

# Evaluation of AuxiGro® WP and Foliar Fertilizers on Bermudagrass Seed Production

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## Abstract

*AuxiGro® WP was evaluated for effects on bermudagrass seed production in the Palo Verde Valley of far eastern California. Four rates of this product, in addition to a 4 oz./acre rate with two fertilizers were tested, as were the fertilizers only to separate treatment effects. Highest yields from subplot harvests were noted from the 2 and 4 oz./acre rates of AuxiGro® WP, and germination percentages from these treatments and resultant pure live seed were also numerically higher (81-99 lbs./acre) than that noted from untreated bermudagrass, although most plant parameters did not result in statistical difference.*

## Introduction

AuxiGro® WP is registered in California to increase yields in almonds, melons, onions and tomatoes. It has a much wider federal label registration for crops such as peanuts, lettuce, edible dry beans, sugar beets, as well as grass grown for seed such as annual rye, perennial rye, Kentucky bluegrass, and tall fescue. The grasses on which AuxiGro® WP is currently registered are all cool season (C<sub>3</sub> photosynthetic pathway) grasses; data for effects of AuxiGro® WP on warm season (C<sub>4</sub> photosynthetic pathway) grasses grown for seed production are not as readily available.

Seed production of bermudagrass (*Cynodon dactylon* (L.) Pers.), a warm season grass, is extensively grown in only four counties within the United States (La Paz and Yuma in Arizona; Imperial and Riverside in California). This trial was initiated to evaluate the effects of several rates of AuxiGro® WP as well as fertilizers on bermudagrass seed in the Palo Verde Valley of far eastern Riverside County.

## Methods and Materials

Treatments were applied the morning of June 8, 2004, to a field of bermudagrass (var. 'Sahara') with a backpack CO<sub>2</sub> sprayer calibrated to deliver 18.8 gal/acre with a boom that had four T-Jet 8002VS spray tips. Plots were 7 ft wide x 25 feet long and replicated four times in a randomized complete block design. Plants had already pollinated and had developing seed, and were about one month away from swathing and about seven weeks from mechanical harvest on date of application.

Nine treatments were applied to compare with the untreated check. Treatments consisted of 1, 2, 4 and 8 oz/acre of AuxiGro® WP, the fertilizers First Choice® CalMax® and First Choice® Foliar Pride (each at 1 qt/acre), 4 oz./acre of AuxiGro® WP with 1 qt/acre of CalMax® and 4 oz./acre of AuxiGro® WP with 1 qt/acre of Foliar Pride, and First Choice® Solar™ at the rate of 3.0 oz./acre (1 pt/100 gal = 0.125%). All AuxiGro® WP treatments also included First Choice® Solar™ at this rate.

CalMax<sup>®</sup> is a foliar fertilizer consisting of 10% nitrogen, 11% calcium, 1.2% magnesium, 0.1% iron, 0.1% manganese, 0.05% boron, 0.05% copper, 0.05% zinc, and 0.001% molybdenum (wt. = 12.52 lbs./gallon). Foliar Pride is a foliar fertilizer containing 7% nitrogen, 14% phosphoric acid, 8% potash, 0.1% iron zinc and 0.05% zinc as well as 0.15% humic acids derived from leonardite (wt = 10.53 lbs./gal.). Solar<sup>™</sup> is a spreader sticker methylated seed oil, comprised of a proprietary blend of 99% polyalkyleneoxide modified polydimethylsiloxane nonionic emulsifiers and methylated seed oil (all three products marketed under First Choice<sup>®</sup> labeling by Western Farm Service, Inc.).

Plots were hand harvested on July 8-9, 2004 (one day before the commercial field in which the plots were located was harvested) and allowed to dry. Two 4 ft. x 4 ft. squares were placed in each plot, and all foliage within the squares were cut with scissors or other sharpened/serrated utensils. Foliage with attached seeds from each plot was then placed in large paper bags and returned to the laboratory and allowed to dry, similar to commercial operations that allow foliage to dry in the field for improved threshing/combing at a later date.

After allowing to dry for several weeks, bags were delivered for threshing, cleaning and weighing (Ron Rubin, Brawley, CA). Germination testing was completed on seed from each plot by AB Seed Laboratory, LLC (Norcross, GA).

Analysis of variance indicated data from one replicate did not fit a normal distribution to allow legitimate analyses, hence this replicate was removed and only three replicates were used for data analyses. Data were analyzed for treatment mean separations of lbs. seed/plot percent germination and pure live seed utilizing Fisher's least significant difference (Statgraphics Plus for Windows, Manugistics, Inc.).

## Results

Area bermudagrass seed yields were reduced in 2004 compared with previous years with 2004 area average noted at 281 lbs./acre (Freeman, 2005), while the average for 2001-2003 was 508 lbs./acre (Mulherin 2002, 2003, 2004). The difference was attributed to high temperatures during the week of May 3-9 which was thought to have reduced viability of pollen, as high temperatures exceeded 100°F on six of these days, with 105°F noted on May 4.

Mean seed weight per 32 sq. feet ranged from a high of 0.483 lbs. for the 4 oz./acre rate of Auxigro<sup>®</sup> WP to 0.398 for CalMax<sup>®</sup> (Table 1), although differences in mean seed weights/plot were not statistically different. Statistical differences did exist (Table 1) between the extremes for germination with highest germination percentage noted from bermudagrass treated with the 8 oz./acre rate of Auxigro<sup>®</sup> WP (88.7%). Two other treatments resulted in germination greater than 87%, with these being the 4 oz./acre rate fo Auxigro<sup>®</sup> WP + CalMax<sup>®</sup> (88.3%) and the 2 oz./acre rate of Auxigro<sup>®</sup> WP (87.7%).

No statistical differences existed for pure live seed (calculated by percent germination multiplied by lbs. of seed), although an increase of almost 100 lbs./acre was noted for the highest yielding treatment compared with the untreated check (Table 1). The treatment which resulted in the most pure live seed was the 4 oz./acre rate of Auxigro<sup>®</sup> WP treatment (509 lbs./acre), followed by the 2 oz./acre rate of Auxigro<sup>®</sup> WP (491 lbs./acre). The untreated check had 410 lbs. of pure live seed/acre, while several treatments were similar or less than this level. These treatments included the 1 oz./acre rate of Auxigro<sup>®</sup> WP as well as CalMax<sup>®</sup> (both 400 lbs./acre of pure live bermudagrass seed), and Solar<sup>™</sup> (395 lbs./acre).

Although a trend for greatest seed production appears to have resulted from Auxigro<sup>®</sup> WP treatments in the range of 2-4 oz./acre, additional testing is recommended to confirm this as fact as statistical differences were not present for most parameters (perhaps due analyses using only three replicates). As bermudagrass seed is usually valued in the range of \$1.33-\$1.75/lb. in recent years (Mulherin 1999-2003), an increase in seed yields of 80-100 lbs./acre of pure live seed would roughly increase per acre value of seed production \$120-150/acre.

## **Literature Cited**

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**Table 1. Bermudagrass seed yields, germination percentages and pounds of pure live seed/plot following application of various rate of Auxigro® WP and fertilizers on June 8, 2004, Blythe, CA.**

Treatment	Rate/acre	Lbs. of seed/plot	Percent germination	Lbs. pure live seed per 32 ft <sup>2</sup> Acre	
Auxigro® WP	4 oz.	0.483a	86.7ab	0.374a	509a
Auxigro® WP	2 oz.	0.476a	87.7ab	0.361a	491a
Auxigro® WP + Cal Max®	4 oz. 1 qt.	0.454a	88.3ab	0.336a	457a
Foliar Pride	1 qt.	0.439a	86.0ab	0.331a	451a
Auxigro® WP	8 oz.	0.435a	88.7 b	0.321a	437a
Auxigro® WP + Foliar Pride	4 oz. 1 qt.	0.432a	84.7ab	0.309a	420a
Untreated check	----	0.401a	86.0ab	0.301a	410a
Auxigro® WP	1 oz.	0.447a	84.0ab	0.294a	400a
CalMax®	1 qt.	0.398a	85.3ab	0.294a	400a
Solar™	3 oz.	0.434a	83.7a	0.290a	395a

- All Auxigro® WP plots also included First Choice® Solar™ at a rate of 1 pt/100 gal of solution (3 oz./acre).  
 - Means in columns followed by the same letter are not statistically different at the  $p \leq 0.05$  level (Fisher's least significant difference test).