

Sugarcane Bagasse Ash as an Amendment to a Greenhouse Growing Media

Charles L. Webber III¹, Paul M. White Jr.¹, Eric C. Petrie¹,
Derek S. Landrum^{1*}, and James W. Shrefler²

¹USDA, Agriculture Research Service, Sugarcane Research Unit, Houma, LA 70360,

²Oklahoma State University, Division of Agriculture Sciences and Natural Resources,
Oklahoma Cooperative Extension Service, Durant, OK 74702

Three million tons of sugarcane bagasse are produced each year in Louisiana from the 380,000 acre sugarcane industry. Bagasse is the fibrous by-product remaining after removing the sugar, water, and other impurities from the sugarcane delivered to the mill. Typically, the 11 Louisiana sugarcane mills use a portion of the sugarcane bagasse for fuel, producing over 60,000 tons of sugarcane bagasse ash (SBA) annually. In 2016, research was conducted to investigate the use of SBA as an amendment to soilless planting media for the production of vegetable seedlings. The ash was combined by volume with a commercial soilless growing media into 5 combinations (0%:100%, 25%:75%, 50%:50%, 75%:25%, and 100%:0%, SBA and growing media, respectively). Bean (*Phaseolus vulgaris* L.) var. 'Bowie' and Chinese kale (*Brassica alboglabra*) var. 'South Sea' were planted in each of the 5 different planting mixtures with 4 replications. The results indicate that the addition of 25% ash significantly increased bean emergence and establishment, while 50% ash increased total fresh and dry weights of kale seedlings without decreasing kale seedling establishment. As the ash percentage increased from 25% to 100%, many of bean growth parameters decreased (plant height and establishment, leaf, stalk, and total plant weight). Bean plant establishment was the most severely impacted by increasing ash content, decreasing plant stands from a high of 76% at 25% ash to 40% establishment at 100% ash content. Kale plant parameters also tended to decrease as ash content increased above 25% and 50%. The research demonstrated the feasibility of substituting 25 to 50% SBA in a standard greenhouse growing medium for bean and kale seedling production.