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Cover Crops - Benefits

by Matt Montgomery

Cover crops have grown in popularity over the last several years, and they will (undoubtedly) continue to grow in popularity. Why do people consider cover crops? What are the benefits? A few key benefits come to mind when discussing the subject of cover crops.

Cover crops act as a green manure for crops. They assimilate nitrogen and other nutrients in the plant (nutrients such as nitrogen, phosphorus, and potassium). This removes those nutrients from the soil environment where they might be subject to loss. For example, grass cover crops have been shown to reduce nitrate losses by 75 to 95%. This ability to sequester nutrients becomes particularly important for nitrogen and phosphorus which can move downstream into the Gulf of Mexico. Legume crops (vetch or crimson clover for instance) go a step further. While they assimilate nitrogen, they also take nitrogen from the air and fix it into a form the plant can use. The green manure properties of a cover crop have sometimes resulted in several to a couple dozen bushels of additional yield where corn follows a cover crop (depending upon the cover crop).

Cover crops also provide soil-related benefits. The root systems of cover crops physically hold soil particles in place during storm events. This reduces sheet, rill, and gully erosion. Tilled cover crops may reduce soil erosion by as much as 50 percent with no-till cover crops sometimes reducing erosion by 90 percent. Decomposing cover crops also form organic compounds that promote granulated soil structure, improving soil silth. The resulting pore space provides an improved avenue for gas exchange, water storage, and root penetration, while taming down the likelihood of compaction. Cover crop material can also form a buffer that reduces evaporation thus conserving soil moisture for the crop.

Cover crops can assist with weed control. The weed control properties of a cover crop primarily stem from cover crops shading the soil. This reduces seed germination which decreases weed competition for water, nutrients, light, and space. While shading plays a primary role in reduced weed pressure, some cover crops species produce allelopathic chemicals (chemicals that inhibit weed seeds from germinating, etc.). It should be noted that cover crops are not usually a standalone weed control option. They are best used along with a vigorous weed control program.

These benefits often eclipse the downside of using cover crops (trash-related planter issues, occasional yield penalties when corn is preceded by a grass cover crop, occasional issues with tied up nitrogen and herbicide resistance concerns).

Cover Crop Resource Guide <http://crops.missouri.edu/covercrops/>

"Covers have been a nice fit for our seed corn rotation, due to early harvest of the seed corn, which allows for timing planting of the cover, we are realizing the full benefit of cover crops. Less residue with shorter stature inbred corn plants has been a challenge for soil tilth and erosion control, and covers have fixed both of those issues. The other benefits we have noticed are weed suppression and capturing residual nitrogen. All of these benefits take management, and we have learned some of cover crop lessons the hard way. I feel like net, they have been a benefit, but understand they carry risks as well." - Kevin Burrus

