

## Best Practice Information Sheet

A joint project between the Environment Agency and Natural England, funded by Defra and the Rural Development Programme for England, working in priority catchments within England.

# Soil management

## Cover and Catch Crops

### Why should you use these?

Cover and catch crops provide green cover to bare soil during certain periods of rotation, thereby improving overall water quality and soil health.

These crops can provide many short and long term benefits, including:

- Reducing soil erosion
- Increasing water and nutrient retention
- Improving soil quality and water infiltration
- Catching nitrogen and other nutrients
- Reducing leaching into groundwater
- Weed and pest control



### Steps to success

- 1. Review the current situation:**
  - Identify where ground is left bare in rotation fields, or where there are agronomic issues such as weed control. Fields left bare following autumn harvests are ideal for sowing cover or catch crops.
  - Identify any high risk fields where erosion has occurred in the past.
- 2. Identify potential opportunities:**
  - Work out where cover crops could fit within the rotation. It is important to select the right cover crop for your situation and consider the full rotation of crops.
- 3. Take measurements before using cover crops:**
  - It is important to carry out soil testing and check soil structure. Monitoring could also include earth worm/slug counts and previous yield and soil indices' data.
- 4. What are the potential cost benefits:**
  - Reducing sediment and nutrient losses via green cover can be worth between £30-£80 per ha/yr.
  - Some cover crops can be used for grazing, allowing for land to be rented. This will also add organic manure to the soil. Take care to avoid poaching and grazing close to boreholes.
  - Payback may not always be visible in the short term, but increasing soil quality can provide many long term benefits such as increased soil resilience in changing weather conditions. Therefore, costs can be spread across the rotation.
  - Reducing the sediment and nutrient load reaching watercourses means that there will be less algal growth and sedimentation. Consequently, maintenance costs and flooding risk will be reduced.
- 5. Take care to ensure that:**
  - The cover or catch crops fit into the rotation. In the autumn, some cover crops need to be sown by early September to achieve good establishment and maximum nitrogen uptake.
  - Budget for costs associated with seed, establishment and crop destruction.
  - Target high erosion risk fields first.
  - Start off small and experiment with certain field types and mixes.
- 6. Monitor progress:**
  - Look at soil quality improvements, compaction, earthworm counts, green cover, future cropping benefits and input costs. Monitor across several rotations and keep up-to-date with ongoing research.

# Land management

## Cover and Catch Crops

### Practical Examples

#### *Using a cover crop before sugar beet*

A 500 ha arable farm experienced erosion problems after leaving soils bare between the autumn harvest of cereal crops and the sowing of sugar beet.

Oats, vetch and radish were chosen as cover crops for their ability to reduce runoff and build soil fertility. They could also be drilled by the end of August for a reasonable cost. Vetch, being a legume, can also fix nitrogen, whereas radish is able to capture nutrients and has notable rooting ability. Additionally, oats are able to increase organic matter and control weeds. The seeds cost just under £30 per ha.

The farmer has found an improvement in the workability of the soil, as well as an increase in earth worm numbers and water infiltration.



#### *Catching nitrogen after harvest*

After harvesting a first wheat, stubbles were left and a mix of mustards, rye and phacelia were sown in order to catch nitrogen and improve soil structure.

The mix was sown in early August and was destroyed in early October. The second wheat was directly drilled into the field. The approximate cost of the seed was £45 per ha.

Increases in the capture of nutrients and soil organic matter have been documented.



### Remember

- Avoid leaving bare land during the rotation by using a cover or catch crop
- Work out what you are trying to improve or change before picking a mix. Make sure it fits with your rotation and it is feasible to establish and destroy in time
- Spread costs across a whole rotation. Look at ways of cutting costs by using minimum or direct tillage or consider reducing nutrient inputs

This information sheet is part of a series providing farmers with advice on land management practices to protect water bodies, produced by The Rivers Trust with support from Catchment Sensitive Farming. The advice will also enable farmers to use farm resources more efficiently and help meet Nitrate Vulnerable Zone and Soil Protection Review requirements under Cross Compliance and environmental regulation. Information for these sheets was provided through the Broadland Catchment Partnership and Cam and Ely Ouse Catchment Partnerships Water Sensitive Farming project.



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