

Forage Research Updates

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WISCONSIN - Intercropping Clovers with Corn Silage Shows Promise

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Greater use of cover crops and living mulches may reduce nitrate/soil loss and improve soil quality under annual row crops. In a southern Wisconsin study, continuous corn (Roundup ready) for silage was grown with cover crops of June-interseeded Italian ryegrass, winter rye seeded in September after corn, or no cover crop. Corn silage in a 2-year rotation with Kura clover living mulch or a cover crop of June-interseeded red clover, followed by a year of clover, was also grown. Manure slurry was applied on a phosphorus-basis; fertilizer was applied as needed at corn planting early May to supply 160 lb/acre of available nitrogen. 2003 and 2004 findings:

- In 2003 (normal temperatures, dry late summer), corn silage yields ranged 8.2-10.3 tons DM/acre and were greatest with red clover and least with ryegrass. In 2004 (wet spring, cool summer), corn silage yields ranged 7.4-8.9 tons DM/acre and were greater with clovers or no cover crop than with rye or ryegrass.
- Growth of cover crops and living mulch by late October was greatest with ryegrass (0.5 ton/acre). Spring growth by corn planting was similar for rye, Kura clover, and red clover in 2003 (0.5 ton/acre) and greatest for rye in 2004 (1.6 ton/acre).
- In late fall, nitrate levels to 4' depth were 28-48 lb/acre (greatest with clovers, least with ryegrass). When a year of clover followed corn, fall nitrate levels dropped to 20 lb/acre.
- In the year following corn, yields of red clover were greater than Kura clover in 2003 (5.0 vs. 3.8 tons/acre). Both were similar in 2004 (3.7 tons/acre) even though red clover was reseeded in April due to drought-induced interseeding failure in 2003.
- Applying manure in fall vs. spring didn't influence yields or soil nitrate levels.

Data suggest silage yields of corn grown with red clover or Kura clover are similar or better than corn silage yields without a cover crop. Interseeded Italian ryegrass depressed corn silage yields, providing only modest cover and reductions in fall nitrate prior to winterkill. Fall-seeded winter rye had intermediate performance; corn yields were improved if rye was killed before early spring growth accumulated. Systems will be evaluated until 2007.