

Miscanthus and switchgrass establishment

Kalamazoo County

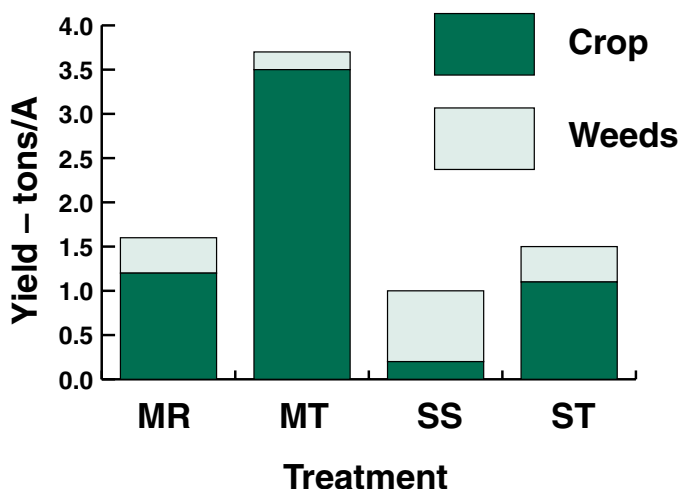


MICHIGAN STATE UNIVERSITY EXTENSION

MICHIGAN AGRICULTURAL EXPERIMENT STATION

Cropping Systems
Other

County	Kalamazoo
Cooperator	W.K. Kellogg Biological Station
Nearest town	Hickory Corners
Soil type	Kalamazoo sandy loam
Tillage	Chisel plow, field cultivation
Planting date	June 2009
Variety	Cave-in-Rock (switchgrass), <i>Miscanthus giganteus</i>
Weed control	3.6 pts/A pendamethalin
Exp. design	RCB, 4 replications



Averages (tons/A)						
Pass	Crop	Weeds	Total	Percent mortality	No. tillers	% weeds
MR	1.16	0.37	1.53 b	29.50	18.63	32
MT	3.50	0.22	3.72 a	0.00	37.13	6
SS	0.19	0.82	1.01 b			437
ST	1.07	0.38	1.44 b			35

Purpose

Evaluate starting miscanthus and switchgrass plants in the greenhouse and transplanting them into the field to determine if this shortens the establishment period.

Materials and methods

Miscanthus rhizomes and switchgrass were grown in the greenhouse for 6 weeks and transplanted to the field by hand. Randomized complete block design, with 4 replications were used with the following treatments: Miscanthus Transplants (MT), Miscanthus Rhizomes (MR), Switchgrass Transplants (ST) and Switchgrass Seeded (SS) with a drill. MT and MR were planted in rows 3 foot apart with 3-foot spacing within rows (3' x 3' grid). SS was planted with a drill on 7-inch row spacing at a rate of 8 pounds of pure live seed per acre. ST was planted in rows 12 inches apart with 12-inch spacing within rows (12" x 12" grid). Total biomass yield, including weeds, was calculated for each plot. Stem counts and mortality was taken for MT and MR.

Results

MT yielded the highest at 3.72 tons/A. All other plots were not statistically different. Weed biomass in SS was more than four times higher than the switchgrass yield, indicating that weed control is critical to establishment. Mortality in MT was zero, while nearly 30 percent of the MR planted did not survive the first summer. This could be due to non-viable rootstock being planted. This suggests that testing for viability before planting would increase the chance of a successful stand of miscanthus. MT had 37 tillers per plant compared to 19 tillers per plant for the rhizome planted miscanthus. One of the problems in establishing miscanthus is winter survival. Tiller counts and mortality data will be collected next spring to evaluate this.

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Dennis Pennington
Bioenergy Educator
KBS/MSUE Land & Water Unit
3700 E. Gull Lake Dr.
Hickory Corners, MI 49060
Phone: 269-671-2412
Email: pennin34@msu.edu