

Enhancing Switchgrass Establishment

A. Sadeghpour, S. Herbert, and M. Hashemi

Rationale:

Switchgrass is a high yielding warm season perennial grass that can be used as renewable source of energy. Poor establishment in the planting year is one of the biggest challenges that growers may experience. Enhancing switchgrass establishment improves stand vigor and yield in succeeding years. Experiments were initiated at The UMass Crop and Animal Research and Education Center to study the influence of some management practices on improving switchgrass establishment.

Experiment I:

The objectives of this study is to determine if (i) cover crops can control weed population and therefore improve establishment of switchgrass (ii) to evaluate the establishment of switchgrass sown using different methods of planting and (iii) to assess the role of herbicide application and the interaction of cover crops, planting methods and application of herbicide.

- Seeding methods: broadcast, drilled and no-till.
- Cover crops: Winter rye, oat, no cover crop.
- Herbicide: No herbicide, application of Atrazine + Quinclorac.
- Replications: 3

switchgrass emergence date, stand density, weeds population, and crop growth will be determined.

Experiment II:

The objectives of this study are to (i) assess whether early planting of switchgrass (November) can enhance the germination rate because of winter chilling effect compared to other planting dates and (ii) to evaluate if application of herbicide is needed for weed control.

- Seeding dates: November, May, June, July.
- Herbicide: No herbicide, application of Atrazine + Quinclorac.
- Replications: 4

switchgrass emergence date, stand density (established plants/m²), weed species and weed biomass will be determined every 30 days after planting through the summer and early fall. Winter survival and spring regrowth will be evaluated in the following year.

Experiment III:

The objective of this study is to examine if (i) application of preplant N will enhance switchgrass establishment, (ii) if preplant N application will promote weed population.

- Prep-planting Nitrogen: 0, 20, 40 kg N/ha.
- Post planting Nitrogen (after initial establishment): 0, 25, 50 kg N/ha.
- Second year nitrogen application: 0, 60, 120 kg N/ha.
- Replications: 4

Switchgrass stand density and weed content will be determined in early and late summer. Nitrogen content in switchgrass tissue will also be determined in harvested plant material.

For more information about this research project contact Amir Sadeghpour, asadeghp@psis.umass.edu or Stephen Herbert, sherbert@cns.umass.edu.

