



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 !

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## COVER CROPS + COMPETITIVE CROP VARIETIES

### DESCRIPTION & BENEFITS

Cover crops + competitive crop varieties is a combination of preventive approaches that combines the weed-suppressive effects of cover crops with the competitive ability of the following or companion cash crop. Competitive crop varieties are cultivars with traits that allow the crop to establish quickly, capture resources efficiently and tolerate or suppress weeds. They could:

- **reduce weed emergence and growth** before and during the cash crop cycle
- **improve early crop competitiveness**, which is a critical period for weed suppression
- **reduce weed seed production and seedbank replenishment** over time
- **improve soil protection, organic matter inputs and biological activity** through cover crop residues

## STRENGTHS

- Combines weed suppression from cover crop competition and residues with stronger cash crop competitiveness during early growth and canopy closure
- Could reduce early-season weed pressure and weed seed production by limiting light, space and resource availability for weeds
- Improves soil cover, soil protection and agroecosystem resilience when cover crop residues are combined with a dense and vigorous cash crop canopy

## OPPORTUNITIES

- Could reduce reliance on herbicides and repeated mechanical weeding by strengthening preventive and crop-based weed suppression
- Supports breeding and variety selection for agroecological traits such as early vigour, canopy closure, weed tolerance and resource-use efficiency
- Could be integrated with crop rotation, optimized row spacing, higher sowing density, false seedbed and mechanical control

## WEAKNESSES

- Effectiveness depends on correct selection of cover crop species, crop variety, sowing date, crop density, termination timing and local field conditions
- Competitive varieties may have trade-offs, such as lower yield potential under weed-free conditions, different quality traits, lodging risk or higher water and nutrient demand
- Requires good technical knowledge and local testing, because weed suppression varies with weed species, weather, soil fertility and crop management

## THREATS

- Competitive crop varieties may not be available for all crops, regions or market requirements, limiting adoption
- Poor cover crop termination or unsuitable variety choice may increase competition with the cash crop and reduce yield
- Severe drought, nutrient limitation, high weed pressure or aggressive perennial weeds may reduce the effectiveness of both cover crops and competitive crop varieties

## TIPS

- **select cover crop species or mixtures that** establish rapidly, produce enough biomass and fit the rotation window before the competitive cash crop
- **choose crop varieties with traits linked to weed competitiveness** such as rapid emergence, early vigour, fast canopy closure, height, tillering capacity, large leaf area and strong rooting ability
- **match the cover crop and cash crop carefully to avoid competition** for water, nutrients or light during cash crop establishment
- **terminate the cover crop at the right time** to prevent regrowth, volunteer problems or excessive competition with the following crop
- **avoid leaving bare soil between the cover crop and the cash crop** as open soil favours weed emergence
- **consider increasing crop sowing density or optimizing row spacing where appropriate** because competitive varieties are more effective when they establish a dense and uniform canopy
- **monitor nitrogen and water availability**, because cover crop residues or high crop density may increase competition for resources
- **avoid relying only on crop competitiveness** where weed pressure is high, perennial weeds are present or herbicide-resistant weeds have already established and combine with other agroecological weed management practices

### LIABILITY DISCLAIMER

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