[INTRUCTIONS – REPLACE EVERYTHING THAT IS HIGHLIGHTED AND IN SQUARE BRACKETS WITH YOUR OWN TEXT (AND FIGURES/LEGENDS FOR THE RESULTS)]

**Controlled burn effects on plant growth and reproductive allocation in a dominant tallgrass prairie species, *Andropogon gerardii***

[Full Name]

[Lab Section]

[Date]

**Introduction**

Fire is a major abiotic factor in grassland ecosystems with the potential to influence not only the type of species found in an area, but also the growth of individual species. Prior to their transition to agricultural lands, tallgrass prairies covered the landscape from eastern Texas to Manitoba, forming a bridge between the western sagebrush/dry grasslands and the eastern deciduous forests, and providing habitat for large herds of bison. Fires, a frequent occurrence on the prairies, were caused by lightning strikes or set by Native American tribes in an attempt to stimulate new plant growth and attract bison herds to graze on the fresh shoots of grass. Natural resource managers continue the practice today through the application of controlled burns to tallgrass prairies to encourage greater plant and animal species diversity and to limit the invasion of tree seedlings.

Previous research on the effects of burning on tallgrass prairies have found significant effects on growth of two dominant native grasses, *Andropogon gerardii* and *Sorghastrum nutans* (Hadley and Kieckhefer 1963). The ecophysiology and growth of *A. gerardii*, as measured by photosynthesis, leaf conductance, leaf nitrogen content, nitrogen use efficiency, leaf thickness, and shoot biomassincreased in burned treatments, whereas *Panicum virgatum* did not show the same response (Knapp 1985). Benson and Harnett (2006) addressed seed vs. vegetative growth of prairie species following a burn, but no studies were found that measured seed allocation of *A. geradii* in response to fire.

This study examined the effects of a prescribed burn on the growth and reproductive allocation on a burned and an unburned plot of restored prairie dominated by *A. gerardii*, a warm season grass with a C4 photosynthetic pathway. Our null hypothesis was that plants heights and rame lengths would not differ between the burned and unburned populations. Our alternative hypotheses were that the burned population *A. gerardii* would be [taller or shorter (add what you wrote in your lab manual)] and the rame lengths would be [longer or shorter (add what you wrote in your lab manual] than the unburned population of *A. gerardii.*

**Methods**

[Refer to the guidelines for lab reports handout and revise, if necessary, your methods paragraph that you wrote in your lab manual to make sure your paragraph addresses each point]

**Results**

[First, double check the quality of your figure legends and results paragraphs and revise, if necessary. Then copy and paste your four figures, your figure legends, and the t-test statements from the ‘data lab 1’ assignment. Arrange them so that the correct figure legends are underneath each figure, and the t-test results paragraphs are one right after the other, and after the figures.

**Discussion**

[Refer to the lab report guidelines handout for instructions on writing your discussion. MAKE IT AS LONG AS THE INTRODUCTION (one page)! Make sure that you cite information/results from at least two of these four papers (you will have to visit the MSUM Library webpage and/or Google Scholar and search for these articles and get the full text versions of them to read the abstract, intro, and conclusions (you will not have time to read the entire papers). Note that the information below is merely to help you locate the papers; they are not cited correctly):

* Hadley and Kieckhefer 1963 Productivity of two prairie grasses in relation to fire frequency
* Knapp 1985 Effect of Fire and Drought on the Ecophysiology of Andropogon gerardii and Panicum virgatum in a Tallgrass Prairie
* Kitchen et al 2009 Annual fire and mowing alter biomass, depth distribution, and C and N content of roots and soil in tallgrass prairie;
* Benson and Harnett 2006 The role of seed and vegetative reproduction in plant recruitment and demography in tallgrass prairie]

**References**

[Refer to the lab report guidelines handout for instructions on citing your end references. Make sure that you include full citations, as instructed in your lab manual, for the papers that were cited in the intro and discussion, in alphabetical order by last name of first author. Make these single spaced, please. The first one is done for you ☺, however only include it is you cited it. ]

Benson, EJ, Hartnett, DC. 2006. The role of seed and vegetative reproduction in plant recruitment and demography in tallgrass prairie. Plant Ecology 187: 163-177.