MINNESOTA– Kura Clover Living Mulch-Corn Systems Provide Forage & Environmental Benefits

Jonathan Alexander[1], Jeff Coulter[1], John Baker[1,2], Rodney Venterea[1,2]; [1]University of Minnesota, [2]USDA-ARS

Kura clover is a cold-tolerant forage legume with high protein content that can be used as a perennial cover crop or living mulch in corn-based forage systems. Compared with conventional corn systems on soils with 7-15% slope, kura clover living mulch (KCLM)-corn systems have been shown to reduce runoff by one-half and soil erosion by three-fourths, in addition to greatly reducing residual soil nitrate after corn harvest. University of Minnesota research is building on these environmental benefits through optimization of KCLM systems for agronomic benefits, including harvest of kura clover for forage and reduced nitrogen fertilizer requirements for corn.

Recent study results revealed harvesting kura clover prior to planting row crops does not affect in-season nitrogen contributions from the living mulch. Farmers can expect 0.5-1.0 ton of dry clover biomass per acre by mid- to late May, comparable in quality to first-cutting alfalfa, which is well-suited to harvest as wilted or direct-cut haylage. Following spring forage harvest, the clover can be suppressed with rotary zone tillage before planting corn for silage or grain plus stover harvest. Compared to conventional management, corn production in KCLM with this approach had similar grain yield with significantly less nitrogen fertilizer and similar cost of production during the last two years in east-central Minnesota trials.

Spring clover growth on June 1, 2017. *Photo: Jonathan Alexander.*

Kura clover living mulch systems have great potential for forage farmers. The ability to harvest high-quality clover forage prior to corn grain or silage production without added production costs might promote adoption in some operations. Research on forage production, nutrient management, and agronomic optimization in KCLM-corn systems is ongoing.