

Influence of the above and below ground interference of purple and yellow nutsedges (*Cyperus rotundus* L. and *Cyperus esculentus* L.) with tomato (*Lycopersicon esculentum* Mill.)

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Abstract

Purple and yellow nutsedges are weeds difficult to control and reported to cause yield losses of over 40% in tomato. The mechanism of nutsedge interference with tomato has not been elucidated. Greenhouse studies were conducted in Florida with the objective of determining the extent of nutsedge interference with tomato above and below ground. Tomato and nutsedge plants were grown in plastic containers of 4 liter capacity filled with sandy soil. The treatments were no interference (tomato and nutsedge grown in separate containers), complete interference (tomato and nutsedge grown in the same container), above-ground interference (tomato and nutsedge roots growing separately but allowing leaf interference) and below-ground interference (tomato and nutsedge leaves growing without interference but with roots growing in the same container). A randomized complete block design with 5 replications was utilized. Plants were grown for 35 days after transplanting. The variables evaluated were the dry weights and plant heights of tomato and nutsedges. Analysis of variance (5% level) was performed on the resulting data. Complete interference by yellow nutsedge caused more damage to tomato (32% growth reduction) than complete interference by purple nutsedge (20%). The primary mechanism of purple nutsedge interference with tomato took place below-ground, causing a 16% growth loss. In contrast, the above- and below-ground interferences of yellow nutsedge with tomato were found to be equally important (16% each). The different mechanisms of interference of both nutsedge species could be partially due to yellow nutsedge being taller than purple nutsedge, thus being able to compete more effectively for light. These results suggest that in tomato yellow nutsedge management should focus on above-ground suppression, while for purple nutsedge management impairing subterranean activity could be more effective.

Key words: interference partitioning, yield loss, weed competition.

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