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AGROecological strategies for SUStainable weed management in key European crops

Stakeholder perceptions of the most frequently used agroecological strategies for weed control in horticultural crops in the Mediterranean region (Valencia, Spain)

PROBLEM

What are the most effective agroecological strategies for weed management in horticultural crops in the Mediterranean region?

STAKEHOLDER PERCEPTIONS

Among farmers, crop rotation and roller-crimping were the most common weed control methods (24%), followed by living mulch and cover crops (16%). Mechanical cultivation, agroecological service crops, and weed flaming were used by 11%, while intercropping and biological control were less common (8% and 5%). Some methods, like mechanical cultivation (24%) and intercropping (16%), were discontinued by many farmers. Biological weed control and weed flaming were known but not used by 21%, while 21% had never heard of agroecological service crops or biological control. Stakeholders familiar with horticultural practices recognized mechanical cultivation and crop rotation (53%) and were aware of biological control and weed flaming (51.5%). Awareness of roller-crimping, living mulch, and intercropping was moderate (40-44%), whereas agroecological service crops were the least familiar (24%). Key strategies identified for Mediterranean weed management included preventive methods like crop rotation, cover crops, mulching, solarization, and false sowing, along with mechanical methods like mowing. Drip irrigation was also highlighted for its role in reducing weed pressure. Bioherbicides were recommended as alternatives to conventional herbicides.

Figure 1: Tomato assay on agroecological measures for weed control in the Mediterranean biogeographical region. Detail of plastic mulching used in conventional farming.

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RECOMMENDATION

Crop rotation and organic mulching with rice straw or biofilm should be prioritized. Testing living mulch and roller-crimping alongside bioherbicides and improved water management could further enhance weed control.

Figure 2: Detail of biofilm installation in a tomato field. Assays on agroecological measures for weed control in horticultural crops in the Mediterranean geographical region.

Figure 3: Installation of rice straw mulch in a tomato assay in the Mediterranean geographical area.

Figure 4: General view of the zucchini assay on agroecological measures for weed control in the Mediterranean geographical area.

Figure 5: Tomato plants at the flowering and productive stages during an assay on agroecological measures to control weeds in the Mediterranean biogeographical area.

KEYWORDS

horticultural crops, agroecological weed control, mulching, biofilm, rice straw, corn straw

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