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CROP DIVERSITY & AGRONOMY

Using subsidiary crops to optimal effect

An online toolbox for cover crops and living mulches

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OSCAR
Optimising Subsidiary Crop Application in Rotations

Maintaining ground cover via techniques such as cover cropping and living mulches has several benefits including preventing soil erosion, conserving soil moisture, adding soil organic matter, reducing external inputs, and increasing soil biodiversity.

Following on from research on optimal use of species-rich legume-based leys in varied local environmental conditions, ORC was the UK partner in the OSCAR (Optimising Subsidiary Crop Applications in Rotations) research project. In multi-environment experimental trials across 12 different climates, it was found that the performance of subsidiary - cover crop and living mulch - crop species on soil quality improvement strongly related to climate; hence choice of species based on environmental conditions is essential. Although use of subsidiary crops reduced weed growth in most cases, satisfactory weed control remained a challenge which further emphasised the importance of good crop choice.

Researchers worked with farmers to assess cover crop species performance

Resultantly, a decision support tool was developed by ORC. It was based on a database of trial results from across the different climates included in the project and gave an overview of individual subsidiary crop species traits as well as the possibility to filter results in relation to site specific performance factors such as pH range or winter hardiness. This allowed farmers to explore the potential performance of different crop species according to geographic location and taking into account their on-farm growing conditions, e.g. soil type.
Presenting experimental data in a format that encourages uptake remains a key part of ORC's work. The OSCAR toolbox enabled farmers to identify suitable subsidiary crop species, varieties and appropriate species mixtures and access practical management advice. The online toolbox is now available via the Subsidiary Crop Database, which is part of the AgroDiversity Toolbox wiki site.

FURTHER READING

1. IOTA Technical Leaflet no. 7 (2014) tinyurl.com/7ume96v3
2. Crossland *et al.* (2015) tinyurl.com/14m6b5vl
3. ORC Bulletin 120, pp. 20-22 tinyurl.com/5ckzuyw4
4. ORC Factsheet no. 6 (2021) tinyurl.com/34d6fjye

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