LIFETIME FECUNDITY OF F1 CROP-WILD SORGHUM HYBRIDS: IMPLICATIONS FOR GENE FLOW FROM TRANSGENIC SORGHUM IN AFRICA. Allison A. Snow, Patricia M. Sweeney*, Cécile Grenier, Gebisa Ejeta, Tesfaye Tesso, Issoufrou Kapran, Gurling Bothma, and Jeffrey F. Pedersen, Professor and Research Associate, respectively, Department of Evolution, Ecology and Organismal Biology, The Ohio State University, Columbus, OH, 43210; Research Geneticist and Professor, respectively, Department of Agronomy, Purdue University, West Lafayette, IN, 47907; Researcher and Leader, National Sorghum Research Project, Ethiopian Institute of Agricultural Research, Melkassa Research Center, Nazareth, Ethiopia; Principle Sorghum Breeder, Institut National de la Recherche Agronomique du Niger, Niamey, République du Niger; Researcher, Agricultural Research Council-Roodeplaat, Pretoria, South Africa; and Research Geneticist, United States Department of Agriculture-Agriculture Research Service, University of Nebraska, Lincoln, NE, 68583.

Researchers are developing transgenic crops with enhanced nutrition and higher yields for Africa, but few studies have assessed environmental risks of growing these crops. Since wild relatives of sorghum (*Sorghum bicolor*) are often weedy and represent valuable germplasm, plans to release transgenic sorghum should consider consequences of gene flow. Our previous studies in Ethiopia and Niger showed that wild and cultivated sorghum often co-occur and flower simultaneously. Here, we tested for spontaneous hybridization between accessions of wild *S. bicolor* and local cultivars from eastern Africa at times when their flowering overlapped. Plants were grown in field plots in Ohio, with a ratio of more than 20 crop plants per wild individual. Microsatellite DNA markers showed that some seeds on wild plants were fertilized by crop pollen. We also studied the fecundity of F_1 hybrids between a male-sterile cultivar and three wild accessions. Wild and hybrid progeny were grown in Niger, Ohio, and Indiana. The relative fecundity of hybrids was fairly consistent across locations but differed somewhat among accessions. For two accessions, crop-wild hybrids produced more seeds per plant than their wild parent. For a third accession, hybrids produced similar numbers of seeds per plant in Niger, but fewer seeds per plant in the USA. However, this decrease in seed per plant in the USA was not significant. Although one hybrid had poor seedling survival, once established, all crop-wild F_1 hybrids were vigorous, and fertile, and could easily contribute pollen and seeds to subsequent generations. This study shows that selectively neutral or advantageous crop alleles are likely to persist in wild sorghum populations following hybridization. Before transgenic sorghum varieties are grown near wild relatives in Africa, ecological effects and other consequences of crop-to-wild gene flow should be examined for each transgenic trait.

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