

A Focus on Soil Health - Lake and Sanders County Cover Crop TIP



The wave of soil health is currently sweeping the nation. This producer-driven approach to sustainable farming and ranching is supported by the NRCS and many of our partners. Although soil health trends are increasing nationally, soil health successes are built locally. One of the ways that producers can begin implementing soil health principles in Lake and Sanders Counties is by using cover crops in innovative ways. Implementing cover crops on the forage-based crop and pasture rotations that are commonly utilized in Sanders County and Lake County will require site-specific planning and coordination. This Targeted Implementation Plan will build upon work completed by existing local partnerships. These partnerships have laid the groundwork for this TIP by coordinating on field-trials, Conservation District-run cost-share programs and significant investments in outreach and education. The goal of this TIP is to expand the use of cover crops by over 500% within the two counties over five years as well as increase the awareness of soil health practices within both counties. This outcome-based approach will improve soil fertility, reduce erosion potentials, increase organic matter and soil structure while adding high quality forage to our agricultural operations.

Targeted Implementation Plan Lake and Sanders Counties, Montana 2021-2025

Overview and Background Information

As outlined by NRCS Chief Mathew Lohr, Soil Health is a key priority for NRCS in 2020. According to the 2020 agency priorities, NRCS will “elevate the importance of soil health across our agency’s outreach and communication efforts to further enhance and promote the delivery of soil health principles to staff, customers and partners.” The Ronan and Plains Field Offices will address this priority by leading a Targeted Implementation Plan (TIP) to promote the expansion of soil health principles by encouraging the adoption of soil building principles via the planting of cover crops. The Lake County Local Working Group has also prioritized soil health and soil health is highlighted within both the Lake County’s and Sanders County’s Long Range Plans.

Over the past seven years the Ronan and Plains NRCS Field Offices, along with multiple partners including Lake County Conservation District (LCCD), Eastern Sanders Conservation District (ESCD), Montana Fish, Wildlife and Parks (FWP) and Pheasants Forever (PF) have worked to encourage producers to explore and expand the use of soil-building practices such as reduced tillage, eliminating residue burning and incorporating cover crops in their crop rotations.

Locally, the interest and use of cover crops is slowly increasing within the agricultural community. During the past several years the LCCD and ESCD have worked cooperatively with the NRCS to encourage the use of cover crops by offering a ‘Cover Crop Cost Share Program’. Through this program eligible producers could apply for funding to offset some of the costs associated with planting cover crops on up to 20 acres of cropland. The project is funded by the Conservation Districts while NRCS has provided technical assistance to enrolled producers and Conservation District employees.

Table 1: Lake County and Sanders County Cover Crop Cost-Share Program, 2018 and 2019

<i>Program Year</i>	<i>Number of Producers</i>	<i>Total Acres</i>
<i>2018</i>	<i>6</i>	<i>298</i>
<i>2019</i>	<i>7</i>	<i>150</i>
<i>Total</i>	<i>13</i>	<i>448</i>

This TIP will build upon existing the partnership with the conservation districts by offering a more competitive payment rate through the Environmental Quality Incentives Program (EQIP) for cover crop adoption as well as providing funding for a greater number of acres and participants. The goal of the TIP is to expand the adoption of cover crops within the work unit over a five-year time period. A secondary goal of this TIP is to increase the awareness and education of soil health within the counties. Our partnerships views cover crops as one of the first steps in the progression of adopting beneficial soil health principles. We have found that after producers try cover cropping and begin using them with regularity, they more readily adopt other soil health practices such as reducing tillage, rotating crops and eliminating burning residue from their operation. Our hope is that by encouraging more large-scale adoption of cover crops within our agricultural community we will be able to more effectively sell additional soil health practices in the future. This TIP will provide the first step in what will become a multi-step journey towards wide-spread progressive implementation of soil health principles locally.

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Problem Statement

Soil health has become a key priority for NRCS and has gained great traction within the agricultural community on a national level. The adoption of one of the key components to soil health, cover crops, remains relatively low within the Lake and Sanders counties. It is recognized that cover crops play only one part of an overall larger picture regarding soil health, however, encouraging producers to explore the use of cover crops as an introductory first step forward towards a more aggressive soil health strategy is beneficial. Our work with several local producers who have begun using cover crops has shown this to be true. The producers who have started using cover crops have continued to expand their use and have begun implementing other soil health practices such as improving residue management by reducing tillage and eliminating burning of their stubble. Our hope is that this TIP will expand the number of producers in Lake and Sanders Counties who adopt cover cropping and will lead those producers to progressively implement greater improvements over time.

This TIP will encompass the entirety of both Sanders and Lake Counties. The geographical boundary of this TIP is large; however, the scope of work is well-defined and targeted; cover crops on cropland or pasture. The only times that cover crops will be used on pastures is when the pasture is in poor condition and is being renovated for several years before being reseeded. This TIP will last for five years. It is anticipated that interest in cover crops will increase during the implementation of the TIP. As more producers begin to adopt cover crops it is expected that the role of cover crops within the counties will increase. There is already an interest in cover crops thanks much in part to the existing partnerships that are in place between the NRCS and Conservation Districts. This partnership will be fundamental to the success of the TIP.

As is typically the case, each geographical region has its own unique agricultural challenges which need to be overcome when implementing soil health principles. Lake and Sanders counties are largely forage-based agricultural systems; rotations lean heavily towards perennial forages including alfalfa and/or grass hay or pasture. While the significant majority of cropland follows a forage-based rotation, other commonly grown crops, accounting for approximately 25%-35% of the irrigated lands include wheat, barley, oats, peas, potatoes and corn as well as numerous smaller truck gardens growing diverse market vegetables. Employing cover crops on perennial forage rotations is much different than on row crop rotations where cover crops are more commonly used. Planting cover crops in perennial systems can only be done during renovation years when the perennial crop is terminated. Commonly perennial forages are grown for five to eight years after which they are terminated with herbicide and/or tillage. After termination the fields are typically planted to an annual cereal grain crop such as barley or wheat for several years; after two years of small grains they are replanted to perennial vegetation. Most often hay barley is used during the two years following the perennial crop. The barley is planted in the spring and harvested for hay in mid-July. After harvest the fields are left bare until the following spring when either another small grain is planted, or the field is seeded back to a perennial crop. Through partnership with the LCCD and ESCD, our work unit has implemented a variety of field trials and have found that planting a cover crop after small grain harvest can be very successful in our local climate. Immediately following harvest of the small grain, a diverse cover crop is planted, irrigated and allowed to grow until killing frosts in the fall which typically don't occur until October. Planting a cover crop after small grain harvest can typically provide for a greater than 60-day frost-free growing period for the cover crop which often is enough time to produce 2,000 to 4,000 pounds of above-ground biomass. Our climate zone in Lake and Sanders counties is uniquely hospitable for this type of production opportunity; in other areas of Montana planting a cover crop after grain harvest would rarely be successful. The cover crop can be grazed in the fall or winter allowing ranchers the opportunity to rest other pastures and/or reduce hay feeding requirements. Planting a cover crop after small grain harvest works not only during renovation years on perennial rotations but also works well for many of the small grain producers within the TIP area. Our partnership has

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worked with several local farmers who have begun using cover crops after harvesting their small grains in early August with good success.

Another option for cover cropping is planting a full-season cover crop instead of planting a small grain during renovation years. This full-season cover crop can be grown throughout the summer and fall with multiple grazing events taking place throughout the growing season. One of the tenants of soil health is “keep the soil covered” and “add diversity”. Perennial cropping keeps the soil covered for most of the rotations but during the annual cropping years there are significant periods of time when there are no active plants growing. Adding cover crops will increase the amount of time that the soil is covered by actively growing plants and will add significant diversity to the rotations. Our field trials have shown that planting a cover crop can provide benefits to the soil and wildlife and can also maximize profitability for the producer. The opportunity to obtain multiple benefits from cover cropping makes it very appealing. A small number of producers have begun employing cover crops on a regular basis. Our hope is that by implementing this TIP the number of producers willing to try and subsequently adopt cover cropping as a common practice will increase. As part of this TIP our partnership with LCCD and ESCD will host multiple field days and workshops to encourage adoption of cover cropping and other soil health practices within our agricultural community.

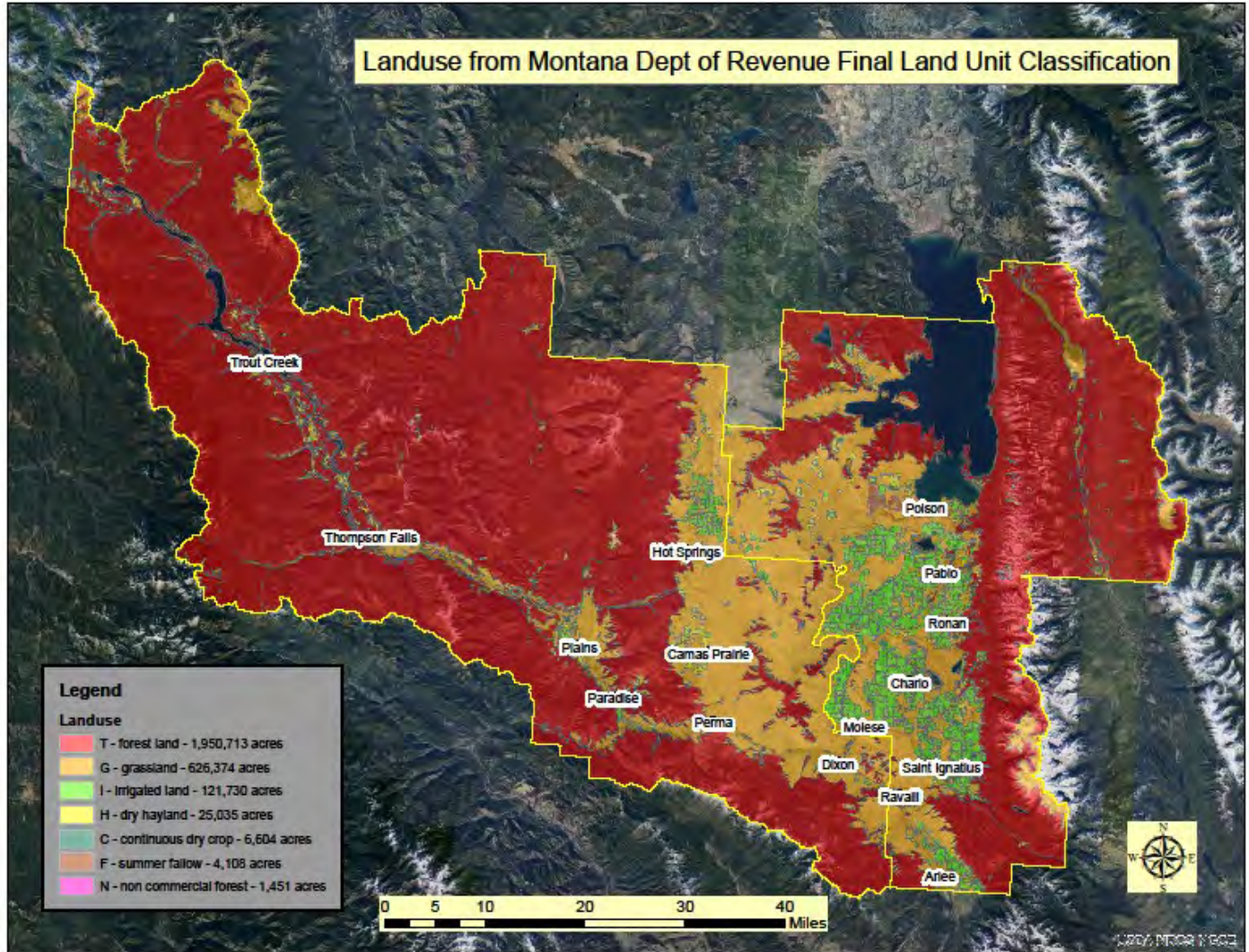
As previously noted soil health is highlighted in both the Lake and Sanders County Long Range Plans as well as the Local Working Groups as being a priority for NRCS assistance.

Targeted Implementation Plan

Lake and Sanders Counties, Montana

2021-2025

Figure 2: Project Area, Lake and Sanders Counties. Eligible lands for this TIP include cropland, hayland and pastureland.



Goals and Objectives

The primary goal of this TIP will be to expand the use of cover crops within the work unit to cumulatively treat over 2,500 acres within the five-year TIP timeframe. Increasing the use of cover crops will reduce bare ground, improve nutrient cycling, reduce erosion, produce increased feed for livestock and build healthier soils. It is hoped that the integration of cover crops into local agricultural operations will be only a first step towards adoption of more soil health principles over time. The primary resource concern addressed with this TIP will be soil organic matter depletion. Secondary resource concerns addressed will include soil aggregate instability, soil organism habitat loss or degradation and wind erosion. The goals and objectives of this project will be completed jointly via NRCS, LCCD and ESCD.

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The expected outputs and outcomes are:

1. Expand the use of cover crops by seeding cover crops on 2,500 total acres during the course of the five-year TIP as shown in Table 2. We anticipate that over 20 landowners will participate in the TIP.
2. Complete Haney Tests to measure and compare changes in soil health indicators such as organic carbon, total organic nitrogen, and overall microbial respiration (activity) on $\geq 10\%$ of the contracted fields before and after implementing the use of cover crops.
3. Increase landowner awareness of cover crops and other soil health principles. Results will be measured by hosting three tours and/or workshops during the five-year TIP and measuring attendance and adoption of cover crops following attendance with a goal of holding events that cumulatively reach more than 200 people.

The footprint of this TIP is large, encompassing both Lake and Sanders counties, however the goals and objectives are narrowly focused. Cropland and pastureland are widely distributed throughout both counties and focusing within a geographical area would not allow innovative producers the opportunity to participate if they are outside of the boundary. Adoption of cover crops by innovative producers is critical to spring boarding adoption on a larger scale. Additionally, because the majority of the land eligible for this TIP (cropland and pastureland) are in perennial hay and forage rotations the opportunity for inserting a cover crop may only arise once every five years during renovation, therefore having larger geographical boundaries for a full five years will increase the number of producers and associated fields that will be able to participate during the lifespan of the TIP. The hope is that this TIP will accelerate the adoption of soil health principles in Lake and Sanders counties by encouraging cover cropping to become a commonly used agricultural practice.

Proposed Alternatives and Actions

1. Alternative 1: No action will occur. NRCS will not provide financial or technical assistance to producers to implement soil health strategies. It is likely that if this alternative is selected that the level of implementation and adoption of soil health principles within the work unit will remain relatively unchanged from current conditions during the next five years.
2. Alternative 2: Chosen Alternative. The chosen alternative will be to implement the use of cover crops on 2,500 acres over the course of the five-year TIP project. NRCS will assist by providing both technical and financial assistance to producers through EQIP to assist with planting cover crops on private lands. Cover Crops (practice code 340) will be the only contracted practice for this alternative. It is expected that alternative two will provide the highest likelihood for expanded use of cover crops and soil health principles within the work unit over the next five years.

Alternatives will be analyzed in compliance with the National Environmental Policy Act (NEPA). All practices chosen for implementation will meet NEPA requirements. Special consideration will be given for practices affecting T/E species, such as Canada Lynx and Bull Trout, to meet all federal regulations and NRCS policy requirements. Any cultural resources present will be identified and avoided during the planning and implementation of practices involving any federal action.

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Partnerships

The following partners will provide both direct and indirect assistance with this Cover Crop TIP:

- Natural Resources Conservation Service – Ronan Plains and Pablo Field Offices
- Lake County Conservation District (LCCD)
- Eastern Sanders Conservation District (ESCD)
- Intermountain West Joint Venture (IWJV)

LCCD and the Ronan Field Office have had a longstanding partnership coordinating on conservation efforts. LCCD has received funding for a partner position with NRCS through the National Association of Conservation Districts Technical Assistant Grant. They have hired a Resource Conservationist who works primarily on NRCS-related work including EQIP, CSP, and providing technical assistance to community members. This position also serves as a liaison between NRCS, LCCD and ESCD and will provide ‘boots-on-the-ground’ assistance towards implementation of the TIP. LCCD and ESCD have also committed to investing in this project by hosting and promoting outreach events, providing funding for Soil Health Assessments (Haney Tests) and communicating with producers interested in the EQIP program.

Intermountain West Joint Venture (IWJV) has assisted with this project by providing funding to LCCD to hire a Resource Conservationist (RC). This RC has assisted both NRCS and LCCD with development of this TIP. The RC position will continue to provide technical assistance to assist in implementing this TIP. IWJV will also aid developing outreach materials for the TIP. Posters, fliers, and publications will be created with the assistance of IWJV in order to educate and advertise for the TIP in the work unit.

Implementation and Outreach Efforts

This TIP will last for five years. It is expected that interest in the program will increase over time as more producers become aware of the program and understand the benefits that cover crops can provide.

Table 2: Total Anticipated Acres/Year Enrolled in the TIP

<i>Practice</i>	2021	2022	2023	2024	2025	Total
<i>Cover Crop (340)</i>	250 ac	500 ac	750 ac	750 ac	250 ac	2500 ac

Table 3: Total Anticipated Acres/Year Enrolled in the TIP by land use

<i>CONTRIBUTIONS (HRS)</i>	2021	2022	2023	2024	2025	TOTAL
<i>Hayland</i>	50	100	200	200	50	600
<i>Cropland</i>	150	300	350	350	150	1300
<i>Pasture</i>	50	100	200	200	50	600
<i>Totals</i>	250	500	750	750	250	2500

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Table 4. NRCS Budget Projections, assume average cost of \$55/ac

<i>CONTRIBUTIONS</i>	2021	2022	2023	2024	2025	TOTAL
<i>NRCS EQIP FA</i>	\$13,750	\$27,000	\$41,250	\$41,250	\$13,750	\$137,500

Table 5. Anticipated NRCS Technical Assistance (TA) Deliverables

<i>CONTRIBUTIONS (HRS)</i>	2021	2022	2023	2024	2025	TOTAL
<i>Outreach</i>	40	40	40	40	40	200
<i>Planning</i>	160	200	200	200	160	920
<i>Implementation/Certifications</i>	40	60	80	80	40	300
<i>Totals</i>	240	300	320	320	240	1420

Table 6. Anticipated Combined LCCD and ESCD Technical Assistance (TA) Deliverables

<i>CONTRIBUTIONS (HRS)</i>	2021	2022	2023	2024	2025	TOTAL
<i>Outreach</i>	40	80	100	100	40	360
<i>Planning/Implementation</i>	160	200	200	200	160	920
<i>Totals</i>	200	280	300	300	200	1,280

Ranking

Screening tools and ranking questions will be used to prioritize areas within the work unit based upon interest levels of potential applicants as well as the priorities of our partners.

Potential Ranking Questions:

1. Will the planned cover crop contain at least four different species from at least 2 functional groups?
2. Will the planned cover crop be in place for greater than 90 days during the growing season (growing season is May thru September)?
3. Will the cover crop be grazed?

Progress Evaluation and Monitoring

Evaluation and monitoring will take place on an annual basis. NRCS and partners will analyze interest levels, implementation rates, and staff availability to plan and direct workloads. Each contracted practice will be overseen by field office staff with certifications being made upon completion, contingent on practices meeting NRCS standards and specifications. Progress will be recorded in Conservation Desktop and Protracts or other appropriate databases.

Progress toward meeting the stated goal planting cover crops on over 2,500 acres will be measured based on the total acres planted each year during the five-year lifespan of the TIP.

Progress towards meeting the goal of improving outreach and education of over 200 individuals will be measured by tracking the number of events, attendance at events and one-on-one landowner communications.

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