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Annual Medics in Minnesota Agriculture

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There are about 30 annual species in the Medicago genus. Annual Medicago are native to the Mediterranean region and western Asia and now occur in all major agricultural continents of the world. In Australia, medics are widely used in permanent pastures and in cereal rotations to provide forage and nitrogen and to improve soil properties. In 1992, we initiated a program to evaluate the use of annual medics in our cropping systems. We have evaluated three systems including monocultures for summer and fall forage production, intercropping with small grains, and intercropping with corn and soybeans.

In trials to evaluate summer and fall forage production potential, we have evaluated 14 Australian cultivars of five annual Medicago species including *M. polymorpha* L. (burr medic), *M. truncatula* Gaerth. (barrel medic), *M. scutellata* (L.) Miller (snail medic), *M. rugosa* Desr. (gama medic), and *M. littoralis* Rhode (strand medic). Annual medic species and cultivars within species varied greatly in maturity at harvest and in yield. For a summer harvest about 70 days following a 1 May seeding at St. Paul, MN, yields averaged 4.1 to 5.7 Mg/ha. Fall yields in October, about 80 days following an August planting averaged 4.1 to 5.5 Mg/ha. Forage crude protein, neutral detergent fiber, and acid detergent fiber concentrations averaged 19%, 30, and 34%, respectively, for the summer harvest.

Mogul barrel medic and Santiago burr medic were intercropped with spring seeded barley which was harvested for grain. Barley grain yields were similar for the annual medic-barley intercrop and barley monoculture treatment. Fall forage yields of Mogul and Santiago following regrowth were 2.5 and 1.3 Mg/ha, respectively. Medic N yield averaged 75 kg/ha.

We have evaluated annual medics as resource conserving crops when intercropped with corn and soybeans. Intercropped annual medics have potential to provide ground cover, smother weeds, and supply nitrogen. Medic seeding rate (0, 72, 216, 648 seeds/m²), medic species (Santiago burr medic, Sava snail medic, and Kelson snail medic), and banding versus broadcasting of medics have been evaluated. In our research, we have seeded annual medics at the time of corn and soybean seeding. Annual medics have suppressed weed growth, but have also reduced yields of corn and soybeans. The success of the intercropping system is influenced by the weed species present and environmental conditions.

We have concluded that annual medics have potential for forage production and as intercrops with small grains. To develop an effective system for intercropping of medics with corn and soybeans, additional variables require study.

References

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