



Forage Management

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January, 1995

WINTER COVER CROPS

Cover crops are valuable tools in many kinds of agricultural production. They find their greatest use in horticultural and home garden practices but should be used any time the soil will be bare for more than a few weeks. The name "cover crop" suggests one of the functions of a cover crop but does not fully describe all its functions.

Any crop covering the soil protects it from erosion, moderates the temperature and inhibits weed seed germination and growth. Most West Virginia cropland is on sloping soils. It's very important to keep it covered over winter to avoid the development of rills and small gullies and to prevent loss of nutrients by erosion. Grass winter cover crops also prevent leaching loss of nitrogen and other nutrients over the winter period. Prevention of nitrogen leaching is especially important. Well fertilized cropland may have a lot of valuable nitrogen left at the end of the growing season. If there is nothing growing over winter to use the nitrogen, it will likely be leached below the root zone before the spring planting season. A grass cover crop will capture this nitrogen, incorporate it in its tissues, and then release it when the cover crop is plowed under the following spring. This "left-over" nitrogen is saved for the next crop instead of allowing it to leach into the ground water.

Cover crops are helpful in maintaining soil organic matter. While they are in place they protect the soil from organic matter loss by erosion and exposure to high temperatures. When the cover crop is added to the soil it will be converted into soil organic matter. One-time use of a cover crop will not have much impact on soil organic matter content. Regular use over a period of years will slowly raise the organic matter level in the soil. Perhaps the most beneficial short-term effect of a cover crop is increased activity

of soil organisms. Earthworms, fungi and a variety of organisms attack the freshly added organic material. Their by-products are in turn used by other organisms in the soil. This biological activity brings about increased soil aggregation and improved structure and tilth.

Choosing a Cover Crop

A range of species is available to use as cover crops. The most common crops used are winter small grains. These have the advantage of making rapid growth, have good winter hardiness and seed is readily available throughout the state. Some, particularly winter rye, may be somewhat difficult to manage in spring because, if turned under too late, they tend to decompose slowly and compete with planted crops for available nitrogen. Some legumes also may be used as winter cover crops. Their greatest disadvantages are they are less winter hardy than grasses. In addition, they are not as effective in preventing erosion and are not effective in reducing leaching loss of left-over nitrogen. Their primary advantages are that they add significant amounts of available nitrogen to the soil and have a more favorable effect on soil tilth than grasses.

The choice of the most suitable cover crop depends on many factors. On level land where the cover crop can be seeded early, crimson clover or hairy vetch plus a small grain would be good choices. Where later seedings are necessary, use the more cold-hardy species.

Triticale is a new crop which was developed by crossing wheat and rye and has characteristics intermediate between its parents. Varieties vary in the extent to which they resemble the wheat or rye parent. All of them tend to be more cold-tolerant and herbicide-tolerant than wheat.

Cover Crop Establishment

Cover crops may be established by broadcasting seed in the standing crop before it is harvested, or on a prepared seedbed, or by drilling with a conventional or no-till drill. If the seed is broadcast into a standing crop, about 25 to 50 percent more seed must be used to allow for poorer establishment that is

likely to occur with this method. When seed is broadcast on a prepared seedbed, it should be lightly disked or dragged and cultipacked to improve establishment and avoid attracting birds. It is a good idea to use certified seed. If you use feed grade seed, you do not know what the germination will be or what weeds you will be bringing to your cropland.

Summary of Cover Crop Characteristics

Crop	Latest Seeding Date*	Best Feature	Worst Feature
Annual ryegrass	1 September	Fine, dense, decomposes readily	Not winter hardy, poor drought tolerance
Barley	20 September	Small, matures very early	Moderately winter-hardy
Wheat	10 October	Leafy, not likely to mature too quickly	May become too large
Triticale	15 October	Rapid growth, cold-hardy	May become too large
Rye	20 October	Legume, adds nitrogen	Winter kills if not seeded early
Crimson Clover	20 August	Legume, adds nitrogen	Winter kills if not seeded early
Hairy vetch	1 September	Legume, adds nitrogen	Makes growth late in spring, hard seed carry over like a weed

* Latest date for acceptable winter cover. Rye or triticale could be seeded up to mid-November and survive, but the advantage of winter cover would be sacrificed.

Suggested seeding rates are as follows:

Crop	Seeding rate
Annual ryegrass	25 lbs.
Barley	100 lbs.
Wheat	120 lbs.
Triticale	100 lbs.
Rye	100 lbs.
Crimson clover	20 lbs.
Hairy vetch	20 lbs.*

* (plus 60 lbs. winter wheat).