Potential of cinosulfuron and CGA152005 seed treatment for control of Striga hermonthica in upland rice

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Abstract

Field trials were conducted in the dry and wet seasons of 1998 at Samaru (11°11' N, 07° 38' E, 686 m above sea level) in the northern Guinea savanna of Nigeria, to investigate the potential of cinosulfuron and CGA152005 seed treatments on the reaction of upland rice varieties to Striga hermonthica (Del.) Benth. Seven varieties of upland rice formed the main plots treatments while four levels each of cinosulfuron at 0.1, 0.2, 0.4 and 0.6 g/l and CGA152005 at 0.008, 0.016, 0.032 and 0.064 g/l, as well as two no herbicide treatments of dry sowing and distilled water-soaked planting were assigned to the subplots. The experiment was laid out in a split plot design and replicated three times. The resistant varieties FARO 40 and WAB 56-50 did not support Striga emergence and also produced grain yields which were the maximum, or comparable to the maximum. FARO 11, a susceptible variety, produced high grain yields in spite of support for early, high Strigaemergence. In spite of delayed emergence of Striga on FARO 38 and FARO 48, these varieties, as well as FARO 46 and FARO 45, supported high Striga emergence, exhibited high crop reaction scores to Striga and produced low grain yields. The seed treatment of upland rice varieties with cinosulfuron at 0.2 to 0.6 g/l and CGA152005 at 0.032 and 0.064 g/l significantly delayed Striga emergence compared with the lower rates. After seed treatment with cinosulfuron at 0.6 g/l, the susceptible rice variety FARO 38 and the resistant variety WAB 56-50 produced rice grain yields comparable to the maximum obtained with FARO 40 given seed treatment with CGA 152005 at 0.064 g/l. The significant interactions of varieties of upland rice and herbicide seed treatments on the number of days to first Strigaemergence, Striga shoot count and crop reaction to Striga confirm the differential influence of various concentrations of the herbicide seed treatments on the virulence of Striga hermonthica on varieties of upland rice.