

Efficacy of Imazameth (Cadre) for Nutsedge Control in Parker Valley Alfalfa

Tim C. Knowles and Jerry McGuire

Abstract

Summer weeds including purple nutsedge are of economic concern to alfalfa growers in western Arizona. Application rates of Cadre 2 ASU, a new sulfonylurea herbicide chemistry currently registered for experimental use in peanuts, for purple nutsedge control in a roadway bordering established alfalfa were examined in a two year duration, replicated field study. Fair to good (35-65%) purple nutsedge control was obtained when Cadre was applied at the 3 oz/acre rate to a severe initial nutsedge infestation (80-100%). Control was most effective when Cadre was applied in late summer compared to early spring, and repeat split applications were necessary under the high weed pressure observed in this study.

Introduction

Imazameth (Cadre 2 ASU) can be applied early postemergence in peanuts for postemergence control of broadleaf weeds, grasses, and sedges. Uptake of Cadre by weed roots and/or foliage is followed by rapid translocation to the growing points. Its ALS/AHAS enzyme inhibiting mode of action is similar to other sulfonylurea herbicides such as Accent, Classic, and Permit, the sulfonamide herbicides such as Broadstrike, and the pyrimidyl benzoates such as Staple. Susceptible weeds will show yellowing and terminate growth following Cadre application, followed by death within several days. When adequate soil moisture is present, Cadre will have residual activity on susceptible germinating weeds. It requires addition of a nonionic surfactant or crop oil concentrate and cannot be applied by air or through an irrigation system. Cadre has a post harvest interval of 90 days for peanuts. Currently, treated forage may not be fed to livestock. Presently, rotational crops include: peanuts at any interval after application; wheat and rye 4 months after application (MAA); corn 9 MAA; barley, cotton, milo, and oats 18 MAA; 26 MAA for all other crops.

A two year small plot field experiment was conducted to examine the effectiveness of Cadre applications for purple nutsedge control in established alfalfa growing along a roadway, although the material is not labeled for this use, yet. Two applications (late summer 1996 and early spring 1997) of Cadre 2 ASU following alfalfa hay baling but prior to irrigation. Research will help fine tune application rates for purple nutsedge control in peanuts, and possibly other crops in the future.

Materials and Methods

A small plot field experiment was conducted during 1996-97 in Parker Valley (located in southwestern La Paz County) to determine the effect of imazameth herbicide rates on actively growing purple nutsedge growing in a

roadway bordering two year old alfalfa. Initial purple nutsedge infestation of the area ranged from 80 to 100%. The experiment was conducted on a sandy loam soil. Four rates of Cadre 2 ASU (0, 2, 3, and 4 oz. material./acre) applied in late summer and early spring. Herbicide applications were made with a backpack sprayer applying 12 gallons spray solution per acre on September 11, 1996 and March 28, 1997. The four treatments were replicated four times in randomized complete blocks. Individual plots were 5 ft wide by 20 feet long. The first spring visual weed ratings of nutsedge control were made on September 20, 1996 which was 9 days after treatment (DAT). Subsequent 1996 nutsedge visual control ratings were taken weekly through October 11 (30 DAT), then when nutsedge entered winter dormancy on October 25 (44 DAT). Treatments were reapplied on March 28, 1997 and nutsedge control was rated on a monthly basis through July. Visual ratings of weed control were on a rating system from 0 to 100 with 0 to 50 representing yellow symptoms, and 50 to 100 representing death and population reduction. Statistical analyses were performed on the data using ANOVA and the least significant difference Duncan's Multiple Range Test at the 0.05 level of probability when appropriate.

Results and Discussion

In 1996, four Cadre rates (0, 2, 3, and 4 oz/acre) were applied in late summer to a severe established infestation (80-100%) of purple nutsedge growing in a roadway bordering an established alfalfa field. By October 11, 30 days after treatment (DAT), good purple nutsedge control (58-65%) was obtained at the 3 and 4 oz per acre Cadre application rates (Figure 1). The purple nutsedge seemed to enter winter dormancy prematurely by October 25, resulting in excellent visual control ratings at the 2, 3, and 4 oz/acre Cadre application rates.

In 1997, the Cadre rates were reapplied to the same field at the first flush of spring growth of purple nutsedge in early spring. At 30 DAT, the 2 and 3 oz/acre Cadre application rates provided fair purple nutsedge control (25-27%). Fair to good purple nutsedge control (35%) required 60 DAT at the 3 oz/acre Cadre application rate. When Cadre was applied to cut alfalfa following removal of bales, but prior to irrigation, no damage to the alfalfa was observed at application rates up to 3 oz Cadre/acre. In contrast, when Cadre was applied at the 4 oz/acre rate over the top of half grown alfalfa in a similar field experiment, severe chlorosis of the plant and flagging of the terminals was observed. Good nutsedge control resulted, however alfalfa hay tonnage was reduced for one cutting.

Cadre provided fair to good purple nutsedge control (35-65%) under the conditions of this study. Summer Cadre applications seemed to provide better nutsedge control than early spring applications at comparable rates. The initial purple nutsedge infestation was more severe (80-100%) than is normally encountered, thus we suspect multiple (2 or more) applications per year would be required to provide adequate control at the high pressure observed in this study. In a separate, unreplicated study with light to moderate nutsedge pressure, purple nutsedge control exceeded 65% at the 4 oz Cadre/acre application rate, however alfalfa hay tonnage was reduced by approximately 25% for one cutting. Currently, the lack of feeding studies, relatively long residual soil activity of this material, severe plant back restrictions, and potential for crop damage will limit the marketability of this material in alfalfa. However, research should continue to determine the suitability of Cadre for nutsedge and summer grass control in AZ grown peanuts.

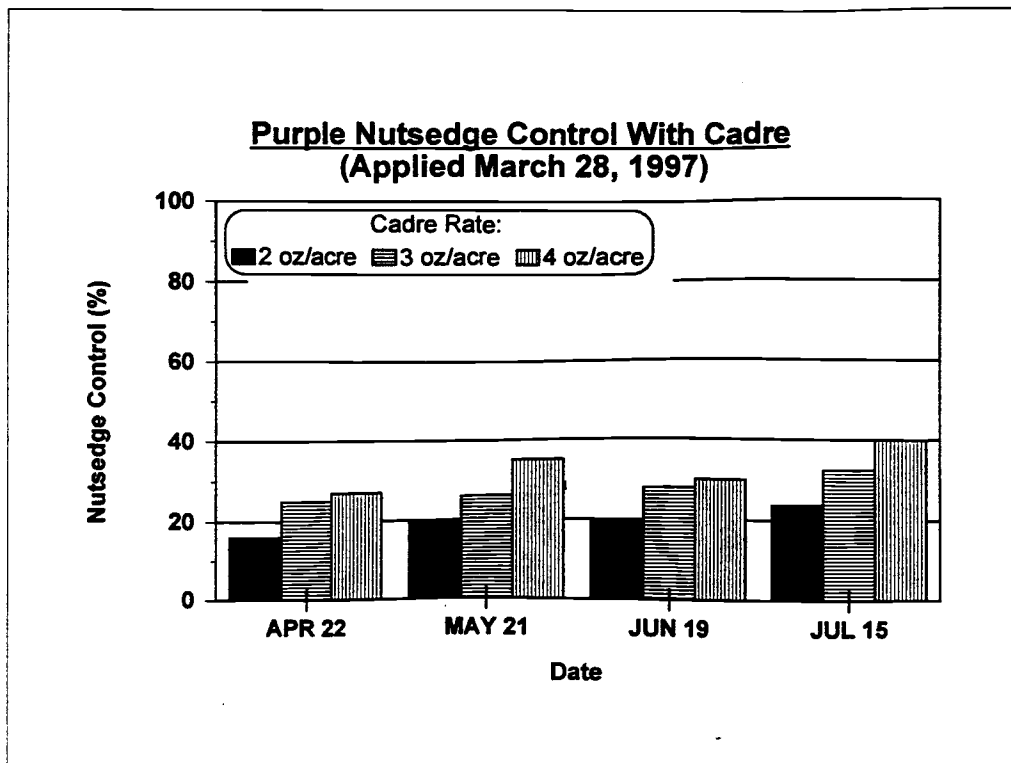
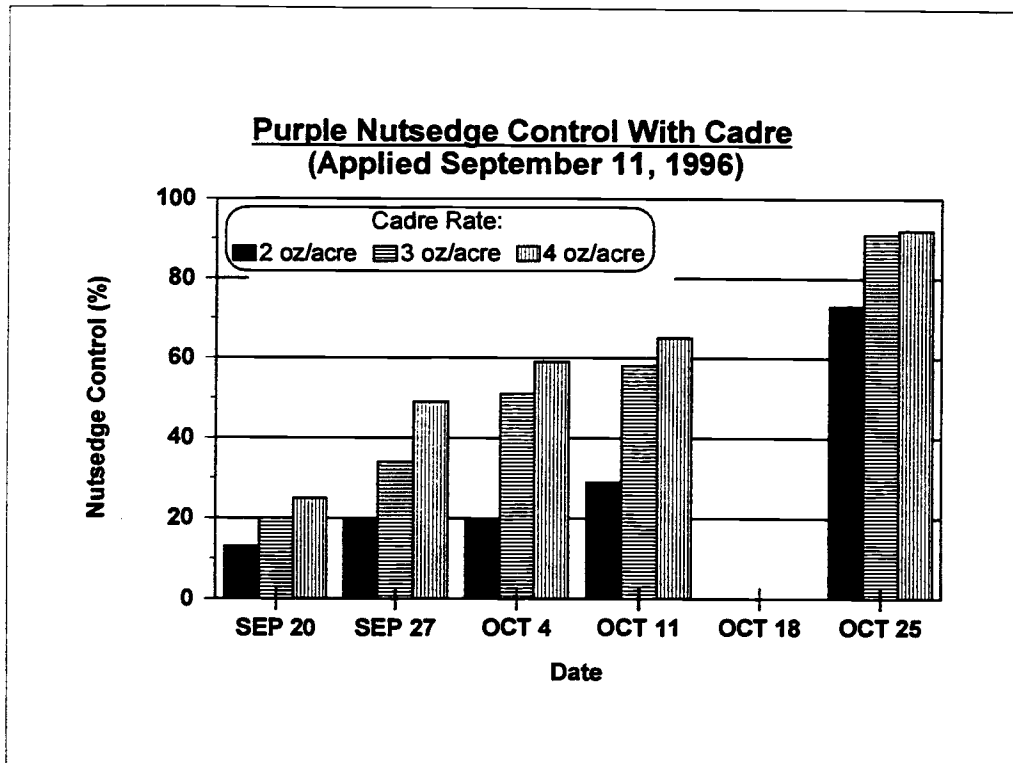


Figure 1. Purple nutsedge control following Cadre application at two dates from 1996-97.