CHOOSING COVER CROPS AND SEEDING DATES

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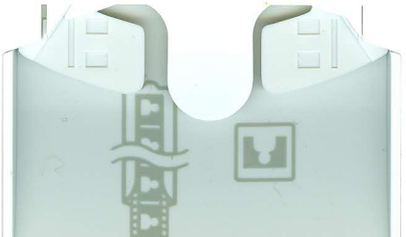
Management for wind and water erosion control involves alternative practices that are flexible and practical in reducing soil erosion. They are based on maintaining good soil structure, protection of the soil surface by adequate crop and residue cover, and the use of special erosion control practices where necessary. Adherence to soil conserving practices will do much to enable farmers to continue to maximize crop yields, minimize soil erosion, and also enhance the quality of surface water.

Growing the appropriate crops on soils is important. Crops can improve or detract from good soil structure. Whether a field is sod-covered or open, some soil moves down the slope every time it rains. Crops help reduce the erosive forces of water and wind by means of their canopy intercepting rain and acting as a windbreak to soil blowing. Root systems stabilize the soil and therefore reduce losses. Crop residues in addition form small dams which help retain the run-off water, reducing erosion.

Soil loss is worst in winter and spring. The use of winter cover crops on cropped soils is the prime way to reduce this soil loss. Fallow land has the highest erosion potential of any cropping system. Row crops such as corn reduce this potential by half but this can still be excessive. Use of a cover crop of winter rye or winter wheat in between successive corn crops has been shown to reduce soil loss by as much as 40% compared to continuous corn. A good rotation can reduce soil loss by water erosion and, at the same time slow buildup of insects and diseases encountered in a continuous cropping program. On farms where rotations do not appear practical, other management factors, including cover crops, should be considered.

In 1981 four winter cover crops, Garry oats, Balbo rye, Aroostook rye and Ticonderoga winter wheat, were established in Amherst on three sowing dates, August 27, September 24 and October 22. Seeding rate was based upon the number of viable seeds equivalent to a 2 bushel per acre seeding rate for Garry oats. Effectiveness of the crop to cover and protect from soil loss was measured by sampling for spring aboveground dry matter accumulation at two dates and by visually rating for cover and winterkill. The first sampling date, April 30, 1982, was selected to sample dry matter accumulation up to the last possible plowing date for early planted corn. The second date, May 18, corresponded to dry matter accumulation up until the time of plowing for mid to late planted corn. Visual ratings for cover were based upon a sliding scale where 0 represents no cover, 3 represents 40-50% cover, and 5 represents more than 85% cover. Visual rating for winterkill was based upon a scale where 1 represented all winterkilled, and 5 represented no winterkill. These ratings were taken by four persons on May 4, 1982.

Table 1 shows the dry matter yields for both spring sampling dates. There were no differences among the replicates but there were marked differences among the cover crops and planting dates. Dry matter accumulation was greatest in the earlier planted crops for all species. Oat was completely



killed by frost in the fall but measurable dry matter did accumulate in the earliest planting while the last planting only had one leaf emerged before it was frosted or covered by snow.

Table 1. Cover crop dry matter production and ratings for cover and winterkill.

Crop	Date	Dry Matter* on April 30	Dry Matter* on May 18	Cover† Rating	Winterkill¶ Rating
Garry Oats	Aug. 27	967	934	3.4	1.1
	Sept. 24	-	-	2.5	1.2
	Oct. 22	-	-	0.9	1.0
Balbo Rye	Aug. 27	1182	5379	4.4	2.8
	Sept. 24	728	4631	2.7	2.2
	Oct. 22	216	1267	1.1	3.2
Aroostook Rye	Aug. 27	1911	6454	4.6	3.4
	Sept. 24	1063	5169	2.8	4.4
	Oct. 22	196	1902	1.3	4.7
Ticonderoga Winter Wheat	Aug. 27	898	3082	4.2	3.7
	Sept. 24	411	1813	2.1	4.2
	Oct. 22	149	702	1.3	3.4

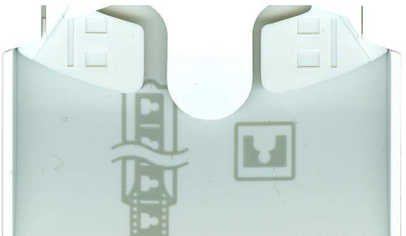
* Dry Matter, lb/ac.

† 0 = no cover; 3 = 40-50% cover; 5 = >85% cover.

¶ 1 = all winterkilled; 5 = no winterkill.

Aroostook rye appeared to have a growth advantage over the commonly grown Balbo rye but this was small compared to the Ticonderoga winter wheat which accumulated less than 50% of the dry matter of the ryes and compared to the negligible oat dry matter accumulation. This difference between the ryes is probably related to low temperature tolerance since the Balbo rye had more winter injury than the Aroostook rye (Table 1). Survival of the wheat during this year of winterlong snow cover was intermediate between the ryes.

As cover crops each species only provided near adequate cover from the earliest planting on August 27 (Table 1). Even at this planting date the growth of oats was sufficient to leave a dead mulch which provided approximately 60% soil coverage. The September 24 plantings provided less than 30% cover irrespective of crop and some of this cover was only provided during the latter part of April. The October 22 planting provided less than 10-15% cover and this was entirely unsuitable.



The harvest schedule for corn silage of some growers may not permit the establishment of cover crops on all fields, but it is possible to get cover crops established on earliest harvested fields. Farmers are encouraged to shorten the time period between corn silage harvest and cover crop establishment. Aerial sowing of rye while the corn is still immature has been tried by farmers with varying degrees of success. Some innovative farmers have devised methods for cover crop planting and establishment during the operation of harvesting corn silage.

Harvesting the corn and getting winter cover established early on the steepest corn fields would be a positive step toward reducing erosion. The correct choice of corn hybrid and planting first fields most prone to erosion can allow the corn harvest to be completed before the planting deadline for winter cover crops.