



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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30

COVER CROPS + CROP ROTATION

DESCRIPTION & BENEFITS

Cover crops + crop rotation is a preventive combination of practices in which cover crops are included between cash crops within a diversified rotation. The aim is to combine the weed-suppressive effect of cover crops with the long-term benefits of rotating crops that helps disrupt weed life cycles. This practice could:

- **reduce weed emergence and growth** through cover crop competition and residue cover
- **interrupt the dominance of weed species** adapted to repeated monoculture or simple rotations
- **reduce the weed seedbank** over time by preventing seed production
- **improve** soil organic matter, nutrient cycling and soil biological activity
- **diversify farm production**

STRENGTHS

- Disruption of weed life cycles by alternating crops, sowing dates, harvest periods, canopy structures and management operations across the rotation
- Improved weed suppression through the combined effects of cover crop competition, residue cover, reduced bare soil periods and diversified crop competitiveness
- Potential long-term reduction of weed seedbank replenishment by limiting weed growth and seed production across different phases of the rotation

OPPORTUNITIES

- Could reduce reliance on herbicides over time by combining preventive weed suppression, soil cover and diversified crop management
- Supports broader agroecological benefits, including improved soil health, erosion control, nutrient cycling, biodiversity and resilience to climatic variability
- Could create opportunities for additional income or resource use through forage, seed production, livestock integration or diversified products

WEAKNESSES

- Requires long-term planning, technical knowledge and coordination of crop sequence, cover crop windows, termination timing and cash crop establishment
- Effectiveness is gradual and variable, depending among others on weed species, cover crop biomass, climate, soil conditions, and crop selection
- May involve additional costs such as cover crop seed, establishment, machinery, and labour

THREATS

- Market limitations or low profitability of some rotational crops may discourage farmers from adopting more diverse rotations
- Poorly selected cover crops or incorrect termination timing can lead to competition with the cash crop, regrowth or volunteer cover crop problems
- Weather variability, short rotation windows, drought or excessive rainfall may limit cover crop establishment, biomass production or timely termination

TIPS

- **design the crop rotation according to the main weed problems/challenges in the field** including weed life cycle, emergence timing, seedbank, seed persistence and competitiveness
- **alternate crops with different sowing and harvest periods** to disturb weed species adapted to one repeated crop cycle
- **select cover crop species or mixtures that fit** the rotation window and provide rapid establishment, strong biomass production and good soil cover
- **avoid leaving long bare fallow periods** as open soil can increase weed emergence and seedbank replenishment
- **terminate cover crops at the right time and with the right means** to avoid competition with the following cash crop and prevent cover crop seed production
- **consider the effects of cover crop residues** on soil moisture, soil temperature, nitrogen availability and cash crop establishment
- **combine species with complementary traits** such as grasses for biomass and soil cover, legumes for nitrogen contribution, and brassicas for rapid growth, where locally appropriate
- **monitor weed species and density before and after each crop** to understand how the rotation is affecting the weed community
- **avoid repeating the same herbicide mode of action** or mechanical operation across the rotation, as this can select for tolerant or resistant weed species community

LIABILITY DISCLAIMER

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