AGROECOLOGY FOR WEEDS

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AGROECOLOGICAL WEED MANAGEMENT REPOSITORY

The Agroecological Weed Management (AWM) Repository https://www.goodhorizon.eu/platform/awm-practices/ is a virtual space where you can freely and openly find information and educational material on current and agroecological weed management practices in the European Union. You can browse and learn about several weed management practices and crops.

The **Agroecological Weed Management (AWM) Toolbox**, our Decision Support System that supports the user to reduce the use of synthetic herbicides and/or improve weed management by combining different Agroecological Weed Management (AWM) strategies with cover crops is LIVE ! https://dss.goodhorizon.eu/

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COVER CROPS + FALSE SEEDBED

DESCRIPTION & BENEFITS

Cover crops + false seedbed is a combined agroecological weed management practice in which a cover crop is used to suppress weeds during the fallow or intercrop period, followed by a false seedbed before the establishment of the next cash crop. After cover crop termination or removal, the soil surface is prepared as if for sowing the cash crop, but sowing is delayed for a short period to allow weed seeds near the soil surface to germinate. The emerged weed seedlings are then destroyed before crop sowing, usually by shallow mechanical weeding, flame weeding or another non-chemical method. This practice could:

- **reduce weed pressure** before cash crop establishment
- **help deplete the germinable weed seedbank** in the upper soil layer
- **reduce the number of weeds competing** with the crop during early growth
- **combine** the preventive effect of cover crops with the direct effect of false seedbed control
- **protect soil from erosion and improve soil biological activity** when cover crop residues are managed carefully

STRENGTHS

- Combines two preventive weed management strategies: cover crop competition during the fallow period and false seedbed depletion of newly emerged weeds before crop sowing
- Could reduce early crop-weed competition by removing a wave of weeds before the crop is planted/sown
- Reduces reliance on synthetic herbicides by using soil cover, cover crop competition and shallow non-chemical destruction of weed seedlings

WEAKNESSES

- Requires careful timing between cover crop termination, false seedbed preparation, weed emergence, weed destruction and cash crop sowing
- May delay cash crop sowing, which can reduce yield potential or create problems in short growing seasons or market-sensitive crops
- Effectiveness depends on adequate soil moisture and temperature for weed germination, and may be weak under dry, cold or highly variable conditions

OPPORTUNITIES

- Could support diversified, organic, low-input and herbicide-reduction strategies by reducing early-season weed pressure before the cash crop is established
- Could be integrated with crop rotation, cover crop mixtures, mechanical weeding, flame weeding, mulching and competitive crop stands
- Could contribute to long-term weed seedbank management when repeated across the rotation and combined with prevention of weed seed return

THREATS

- Weather variability may prevent timely cover crop termination, weed emergence, mechanical control or cash crop sowing
- Deep or poorly timed soil disturbance after the false seedbed can bring new weed seeds to the surface and reduce the effectiveness of the practice
- Cover crop regrowth, volunteer cover crop plants or insufficient weed control before sowing may increase competition with the following cash crop

TIPS

- select cover crop species according to the rotation, climate, soil type, weed problems and the time available before the next cash crop
- terminate the cover crop early enough to allow seedbed preparation, weed emergence and timely sowing of the cash crop;
- avoid cover crop seed production as this can create volunteer plants in the following crop and good soil cover
- prepare the false seedbed shallowly and uniformly to stimulate weed emergence from the upper soil layer without bringing new buried seeds to the surface
- allow enough time between seedbed preparation and crop sowing for a flush of weeds to emerge, using rainfall or irrigation where appropriate and available
- destroy emerged weed seedlings before sowing the cash crop preferably with shallow mechanical control or another non-chemical method suitable for the system
- avoid deep cultivation after the false seedbed because it can bring new weed seeds to the surface and reduce the benefit of the practice, and brassicas for rapid growth, where locally appropriate
- start with fields where weed pressure is high but where the sowing date can be delayed without major yield trade offs

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