ASSESSING GM X WILD RICE HYBRID FITNESS. Wesley J. Leverich, and Anbreen Bashir, Professor of Biology, Graduate Student, St. Louis University, St. Louis, MO 63103 and Barbara A. Schaal, Spencer T. Olin Professor, Department of Biology, Washington University, St. Louis, MO 63130.

As part of a broader collaborative study to measure and assess the effects of possible gene flow between cultivated rice and its wild progenitor (*Oryza rufipogon*), we have been studying the relative fitnesses of genetically modified rice cultivars, the wild ancestor of cultivated rice, *O. rufipogon*, and their F1 hybrids. The GM rice lines in our studies contain a LEA (late embryogenesis abundant) protein, HVA1 with a strong constitutive promoter, rice act 1(Actin 1). These lines, from David Ho's lab, exhibit increased tolerance to water-deficit stress. In earlier studies, we estimated relative fitnesses of 4 GM rice lines, *O. rufipogon*, and 4 F1 hybrid lines. The study reported here examines the relative response to water-deficit stress challenge in these same lines. Beginning on the tenth day following planting, water was withheld for 5 day; after two days of watering, water was again withheld for 5 days. Plants were then maintained with normal amounts of water for the remainder of the study. Fitness responses to the water stress treatment were assessed by measuring number of leaves, number of tillers, day of first flowering, number of panicles, reproductive biomass, final plant height, and total plant biomass. We assessed the variation between unstressed and water-deficit stressed treatment, in addition to the differences between GM lines, wild rice, and F1 lines. Under non-stress and water deficit stress conditions, all groups were similar in emergence and survival. Under non-stress conditions, hybrids flowered later and had greater final biomass. In the stress study, hybrids flowered later and produced more panicles, but the GM cultivars produce more seeds, just as they did under non-stress conditions. *O. rufipogon* final biomass was greater than either GM or hybrids under water deficit stress.

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