



Katahdin sheep grazing on bush honeysuckle at the PMC.

Current Studies

Using a Biological Approach (Goats/Sheep) to Control Invasive Species with Emphasis on Bush Honeysuckle (*Lonicera maackii*) and Buckthorn (*Rhamnus cathartica*)

Study Leader: Ron Cordsiemon

This study has been through its first season of grazing by small ruminant animals. During the growing season of 2011, 49 pregnant Katahdin ewes grazed the invasive bush honeysuckle and buckthorn from three paddocks at the PMC. The ewes lambed at the PMC in the spring. The sheep grazed these species up to a height of 4.5 feet. Ewes had an average daily gain (ADG) of -0.37 lbs, a total gain of -12.5 lbs, mean body condition score of 3, and a mean FAMACHA® score of 2. FAMACHA system is a method that indicates the degree of infection of the *Haemonchus contortus* parasite. The score is a range from 1-5, with 1 being that the eyelid membrane color is a dark red and indicates no significant anemia caused by the parasite, while a score of 5 indicates a white eyelid membrane and severe anemia. Fecal nematode counts increased on average by 485 over the course of the grazing season. The negative ADG and total gain of the ewes is not unexpected, due to the fact that they lambed, and most ewes lose some weight during that time. Lambs had a mean birth weight of 13.4 lbs., mean end weight of 30.3 lbs, mean ADG of 0.4 lbs., and a mean total gain of 16.8 lbs.

2011



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The results from the first year of this study suggests that grazing bush honeysuckle and buckthorn may alter sheep performance but may not negatively impact lamb performance. Preliminary results suggest that sheep grazing did not negatively impact the bush honeysuckle and buckthorn. Plans for next grazing season include using Spanish goats instead of sheep. Grazing habits of Spanish goats will allow them to graze much higher in the canopy which may have a greater impact on the target plant species.

Collection of Plant Attributes from Plantings of Giant Miscanthus (*Miscanthus x giganteus*) for RUSLE2

Study Leader: Allen Casey

In response to the interest in giant miscanthus as a biomass crop and the inclusion of it in the Biomass Crop Assistance Program (BCAP), the Elsberry PMC has started a study to collect data to develop a vegetation file in the Revised Universal Soil Loss Equation (RUSLE2), which currently does not include any data or options for giant miscanthus. The plant attributes that are being collected include plant height, above ground



Harvesting Giant Miscanthus in November 2011 for data to be included in RUSLE2 model.

biomass, stubble residue, and soil surface residue of giant miscanthus plantings that are in the establishment year and from a mature stand. This data is needed to accurately account for the growth and the erosion potential for plantings of giant miscanthus for biofuel production.

In-Field Weathering Affects on Biomass Yield and Biofuel Quality of Warm Season Grasses

Study Leader: Ron Cordsiemon

Warm season grasses that are of interest as a biofuel crop were evaluated as to their yield and biofuel quality. The species included in this study were 'Cave-in-rock' switchgrass, 'Kanlow' switchgrass, 'Rumsey' Indiangrass, 'Alamo' switchgrass, Missouri

PMC accession 9083274 big bluestem (selected for tall stature), and 'Freedom' giant miscanthus. Each species was harvested at seed maturity and every 6 weeks after for biomass production, biofuel quality estimates of nitrogen, lignin, acid detergent fiber (ADF), neutral detergent fiber (NDF), ash calorific value, calcium, magnesium, sulfur, phosphorus, potassium, and gross energy. The winter of 2010-11 marked the final evaluation year of this 3-year study and results are being analyzed and will be reported in the PMC annual technical report. Joel Douglas, Central Region Plant Materials Specialist, and Brian Baldwin, Associate Professor Mississippi State University, have been instrumental in analyzing samples and data collected by the staff at the PMC.

Inter-Center Strain Trial – Yield and Persistence of 11 Big Bluestem Sources in Kansas, Missouri, Arkansas

Study Leader: Allen Casey

Field data comparisons between 11 big bluestem sources were completed in 2011. The data will be compiled and included with the three other PMCs that were involved with the trial. Data was collected at two different times, once at boot stage and again two weeks after the first killing frost. The plantings were evaluated for biomass yield (initial cutting and re-growth), plant height and plant vigor.



Big Bluestem Inter-Center Strain Trial at the PMC.

Cool and Warm Season Cover Crop Evaluation

Study Leader Jerry Kaiser

Field data comparisons between 5 warm season mixtures were evaluated for total dry matter yield following a wheat crop. Field data comparisons between 6 cool season mixtures were applied using a broadcast seeder to mimic an aerial



Warm Season Cover Crop Study Plot showing mix with sorghum-sudangrass.

application into standing soybeans. The same 6 cool season mixtures were drilled into soybean residue following harvest. Data to be collected next spring will be percent canopy cover measured, total dry matter yield, and timing of cover crop termination. This data will be included in the RUSLE2 database as well.

Training and Tours

Field Training for New Employees by Missouri Field Technical Staff and Plant Materials Staff

A three day training was offered in July to new employees of NRCS at the Elsberry PMC. Participants were given hands on training for grazing management and fencing techniques, basic soils and soil health characteristics, plant materials program processes and functions, tree and plant identification, and an introduction to tillage equipment, spray equipment, planters, drills, and harvesting equipment. The training also included a tour of the fields and facilities of the PMC. The new employee basic field training will again be offered to field office personnel in Iowa, Illinois and Missouri and scheduled in the summer of 2012.

Chestnut Growers of America

Members of the Chestnut Growers of America and potential chestnut growers held their annual meeting at the PMC. They were given a tour of the PMC and Forrest Keeling Nursery.

New Publications

- Fact sheet for planting and managing giant miscanthus (*Miscanthus x giganteus*) in Missouri for the Biomass Crop Assistance Program (BCAP). This publication can be accessed at the following site:
<http://www.plant-materials.nrcs.usda.gov/pubs/mopmcf10595.pdf>
- Agronomy Technical Note: Big bluestem and Indiangrass for biomass production by variety selection and establishment methods for Missouri, Illinois, and Iowa. This publication can be accessed at the following site:
http://www.mo.nrcs.usda.gov/technical/tech_ref/out/Agron%20Tech%20Note%2039_311a.pdf

These and other publications can be accessed by going to the Plant Materials Website at <http://plant-materials.nrcs.usda.gov>.