

## **TANK-MIX ACTIVITY OF REGIMENT™ CA PLUS TWO FORMULATIONS OF PROPANIL FOR CONTROL OF HERBICIDE SUSCEPTIBLE EARLY WATERGRASS AND HERBICIDE RESISTANT LATE WATERGRASS IN WATER SEEDED RICE**

*Thomas DeWitt, Valent USA Corporation, Fresno, CA;  
Tim Ksander, Agricultural Advisors Inc., Live Oak, CA*

Regiment CA (bispyribac-sodium) is a postemergence herbicide that has excellent efficacy against certain grasses, sedges and broadleaf weeds with selectivity for rice. It inhibits the plant enzyme acetolactate synthase (ALS), thus blocking branched-chain amino acid biosynthesis. Regiment CA controls sensitive species with a cessation of growth followed by chlorosis, necrosis, and plant death. Onset of symptoms usually occurs in 3 to 4 days.

Regiment CA has excellent activity on barnyardgrass, *Echinochola crus-galli*, early watergrass *E. oryzoides*, and late watergrass, *Echinochola phyllopogon*, with minimal phytotoxicity to the rice plant. Slight stunting of the rice may occur within 3 to 5 days of application. The rice plant recovers within 10 to 14 days. Phytotoxic response can be minimized with a good fertility program. Phytotoxicity does not have a negative effect on maturity or yield.

Regiment CA has a wide application window for control of barnyardgrass and watergrass. Regiment CA can be applied from 5th leaf to 2nd tiller stages of *Echinochola sp.* growth. Use rates range from 12 to 18 grams ai /A. Optimum use rates for herbicide resistant early watergrass are 15 to 18 grams ai /A. For herbicide resistant late watergrass, 18 grams ai/A is necessary. A non-ionic silicone based surfactant is required at rates of 0.125 to 0.25% v/v.

In 2003, joint testing was conducted between Valent USA Corporation and Agricultural Advisors Inc, to determine the tank-mix activity of Regiment CA and two formulations of propanil, Stam® DF, and SuperWham® .The trial site had a mixed population of herbicide susceptible early watergrass and herbicide resistant late watergrass<sup>1</sup>. Regiment CA was tested alone at rates of 5 and 18 grams ai/A plus Kinetic® at 0.125 % v/v and was compared to Regiment CA at 5 grams ai/A plus 4 lbs ai/A of Stam or Superwham plus Kinetic at 0.125 % v/v. Additional treatments included: Regiment CA at 5 grams ai/A plus SuperWham at 4 lbs ai/A plus COC at 2.5% v/v; SuperWham at 4 lbs ai/A plus COC at 2.5% v/v; and Stam DF at 4 lbs ai/A plus COC at 2.5% v/v. All treatments were applied when the watergrass was at the 5th leaf to 1st tiller stage at 15 gallons per acre.

### **Herbicide Susceptible Early Watergrass**

Weed control ratings for herbicide susceptible early watergrass were taken at 16, 43 and 66 days after the application. The data taken at 43 days after treatment indicated that individual applications of Regiment CA at 5 and 18 grams ai/A provided 100% control. The tank-mix of Regiment CA at 5 grams ai/A plus Stam DF or SuperWham at 4 lbs ai/A plus Kinetic at 0.125% v/v provided 50% and 30% control respectively. A tank-mix of Regiment CA at 5 grams ai/A plus SuperWham at 4 lbs ai/A plus COC at 2.5% v/v provided 80% control. Individual applications of Stam DF and SuperWham at 4 lbs ai/A plus COC at 2.5% v/v gave 50% control.

### **Herbicide Resistant Late Watergrass**

Weed control ratings for herbicide resistant late watergrass, were taken at 43 and 66 days after application. The data taken at 66 days indicate that individual applications of Regiment CA at 5 and 18 grams ai/A plus Kinetic at 0.125% v/v provided 47% and 90 % control respectively. The tank-mix of Regiment CA at 5 grams ai/A plus Stam or SuperWham at 4 lbs ai/A plus Kinetic at

0.125% v/v provided 33% and 30% control respectively. A tank-mix of Regiment CA at 5 grams ai/A plus SuperWham at 4 lbs ai/A plus COC at 2.5% v/v provided 40% control. Individual applications of Stam and SuperWham at 4 lbs ai/A plus COC at 2.5% v/v gave 30% and 33% control respectively.

In conclusion, the individual applications of Regiment CA at 5 grams ai/A and 18 grams ai/A plus Kinetic at 0.125% v/v provided excellent control of herbicide susceptible early watergrass. However, only the 18 grams ai/A rate of Regiment CA plus Kinetic at 0.125%v/v provided acceptable control of herbicide resistant late watergrass. The tank-mix combinations of Regiment CA at 5 grams ai/A plus Stam or SuperWham at 4 lbs ai/A plus Kinetic at 0.125%v/v appeared to be antagonistic and did not provide adequate control of either watergrass species. The tank-mix of Regiment Ca at 5 grams ai/A plus SuperWham at 4 lbs ai/A plus COC at 2.5%v/v did appear to be more efficacious on herbicide susceptible early watergrass when compared to Regiment Ca at 5 grams ai/A plus SuperWham at 4 lbs ai/A plus Kinetic at 0.125% v/v. The Regiment CA at 5 grams ai/A plus SuperWham at 4 lbs ai/A plus Kinetic at 0.125%v/v for control herbicide resistant late watergrass was no more efficacious than Super Wham at 4 lbs ai/A plus COC at 2.5%v/v by itself.

1. University of California and USDA, Annual Report, Comprehensive Rice Research, 2001.

Regiment™ CA Reg. TM of Valent USA Corporation.

Stam® DF Reg. TM of DowAgroSciences LLC.

SuperWHAM® Reg. TM RiceCo LLC.