

Weed management without glyphosate

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Glyphosate is widely used in France during the intercropping period, to control weeds poorly managed by tillage, re-emergences, perennial weeds and sometimes cover crops. French institutes compared several tillage tools and strategies as alternatives to glyphosate.

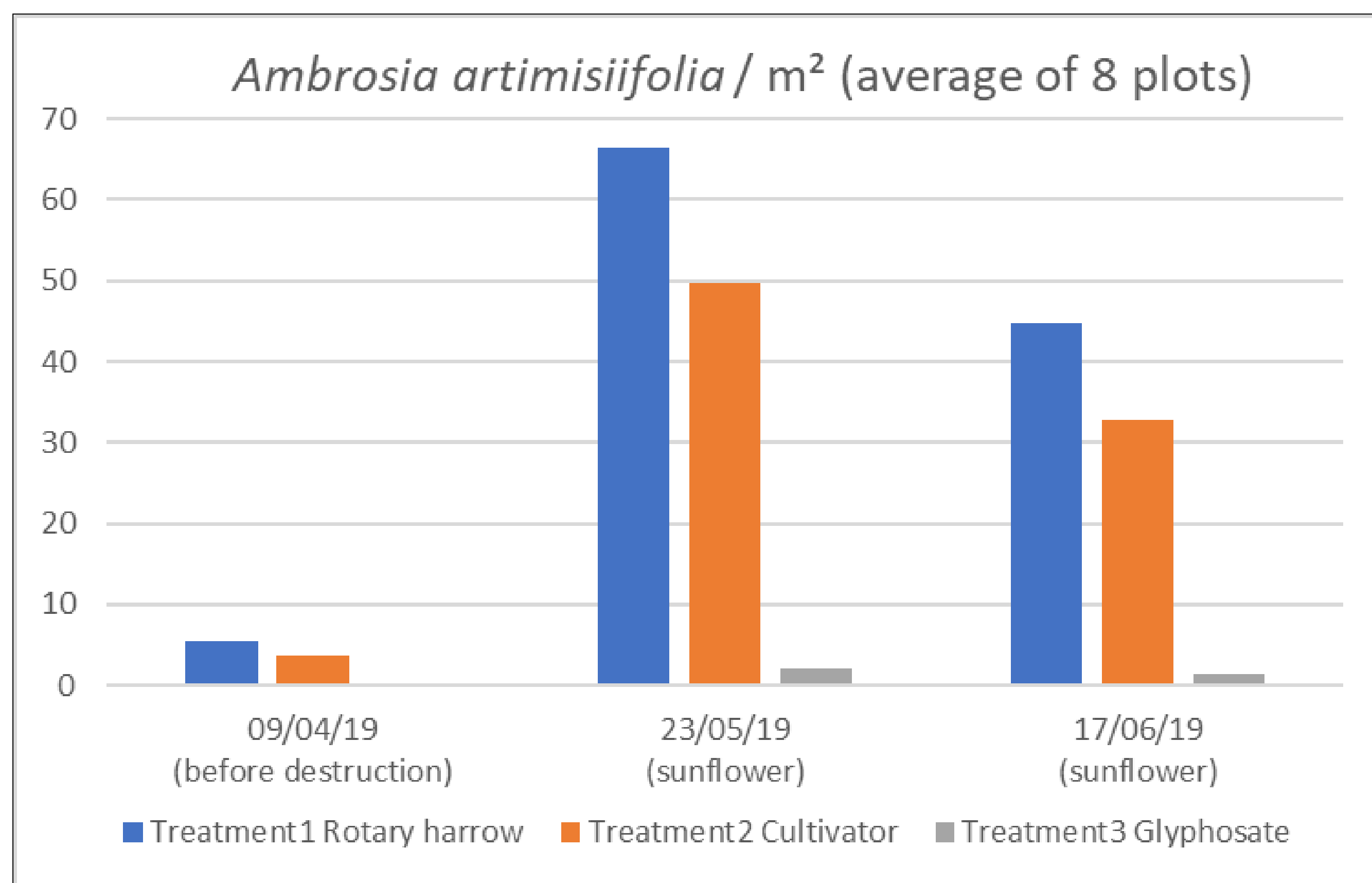
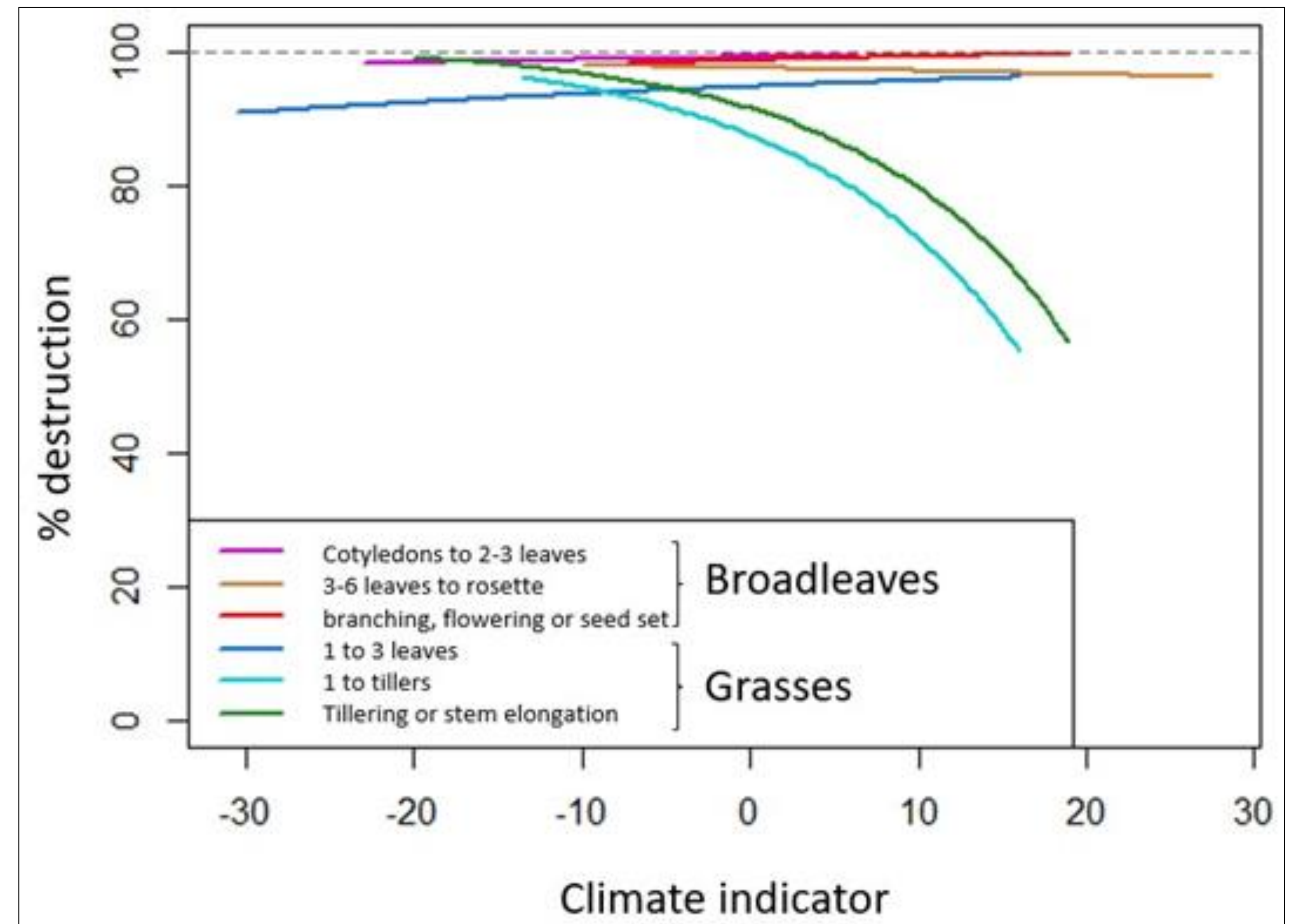
Efficiency of different tillage strategies :

The efficacies of the different strategies were assessed with an indicator called "climatic indicator" which represents the difference between rain and potential evapotranspiration (Figure 1).

For grass species, the efficiency of destruction is lower when the climate is wet, especially from tillering stage.

For broadleaved weeds species, the quality of the destruction seems independent of the climate and the stages of the weeds.

Figure 1: Weed destruction (%) among type of weeds and climate indicator (P-ETP) (compilation of 30 trials) =>

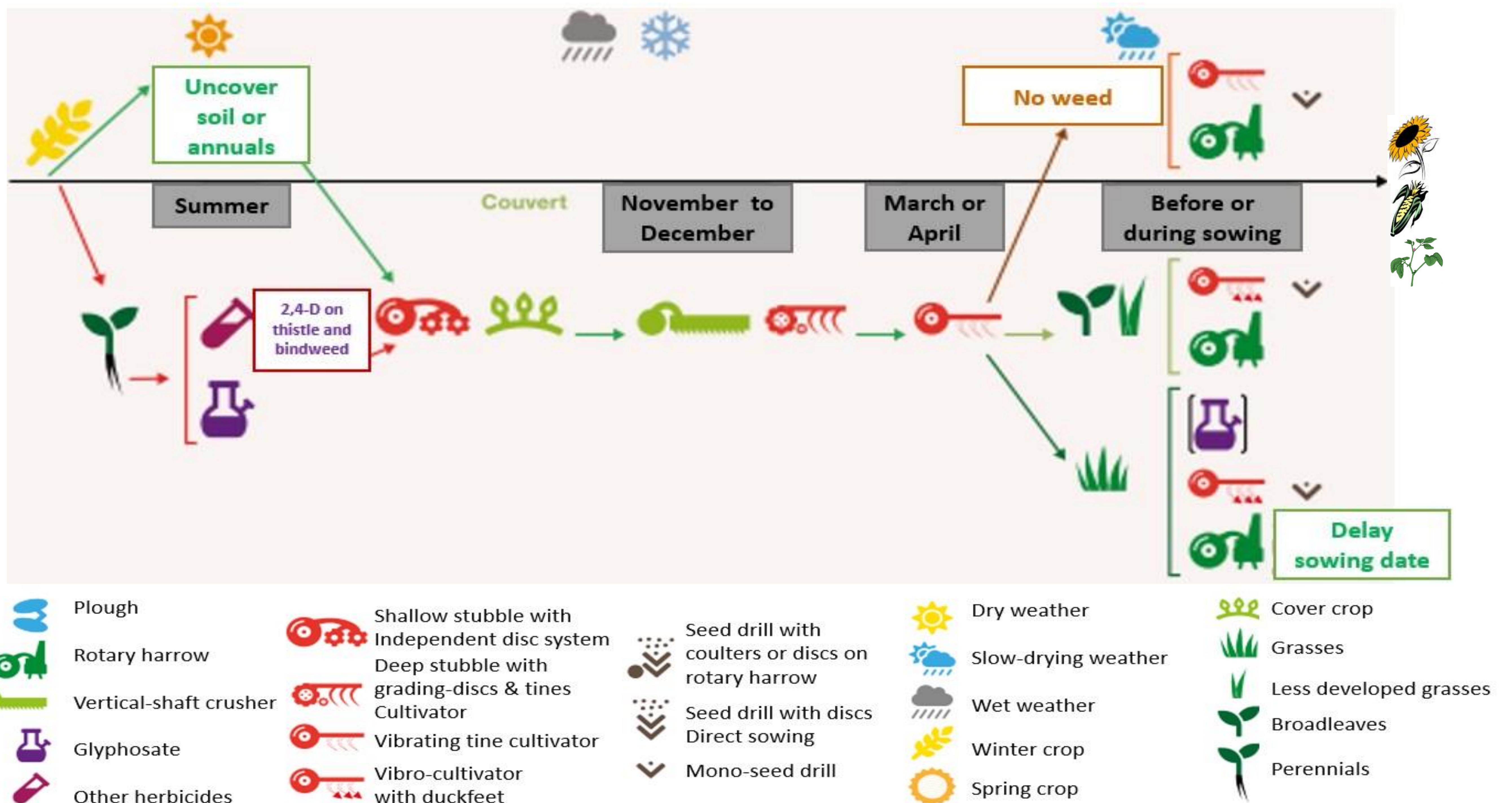


Tillage is efficient to destroy young seedlings of ragweed. Nevertheless, tillage can stimulate more regrowth of ragweed in sunflower or soybean, and even more than after glyphosate application (Figure 2).

The type of tool is also important: rotary harrow seems to stimulate more germinations of ragweeds than vibrocultor, perhaps because it was equipped by a "packer roller" which facilitates germination. This conclusion needs to be confirmed.

<= Figure 2: Ragweed germination in 2019 trial in sunflower (Terres Inovia)

Case study : before spring crops sowing



To sum up :

- Destruction is more efficient when the elements of the equipment (tines or discs) have a good recovery
- Glyphosate without any tillage avoid new germinations of weeds but is not enough to correctly prepare the soil for sowing, especially for spring crops (e.g. sunflower).
- Tillage can induce excessive drying of the seedbed and impact the potential yield. It also accentuates soil erosion.
- Time and fuel consuming are higher without glyphosate.