

RICE PLANT TOLERANCE TO RICE WATER WEEVIL INDUCED ROOT INJURY INCREASES WITH PLANT AGE

Larry D. Godfrey and Richard R. Lewis

Department of Entomology, University of California, One Shields Avenue, Davis, CA
95616-8584, USA

The recently-registered post-flood treatments for rice water weevil (Dimilin and Warrior) can be very effective, but must be properly used to provide optimal rice water weevil (RWW) control. A “window” of control, ~7 days long, starting at the 2-3 leaf stage is provided by an application of the post-flood materials. The key question that arose was how long during the season is RWW control needed to protect yield, i. e., are multiple applications needed.

Studies were conducted at the Rice Experiment Station near Biggs, CA in 2000 and 2001 to examine rice plant response under stresses from various levels of RWW injury at five rice growth stages. The amount of RWW adult feeding on the rice leaves, RWW larval counts, rice plant photosynthetic rate (and other gas exchange parameters), rice plant growth and development, timing of panicle emergence, and grain yield were among the variables evaluated. Rice plants responded detrimentally to RWW injury; however, the response varied between the two years. In 2000, grain yield was reduced from infestations of adults from the 2 to 4 leaf stage (larval feeding commenced ~7 days thereafter). In 2001, RWW infestations out to the ~8 leaf stage produced reductions in grain yield with earlier infestation having the most severe effects. Overall, the magnitude of the yield loss (% per larva) was mitigated in 2001 compared with 2000. RWW stress in 2001 delayed plant maturity and significantly reduced the number of panicles at harvest. Rice plant growth and development throughout the season, as well as plant physiological parameters (photosynthetic rate, stomatal conductance, etc.) were also effected.