

KEYS TO ALFALFA ESTABLISHMENT IN HIGH-YIELDING SILAGE CORN

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Alfalfa has often been replaced in rotations by corn silage, in part because corn produces greater forage dry matter yield than alfalfa. First year yields of spring-seeded alfalfa are particularly low, often being one-half that of subsequent full production years. Planting small grain, grass, or legume companion crops with alfalfa can modestly improve forage yields in the establishment year, but seeding companion crops with alfalfa often reduces forage quality. Thus, new approaches are needed to increase the yield of alfalfa, especially during its first year of production.

One way to bypass the low yielding establishment year would be to interseed alfalfa into corn to jumpstart full production of alfalfa the following year. When successfully established, first year dry matter yields of interseeded alfalfa are 1.6- to 2.25-fold greater than conventionally spring-seeded alfalfa. During and after establishment, interseeded alfalfa also serves as a cover crop to reduce soil and nutrient loss from cropland. Unfortunately, this system has been unworkable because traditional intercropping methods require producers to plant corn at low density (sacrificing high silage yields) to allow reliable establishment of alfalfa.

Therefore, scientists at the USDA-Agricultural Research Service, the University of Wisconsin and other institutions are working to develop reliable methods for establishing alfalfa in high yielding silage corn. During the course of this work in Wisconsin, it has become apparent that successful establishment of alfalfa in corn can be greatly improved by applying growth altering and protective agrichemicals on alfalfa seedlings. Good alfalfa establishment and high yields of corn silage can also be ensured by proper field selection and preparation and by using good weed control, adequate nitrogen fertilization, adapted alfalfa varieties, suitable seeding rates, and appropriate planting and harvest dates. In ongoing work, we will identify corn hybrids that are best suited for interseeding and will further refine management practices to ensure interseeded alfalfa production systems will be reliable, high yielding, and profitable for farmers.

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