



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 + MECHANICAL CONTROL

DESCRIPTION & BENEFITS

Cover crops + mechanical control is a combination of practices in which cover crops are grown to suppress weeds through competition, soil cover and residue effects, and are then managed or complemented with mechanical operations. Mechanical control may include mowing, flail mowing, shallow cultivation, cutting, rolling, incorporation, inter-row hoeing or other soil- or residue-based operations & could terminate the cover crop, reduce weed biomass, incorporate residues or maintain crop rows clean before or after cash crop establishment. It could:

- **reduce weed emergence and growth** through cover crop competition
- **suppress later weed waves** through cover crop residues or mulch
- **provide a non-chemical termination option for cover crops**
- **support diversified**, organic, low-input and agroecological weed management systems
- **improve the effectiveness of mechanical weeding** by reducing the initial weed pressure before the cash crop is established

STRENGTHS

- Combines preventive weed suppression from the cover crop with direct mechanical reduction of weeds or cover crop biomass, improving weed management compared with either method used alone
- Reduces reliance on synthetic herbicides by using crop competition, soil cover, residue effects and physical weed control
- Could improve soil protection when enough residue remains on the soil surface to reduce erosion, moderate temperature and support soil biological activity.

OPPORTUNITIES

- Could support diversified, organic, low-input and herbicide-reduction strategies by providing non-chemical options for both cover crop termination and weed suppression
- Could be adapted to different farming systems using mowing, shallow cultivation, undercutting, inter-row cultivation or residue retention
- Integration with precision guidance, improved cultivators, and decision-support tools could increase efficiency and reduce crop damage

WEAKNESSES

- Effectiveness depends strongly on cover crop establishment, biomass production, weed species, timing and the suitability of the mechanical operation
- Requires appropriate machinery, fuel, labour, technical knowledge and good coordination between cover crop management, mechanical control and cash crop planting/sowing
- Some mechanical methods may reduce mulch persistence, accelerate residue decomposition or temporarily reduce soil moisture and nitrogen availability for the following crop

THREATS

- Wrong timing may lead to cover crop regrowth, weed escapes, excessive residue problems or cover crop seed production that creates volunteer plants
- Mechanical disturbance can stimulate new weed germination, reduce soil cover or damage soil structure if operations are too intensive or performed under unsuitable conditions
- Weather variability, wet soils, drought, stones, high residue loads or narrow planting windows may prevent timely mechanical control and reduce effectiveness

TIPS

- **select cover crop species or mixtures that are adapted to** the climate, soil type, rotation and expected mechanical termination method
- **aim for rapid cover crop establishment and sufficient biomass**
- **choose the appropriate mechanical method according to the objective** (e.g., biomass reduction, seedlings uprooting, residues incorporation into the soil;
- **time mechanical control carefully** because early termination may reduce biomass and weed suppression, while late termination may create problems with cover crop regrowth, excessive residues or seed production
- **avoid mowing species that easily regrow** unless repeated mowing or an additional termination method is planned
- **avoid intensive soil disturbance** where the goal is to maintain mulch cover and reduce weed emergence
- **operate when soil conditions are suitable** avoiding very wet soils
- **ensure machinery is adjusted correctly** for working depth, speed, residue load and crop row spacing
- **start with a small area to test the combination** of cover crop species, biomass, mechanical method and cash crop establishment under local conditions

LIABILITY DISCLAIMER

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