below.

DID YOU KNOW?

Glyphosate is currently approved for use in the EU until 15 December 2022. This means it can be used as an active substance in PPPs until that date, subject to each product being authorised by national authorities following a safety evaluation.

FIRST CASE STUDY: BEFORE OIL-SEED RAPE SOWING

- The dry summer period is favourable for the mechanical destruction of volunteers/weeds in intercropping, without the use of glyphosate.
- However, with no rain forecast, it is preferable to preserve seedbed humidity to ensure the emergence of the crop. In this case, controlling volunteers with a specific herbicide should be postponed to the post-emergence of the crop, and sowing with a single-seed drill favoured in order to secure establishment.
- Stale seedbeds can also be used after the harvest of the previous crop, but no later than 20 July in order to prevent any excessive drying of the seedbed, which would be prohibitive for the establishment of oilseed rape after it is sown in early August.



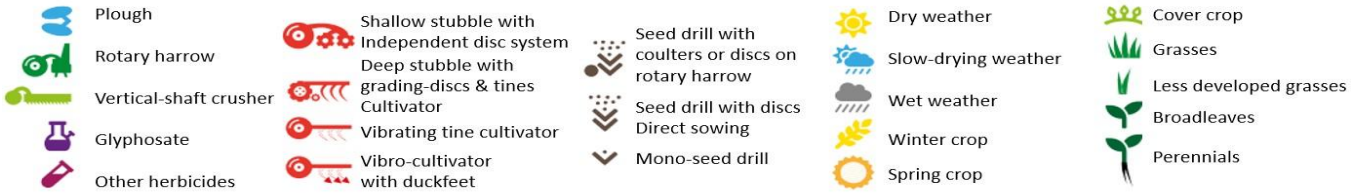


Figure 2 – Keys to the schemes on Figures 1 and 3

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SECOND CASE STUDY: BEFORE SPRING-CROP SOWING

- The sowing of an autumn cover-crop is frequent in these situations. The cover-crop will be destroyed in clay soils at the beginning of winter (e.g. by shredding), and deep tillage (e.g. by tine stubble cultivator) will prepare the soil.
- It is very likely that developed weeds are present. In this case, a first pass of mechanical equipment should be done in March. A last pass, in order to manage regrowth, should be made before sowing. This last pass is crucial and depends on the weather conditions. Drying out the seedbed should be avoided at all costs. Furthermore, the later the spring crop is sown, the greater the chance of success without glyphosate. However, do not delay the sowing too long, or potential yield could be reduced.

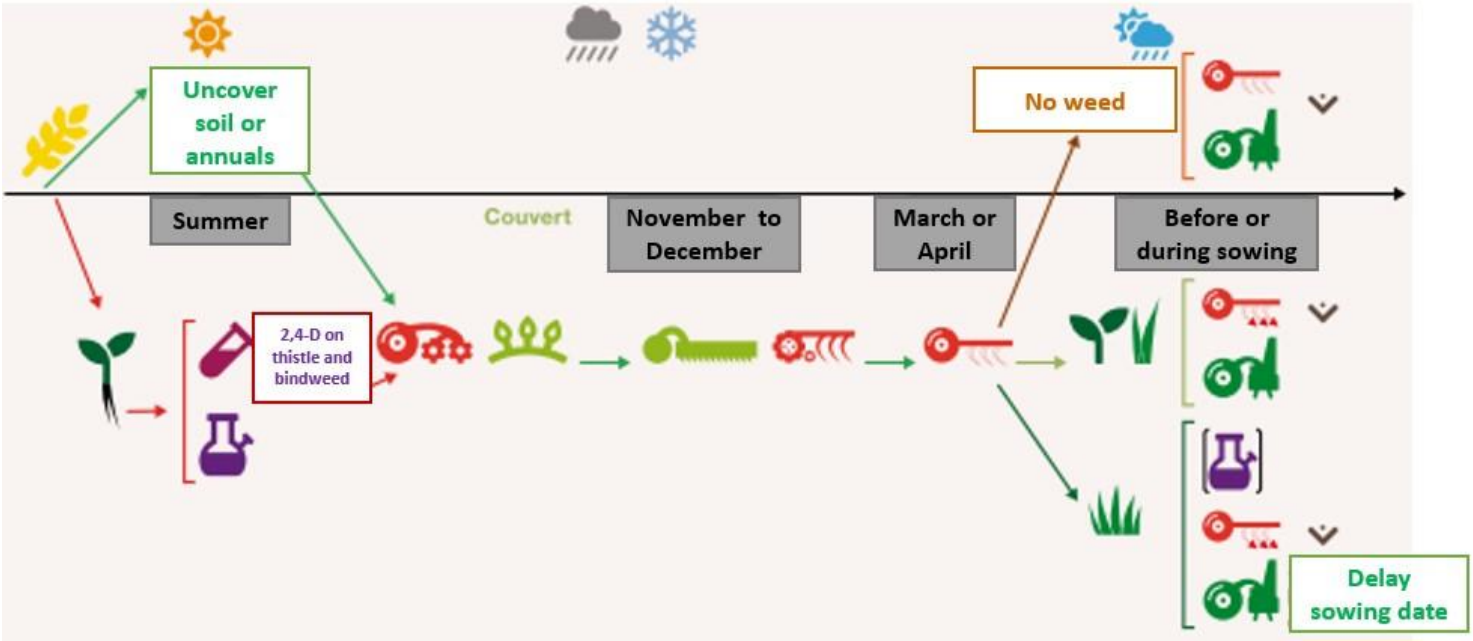

Figure 3 - Case study 2 scheme

WHAT ARE THE LIMITS OF THESE STRATEGIES?

- Soil tillage (e.g. stale seedbeds, ploughing) and its efficiency depend on climatic and soil conditions, which are generally unfavourable for weed management in winter and early spring.
- Increased risk of encountering unfavourable conditions for crop establishment, as the seedbed may dry excessively and thus impact potential yield.
- Not suited to conservation agriculture, which is based on no tillage.
- Accentuated soil erosion.
- Consumes more time and fuel than conventional systems, even more than no-till systems.

TO SUM UP

- Alternatives to glyphosate are based mainly on tillage, as well as on other methods (e.g. crop rotation, sowing date) with more impact on economic aspects.
- The main limitations concern weed stages (tillage cannot be used, but ploughing can, if grasses are too developed) and climatic conditions (need for dry conditions).
- The main risk is that the seedbed will dry up for the following crop, leading to poor crop establishment, and that new weed germinations induced by soil tillage will grow in the crop. Locally, more intensive tillage can also increase the risk of erosion.

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