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04. Botany

University of Central Oklahoma

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Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

05. Mathematics and Science

04. Botany

05.04.01 Using Digital Photography to Estimate Canopy Development of 'Noiret' Grape Vines After the Second Growing Season

William, Phillips , Bill Baker, Caleb Kimberling, Laura Gruntmeir

Redlands Community College

Grape vine spacing (distance between vines within the row) and rooting system (grown on grafted rootstock for disease resistance or on own rootstock), can impact grape vine canopy development. Greater canopy is an indication of rapid growth rate. The objective of this experiment was to determine the impact of vine spacing and rootstock on canopy development of 'Noiret' grape vines at the end of the second growing season (2013). In 2012, seven rows of 'Noiret' grape vines were established in a split plot design. Within row, grape vines were spaced at 8- or 10-foot intervals and were either own rooted or grafted onto '101' or 'Riparia' rootstock. Vines were trained to a high cordon system with drip irrigation. Digital photographs (taken in October) and a calibrated grid system were used to estimate the surface area of one vertical plane of the canopy and used to statistically compare canopies of the different treatments. No significant differences ($P > 0.22$) were noted between grafted vines planted at 8- or 10-foot intervals within the row. 'Noiret' vines not grafted onto rootstock, own rooted, and planted 10 feet apart had the least amount of canopy. Based on canopy developed by the end of the second growing season, we concluded that producers planting 'Noiret' vines should use grafted rootstock and plant vines 10 feet apart within row. This procedure will fill the fruiting zone canopy with the fewest n

05.04.02 Using the At-Risk Tool to Assess the Vulnerability of Native Edible Plants to Over Harvest

Zella, Classen

Southwestern Oklahoma State University

Five edible plant species native to the United States were scored using the United Plant Savers' At-Risk Tool. This tool is used to quantify and compare vulnerability to overharvest for wild collected medicinal plants. The species chosen, Tomatillo *Physalis longifolia*, Persimmon *Diospyros virginiana*, Pawpaw *Asimina triloba*, Chokecherry *Prunus virginiana*, and Prairie Turnip, *Pediomelum esculentum* all have traditional uses as both food and medicine. These species have been the subject of recent investigations into their promising chemical compounds and medicinal properties. Scores from the At-Risk Tool will help determine if wild harvest can be sustained if one of these species becomes the next "anti-cancer super-food".

05.04.03 Collection, Identification, and Preservation Techniques of Plant Samples Collected in the Field

Mandi, Foutch

Southwestern Oklahoma State University

Proper collection, identification, and preservation techniques are important when plant samples are used as taxonomic and herbarium specimens. Using proper tools and collection methods aid in the proper preservation and eventual plant identification process. Recommended techniques for collection, preservation, and identification of plants in the field are discussed in a manner that should aid anyone wishing to collect and preserve plants. Proper collection includes gathering materials that will aid in the proper identification of the plant. This can include leaves, roots, flowers, stems and seeds. Proper identification uses the plant's characteristics to determine the species. Proper preservation includes pressing and mounting of the specimen.

05.04.04 Preliminary Search for Biologically Active Secondary Metabolites from Cyclanthera Dissecta

Ashlie, Walker , Lisa Castle

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Antimicrobial assays were performed on *Cyclanthera dissecta* (Cucurbitaceae) to determine if the weedy annual vine warrants further investigation as a medicine. Students at Southwestern Oklahoma State University have begun long term monitoring of a local *Cyclanthera dissecta* population in order to learn how it responds to changing weather and land use patterns. The native species is very poorly studied, but has life history traits that suggest it could be a problematic weed, as well as edible and medicinal relatives including *Cyclanthera pedata*, *Cyclanthera explodens* and *Cucurbita foetidissima* that suggest it might have healthful properties for humans. In this study we examine the results of the initial antimicrobial assays performed on de-fatted organic extract of dried *Cyclanthera* vines. These analyses are the initial stages of identifying bioactive compounds.