

Does floret position in eastern gamagrass [*Tripsacum dactyloides* (L.) L.] influence cupule number, fill weight and caryopsis weight?

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Eastern gamagrass [*Tripsacum dactyloides* (L.) L.] is a widely-distributed warm-season perennial grass native to most of North, Central and South America and an emerging ornamental, biofuel and forage crop. The planting unit is an indurate cupule, which encases the caryopsis. A high percentage of light-weight cupules reduces seed quality, lowers viability and diminishes potential stand. The objectives of this study were to determine the effect of inflorescence position on cupule fill and caryopsis development. Mature seed heads were collected in August of 2008 and 2009 from an established ecotype planting in Lexington, Kentucky, USA. Cupule number, weight and fill and caryopsis weight were determined. In year 1 and 2, 66 and 116 cupules were produced from 7 and 10 inflorescences, respectively. Either harvest, the average number of cupules per single infructescence was 9. In 2009, compound infructescences were also collected, which averaged 15 cupules and 4 within the branched groups. Cupule fill was 73 and 95%, respectively. Mean cupule weight was 90.7 and 89.7 mg and mean caryopsis weight was 10.5 and 27.3 mg in year 1 and 2, respectively. All locations along the inflorescence were capable of producing a caryopsis and position had no influence on successful development (cupule fill). Cupule number and weight were similar across years, but fill and caryopsis weight were lower in 2008. No pattern of development was observed. In 2009, cupule fill improved and a general trend was observed; cupule weight increased acropetally along the infructescence. These results suggest that environmental conditions during flowering and development exert a strong influence on cupule fill and caryopsis weight. Additional years of data and investigation regarding reproductive effort may reveal production measures to increase caryopsis development and improve seed quality in this species. Caryopsis viability and dormancy in relation to position is also of interest.