

# Restoring Grasslands With the Addition of Alfalfa in an Effort to Sustainably Increase Alfalfa Production in the Southeast

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The specific goal of this project was to develop a multi-location study aiming to introduce alfalfa (*Medicago sativa*) to restore and renovate poor stands of cool and warm-season grasses under different management strategies. To achieve the overarching goal, the project aimed to expand alfalfa production in the Southeastern humid-transition zone, improve yield and forage quality of pastures, extend the grazing season and reduce hay feeding, reduce the need for N (nitrogen) fertilization, and increase profitability in the system. Our objective was: to identify how different management strategies in restoring poor stands of grass pastures with alfalfa will influence yield, forage nutritive value, pest and weed control and soil quality.

One of the most efficient ways to restore pastures is by introducing alfalfa, due to its wild adaptation and along with its high nutritional value. However, one main concern over introducing alfalfa into monoculture grass swards in this region is weed control, which is commonly dominated by crabgrass [*Digitaria sanguinalis* (L.)]. Crabgrass, which was traditionally controlled with herbicides, can be utilized as a complementary summer forage grass in these cool-season pastures when adequately managed.

In Tennessee two experiments, one with tall fescue [*Schedonorus phoenix* (Scop.) Holub], and one with orchardgrass (*Dactylis glomerata* L.), while in Georgia, two experiments, one with tall fescue and two with bermudagrass (*Cynodon dactylon*) in Northern and Southern locations, were designed, with six management strategies as follows: 1) control with no renovation, 2) synthetic N fertilization, 3) fall seeding of alfalfa, 4) spring seeding of alfalfa, 5) fall seeding of alfalfa + summer seeding of crabgrass, and 6) spring seeding of alfalfa + summer seeding of crabgrass. After establishment, samples were collected monthly from April to September, and processed for botanical composition and determination of forage mass. Preliminary results show that introducing crabgrass has successfully controlled weeds; introducing alfalfa into orchardgrass swards significantly improve the ground cover and forage availability; fall seeding of alfalfa into warm-season grass sods provides greatest stand success. Regardless of location, interseeding alfalfa into existing tall fescue stands provided greatest challenge and additional work is needed to further investigate best management methods to improve establishment in these systems. The future results will contribute to further studies as ultimately achieving goals to increase profitability and sustainability for regional agriculture and forage production systems.