

Designing strip intercropping systems

Problem

Farming landscapes dominated by monocultures are vulnerable to pests and diseases, in part because of a general loss of biodiversity in the field.

Solution

Strip intercropping creates spatial diversity within the field, which helps support biodiversity and related ecosystem services (such as biocontrol of pests and diseases).



Picture 1: A strip cropping experiment at the ERF commercial farm where different strip widths are tested with 5 different crops. (Photo: ERF BV)

Applicability box

Theme

Intercropping, Strip Cropping

Geographical coverage

Europe, North America

Application time

All year

Required time

A few days for planning pre-season, but time for field operations should remain the same once strip layout is established

Period of impact

All year

Equipment

No special equipment needed; smaller tractors and machines are advantageous

Best in: Any arable farm, but especially organic



Picture 2: A ley crop used as traffic lane during potato harvest to reduce soil compaction. (Photo: Dirk van Apeldoorn)

Outcomes

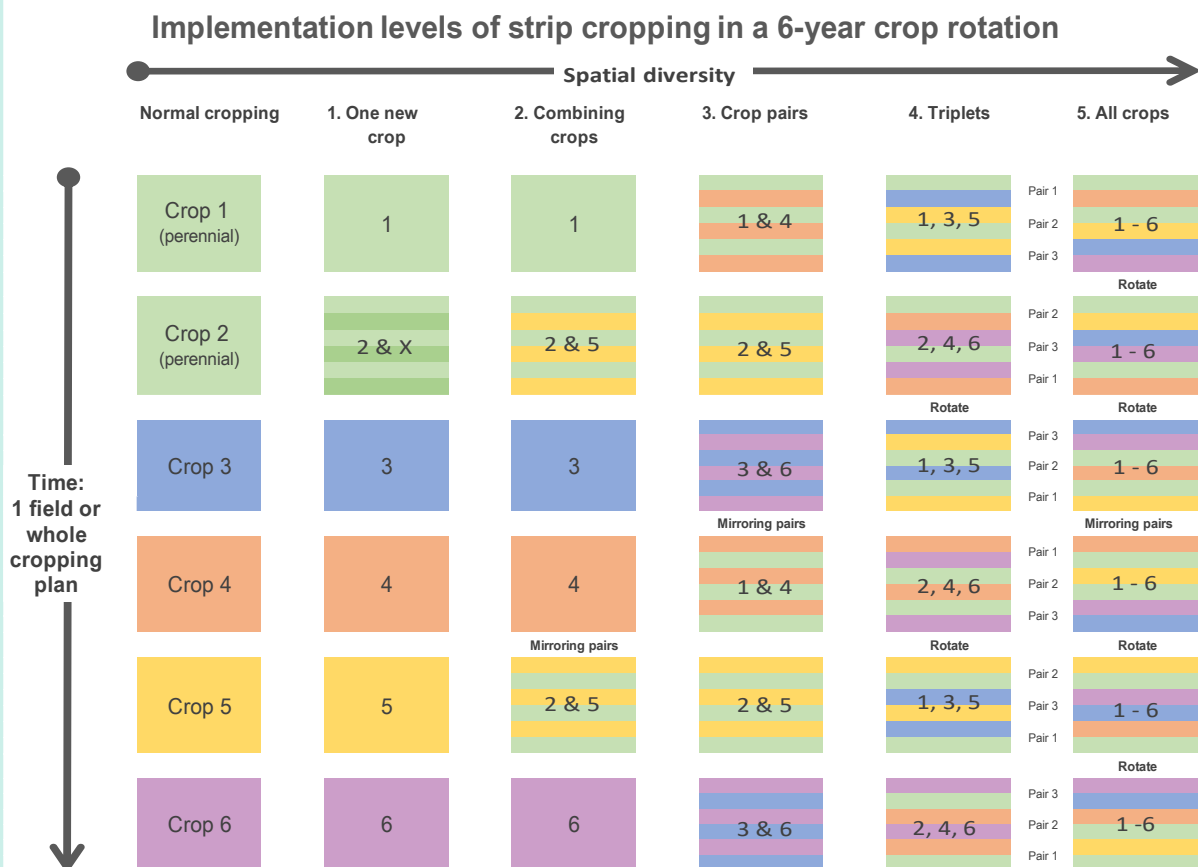
Strip cropping experiments have shown an increase in general biodiversity and beneficial insects, higher yields for various crops, slower development of pests and diseases, and less soil structural damage. By choosing strip widths compatible with the machines a farmer already has, implementation on commercial farms can be realised without significant changes in equipment or management.

Practical recommendations

If designed well, strip cropping will not change much of the current management on a farm. Here are a few simple guidelines for designing manageable and effective strip systems:

- Determine strip width based on available machines, and make strips as narrow as the machine can handle (narrower strips have stronger effect on disease suppression)
- Strip length should be determined by the maximum load capacity of harvest trailers
- Crop rotation determines which crops can be combined on a field, at least a one-year gap is required between neighbouring strips of the same crop to minimise risk of disease development
- Crop combination compatibility should be evaluated on aspects such as management type and intensity, growing period, ground cover and expected edge interactions
 - Combine winter and spring crops, as they provide year-round refuge for beneficial insects on the field
 - Combine pest-sensitive crops with winter crops so beneficial insects have resources to over-winter and can be present in the field early in the season
 - Put ley crops next to intensive crops and use ley crops as a traffic lane to reduce soil compaction (Picture 2)
 - Choose neighbour crops with complementary traits to avoid competition at strip edges
- Other options include adding functional biodiversity strips, or positioning green manure strips next to crop strips where the green manure can be easily spread
- Treat strips as a new management unit, like small fields. The use of a spreadsheet with strip numbers or GPS lines facilitates their management.

There are many ways strip cropping can be incorporated into a crop rotation on the field. In Picture 3 we show several options for how to do it, from just one strip crop pair to a full strip rotation.



Picture 3: Options for strip cropping implementation in a 6-year rotation. Note that in 'Triplets' and 'All crops' every other repetition of crops needs to be mirrored in the field to facilitate efficient traffic. Each colour represents one crop.

Further information

Video

- [WUR's strip cropping experiments \(Dutch with English subtitles\)](#)

Weblinks

- [WUR's strip cropping projects](#)
- [Strip cropping practice network](#)

Use the comment section on the <https://www.diverimpacts.net/service/forum/forum/discussion.html> to share your experiences with other farmers, advisors and scientists! If you have any questions concerning the method, please contact the author of the practice abstract by e-mail.



About this practice abstract and DiverIMPACTS

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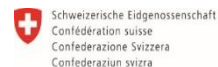
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