

RATE OF *IN SITU* SHATTERCANE X SORGHUM HYBRIDIZATION. Jared J. Schmidt, John L. Lindquist, Mark L. Bernards and Jeff F. Pedersen, Graduate Research Assistant, Associate Professor, Assistant Professor, Department of Agronomy and Horticulture, University of Nebraska, Lincoln NE 68583, Research Geneticist, USDA-ARS, University of Nebraska, Lincoln NE 68507.

Sorghum (*Sorghum bicolor* subsp. *bicolor*) can interbreed with its close weedy relative shattercane (*S. bicolor* subsp. *drummondii*). An *in situ* experiment was conducted to determine the potential for pollen-mediated gene flow from sorghum to shattercane. Shattercane with juicy midrib (*dd*) was planted in a soybean field in concentric arcs at varying distances from a sorghum pollen source with dry midrib (*DD*). The arcs were placed so that prevailing winds would carry pollen from the sorghum to shattercane. Shattercane panicles in anthesis during sorghum pollen shed were tagged and seeds were collected from those shattercane panicles. Shattercane progeny were scored for the dominant phenotypic marker to determine outcrossing rate. Outcrossing was greatest ($3.6 \pm 0.06\%$) for shattercane planted within the sorghum field and generally declined as distance from the source increased. Progeny from 101 of the 105 panicles evaluated at $\leq 10\text{m}$ contained outcrossed seed with the highest percentage of outcrossing for a panicle of 10.2%. Outcrossing was noted in 9 of the 73 panicles grown at the farthest distance evaluated (200m) with the highest outcrossing individual having 2.4%. Results indicate that genes from sorghum could be introduced into shattercane populations by cross-pollination at distances of at least 200m. Two of the 307 panicles evaluated (both 40m from source) had outcrossing rates greater than 40%. This might be due to environmental or genetic factors inducing protogyny or male sterility. Further tests are being conducted to examine the cause.