

Interseeding alfalfa into silage corn

CURRENT RECOMMENDATIONS



*When trying new practices,
it's always a good idea to
start small!*



Over the last decade, scientists at the USDA-Agricultural Research Service, the University of Wisconsin, Michigan State University and Penn State University have been developing reliable methods for establishing alfalfa into a high yielding corn silage companion crop. Based on this work, the following represents our current recommendations for implementing this practice on farms. Establishment of alfalfa by interseeding into corn has:

BENEFITS

- Up to 2-fold greater 1st year alfalfa yield compared to conventional spring-seeded alfalfa and greater overall forage production from corn silage-alfalfa rotations
- Profitability of corn silage-alfalfa rotations increased by 7–15% under typical production conditions
- Soil and nutrient loss from cropland decreased by 37–87% due to greater soil cover provided by interseeded alfalfa

CHALLENGES

- Competition from interseeded alfalfa seedlings can reduce corn silage yield by 0–15%
- Wet soil conditions during corn silage harvest can damage alfalfa stands
- 1–2 extra passes are required for agrichemical application to ensure establishment of alfalfa

Field characteristics and soil fertility

Good establishment of both crops is essential



- The site must be suitable for good alfalfa production:
 - ✓ Soil pH of 6.6 or greater with good drainage
 - ✓ Smooth, firm seedbed, free of excessive residues
 - ✓ Not routinely wet or easily rutted during corn silage harvest
- To ensure good corn production:
 - ✓ Apply phosphorus, potassium, boron and sulfur (based on soil test results) to meet nutrient needs of both corn silage and seeding-year alfalfa
 - ✓ Apply up to 40% of N in starter fertilizer in 2 x 2 placement along corn row. Deep banded fertilizer or manure under the corn row might be a good alternative.
 - ✓ Total N rate from fertilizer and manure should be at the upper end of Extension recommendations for corn silage

Proper timing

Balancing competition between corn and alfalfa is important, consider soil temperature, soil moisture and planting timing



- If corn is planted early under cool conditions (minimum soil temperatures are below 50°F), delay interseeding until the corn V1 stage to lessen competition from alfalfa.
- Warmer conditions favor growth of late-planted corn, so alfalfa should be interseeded within 3 days to allow sufficient growth before corn canopy closure.
- Corn & interseeded alfalfa can compete for moisture early in the growing season:
 - ✓ If the soil profile is extremely dry and rainfall is not expected after planting, either irrigate after interseeding or do not interseed
 - ✓ Interseeded alfalfa improves water infiltration into soil, so dry mid- or late season conditions usually have little impact on alfalfa establishment or corn silage yield



Corn hybrid, seeding rate and harvest considerations

Hybrid selection and plant populations are important



- Use an early to mid-season hybrid for an anticipated harvest by early September to allow interseeded alfalfa adequate time to prepare for winter.
- To provide a good balance between satisfactory alfalfa establishment and good corn silage yields, plant corn to provide a final population of 26,000 to 32,000 plants/acre. Use lower corn populations until you gain experience with this production system.
- Harvest corn at the proper moisture for ensiling.
 - ✓ Avoid harvesting if fields are wet and easily rutted; follow UW-Extension recommendations to minimize soil compaction

Alfalfa establishment

Varieties vary in their performance in interseeded systems



Previous studies in Wisconsin have shown good success with the following alfalfa varieties:

55H94, 55H96, 315LH, Magnagrazee II, Magnum Salt, Hybriforce 3400, Hybriforce 3420, 54Q14, 55V50, FSG403LR, FSG329, Spredor 5, WL359RR.LH, RR Vamoose, 431RRLH, FSG430LH.RR, 55VR08, 54VR10, L-451APH2+, L-457HD+ and Hybriforce 4400

- Alfalfa varieties vary considerably in performance in this system, make sure you plant a variety that is documented to be effective.
 - ✓ Alfalfa varieties with high resistance to *Aphanomyces* races common in your area should be used
 - ✓ Low lignin or 'high quality' alfalfa varieties have not performed well in this system
- A drill with press wheels should be used to plant 16 lb/acre of alfalfa on a live seed basis at a ¼–½ inch depth in the corn inter-row area.
 - ✓ Row spacing for alfalfa should not exceed 10 inches
 - ✓ If using a corrugated roller-seeder, ensure alfalfa seed is properly worked into soil just before or after corn planting

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Agrichemical management

Good pest management is key to establishing alfalfa



Looking ahead!

In future articles, we will discuss more results that optimize agrichemical application rates and timings for interseeded alfalfa. 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.

- **PRE Emergence herbicide:**
 - ✓ Apply acetochlor (Warrant®) after planting, just after alfalfa emergence
- **POST Emergence herbicide:**
 - ✓ For Roundup® Ready systems, glyphosate is highly effective when weeds are 4–6 inches tall
 - ✓ For conventional alfalfa or corn, bromoxynil (Moxy 2E®) applied when broadleaf weeds are 1–2 inches tall and after alfalfa has 4 trifoliolate leaves is recommended; pendimethalin (Prowl® H2O) can be applied if alfalfa has at least 2 trifoliolate leaves and is less than 6 inches tall
- **Plant health promoting agrichemicals:**
 - ✓ Directed prohexadione calcium (Kudos®) on 4-12 inch tall alfalfa often enhances alfalfa root growth and plant survival
 - ✓ In humid environments or especially during wet growing seasons, application of foliar fungicide (such as fluxapyroxad plus pyraclostrobin) on alfalfa near the V12 growth stage of corn (just before the onset of foliar disease) is required for good alfalfa establishment
 - ✓ Insecticide can be beneficial if leafhopper pressure is above established thresholds

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