

# Efficacy of Opportune™ as a Pre emergent Herbicide on Organically grown Corn and Soybean — Clay County

<b>Cooperator:</b>	Lynn Brakke Organic Farms	
<b>Nearest Town:</b>	Comstock, MN	
<b>Soil Type:</b>	<i>Soybean:</i> Fargo silty clay	<i>Corn:</i> Fargo silty clay
<b>Tillage:</b>	Spring: One pass with a field cultivator	
<b>Previous Crop:</b>	<i>Soybean:</i> Corn	<i>Corn:</i> Soybean
<b>Planting Date:</b>	<i>Soybean:</i> 5/15/13	<i>Corn:</i> 6/12/13
<b>Variety:</b>	<i>Soybean:</i> ProSoy	<i>Corn:</i> 2853 BC
<b>Row Width:</b>	<i>Soybean :</i> 22 inches	<i>Corn:</i> 22 inches
<b>Planting Population:</b>	<i>Soybean:</i> 210,000	<i>Corn:</i> 32,000
<b>Harvest Date:</b>	<i>Soybean:</i> 10/2/13	<i>Corn:</i> Not harvested
<b>Experimental Design:</b>	<i>Soybean &amp; corn:</i> Randomized complete block design with four replicates.	

## Purpose of Study:

Evaluate the efficacy of Opportune™ as a pre-emergent herbicide on organically grown corn and soybean.

## Materials and Methods:

Opportune™ was applied to the soil of six row plots (30 feet long) at a product rate of three gal/a using a CO<sub>2</sub> pressurized plot sprayer delivering 20 gal/a spray solution and incorporated into soil or left on soil surface. Opportune™ was incorporated by lightly raking soil surface. No spray solution was applied to untreated plots, but soil was lightly raked. Opportune™ was applied to soybean on 16 May and corn 12 June. Stand counts were taken for soybean and corn from the middle two plot rows. Weed control was evaluated for corn and soybean by rating the treated plots relative to the untreated for each replicate. Untreated plots had zero percent control and treated plots were rated using a 0 - 100% scale. Specific weed counts were taken for corn and soybean by randomly placing a hula hoop (27 inch diameter) in each plot. Center of hula hoop was marked with a flag to facilitate placement of hula hoop for future weed counts. At harvest, ten feet of row was collected from the middle two rows of each soybean plot and used to determine yield and quality. Yield for soybean was adjusted to 13% moisture.

## Results:

Soybean stand counts were significantly greater for untreated check and Opportune™ at 3 gal/ac for both dates when compared to Opportune™ at 3 gal/ac with soil incorporation (Table 1). Corn stand counts were not significantly different between treatments at either date. The difference in soybean stand count between Opportune™ treatments may be due to soil incorporation. Soil incorporation of product would help protect against photo degradation but place product closer to seed. It is possible both attributed to the lower stand count.

**Table 1. Corn and soybean stand counts per 60 feet of row on two sample dates. Comstock, MN. 2013.**

Treatment	Soybean		Corn	
	6/4	6/18	7/3	7/11
	----- plants / 60 row ft -----			
Untreated check	163	287	65	64
Opportune™ 3 gal/ac	173	282	62	60
Opportune™ 3 gal/ac with soil incorporation	122	236	65	65
<i>LSD</i> <sub>0.05</sub>	33	34	NS	NS

# Opportune™ as a Preemergent *continued* — Clay County

## Results continued:

Specific weed counts were taken for corn and soybean (Table 2). Primary weeds present were red root pigweed and yellow foxtail. Common lambsquarter, common cockle bur, and common purslane were also observed in plots but at low numbers and data is not shown. There were no significant differences in populations of red root pigweed and yellow foxtail between treatments on corn or soybean (Table 2). Visual weed ratings were taken for soybean and corn (Table 3). Opportune™ at 3 gal/ac with and without soil incorporation had significantly better visually rated weed control compared to the untreated check for soybean on 28 May. There was no significant difference between treatments on soybean after the 28 May rating.

There were no significant differences between treatments on corn for all rating dates. Visual ratings were difficult, especially early in the growing season because weeds were very small. There was a high degree of variation within treatments as evidenced by the high coefficient of variation (CV) terms (Table 3).

There were no significant differences for yield, percent protein or oil for soybean treatments (Table 4). It is important to note the reduced stand count for Opportune™ at 3 gal/ac with soil incorporation had no significant impact on yield.

**Table 2. Specific weed counts from corn and soybean taken within a 3.97 ft<sup>2</sup> hoop from the same sample sites on two different dates. Comstock, MN. 2013.**

Date	Soybean				Corn			
	6/4	6/18	6/18	6/18	7/3	7/3	7/22	7/22
Treatment	Yellow foxtail	Red root pigweed						
Untreated check	36	1.75	53	8	5.3	4.8	16.5	4.3
Opportune™ 3 gal/ac	27	1.75	35	11	7.5	3.5	10.8	5.5
Opportune™ 3 gal/ac with soil incorporation	41	1.75	46	7	5.5	6.0	21.3	5.3
LSD <sub>0.05</sub> =	NS	NS	NS	NS	NS	NS	NS	NS
CV =	54	93	23	54	63	37	129	33

**Table 3. Visual weed control assessment based on percent control relative to the untreated check (check = 0% control) for corn and soybean. Comstock, MN. 2013.**

Treatment	Soybean			Corn		
	5/28	6/4	6/14	7/3	7/11	7/22
	----- percent control -----					
Untreated check	0	0	0	0	0	0
Opportune™ 3 gal/ac	31	43	28	19	26	24
Opportune™ 3 gal/ac with soil incorporation	31	25	31	25	12	22
LSD <sub>0.05</sub> =	24	NS	NS	NS	NS	NS
CV =	66	90	93	137	167	127

**Table 4. Yield and quality from organically grown soybean treated with Opportune™. Comstock, MN. 2013.**

Treatment	Yield (bu/ac)	Protein (%)	Oil (%)
Untreated check	34.1	37.2	18.6
Opportune™ 3 gal/ac	34.5	37.0	18.6
Opportune™ 3 gal/ac with soil incorporation	35.5	36.9	18.6
LSD <sub>0.05</sub> =	NS	NS	NS