EVALUATION OF AGZYME® IN ONION PRODUCTION

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Introduction

AgZyme® (Ag Concepts Corp., Boise, ID) is marketed as a "biostimulant" for agricultural crops. This trial evaluated the efficacy of AgZyme in onion production.

Materials and Methods

In preparation for testing AgZyme on drip-irrigated onion in 2011, a field at Winegar Farms in Fruitland, Idaho was disked twice, ripped, plowed, and groundhogged in the fall of 2010. The field had been planted to spring wheat in 2010. Fifty pounds of nitrogen and 100 lbs of phosphorus were broadcast in the fall. The field was fumigated with K-Pam at 25 gal/acre. Onions were planted in 6 double rows on 88-inch beds on April 14, 2011. Onion seed was planted at 170,000 seeds/acre using a Beck planter. Three drip tapes (Aqua Traxx, 0.17 gals/min/100 ft, 0.07 gal/hour emitters, Toro Co., El Cajon, CA) were buried at approximately 3-inch depth between the 3 pairs of double onion rows on each bed.

Prior to onion emergence on May 1, Roundup® at 24 oz/acre and Prowl® at 16 oz/acre were broadcast. One hundred and twenty-five pounds of nitrogen and 40 lbs of phosphorus were applied through the drip tape to all plots. For thrips control, Vydate® at 2 qt/acre was applied through the drip tape to all plots every 2 weeks starting the last week of May.

Plots were established near the southern edge of the field. The field had two halves that were supplied with water by a lay-flat hose in the middle. Each plot consisted of one 88-inch bed half the length of the field from the lay-flat hose in the middle. The experimental design was a randomized complete block with 12 replicates. The treatments were AgZyme and an untreated check. AgZyme at 8.4 oz/acre was applied through the drip tape both on May 2 and on June 1. AgZyme was injected through the drip tape during 4-hour irrigation sets with the injection ending 1hour before the end of the set.

The onions were undercut on September 15. On September 21, three samples were harvested from each plot. Each sample was 20 ft long and included the entire bed width. The samples in each plot were collected 80, 180, and 280 ft from the lay-flat hose in the center of the field. The onions from each sample were topped by hand and placed in gunny sacks. The gunny sacks were taken to the Malheur Experiment Station and were graded on October 4. During grading, bulbs were separated according to quality: bulbs without blemishes (No. 1s), split bulbs (No. 2s), neck rot (bulbs infected with the fungus *Botrytis allii* in the neck or side), plate rot (bulbs infected with the fungus *Fusarium oxysporum*), and black mold (bulbs infected with the fungus *Aspergillus niger*). The No. 1 bulbs were graded according to diameter: small (<2¼ inches), medium (2¼ - 3 inches), jumbo (3 - 4 inches), colossal (4 - 4¼ inches), and super colossal (>4¼ inches). Bulb counts per 50 lb of super colossal onions were determined for each plot of every

variety by weighing and counting all super colossal bulbs during grading. Marketable yield consists of No.1 bulbs larger than 2¼ inches.

Treatment differences were compared using protected analysis of variance. Means separation was determined using Fisher's least significant difference test at the 5 percent probability level, LSD (0.05).

Results

Onions treated with AgZyme had similar total yields and total marketable yields compared to onions not treated with AgZyme (Table 1). AgZyme treatment resulted in significantly higher colossal yield (bulbs 4 - 4¼ inch diameter) and colossal plus super colossal yield (bulbs >4 inch diameter) than the untreated check.

Table 1. Yield and grade of onions treated with AgZyme twice at 8.4 oz/acre and untreated (check), Winegar Farms in Fruitland, ID, 2011.

| Treatment | Total yield | Marketable yield by grade | | | | | | Bulb counts >4¼ in | Non-marketable yield | | |
		Total	>4 in	>4¼ in	4-4¼ in	3-4 in	2¼-3 in		Rot	No. 2s	Small
		-------------------------- cwt/acre --------------------------						#/50 lb	%	-- cwt/acre --	
AgZyme	1007.9	997.1	283.8	31.4	252.4	669.6	43.7	33.4	0.1	0.1	9.7
Check	996.3	984.1	251.2	26.5	224.7	685.9	46.9	34.6	0.1	0.0	11.3
Average	1002.1	990.6	267.5	29.0	238.5	677.8	45.3	34.0	0.1	0.1	10.5
LSD (0.05)	NS	NS	30.3	NS	23.5	NS	NS	NS	NS	NS	NS