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www.covercropstrategies.com/articles/1038-cover-crops-protect-natural-resources
<https://www.producer.com/2019/01/soil-erosion-costs-farmers-3-1-billion-a-year-in-yield-loss-scientist/>

Cover Crops Protect Natural Resources

Agricultural producers have seen some trying times over the past few years. Particularly in 2019. From drought to flooding, a delayed harvest, or no harvest at all, and a tough winter for livestock operations. We must not underestimate the toll this can take on our soil and our water.

Here are four ways cover crops can help protect our most essential natural resources:

Preventing soil erosion

According to [Sustainable Agriculture Research & Education \(SARE\)](http://Sustainable Agriculture Research & Education (SARE)), the average sediment loss per acre in the US is 2.7 tons each year (\$3.1 billion each year in lost productivity in Canada) – all of which goes on to pollute waterways. While cover crops will never fully prevent wind and rain erosion, they can go a long way to slowing it down. By providing ground cover and deep root systems, cover crops help reduce land degradation from wind and water erosion. The living roots also enhance water management by protecting the soil surface from sealing and improving drainage of wet soils.

When cover crops are integrated, SARE research indicates sediment losses from erosion are reduced by 20.8 tons per acre on conventional systems, 6.6 tons per acre on min-till systems and 1.2 tons per acre on no-till systems.

Retaining nutrients

While cover crop roots and biomass work to lock soil into place, the reduction of erosion correlates to a reduction in nutrients like nitrogen and phosphorus reaching waterways in sediment. Additionally, cover crops also work more efficiently scavenging nutrients from the previous crop and releasing those nutrients for the subsequent crop when terminated. An analysis of 10 studies by SARE found cover crops to reduce nitrogen losses by an average of 48 percent. In one study, an 89 percent reduction was seen.

Integrated pest management

By selecting for varieties specifically bred for traits to combat weeds and insects, cover crops can effectively be used to reduce the need for pesticides.

For effective weed control, selecting varieties with rapid growth during cool seasons will reduce weed establishment by providing a dense stand for soil shading. Certain cover crops, like cereal rye, have also been shown to have an allelopathic effect on weeds.

Improved soil fertility

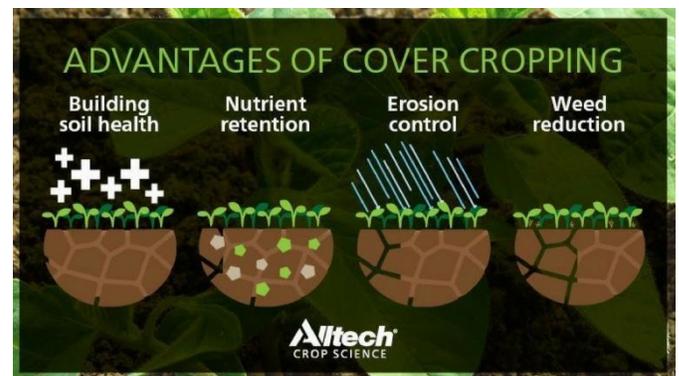
One of the most important, but sometimes forgotten components to a profitable system, lies below the ground's surface.

When increasing plant diversity, different root structures will increase access into untapped nutrients in the soil by reaching new depths. Not only can roots work to bust up compaction, but they also improve water filtration and the cycle of air and nutrients. This all works together to create a healthy habitat for beneficial microbes, in addition to creating channels for the next crop's roots to reach their full potential.

On top of this, certain cover crops varieties can produce notable amounts of organic matter. In a trial conducted at the Ewing Demonstration Center (EDC) in Illinois, FIXatioN Balansa clover had a green biomass yield of 96,154 pounds per acre. All these components work together to improve the fertility of soil, protecting its production potential for generations to come.

Cover crops can be incorporated into your row crop or forage program, remember that varieties matter. Improved plant breeding has given producers access to high performing plant genetics and the ability to select for consistency of performance to avoid yield and cover ratio variation.

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<https://www.alltech.com/blog/incorporate-cover-crops-plant-and-soil-health>