

INFORMATIONAL SHEET: SOIL HEALTH & CONSERVATION

A survey of 100 farmers by the Soil Health Institute found those who implemented soil health practices reported an average increased net farm income of \$52/acre for corn and \$45/acre for soybeans.¹

Soil health is a Nebraska statewide priority for the Natural Resources Conservation Service (NRCS). Soil isn't just minerals, such as sand, silt, and clay. It is also made up of water, decayed plant residue, organic matter, and air. Healthy soil is porous, which allows for the free movement of air, water, and biological organisms, such as worms and plant roots. When there is little porosity in the soil, and the minerals are pressed tightly together, it is harder for roots to dig into and less absorbent when it rains. This compaction not only makes the land less productive, but also less efficient at absorbing rainwater and nutrients, which can contribute to greater problems of flooding and groundwater contamination.²

When soil is healthy, it improves crop yields and supports the long-term environmental and financial resilience of a farm operation. In addition to an increase in yields, farmers are seeing a reduction in input costs by improving soil health.³ While building and restoring soil isn't an overnight project, the benefits of good soil practices are cumulative. Farming for healthy soil is a good choice economically, but knowing what is right for the farm and managing the upfront costs can be daunting.

CONSERVATION STEWARDSHIP PROGRAM

The Conservation Stewardship Program (CSP) is one of the U.S. Department of Agriculture's (USDA) flagship working lands conservation programs. CSP is designed to reward farmers and ranchers for existing conservation, as well as encourage the adoption of new practices through financial and technical assistance. One of the main priorities of the program is soil health, both building and maintaining. Popular practices include cover crops, extended crop rotations, and no-till. Even if a farmer is already implementing some soil health measures, those practices can help them qualify for CSP and increase the level of conservation.

COVER CROPS

Cover crops are plants that a farmer grows during the off-season to protect the soil surface and build soil health. Legumes and grasses are the most popular cover crops. In 2017, the U.S. Census of Agriculture reported that cover crop acreage in the U.S. grew by more than 8% each year since 2012. Additionally, 15.4 million acres were seeded.

There are several options for cover crop practices under CSP: The basic option, which is available for organic and

non-organic operations, was paid at a rate of \$6.87 per acre in 2021 in Nebraska. This rate increases to \$8.41 per acre when the farmer is using multiple species. For either of these practices, the cover crop should be allowed to grow as much as possible without delaying the planting of the following crop. These cover crops may be terminated using tillage or an approved herbicide.

EXTENDED CROP ROTATION

Extended crop rotation—sometimes referred to as conservation crop rotation—goes beyond corn and soybeans and adds additional years of crop species. Extended crop rotations add in small grains, forage crops, or other summer annuals to protect the soil's surface, enriching it with additional organic matter, controlling soil erosion, and increasing the soil's resilience to weather extremes and pest pressure. Options exist within CSP for a basic rotation or specialty crops, which are available to organic and conventional farmers. Crops must be suited to the soil, and the rotations designed to meet the residue needs of the farm. In 2021, the basic conservation crop rotation was paid at \$1.25 per acre. This number increased to \$21.44 per acre when used for irrigated to dryland rotations.

NO TILL

No-till is when crops are sown into undisturbed soil with plant residue on the surface. The practice helps protect the soil from erosion by minimizing surface disturbance, and it doesn't require an increase in the total nitrogen applied for optimal crop yields. The 2017 Census of Agriculture found that 10.3 million acres in Nebraska were farmed with no-till methods, a 10% increase from 2012. This trend was reflected nationally, where no-till acreage increased 8%. Nebraska currently leads the nation in no-till acres. Within CSP, no-till is done in conjunction with other soil conserving practices, such as cover crops. The practice includes maintaining most of the crop residue on the soil surface throughout the year. In 2020, Nebraska farmers were paid \$2.11/acre for implementing no-till.

CSP BENEFITS

Maintaining and protecting the quality of the soil is a good idea for any farmer, as the benefits are both environmental and economic. There are many practices and enhancements available through CSP, and curating the right combination is a key part of the application process for the program. Soil conserving practices, such as these, are an asset to any farmer who implements them. CSP is a valuable tool farmers can use to increase soil health practices across the whole farm.

¹ "Economics of Soil Health Systems." Soil Health Institute, 2020, soilhealthinstitute.org/economics. Accessed May 2021.

² "Soil Health for Nebraska Wealth, The Nebraska Healthy Soils Task Force Report: Findings Recommendations and Action Plan." Nebraska Department of Agriculture, December 2020, nda.nebraska.gov/healthysoils/HSTF_FinalReport.pdf. Accessed May 2021.

³ "Economics of Soil Health Systems." Soil Health Institute, 2020, soilhealthinstitute.org/economics. Accessed May 2021.