

Renovation and Interseeding of Grasses and Legumes

by John Fouts

In this article, the terms interseeding and overseeding are used interchangeably. Often, it is desirable to interseed as either a method of changing the composition of a forage or as a method of renovation. The need for renovation could result from a worn-out or overgrazed situation, from putting a Conservation Reserve Program seeding back into use, or from a partial seeding failure. Over time, alfalfa stands decline due to natural thinning, disease, winter injury, machinery traffic, frequent cutting, heat stress, and rodents. As stands decline, weed control becomes increasingly difficult, because weeds invade areas left open due to dying alfalfa. Eventually, the yield and forage quality decline, and a decision must be made whether to keep or remove the alfalfa.

Sometimes, removing the stand and rotating to another crop is not desirable, because rotation crops may not be as profitable. Overseeding another forage species into a depleted alfalfa stand can extend stand life and improve the yield and marketability of the hay.

Generally, the difficulty with mixed stands is the difference in dominance, in performance, or in establishment rate of one species over another. Another problem arises from differences in fertility requirements. Grasses need nitrogen. Legumes fix nitrogen from the air in root nodules. If a grass/legume mix is fertilized for the grass production, the result is essentially that the legume becomes “lazy” and rather than fixing nitrogen, it uses nitrogen applied for the grass. This can result in diminished vigor of both the grass and the legume.

Overseeding grasses into alfalfa usually creates a mixture of hay that has a lower nutritional value than alfalfa hay alone. This hay is generally not suitable for lactating dairy cows, but is acceptable for dry cows and appropriate for horses or other livestock. Also, grass-alfalfa mixtures, especially mixtures with cereals, produce higher yields than legume-alfalfa mixtures.

Allelopathy is the release of chemicals by certain plants that inhibit the growth of competing plants. Autotoxicity is a form of allelopathy that inhibits germination of the same plant species. Alfalfa has an autotoxic effect on seedling alfalfa. This is why it has generally been recommended to rotate out of alfalfa to a grain crop for a couple of years before reseeding alfalfa. Research has shown, however, that there is little or no harmful effect of autotoxicity if seedlings are made at least several weeks after plowing or spraying old alfalfa with glyphosate (Roundup) to kill it. The lack of any significant autotoxicity with delayed seeding indicated that seeding failures can be reseeded if there is an interval of at least two weeks after plowing or tilling, or three weeks after glyphosate application. Allelopathy doesn't seem to be a problem between most grasses and legumes.

Seedbed preparation is very important for successful establishment of any overseeded crop in alfalfa. Usually, a minimum amount of tillage is required. The biggest problem with interseeding grass or legumes into established stands of the other is the competition for space, nutrients, and moisture. Obviously the established crop has the advantage because of its existing root system.

To give the newly-seeded forage component a fair chance of establishment, the existing stand must be handicapped in some way. This can be accomplished by a fairly aggressive tilling that does not completely eliminate the established stand. A springtooth harrow or a light disk can do a good job. Timing of seeding is especially important to ensure that there is moisture available for the new seedlings. Seed coverage of ¼ - ½" is important for seed to soil contact and moisture availability to the seedling. This can be accomplished with a drill with depth control or by broadcast seeding followed by a light dragging with a section of chainlink fence. Spike-tooth harrowing will usually bury the seeds too deeply.

There are circumstances during alfalfa establishment that may create less-than-optimal stands just after seeding. Seedling stands with a population that falls below 10 plants per square foot may be a good choice for overseeding. When overseeding is timed so that existing alfalfa plants are still small, less than six inches (15 cm) tall, and adequate soil moisture is available for germination, the success rate is high. Successful planting practices have included the use of a disc-type grain drill (or no-till drill) without tillage to place seed ½ to ¾ inch (12.5 to 19 mm) deep, with minimal disturbance of existing plants. If broadcast seeding methods are used, the seed should be pressed into the soil with a smooth or ring-type roller. Use of a spring or spike-tooth harrow is not recommended, since it can remove or damage many young plants that have less than a six-inch (15cm) root.

Sod seeding employs application of glyphosate to burn back the established forage and reduce competition. This effect can also be achieved by severe grazing. Planting in this method is done with a drill. Broadcast seeding will not provide the desired seed to soil contact. Overseeding can also be done using a conventional grain drill without seedbed preparation, provided the soil is sufficiently soft to allow penetration by the drill and covering of the seed. It is important to overseed into the stand as soon as possible after the problem is identified. Overseeding should occur when the existing plants are small.

Large alfalfa plants create greater competition and allelopathy with the emerging seedlings.

The key to preventing the need for renovation is good pasture management. Controlled grazing with adequate rest periods for the pasture and a proper stocking rate should be some of the main tools in pasture management. Overgrazing will deplete the vigor of a plant. More information on good pasture management can be found in the WSU Extension publication EB1297, *Pasture Management Guide for Northeast Washington*.

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