

Project Partners



The Winter Cover Story
*or how to keep soil on the farm . . .
and out of the river*

What is Winter Cover? (hint: it isn't snow!)



Winter Cover can be described as agricultural conservation practices that address cropland erosion by minimizing open ground during the non-growing season. The Southern Aroostook Winter Cover Project supported two such conservation practices: (1) planting winter cover crops on active farm fields harvested earlier in the season (August/ September) and (2)



mulching fields harvested later in the season (late September/October). We used a bench mark of Aopen ground@ as any farm field with less than 30% ground cover after harvest. Implicit in this definition of Aopen ground,@ the cover crop and mulching rate has to reach a minimum of 30% ground coverage to be effective. These winter cover practices reduced soil erosion by an estimated +/- 40% resulting in a significant drop in tons of soil lost off farm fields and delivered to the river and other bodies of water.

Spring varieties of small grains (oats, barley and winter rye) are good choices for winter cover crops. They establish a root system relatively quickly in the fall and do not survive to create weed problems in the spring. Straw and hay are the practical choices for mulching fields.

These practices reduce the physical impact of snowmelt and storm events with the added

Farmer(s)	Year(s) Participated	
	Mulching	Winter Cover Crop
David & Robert Bartlett	2004, 2005, 2006, 2007	2007
Robert Britton	2005, 2007	2004
Barry Campbell		2004, 2005, 2006, 2007
Dexter Cowperthwaite	2004	
Daniel Corey	2004, 2005, 2006, 2007	
Joel Duff	2007	
Albert Fitzpatrick	2004, 2005, 2006, 2007	2004, 2005, 2006, 2007
Donald Fitzpatrick	2004, 2005, 2007	2003, 2004, 2005, 2006, 2007
Doug Fitzpatrick	2004, 2005, 2006, 2007	2007
Erica Fitzpatrick		2004
Leo Fitzpatrick	2004	2003, 2004
Matthew Fitzpatrick	2005	2004
Michael Fitzpatrick	2004, 2005, 2006, 2007	2003, 2004, 2006, 2007
Jerry Flewelling	2007	
Michael Gough	2006, 2007	2003, 2004, 2005, 2006
Dale T. Henderson		2006, 2007
Lilley Farms	2007	2007
Blaine Lincoln	2007	
John Lincoln		2006, 2007
Joseph McGillicuddy	2007	2006
Gerald Miller	2005	2006, 2007
Mark Nason	2007	
E.W. Nightingale & Sons		2006, 2007
Joel Oliver	2006, 2007	2007
Randy Quint	2007	
Greg Schools	2004,2005	
Roger & Greg Sherman	2006	
Arthur Sloat		2004, 2006
Kirk Wilson	2006, 2007	
David Winship	2004, 2005, 2006, 2007	2004
Dana Wright		2006, 2007
Jonathan Wright		2006, 2007



Our Success Story

Soil Saved by implementing cover crop and mulching practices:

2003 - 6 dump truck loads



2004 - 36 dump truck loads



2005 - 34 dump truck loads



2006 - 79 dump truck loads



2007 - 108 dump truck loads!



Total Saved: 263 dump trucks or 3,970 tons of soil!

advantage of improving soil quality. Improved soil health leads to a reduction in soil erosion and improved water quality. Improving soil quality also provides both short and long-term improvements in crop yields thus offering farmers a market-based incentive for implementing these practices.

Another benefit of adding organic matter to the soil helps to create soil conditions that improve crop water availability and overall soil health. This is particularly true in areas such as Aroostook County where there are many barriers to irrigation and soil health that are necessary elements of potato production to meet the needs of the potato markets.

The Story of the Winter Cover Project:

The Winter Cover Project was a five (5) year effort designed to support winter cover conservation practices in the Meduxnekeag Watershed. Initiated in 2003, this project tells a story full of strong partnerships, effective outreach, and the sustained commitment to improving water quality and conserving farm soil in the Meduxnekeag Watershed.

The basic approach of this project was to offer cost share payments to farmers for the application of a cover crop and/or mulch after harvest as part of an comprehensive strategy that included informal social networking and formal education and outreach to introduce and encourage the wide spread use and adoption of these practices. Neither practice was used by farmers in the Meduxnekeag Watershed nor anywhere else in Maine. Farmers in Prince Edward Island, Canada, however, had successfully applied these practices for 10 years and provided the initial inspiration for this project.

A grant from the United States Environmental Protection Agency helped bring together 5 project partners who together made this project a reality.



Project Partners included University of Maine Cooperative Extension (UMCE), Southern Aroostook Soil and Water Conservation District (SASWCD), Natural Resource Conservation Service (NRCS), Maine Department of Environmental Protection (MDEP), and the Houlton Band of Maliseet Indians (HBMI).



In 2002, SASWCD and Cooperative Extension representatives recruited 6 area farmers who farm approximately 2000 acres near the Main Branch of the Meduxnekeag River, to apply cover crops and mulch on their fields over a three-year period. These farmers,



Before

leaders in the local farming community, farm relatively large acreages of active potato fields in the areas of most concern.

Their willingness to adopt the winter cover crop and mulching practices helped to spread these practices to smaller farmers located further up in the watershed.



After

Main Stem of Meduxnekeag River - before and after a rain storm showing the need for erosion control projects

Choice of seed crop: Oats and barley worked well and provided excellent coverage when applied at the optimum seeding rate. It was also noted that winter rye and winter wheat could result in weed issues when spreading, but has advantages as a good green manure plow down in the spring. Just as with mulch, it would be of interest to see what affect applying two to three times the seeding rate would have on soil erosion and total soil health. Maybe these scenarios could be evaluated in a future grant.

*How ya gonna keep soil down on the farm,
after the winter rain?*

*How ya gonna keep soil out of the stream;
turning it brown,
bringing it down?*

*How ya gonna keep soil away from harm?
That's no mystery:*

*You can cover them up with mulch or a crop
That'll slow the rain and snow; erosion will stop.*

*How ya gonna keep soil down on the farm
after the rain, after the snow, after the winter rain?*



(Sung to the tune of "How 'Ya Gonna Keep 'Em Down On The Farm After They've Seen Patee?" by Sam Lewis and Joe Young, World War I era song. New words, by Sharri Venno)

One farmer noted mulching during an extremely wet fall can result in potential germination problems. He stated that he had some germination, but what he gained in erosion control was superior to any problems he had with germination.



Access to hay/straw was important - It took sometime for farmers to find reliable sources of hay and straw for the mulching practice. The Winter Cover Project might have progressed faster if that issue had been addressed at the outset. SAWCD did add a hay/straw exchange site on their website to facilitate access. Ultimately, the mulching practice created a market for hay/straw growers in the area.

Type of mulch used influences quality of bale and mulch coverage - The weight and age of the bales used were a factor in the level of coverage and speed at which the mulch could be applied. All mulch participants stated that hay put out better coverage than straw because hay bales are much heavier. However, hay that was two and three years old was too broken down which made for a slower application. Despite this, participants did not have a problem achieving the minimum coverage of 30 percent needed. It was also stated that there was no need to supplement nitrogen when using hay as it has enough to help facilitate the decay process, however straw does not.



Tightly wrapped round hay bales (average weight of 750#) worked best when applied at 2 bales per acre at the proper spacing and wind conditions provided the best coverage. It would be interesting to see what affect applying two to three times this rate would have on soil erosion and total soil health.

The Project Partners convened a Steering Committee to guide and track the progress of the Winter Cover Project. Farmers Advisory Committee was also devised to provide feed back regarding farmer recruitment and the application of winter cover. As part of the project, UM Cooperative Extension established a six (6) acre demonstration plot for both mulch and seeding practices. In addition, two (2) replicated trial studies (for both the mulching and winter cover crop practices) with two (2) participating farmers were undertaken.

UMaine Cooperative Extension combined their resources with the USDA's Agricultural Resource Service to complete a study of Options for Reducing Erosion and Phosphorus Losses in Potato Systems that included the two winter cover practices of increasing straw biomass and inter-seeding barley before potato harvest.

A total of seventy-three (73) people attended four annual seminars as part of an ongoing Houlton Agricultural Seminar Series (a.k.a. Winter School). These seminars provided area farmers with information regarding the funds available to support winter cover practices, explanations of the science behind these practices and encouraged farmer project participation by demonstrating the tangible benefits of winter cover.

Thirty-six (36) people signed up (although 50 to 60 people attended per an informal headcount) a winter cover field day in 2006. That event included a rain simulator station (shown here) that illustrated the value of both cover practices in retaining farm soil during storm events.

The project partners reached the goal of 33 farmers (overall)



Winter School participants

participating in winter cover practices. The original goal of 10,000 acres in winter cover was surpassed with a total of 13231.73 acres enrolled in the project. These goals took 2 years longer to reach than the originally proposed study period of 3 years; which confirms that the integration of new agricultural conservation practices into long-standing farming systems takes time despite extensive outreach, education and cost share incentives, but can, in the end, be successful.



Winter Cover Acreage Report 2003-2007

Year	Cover Crop		Mulch		Total	
	Acres	Growers	Acres	Growers	Acres	Growers
2003	285.0	4	n/a	n/a	285.0	4
2004	942.1	11	942	9	1883.5	15
2005	504.5	4	1215	11	1719.5	13
2006	2351.46	13	1570.3	13	3921.73	20
2007	2303.69	15	3118.28	17	5421.97	32

Genesis of the Winter Cover Project - How did it all begin?

Back in 2002, a group of interested individuals and organizations met at the Southern Aroostook Soil and Water Conservation District Office to develop a project to submit to the Environmental Protection Agency's (EPA) Watershed Initiative Program. Their main focus was to address water quality problems in the Meduxnekeag Watershed.

Representatives from the SASWCD board and personnel, Natural Resources Conservation Service (NRCS), UM Cooperative Extension, Maine Department of Environmental Protection, Meduxnekeag Watershed Coalition, Organization for Watershed Living, and the Houlton Band of Maliseet Indians met to begin developing the project.



Matt Williams, Project Founder

This collaboration, in part, resulted in the Winter Cover Project; designed to keep productive agricultural soil on potato fields (especially during winter thaws and spring runoff) and out of the tributaries and main branches of the Meduxnekeag River.

Role of the Houlton Band of Maliseet Indians

Once the plan for the Winter Cover Project was formulated, the Houlton Band of Maliseet Indians agreed to write and submit a project proposal on behalf of the SASWCD and other cooperators to the U.S. Environmental Protection Agency (EPA). The Tribe also co-sponsored the proposal along with the State of Maine.

After the grant proposal was approved and funded, the Tribe became responsible for managing the grant and working with the District and other project partners to ensure the success of the project.



So, what did we learn?

Weather (as with any farming practice) is a factor - Significant rainfall during the Fall of 2005 made harvest difficult. Many of the interested growers were unable to get a winter cover crop in the ground in time to establish growth before winter set in. However, the number of growers taking part in the mulching program in 2005 increased as the practice could be applied through snowfall in late December.