

Cover Crops

Cover crops are grown in agricultural fields before the main crop is planted and after it is harvested. Cover crops protect soil, improve soil health, and keep nutrients in place to supply to subsequent crops. Many plant species can be used as cover crops. Each type of plant provides its own suite of potential benefits.

Benefits and Functions of Cover Crops

Reduce water and wind erosion

- Cover crops protect topsoil from water and wind erosion. The roots stabilize the soil. The stems intercept, slow, and disperse surface runoff. The vegetation reduces the force of raindrop impact and increases surface roughness to slow winds. Water quality is protected as nutrients and chemicals bound to soil are less prone to being eroded by wind and water.

Nutrient cycling

- Many cover crops act as temporary storage for nutrients. Some cover crop species scavenge nitrogen from the soil. This offers the added benefit of preventing nitrogen from leaching into groundwater, while other species fix atmospheric nitrogen. This stored nitrogen, along with other nutrients, is released as the cover crop decomposes and, if released at the appropriate time, could be made available for use by the subsequent main crop.



Enhances soil health and structure

- Cover crops improve soil quality in a variety of ways. They increase soil biological activity and enhance biodiversity of soil organisms. Species with deep roots or taproots can help break up soil compaction while fibrous roots systems can help bind soil particles together. High biomass cover crops increase soil organic carbon.

Economic benefit

- Cover crops can enhance nutrient cycling, moisture retention, and overall soil health. This can result in increased crop yields. Cover crops diversify a cropping system. This can reduce pressures from insects, nematodes, disease, and weeds, decreasing the need for pesticides and herbicides.

Types of Cover Crops



Red clover, a type of legume cover crop, fixes nitrogen, protects the soil from erosion, suppresses weeds, and improves soil conditions.



Oats is a type of grass cover crop. Above-ground biomass and root growth help to mitigate soil loss and improve water quality.



Tillage radish, a species of brassica, can alleviate soil compaction and suppress weeds.

Planning to use a cover crop

Cover crop goals

Choose a cover crop that matches your goals. Some examples of cover crop goals include:

- Nitrogen cycling
- Reducing soil erosion
- Improving soil health and structure
- Increasing organic carbon in the soil
- Suppressing weeds, disease, or pests. If a single species cover crop does not meet your goals, consider using a multi-species cover crop.

Crop rotation

- Consider where in your crop rotation to use a cover crop. A rotation that includes winter wheat is a great opportunity to start using cover crops. Seeding a cover crop immediately following wheat harvest provides an extended period of soil cover into the next winter. Cover crops can also be planted later season after corn or soybean harvest. Cereal rye is a common late-season cover crop as it does not winter kill and may provide weed control benefits to the subsequent crop in the spring.



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