AgZyme Increases Soil Respiration by 42%

Significant Increases in Nutrient Density of Many Elements Followed on Wheat in Reardan, Washington

In 2012 Rhizoterra was commissioned by Ag Concepts Corp to initiate a study on the effect of AgZyme when applied to wheat. The first year of the test was completed on DNS var. Kelse wheat in Reardan, Washington. Five treatments were examined, full recommendation of fertilizer, check with only sulfur, 12.8 oz of AgZyme with full rate of fertilizer, 12.8 oz AgZyme with half rate of fertilizer, and 12.8 oz AgZyme without fertilizer. Data collected included grain yield, grain protein, grain nutrient density and biological activity. As this is a summary we will report only the results of full rate of fertilizer without and with 12.8 oz of AgZyme.

Biological activity was examined by measuring soil respiration. According to the researcher, carbon in plant residues provides the fuel for microbial mineralization of nitrogen (N) and phosphorous (P). Therefore, "Soil respiration is directly related to the availability of carbon, nitrogen and other mineral nutrients – or the quality of the organic residues. So you can see how it could be possible to use soil respiration as an indicator of soil health and fertility." For this test, the increase in biological activity over the recommended fertilizer application was statistically significant for the AgZyme treatment. Results can be seen in Fig 1.

The results for grain nutrient density can be seen in Table 1. According the researcher, "AgZyme clearly interacted with something in the soil in the presence of fertilizer to increase Ca uptake. … However, Ca also interferes with P uptake, but it looks like AgZyme is working to overcome the affect of Ca on P uptake" This may be explained by the increase in soil microbial activity. Active soil microbiology produces organic acids which can chelate calcium, protecting from tie-up with phosphate, increasing the availability of both nutrients. AgZyme also had a significant effect on the density of Boron and Molybdenum. These elements normally occur as anions, and are subject to leaching, but are also tied up in organic matter. As organic matter is mineralized by microorganism, tied up elements are released and become available to the plant. Using AgZyme to increase the availability of Molybdenum can be especially beneficial in legumes as it is required for Nitrogen fixation and nodulation.

> "Adding AgZyme does increase the soil respiration."
> Dr. Jill Clapperton

Yield did not differ significantly, however AgZyme with full fertilizer did show a numerical increase to 39.3 from 37.2 bu/a over the full fertilizer treatment. Results can be seen in Fig 2. Similarly, grain percent protein did not increase with AgZyme. According to the researcher, "The AgZyme product clearly required more of some nutrient in order to make more protein."

Fig 1: Soil Respiration

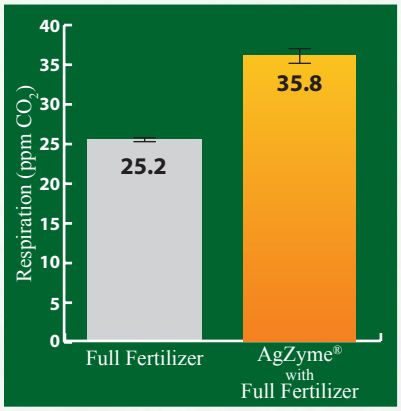

Table 1: Grain Nutrient Density

	%N	%P	S ppm	Ca ppm	B ppm	Mo ppm
AgZyme	2.10±	**0.43±**	1667±	**870±**	**5.3±**	**0.31±**
Full Fertilizer	2.59±	0.40±	1800±	763±	4.9±	0.15±

2012 in Reardan, WA by Dr. Jill Clapperton of Rhizoterra