MINNESOTA– Profitable Conservation: Corn Production in Kura Clover Living Mulch

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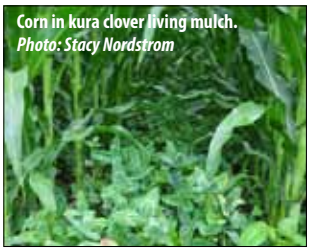
Corn in kura clover living mulch. *Photo: Stacy Nordstrom*

Conventional row crop rotations can be challenged by wet conditions at planting and unfavorable markets. Companion cropping may offer greater flexibility for farmers with diverse production demands. Kura clover is a persistent perennial legume forage crop that can be used as a living mulch in corn and soybean production. Its vigorous spring growth and spring management enriches soil with organic nitrogen (N) that is broken down and later used by the growing cash crop, reducing N fertilizer needs. Kura clover-row crop companion systems offer the ability to produce high-quality forage, silage, or grain and stover, in combinations that rapidly respond to farmer and market demands. An N rate study for corn after kura clover forage, and corn after corn in kura clover living mulch, was conducted in east-central MN in 2017 and 2018. Corn was fertilized with a split-application of SuperU (urea with microbial inhibitors to reduce risk of N losses) from 0 to 220 lbs N/ac, with 40 lbs N/ac applied at planting and the remainder at the four-leaf stage. In 2017, for corn after kura clover forage, corn grain and stover yields (193 bu/ac and 2.3 tons DM/ac, respectively) were not increased with applied N. For corn after corn, only 105 lbs N/ac was needed to maximize grain and stover yields (197 bu/ac and 2.6 tons DM/ac, respectively). These yields are comparable to those attainable with conventional production and N fertilizer rates and indicate kura clover living mulch can provide substantial amounts of fixed N to corn. Findings suggest kura clover living mulch can reduce fertilizer cost while maintaining high corn yield and providing additional income from corn stover. In this system, kura clover living mulch regrows in the spring and contributes organic matter to soils while protecting against erosion. Possibilities of this cropping system are revealing themselves. Future research could soon investigate optimum rotation management to realize the full economic and environmental potential of kura clover living mulch.