

# Control of Herbicide Resistant Watergrass in Northern California Rice with Regiment™ Herbicide

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## Abstract

Regiment™ 80 WP (bispyribac-sodium) is a post-emergence 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™ 80 WP has a wide application window for control of barnyardgrass and watergrass. The herbicide can be applied to watergrass and barnyardgrass from the 1 leaf to 2-3 tiller stages of growth. Use rates range from 10 to 18 grams ai./Acre. Optimum use rates are 10 to 12 grams ai/A with the grass being at the 3 to 5 leaf stage. Higher use rates may be required for herbicide resistant watergrass. A non-ionic silicone based surfactant is required at rates of 0.125 to 0.25% v/v.

Over the last 3 to 5 years, growers in the Princeton area (Glenn County, CA) have had difficulty in controlling late season watergrass in their rice fields. Grass control failures have been observed with maximum rates of thiobencarb, molinate and fenoxaprop-ethyl applied alone and sequentially.

In 1998, Dr. Albert Fischer, UC-Davis, confirmed in greenhouse tests that resistance to thiobencarb, molinate and fenoxaprop-ethyl had developed in late-season watergrass biotypes. His findings also indicated that resistance to all three herbicides was not equal but varied from field to field.

Findings from greenhouse testing also indicated that certain watergrass biotypes exhibited resistance to bispyribac-sodium. To confirm greenhouse results, three field trials were established in the Princeton area. All three fields, Argo, Glasgow and Zoller had histories of herbicide failures and confirmed resistance in greenhouse testing by Dr. Fischer.

**ARGO TRIAL:** This trial was established by Chemtec, Inc. to determine the application timing and rates for control of herbicide resistant watergrass. The trial was located north and west of Princeton by 2 miles. Regiment™ 80 WP at 10, 18 and 24 grams ai/A was applied to 4 - 5 leaf and 1 - 2 tiller watergrass. All treatments included Kinetic® @ 0.125%v/v. The standard in the trial was Super Wham® at 6 qt./A.

**GLASGOW TRIAL:** This trial was located 2 miles south of the ARGO trial. The trial was also a cooperative test with Chemtec, Inc. Regiment™ 80 WP at 10, 18 and 24 grams ai/A

was applied to 2 - 3 tiller watergrass. All treatments included Kinetic® @ 0.125%v/v. The standard in the trial was Super Wham® at 6 qt./A.

ZOLLER TRIAL: This trial was located NW of the GLASGOW trial by 1 mile. John Taylor Fertilizers Co., Inc. conducted the trial. Regiment™ 80 WP at 10, 18 and 24 grams ai/A was applied to 4 - 5 leaf and 1 - 2 tiller watergrass. All treatments included Kinetic® @ 0.125%v/v. The standard in the trial was Super Wham® at 4 qt./A.

RESULTS: Consistent grass control was observed in all three trials. Best application timing was during tillering. The earlier application timing of 4 - 5 leaf watergrass consistently exhibited less control than the later timing.

Best grass control was observed at rates of 18 and 24 grams ai/A which ranged from 85 to 99 % control across all three trials. The 10 grams ai/A rate did not provide adequate control regardless of application timing.

The standard Super Wham® provided good control of watergrass in two of the three trials. Timing did not appear to be important for good control. It appears that the 6 qt./A rate was more efficacious than the 4 qt./A rate, which did not give adequate control in the ZOLLER trial.

Phytotoxicity was minimal in all three trials.

CONCLUSION: Regiment™ 80 WP at 18 and 24 grams ai/A with Kinetic® @ 0.125 % v/v provided excellent control of herbicide resistant watergrass at the late application timing. Control was equal to Super Wham® at 6 qt./A and better than the 4 qt./A rate.

Regiment™ 80 WP appears to provide an additional tool for control of herbicide resistant watergrass in Northern California Rice.