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04. Botany

Northeastern State University

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Abstracts from the 2015 Oklahoma Research Day

Held at Northeastern State University

05. Mathematics and Science

04. Botany

05.04.01 Kamama Community Garden: Research, Community Service, and Cultural Awareness

Laurelyn,Rubidoux *Tulsa Community College*

Tulsa Community College West Campus established the Kamama Community Garden in early spring semester 2014. The objectives of the Garden are to provide research, community service, and cultural awareness for students and the Tulsa community. As a work study / research student, my research and community service experiences are instrumental in the establishment and maintenance of the Garden. This long-term and collaborative project is an extension of the beautification of the West Campus and urban ecology movement in Tulsa.

05.04.02 Isolation Of Antipodal Cells and Gene Expression Analysis In Rice

Rashad,Hall *Langston University*

The embryo sack of a rice plant contains 7 cells all vital for the plants reproduction. The central cell, egg cell, senergent cells, and the antipodal cells. We know the function and purpose of all of these cells except the Antipodal cells. The objective for our research is to gain a better understanding of these cells. We believe the cells may play a similar roll in rice as the vegetative cell does in pollen. RT-PCR and antipodal isolation were the main techniques we used to conduct our research. My results did not match my hypothesis due to the primes I chose to use during RT-PCR. We still don't fully know the function of Antipodal cells.

05.04.03 Gender Differences in the Immediate Perception of Violent Scenarios

Allison, Statton *Southwestern Oklahoma State University*

Lisa, Castle *Southwestern Oklahoma State University*

Cyclanthera dissecta (Cucurbitaceae), also referred to as cut-leaf cyclanthera, is a weedy annual vine native to western Oklahoma, USA. A historical lack of interest in this species has led to it being poorly studied even though it is closely related to known edible and medicinal species such as *Cyclanthera pedata* and some agricultural weeds. We have tracked changes in a population of *Cyclanthera dissecta* near Weatherford, Oklahoma, located in the western part of the state, for five years to determine the baseline population size and the effect of inconsistent weather conditions on this plant. We compare population size, average plant size, average number of fruit per plant, and each plant's geographical location for the five growing seasons. We utilize this information alongside environmental factors, such as droughts and early freezes, to better understand how climate change and human activity may influence plant growth and survival.

05.04.04 Isolation of Mature Antipodals in *Oryza sativa* to Determine the Function Through Gene Expression

Jasmene, Abernathy *Langston University*

Oryza Sativa, better known as rice is a model cereal. It is the most important field crop because it feeds half the world. Rice is the preferred crop for this research because it has the fastest time from pollination to fertilization of thirty minutes. The objective is to better understand the function of antipodals. We isolated the antipodals using forceps and did gene expression using RT-PCR to conduct our research. My results were positive based on my RT-PCR and the primers I chose. Although my gene showed positive results we still don't know the exact function of antipodals.

05.04.05 Optimizing Protocols for Measurement of Ion Leakage and Chlorophyll Content in Dark Stressed Plants.

Rashad, Hall *Langston University*

Abiotic stress adversely affects plant growth. Determining membrane permeability as a result of environmental stresses, growth and development, and genotypic difference is accomplished by measuring solute leakage from plant tissue. We hypothesized that greater leakage would occur with increased light deprivation. We did our original experiments with wild type *Arabidopsis thaliana* and a mutant deficient in lipoxygenase and subsequently employed *Trigonella foenum-graecum*. Plants were grown in soil for three weeks and then placed in the dark. Ion leakage was measured at zero hours, six hours, and 24 hours post darkness. Similar sized leaves were rinsed with deionized water, and immersed in 25 mL of deionized water for 4 h with shaking at 100 rpm. The conductivity of the solution was measured with an Oakton CON 510 Series conductivity meter. These samples were then autoclaved, and conductivity was measured again. Relative ion leakage of the autoclaved was calculated. We repeated these steps for each time period and obtained two measurements for each. Acetone extractions of chlorophyll and chlorophyll measurements of samples subject to the same conditions (including sampling time) were also carried out. We discuss the effects of light stress on ion leakage and chlorophyll content in *T. foenum-graecum*.

05.04.06 Optimizing Protocols for Measurement of Ion Leakage and Chlorophyll Content in Dark Stressed Plants.

Rashad,Hall *Langston University*

Abiotic stress adversely affects plant growth. Determining membrane permeability as a result of environmental stresses, growth and development, and genotypic difference is accomplished by measuring solute leakage from plant tissue. We hypothesized that greater leakage would occur with increased light deprivation. We did our original experiments with wild type *Arabidopsis thaliana* and a mutant deficient in lipoxygenase and subsequently employed *Trigonella foenum-graecum*. Plants were grown in soil for three weeks and then placed in the dark. Ion leakage was measured at zero hours, six hours, and 24 hours post darkness. Similar sized leaves were rinsed with deionized water, and immersed in 25 mL of deionized water for 4 h with shaking at 100 rpm. The conductivity of the solution was measured with an Oakton CON 510 Series conductivity meter. These samples were then autoclaved, and conductivity was measured again. Relative ion leakage of the autoclaved was calculated. We repeated these steps for each time period and obtained two measurements for each. Acetone extractions of chlorophyll and chlorophyll measurements of samples subject to the same conditions (including sampling time) were also carried out. We discuss the effects of light stress on ion leakage and chlorophyll content in *T. foenum-graecum*.