



# Agronomy Bulletin

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Date: December 2011  
Vol: 26:01

## Micro-Nutrients for 2011

Micro-nutrients bring value to the farm in a variety of ways. First, micro-nutrient addition can enhance crop yields. Secondly, by increasing yields by more than the cost of the micro-nutrient addition, profitability per acre can be enhanced. Third, by including micro-nutrients in your fertility program, better utilization of applied  $N-P_2O_5-K_2O$  can be achieved. Finally, by adding micro-nutrients to the fertilizer mix, additional yield limiting factors can be eliminated.

With a soil maintenance program for P & K, what would be the suggested micro-nutrient application rates?

For Corn in Fall, Dribble Band Application:

Yield Goal (Bu/A)	Nitrogen	Phosphorus	Potassium	Sulfur	Zinc	Boron
180	19	45	65	10 <sub>s</sub>	.428 <sub>zn</sub>	.2B
200	21	50	75	10 <sub>s</sub>	.428 <sub>zn</sub>	.2B
220	25	55	85	15 <sub>s</sub>	.428 <sub>zn</sub>	.2B
240	27	60	95	15 <sub>s</sub>	.428 <sub>zn</sub>	.2B

For Soybeans in Fall, Dribble Application:

Yield Goal (Bu/A)	Nitrogen	Phosphorus	Potassium	Sulfur	Manganese
50	14.6	30	60	10 <sub>s</sub>	1.3Mn
60	17.9	40	80	10 <sub>s</sub>	1.3Mn
70	21.2	50	100	10 <sub>s</sub>	1.3Mn

Long term corn research with sulfur and zinc has demonstrated that the greatest benefit is achieved when both sulfur and zinc are added together in the fall dribble programs.

**Table 1 Influence of Sulfur and Zinc on Corn Yields for 2004-2009**

Fertility	Timing	Placement	Yield Bu/A	Moisture %	\$/A	
					Cost	Net
24-45-65-10 <sub>s</sub> -.428 <sub>zn</sub>	Fall	Dribble	219.7	25.3	9.97	1308.23
24-45-65-10 <sub>s</sub>	Fall	Dribble	217.8	24.9	8.66	1298.14
24-45-65-.428 <sub>zn</sub>	Fall	Dribble	215.5	25.4	1.31	1291.69

Corn: \$6.00/Bu  
Prev. Crop: Soybeans

Sulfur: \$450.30/T  
Zinc: \$3.07/lb.

Source: Twin State, Inc.  
Ag 10 Research Center  
Walcott, IA

In Table 2, we have demonstrated that adding boron to our P & K program increased yield and profitability for 2010-2011.

**Table 2 Influence of Sulfur, Zinc and Boron on Corn for 2010-2011**

Fertility	Timing	Placement	Yield Bu/A	Moisture %	\$/A	
					Cost	Net
24-55-85-10 <sub>s</sub> -.428 <sub>zn</sub> -.2B	Fall	Dribble	206.2	22.8	11.21	24.19
24-55-85-10 <sub>s</sub> -.428 <sub>zn</sub>	Fall	Dribble	201.2	22.3	9.97	(-4.57)
24-55-85	Fall	Dribble	200.3	22.0	-----	-----
Corn: \$6.00/Bu	Sulfur: \$450.30/T			Source: Twin State, Inc.		
Prev. Crop: Soybeans	Zinc: \$3.07/lb.			Ag 10 Research Center		
	Boron: \$6.20/lb.			Walcott, IA		

For soybeans, a 10 lb/A sulfur addition to the basic 13-40-80 dribble band for the last 11 years has returned an average 14.44/A above the sulfur cost.

**Table 3 Influence of Sulfur on Soybean 2001-2011**

Fall, Dribble Band	Yield (Bu/A) 2001-2011	\$/A	
		Cost	Net
17-40-80-10 <sub>s</sub>	65.7	8.66	14.44
13-40-80	63.6	-----	-----
Soybeans: \$11.00/Bu	Sulfur: \$450.30/T	Source: Twin State, Inc.	
Previous Crop: Corn		Ag 10 Research Center	
		Walcott, IA	

When glyphosate is utilized in the soybean herbicide program, then manganese should be added to your soybean fertility program.

**Table 4 Influence of Manganese (Mn) on 2009-2011 Soybeans**

Fall, Dribbled Fertility lbs/A	Yield Bu/A	\$/A	
		Mn Cost	Net
17-40-80-10 <sub>s</sub> -1.3Mn	62.5	4.38	17.62
17-40-80-10 <sub>s</sub>	60.5	-----	-----
Soybeans: \$11.00/Bu	Manganese: \$2.81/Gallon	Source: Twin State, Inc.	
Previous Crop: Corn		Ag 10 Research Center	
		Walcott, IA	



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