

Allelopathic cover crop for field vegetables

Cover crop terminated as dead mulch or as green manures to prevent weed establishment in field vegetables

Readiness for use: 

Efficacy: 

How it works

- Cover crops can be established as intermediary service crops in early fall on soil prepared by minimum tillage
- Allelopathic cover crops are species that release biochemicals in the soil which are toxic for weed seeds and plantlets, thus contributing to reduce weed establishment at early crop stages
- Allelopathic species include common species, e.g., rye, vetch, squarrosium clover
- Allelopathic cover crop mixtures should be preferred to pure stands, to reduce the risk of cover crop establishment failure due to extreme weather events and to produce well balanced (medium C:N ratio) residues
- Allelopathic effect can be maximised by crushing the cover crops at early flowering/earring phase and then by incorporating them in shallow soil by harrowing
- Alternatively, managing allelopathic cover crops as dead mulch (e.g. by cut roller or roller crimper) can be an effective strategy to boost weed suppression in no-till field vegetable systems
- A strip-tillage machine or a no-till transplanter are needed to establish the vegetable crop (e.g. process tomato) in the dead mulch of the cover crops
- Allelopathic substances are more effective against small seed weeds, whereas they do not affect vegetables if transplanted, nor big seeds or seeds with thick teguments
- Incorporate the cover crops into the soil instead of terminating them as dead mulch if their biomass is too low, anyway



Figure 1. Squarrosium clover:rye mixture can be managed as dead mulch for no-till transplant. Allelopathic compounds will be released slowly, but the physical barrier of the dead mulch can compensate



Figure 2. Tomato directly transplanted and drip irrigated on rye dead mulch



Figure 3. Despite low biomass, in this picture very few weeds are present underneath the rye cover crop, due to N uptake and allelopathic effect

Read more

[Inspiration sheet on roller crimpers](#)

<https://www.agronomy.it/index.php/agro/article/view/1869>

CONTACT

Daniele Antichi & Christian Frascioni, University of Pisa
daniele.antichi@unipi.it
Anna-Camilla Moonen, Scuola Sant'Anna, Pisa
Camilla.Moonen@santannapisa.it



UNIVERSITÀ DI PISA
Centro di Ricerche
Agro-Ambientali
Enrico Avanzi

