

RESEARCH AND DEVELOPMENT  
PROJECT REPORT

Evaluation of the Efficacy of Different Rates of Albion B5 Compared to Brandt  
Smart Trio on Weed Control and Corn Yield Parameters

**Trial ID: ALB1601M**

Albion, MI – Michigan Ag Research Station

**Prepared for:**

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**Prepared by:**



June – October, 2016

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## ABSTRACT

*Objective:* Evaluate the efficacy of different rates of Albion B5 compared to Brandt Smart Trio on weed control and corn yield improvement.

*Product(s) tested:* Buccaneer Plus, Brandt Smart Trio, and Albion B5

*Location:* Albion, MI – Michigan Ag Research Station

*Project Duration:* June 2 (Planting) to October 18 (Harvest), 2016

*Key Findings:*

- No phytotoxic effects observed on corn treated with any treatment
- Weed control was not significantly different among the treatments
- Yields were not significantly impacted by Albion B5 at either rate but higher than using just herbicide alone

Narrative:

Here we evaluate the efficacy of 0.5 and 1 qt/a rates of Albion B5 compared to Brandt Smart Trio on weed control and corn yield improvement. No phytotoxic effects observed for any product applied.

Weed control for green foxtail, velvetleaf, common lambsquarter and common ragweed were evaluated 9 and 24 DA-A. Control for each species was high, greater than 80% for velvetleaf and >90% for foxtail. At 9 DA-A, lambsquarter control was numerically higher (91%) on the untreated plots and lowest on the plots treated with the low rate of Albion B5 (71%, P=0.22). By 24 DA-A, lambsquarter control was above 91% for all treatments.

Corn was harvested mid-October and total yields were calculated in bushels/acre, with an average of 145 from all plots. No treatments significantly improved or reduced yields compared to the untreated check though the Albion product had higher yields.

## MATERIALS AND METHODS

### *Treatments:*

This study consisted of four treatments with applications on July 1 (A), and July 19 (B), 2016.

1. Buccaneer Plus – 1 qt/a (A)
2. Brandt Smart Trio – 1 qt/a (AB) + Buccaneer Plus – 1 qt/a (A)
3. Albion B5 – 16 fl oz/a (AB) + Buccaneer Plus – 1 qt/a (A)
4. Albion B5 – 1 qt/a (AB) + Buccaneer Plus – 1 qt/a (A)

### *Experimental Unit:*

This trial was conducted on DRC-46-18 variety corn in a field. Plants were spaced 30 inches apart, and the field had a planting density of 32,000 plants per acre. Plots were 10 feet by 40 feet, and four treatments were replicated four times in a randomized complete block design for a total experiment size of 6,400 square-feet. The soil had a pH of 5.9, a cation exchange capacity of 3.70 meq/100g soil, and 1.7% organic matter. The soil texture consisted of 54% sand, 28% silt, and 18% clay particles.

### *Pest Description:*

Green foxtail (*Staria viridis*), common lambsquarter (*Chenopodium album*), velvetleaf (*Abutilon theophrasti*), and Common Ragweed (*Ambrosia artemisiifolia*) were occurring naturally in the field.

### *Application Equipment:*

Two foliar spray applications were made with a CO<sub>2</sub> pressurized sprayer equipped with a four flat fan XR8002 nozzle boom operating at 23 PSI. Each treatment had a spray volume of 20 gallons per acre and a mix size of 3 liters.

### *Evaluations:*

The number of weeds per two square feet was counted to determine the weed density on July 1 (9DA-A), 2016.

The control of weed species was evaluated on a scale of 0 to 100 percent where 0% indicates no weed control and 100% indicates no evidence of that species of weed on July 1 (9DA-A) and July 16 (24 DA-A), 2016.

Phytotoxicity was evaluated on a scale 0 to 100 percent where 0% indicates a healthy plant and 100% indicates a plant that has died from chemical spray on July 16 (24 DA-A), 2016.

Corn was harvested, weighed in pounds, tested for percent moisture, and husheled and weighed for a test weight on October 18 (91 DA-B), 2016.

## RESULTS

**Table 1. Phytotoxicity (%).** Phytotoxicity was evaluated on a scale 0 to 100 percent where 0% indicates a healthy plant and 100% indicates a plant that has died from chemical spray on July 16 (24 DA-A), 2016.

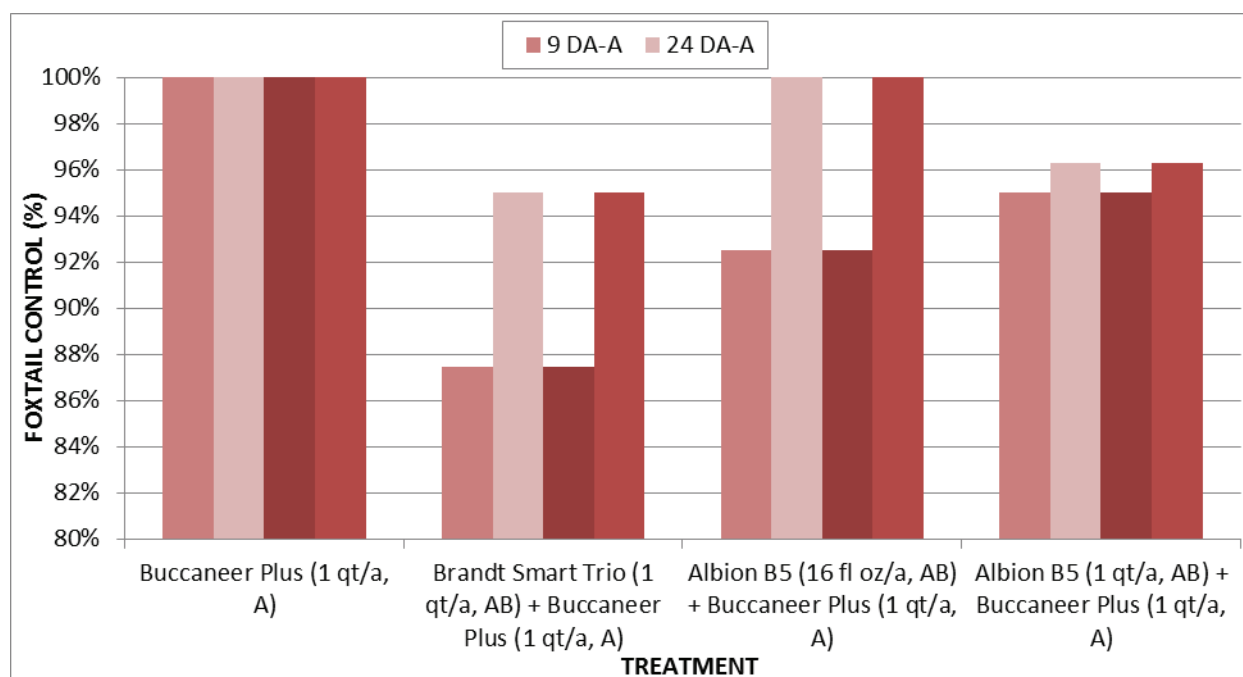
Phytotoxicity (%)

Trt No.	Treatment Name	Rate	Unit	Appl Code	07/16/16 24 DA-A
1	Buccaneer Plus	1 qt/a		A	0.0% a
2	Brandt Smart Trio	1 qt/a		AB	0.0% a
	Buccaneer Plus	1 qt/a		A	
3	Albion B5	16 fl oz/a		AB	0.0% a
	Buccaneer Plus	1 qt/a		A	
4	Albion B5	1 qt/a		AB	0.0% a
	Buccaneer Plus	1 qt/a		A	

## RESULTS

**Table 2. Green Foxtail Control (%).** The control of green foxtails was evaluated on a scale of 0 to 100 percent where 0% indicates no weed control and 100% indicates no evidence of green foxtail on July 1 (9DA-A) and July 16 (24 DA-A), 2016.

Green Foxtail Control (%)					
Trt No.	Treatment Name	Rate	Appl Code	07/01/16 9 DA-A	07/16/16 24 DA-A
1	Buccaneer Plus	1 qt/a	A	100.0% a	100.0% a
2	Brandt Smart Trio	1 qt/a	AB	87.5% a	95.0% a
	Buccaneer Plus	1 qt/a	A		
3	Albion B5	16 fl oz/a	AB	92.5% a	100.0% a
	Buccaneer Plus	1 qt/a	A		
4	Albion B5	1 qt/a	AB	95.0% a	96.3% a
	Buccaneer Plus	1 qt/a	A		



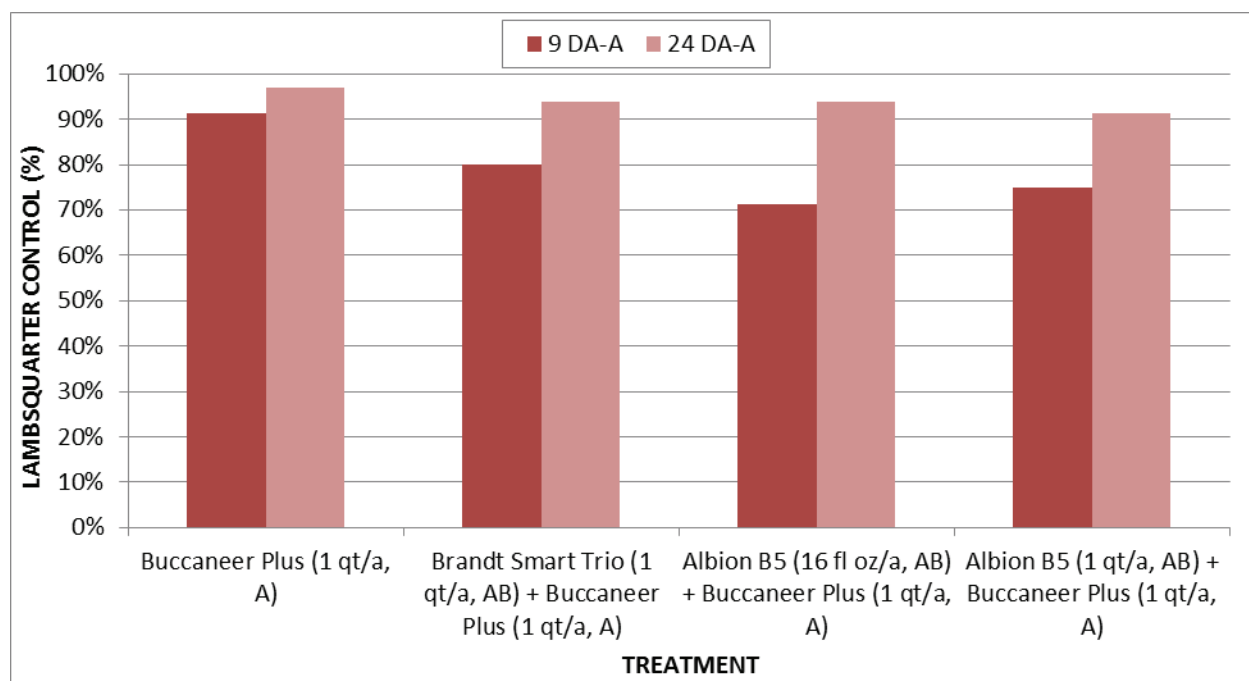
**Chart 2. Green Foxtail Control (%).** The control of green foxtails was evaluated on a scale of 0 to 100 percent where 0% indicates no weed control and 100% indicates no evidence of green foxtail on July 1 (9DA-A) and July 16 (24 DA-A), 2016.

## RESULTS

**Table 3. Common Lambsquarter Control (%).** The control of common lambsquarter was evaluated on a scale of 0 to 100 percent where 0% indicates no weed control and 100% indicates no evidence of that weed on July 1 (9DA-A) and July 16 (24 DA-A), 2016.

Common Lambsquarter Control (%)

Trt No.	Treatment Name	Rate	Appl Unit	07/01/16 9 DA-A	07/16/16 24 DA-A
1	Buccaneer Plus	1 qt/a	A	91.3% a	97.0% a
2	Brandt Smart Trio Buccaneer Plus	1 qt/a	AB A	80.0% a	93.8% a
3	Albion B5 Buccaneer Plus	16 fl oz/a	AB A	71.3% a	93.8% a
4	Albion B5 Buccaneer Plus	1 qt/a	AB A	75.0% a	91.3% a



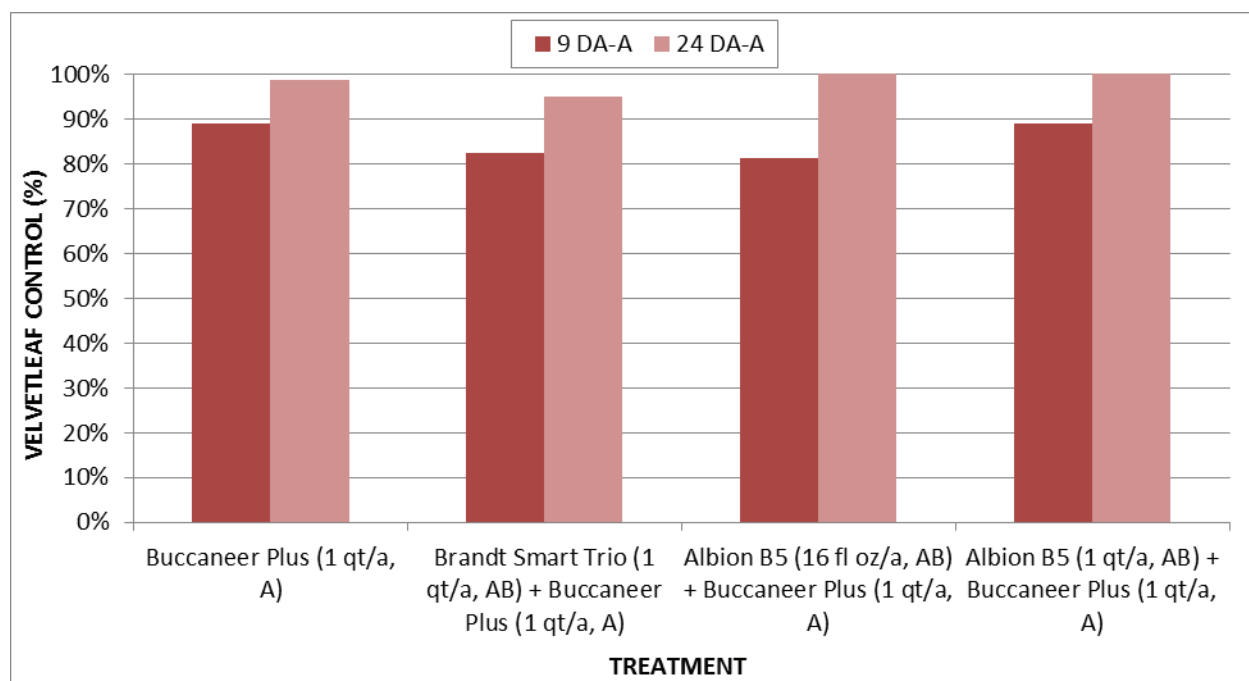
**Chart 3. Common Lambsquarter Control (%).** The control of common lambsquarter was evaluated on a scale of 0 to 100 percent where 0% indicates no weed control and 100% indicates no evidence of that weed on July 1 (9DA-A) and July 16 (24 DA-A), 2016.

## RESULTS

**Table 4. Velvetleaf Control (%).** The control of velvetleaf was evaluated on a scale of 0 to 100 percent where 0% indicates no weed control and 100% indicates no evidence of that weed on July 1 (9DA-A) and July 16 (24 DA-A), 2016.

Velvetleaf Control (%)

Trt No.	Treatment Name	Rate	Unit	Appl Code	07/01/16 9 DA-A	07/16/16 24 DA-A
1	Buccaneer Plus	1 qt/a		A	88.8% a	98.8% a
2	Brandt Smart Trio	1 qt/a		AB	82.5% a	95.0% a
	Buccaneer Plus	1 qt/a		A		
3	Albion B5	16 fl oz/a		AB	81.3% a	100.0% a
	Buccaneer Plus	1 qt/a		A		
4	Albion B5	1 qt/a		AB	88.8% a	100.0% a
	Buccaneer Plus	1 qt/a		A		



**Chart 4. Velvetleaf Control (%).** The control of velvetleaf was evaluated on a scale of 0 to 100 percent where 0% indicates no weed control and 100% indicates no evidence of that weed on July 1 (9DA-A) and July 16 (24 DA-A), 2016.

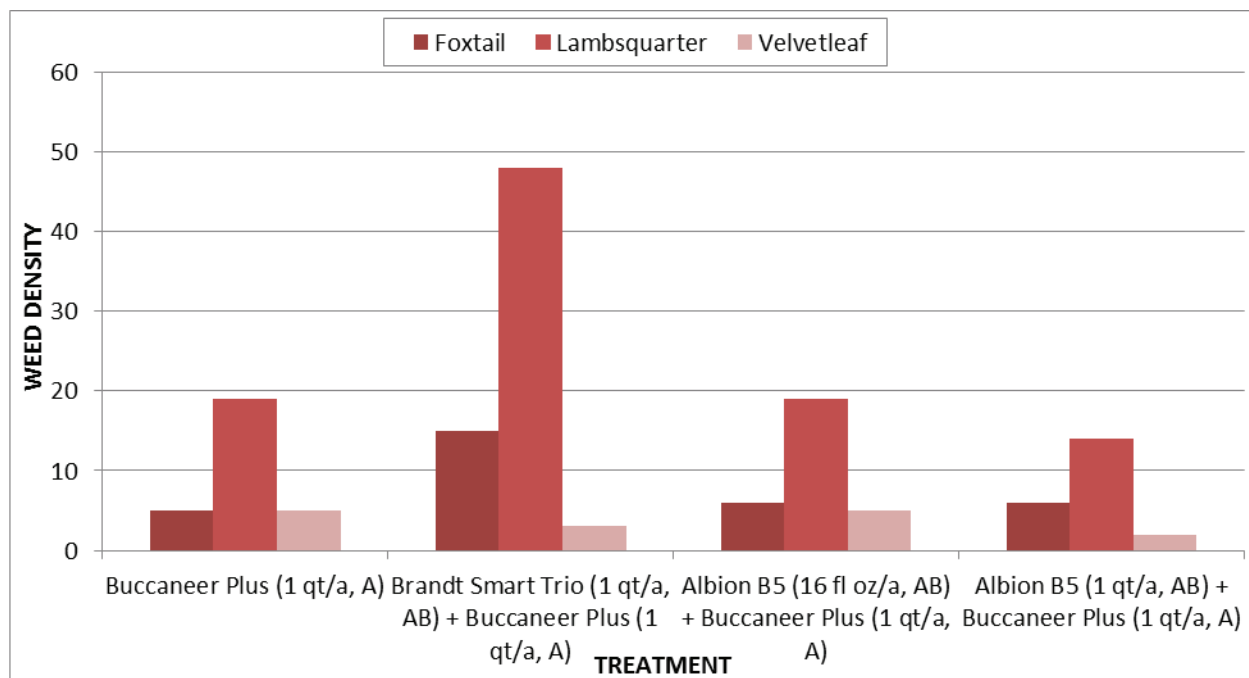


## RESULTS

**Table 5. Weed Density.** The number of weeds per two square feet was counted to determine the weed density on July 1 (9DA-A), 2016. No replication.

Weed Density, July 1, 2016 (9 DA-A) (plant/ft2)

Trt No.	Treatment Name	Rate		Appl Code	Giant Green Foxtail	Common Lambsquarter	Velvetleaf
		Rate	Unit				
1	Buccaneer Plus	1 qt/a	A		5.0	19.0	5.0
2	Brandt Smart Trio	1 qt/a	AB		15.0	48.0	3.0
	Buccaneer Plus	1 qt/a	A				
3	Albion B5	16 fl oz/a	AB		6.0	19.0	5.0
	Buccaneer Plus	1 qt/a	A				
4	Albion B5	1 qt/a	AB		6.0	14.0	2.0
	Buccaneer Plus	1 qt/a	A				

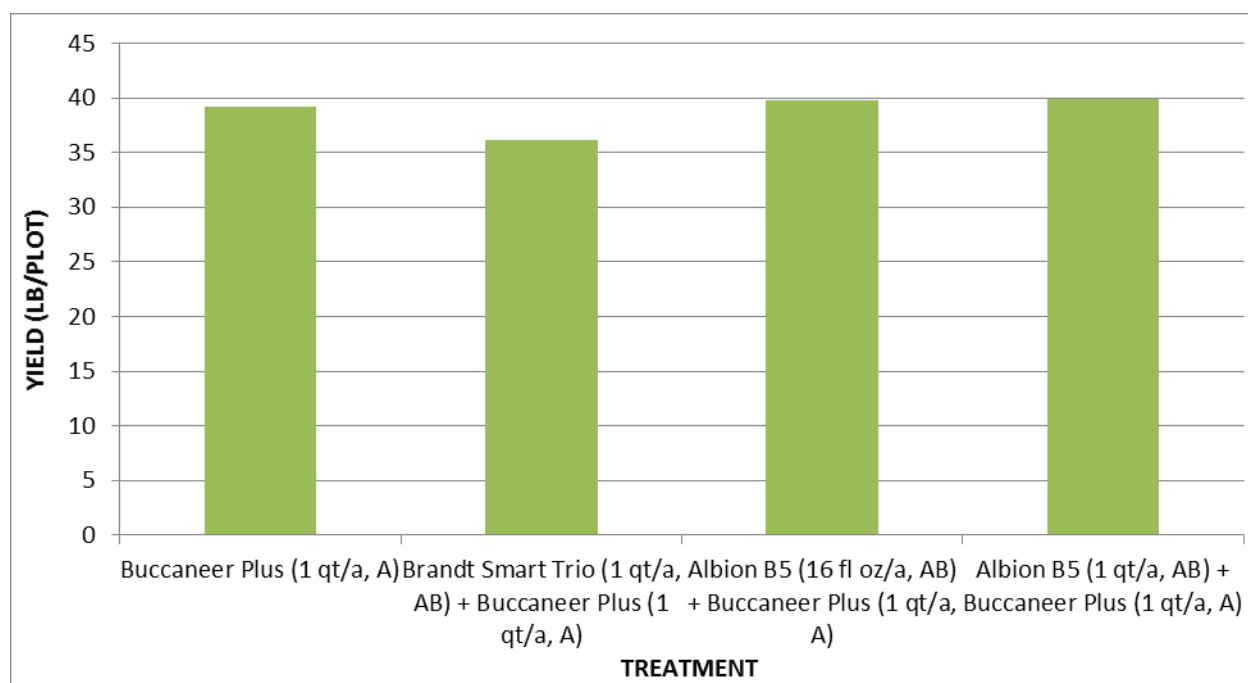


**Chart 5. Weed Density.** The number of weeds per two square feet was counted to determine the weed density on July 1 (9DA-A), 2016.

## RESULTS

**Table 6. Yield Weight.** Corn was harvested on October 19 (91 DA-B), 2016. Yield weight per plot, in pounds was recorded.

Trt No.	Treatment Name	Rate	Unit	Appl Code	10/18/16 91 DA-B
1	Buccaneer Plus	1 qt/a		A	39.15 a
2	Brandt Smart Trio	1 qt/a		AB	36.09 a
	Buccaneer Plus	1 qt/a		A	
3	Albion B5	16 fl oz/a		AB	39.81 a
	Buccaneer Plus	1 qt/a		A	
4	Albion B5	1 qt/a		AB	39.91 a
	Buccaneer Plus	1 qt/a		A	

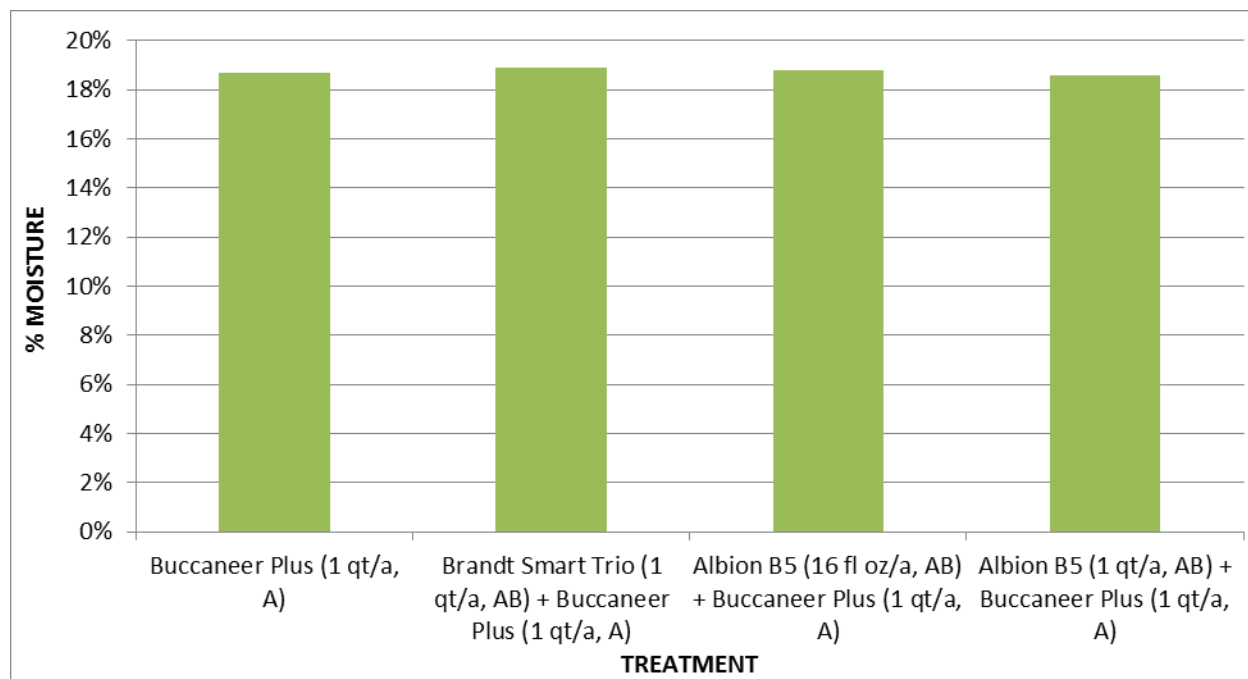


**Chart 6. Yield Weight.** Corn was harvested on October 19 (91 DA-B), 2016. Yield weight per plot, in pounds was recorded.

## RESULTS

**Table 7. Moisture Content.** Moisture content for corn samples from each plot were taken at harvest.

Trt No.	Treatment Name	Rate	Appl Unit	10/18/16 91 DA-B
1	Buccaneer Plus	1 qt/a	A	18.7% a
2	Brandt Smart Trio Buccaneer Plus	1 qt/a	AB	18.9% a
3	Albion B5 Buccaneer Plus	16 fl oz/a	AB	18.8% a
4	Albion B5 Buccaneer Plus	1 qt/a	AB	18.6% a

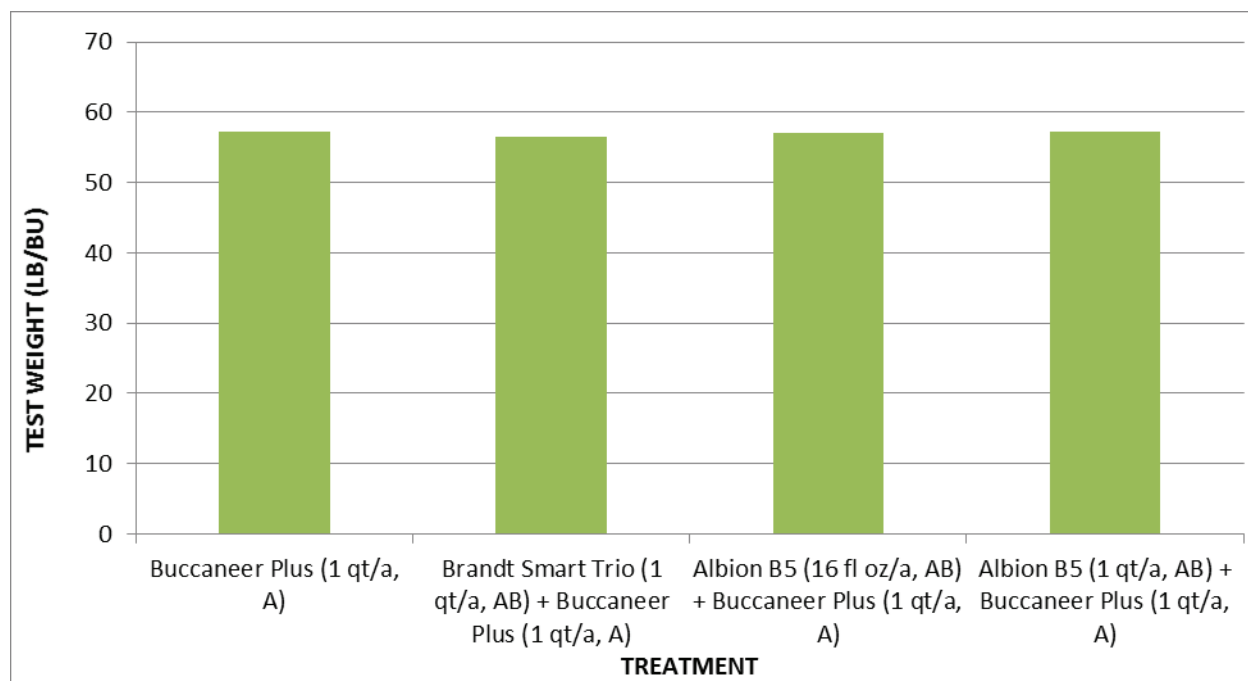


**Chart 7. Moisture Content.** Moisture content for corn samples from each plot were taken at harvest.

## RESULTS

**Table 8. Test Weight (Lbs/Bushel).** The test weight (in pounds/bushel) of corn at harvest was recorded for each plot

Trt No.	Treatment Name	Rate	Appl Code	10/18/16 91 DA-B
1	Buccaneer Plus	1 qt/a	A	57.3 a
2	Brandt Smart Trio	1 qt/a	AB	56.5 a
	Buccaneer Plus	1 qt/a	A	
3	Albion B5	16 fl oz/a	AB	57.0 a
	Buccaneer Plus	1 qt/a	A	
4	Albion B5	1 qt/a	AB	57.2 a
	Buccaneer Plus	1 qt/a	A	

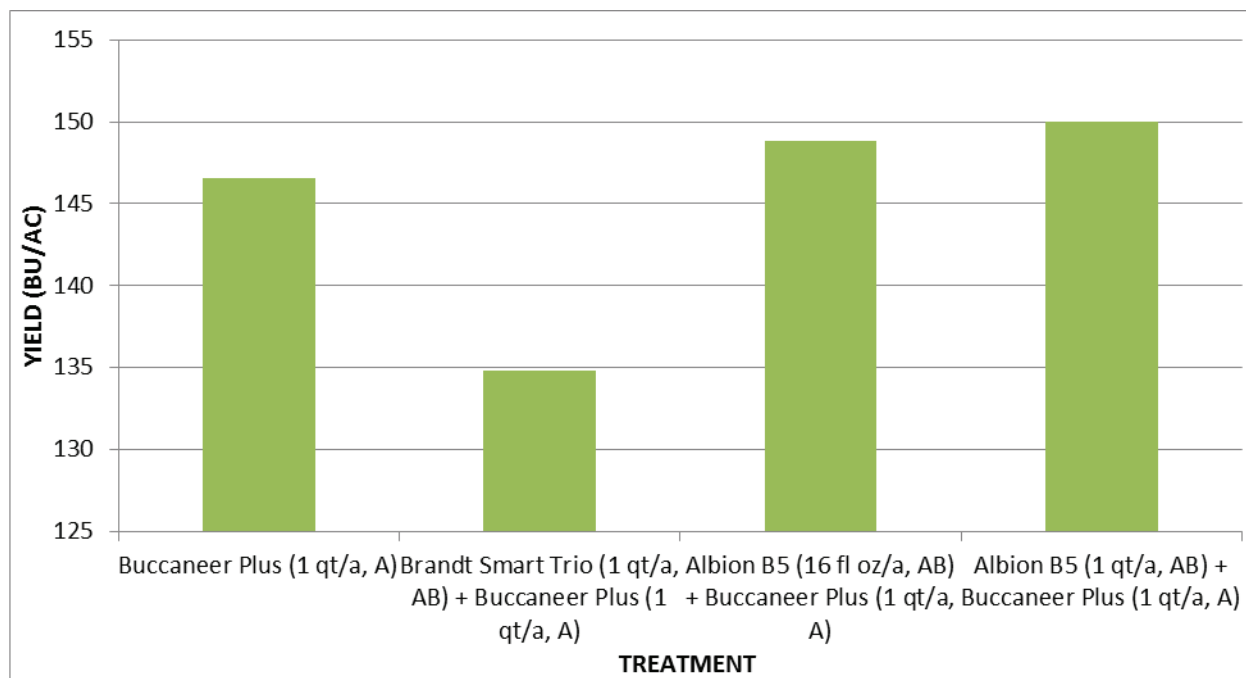


**Chart 8. Test Weight (Lbs/Bushel).** The test weight (in pounds/bushel) of corn at harvest was recorded for each plot

## RESULTS

**Table 9. Moisture-Adjusted Bushels per Acre.** An estimate of the number of bushels per acre was adjusted to 15.5% moisture content for corn.

Yield (Bu/Ac)				
Trt No.	Treatment Name	Rate	Appl Code	10/18/16 91 DA-B
1	Buccaneer Plus	1 qt/a	A	146.57 a
2	Brandt Smart Trio	1 qt/a	AB	134.86 a
	Buccaneer Plus	1 qt/a	A	
3	Albion B5	16 fl oz/a	AB	148.82 a
	Buccaneer Plus	1 qt/a	A	
4	Albion B5	1 qt/a	AB	149.97 a
	Buccaneer Plus	1 qt/a	A	



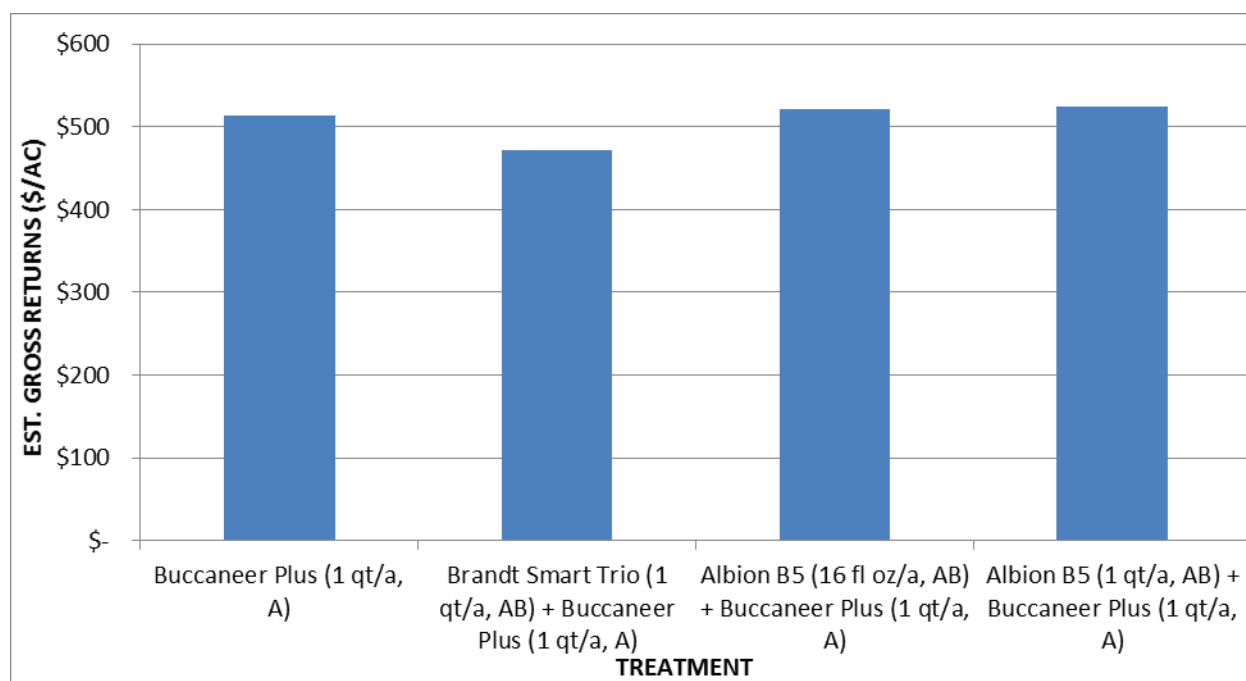
**Chart 9. Moisture-Adjusted Bushels per Acre.** An estimate of the number of bushels per acre was adjusted to 15.5% moisture content for corn.

## RESULTS

**Table 10. Estimated Gross Returns (\$/Ac).** The estimated gross return per acre was based on a market price of \$3.50 per bushel of corn as listed by QuoteCorn.com for November 1, 2016 and the number of bushels harvested per acre on October 18 (91 DA-B).

Estimated Gross Returns (\$/Ac)

Trt No.	Treatment Name	Rate	Unit	Appl Code	ESTIMATED \$/ACRE
1	Buccaneer Plus	1 qt/a	A	A	\$512.98 a
2	Brandt Smart Trio	1 qt/a	AB	AB	\$472.01 a
	Buccaneer Plus	1 qt/a	A	A	
3	Albion B5	16 fl oz/a	AB	AB	\$520.87 a
	Buccaneer Plus	1 qt/a	A	A	
4	Albion B5	1 qt/a	AB	AB	\$524.89 a
	Buccaneer Plus	1 qt/a	A	A	



**Chart 10. Estimated Gross Returns (\$/Ac).** The estimated gross return per acre was based on a market price of \$3.50 per bushel of corn as listed by QuoteCorn.com for November 1, 2016 and the number of bushels harvested per acre on October 18 (91 DA-B).

## TRIAL INFORMATION SHEET

*Trial Setup Info:*

<b>Trial ID:</b>	ALB1601M	<b>Statistical Design:</b>	RCBD
<b>Discipline:</b>	Fertilizer/Weed	<b>Location:</b>	Albion Block 4
<b>Principal Investigator:</b>	Brian Cortright	<b>Plot Width:</b>	10 Feet
<b>Client Contact:</b>	Jeremy O'Brien	<b>Plot Length:</b>	40 Feet
<b>Grower:</b>	Michigan Ag Research	<b>Irrigation Method:</b>	Drip Line
<b># Treatments:</b>	4	<b>Soil pH:</b>	5.9
<b># Replicates:</b>	4	<b>Soil CEC:</b>	3.70
<b>Trial Initiation Date:</b>	6/2/2016	<b>Soil % OM:</b>	1.7%
<b>Trial End Date:</b>	10/18/2016	<b>Soil % Sand, Silt, Clay:</b>	54%, 28%, 18%

*Objective:*

Evaluation of the efficacy of different rates of Albion B5 compared to Brandt Smart Trio on weed control and corn yield improvement.

*Crop and Pest Info:*

<b>Crop:</b>	Field Corn	<b>Pest(s):</b>	Green Foxtail
<b>Variety:</b>	DRC-46-18		<i>Setaria viridis</i>
<b>Planting Date:</b>	6/2/2016		Common Lambsquarter
<b>Planting Method:</b>	Planter		<i>Chenopodium album</i>
<b>Planting Equipment:</b>	JD7000		Velvetleaf
<b>Row Spacing:</b>	30 Inches		<i>Abutilon theophrasti</i>
<b>Harvested Area:</b>	200 FT <sup>2</sup>		Common Ragweed
<b>Planting Density:</b>	32,000 Plants / Acre		<i>Ambrosia artemisiifolia</i> .

*Evaluations:*

<b>Weed Evaluations:</b>	7/1, 7/16
<b>Harvest:</b>	10/18

*Applications:*

<b>A - 07/01/16:</b>	Foliar Spray; 23 PSI; 20 GPA; 3 Liters
<b>B - 07/19/16:</b>	Foliar Spray; 23 PSI; 20 GPA; 3 Liters

Two foliar spray applications were made with a CO<sub>2</sub> pressurized sprayer equipped with a four flat fan XR8002 nozzle boom operating at 23 PSI. Each treatment had a spray volume of 20 gallons per acre and a mix size of 3 liters.

### TREATMENT LIST

Reps: 4

Plots: 10 by 40 feet

Spray vol: 20 GAL/AC

Mix Size: 3 liters (3.476 liters calculated mix size)

Trt No.	Treatment Name	Form Type	Rate	Unit	Appl Code	Spray Volume	Volume Unit	Mix Size	Mix Unit	Amt to Measure	Rep			
											1	2	3	4
1	Buccaneer Plus	EC	1 qt/a		A	20 GAL/AC		3 liters		37.5 ml/mx	103	204	302	401
2	Brandt Smart Trio	L	1 qt/a		AB	20 GAL/AC		3 liters		37.5 ml/mx	104	201	303	404
	Buccaneer Plus	EC	1 qt/a		A	20 GAL/AC		3 liters		37.5 ml/mx				
3	Albion B5	L	16 fl oz/a		AB	20 GAL/AC		3 liters		18.75 ml/mx	102	203	301	402
	Buccaneer Plus	EC	1 qt/a		A	20 GAL/AC		3 liters		37.5 ml/mx				
4	Albion B5	L	1 qt/a		AB	20 GAL/AC		3 liters		37.5 ml/mx	101	202	304	403
	Buccaneer Plus	EC	1 qt/a		A	20 GAL/AC		3 liters		37.5 ml/mx				

### PLOT MAP





APPENDIX A: DAILY METEOROLOGICAL SUMMARY

ALBION, CA  
MAWN ALBION STATION, 8 MILES AWAY

Date	Precip. (in)	Cumul. Precip. (in)	Max Air Temp (F)	Min Air Temp (F)	Avg Air Temp (F)	Max RH (%)	Min RH (%)	Avg RH (%)	Max Wind Speed (MPH)
06/28/16	0.00	0.00	66.9	53.2	60.1	91.4	55.0	73.2	13.5
06/29/16	0.00	0.00	81.0	46.2	63.6	94.9	20.5	57.7	18.6
06/30/16	0.00	0.00	81.4	47.9	64.7	93.8	24.7	59.3	11.5
07/01/16	0.47	0.47	75.6	54.9	65.3	94.3	34.7	64.5	17.9
07/02/16	0.00	0.47	77.5	49.2	63.4	94.4	28.4	61.4	9.5
07/03/16	0.00	0.47	78.5	50.0	64.3	94.5	24.5	59.5	9.5
07/04/16	0.00	0.47	79.7	53.2	66.5	90.9	51.3	71.1	11.2
07/05/16	0.00	0.47	84.7	63.3	74.0	94.5	42.2	68.4	13.9
07/06/16	0.00	0.47	87.5	63.5	75.5	93.9	37.0	65.5	12.5
07/07/16	0.10	0.57	88.8	64.6	76.7	93.7	45.2	69.5	11.5
07/08/16	1.45	2.02	86.7	65.7	76.2	95.3	35.5	65.4	17.2
07/09/16	0.00	2.02	78.4	61.4	69.9	89.6	47.8	68.7	15.9
07/10/16	0.00	2.02	83.1	55.9	69.5	95.0	32.4	63.7	8.2
07/11/16	0.06	2.08	87.6	63.5	75.6	87.7	44.2	66.0	8.8
07/12/16	0.01	2.09	90.6	65.4	78.0	91.7	39.5	65.6	14.5
07/13/16	0.05	2.14	88.0	68.2	78.1	94.2	51.1	72.7	12.2
07/14/16	0.00	2.14	86.1	67.0	76.6	90.9	32.6	61.8	16.9
07/15/16	0.00	2.14	77.2	60.7	69.0	92.6	52.5	72.6	13.9
07/16/16	0.00	2.14	78.7	57.6	68.2	90.2	34.5	62.4	9.5
07/17/16	0.00	2.14	84.9	52.2	68.6	95.1	48.3	71.7	15.5
07/18/16	0.22	2.36	85.9	64.5	75.2	94.7	32.9	63.8	18.9
07/19/16	0.00	2.36	88.5	58.6	73.6	95.1	32.2	63.7	10.2
07/20/16	0.00	2.36	90.1	60.1	75.1	93.3	32.4	62.9	9.5
07/21/16	0.47	2.83	89.1	65.0	77.1	94.7	52.5	73.6	21.6
07/22/16	0.00	2.83	90.6	71.7	81.2	93.4	48.4	70.9	11.2
07/23/16	0.00	2.83	92.9	63.9	78.4	95.6	28.9	62.3	7.5
07/24/16	0.78	3.61	85.4	67.6	76.5	95.2	69.1	82.2	15.9
07/25/16	0.01	3.62	88.4	68.3	78.4	91.3	38.0	64.7	11.5
07/26/16	0.00	3.62	87.4	60.1	73.8	95.7	31.4	63.6	8.2
07/27/16	0.00	3.62	88.5	62.1	75.3	95.8	34.1	65.0	13.9
07/28/16	0.00	3.62	86.8	61.8	74.3	94.7	45.2	70.0	11.5
07/29/16	0.14	3.76	79.8	64.7	72.3	91.9	62.1	77.0	11.9
07/30/16	0.53	4.29	76.6	61.9	69.3	94.9	64.8	79.9	11.2
07/31/16	0.00	4.29	81.2	63.8	72.5	93.7	53.8	73.8	8.8
08/01/16	0.00	4.29	85.6	58.7	72.2	95.7	33.7	64.7	8.5
08/02/16	0.00	4.29	88.6	60.1	74.4	95.5	36.6	66.1	9.5
08/03/16	0.00	4.29	91.3	62.3	76.8	95.6	34.9	65.3	6.5
08/04/16	0.00	4.29	91.2	63.1	77.2	94.4	30.7	62.6	7.8
08/05/16	0.00	4.29	86.1	64.8	75.5	93.9	53.5	73.7	13.5
08/06/16	0.00	4.29	83.9	58.1	71.0	95.7	33.0	64.4	11.2

08/07/16	0.00	4.29	83.7	55.5	69.6	95.5	32.1	63.8	11.5
08/08/16	0.00	4.29	85.7	54.6	70.2	94.0	23.6	58.8	13.9
08/09/16	0.00	4.29	87.8	56.1	72.0	91.6	44.5	68.1	7.2
08/10/16	0.00	4.29	92.5	62.7	77.6	95.5	31.7	63.6	7.5
08/11/16	0.00	4.29	93.3	71.3	82.3	91.5	42.0	66.8	12.9
08/12/16	0.35	4.64	93.2	72.8	83.0	95.0	47.0	71.0	14.2
08/13/16	0.80	5.44	85.1	69.4	77.3	95.6	62.2	78.9	13.2
08/14/16	0.00	5.44	81.7	65.0	73.4	95.5	55.8	75.7	7.2
08/15/16	1.75	7.19	79.6	63.1	71.4	95.6	63.3	79.5	9.5
08/16/16	2.21	9.40	84.1	66.6	75.4	95.6	48.1	71.9	17.6
08/17/16	0.11	9.51	83.7	63.1	73.4	95.7	54.5	75.1	16.2
08/18/16	0.00	9.51	82.8	59.3	71.1	95.7	54.3	75.0	7.2
08/19/16	0.00	9.51	81.0	65.2	73.1	95.4	59.6	77.5	9.8
08/20/16	0.13	9.64	80.2	64.8	72.5	95.6	64.0	79.8	15.9
08/21/16	0.00	9.64	73.6	58.2	65.9	94.2	50.2	72.2	13.5
08/22/16	0.00	9.64	76.8	52.1	64.5	95.9	36.1	66.0	8.5
08/23/16	0.00	9.64	80.5	53.9	67.2	95.8	45.0	70.4	9.5
08/24/16	0.01	9.65	81.1	58.9	70.0	95.0	66.2	80.6	14.5
08/25/16	0.00	9.65	82.4	63.2	72.8	95.7	61.4	78.6	12.5
08/26/16	0.00	9.65	85.6	57.8	71.7	95.9	41.1	68.5	7.8
08/27/16	0.84	10.49	77.8	64.6	71.2	95.3	66.7	81.0	10.8
08/28/16	0.00	10.49	87.4	67.6	77.5	95.6	50.3	73.0	8.8
08/29/16	0.00	10.49	84.9	63.1	74.0	95.7	46.8	71.3	8.5
08/30/16	0.00	10.49	82.8	64.6	73.7	94.3	57.0	75.7	9.5
08/31/16	0.00	10.49	78.6	59.4	69.0	94.9	50.8	72.9	13.2
09/01/16	0.00	10.49	74.8	55.3	65.1	91.9	41.0	66.5	14.9
09/02/16	0.00	10.49	75.9	51.5	63.7	93.0	41.4	67.2	14.2
09/03/16	0.00	10.49	78.6	48.6	63.6	96.0	37.8	66.9	9.8
09/04/16	0.00	10.49	80.1	49.5	64.8	96.2	38.1	67.2	7.8
09/05/16	0.00	10.49	85.4	54.6	70.0	95.5	47.0	71.3	10.2
09/06/16	0.00	10.49	89.9	68.7	79.3	93.1	52.1	72.6	9.5
09/07/16	0.00	10.49	90.6	72.3	81.5	92.8	52.5	72.7	11.2
09/08/16	0.11	10.60	80.2	67.4	73.8	93.9	63.8	78.9	13.2
09/09/16	0.08	10.68	81.0	62.9	72.0	95.9	58.2	77.1	6.5
09/10/16	1.01	11.69	70.0	59.3	64.7	95.9	70.2	83.1	16.9
09/11/16	0.00	11.69	74.3	50.2	62.3	96.1	33.4	64.8	8.8
09/12/16	0.00	11.69	76.1	49.7	62.9	96.0	41.4	68.7	10.8
09/13/16	0.00	11.69	82.2	52.4	67.3	96.1	50.1	73.1	10.8
09/14/16	0.02	11.71	74.9	57.0	66.0	93.5	42.7	68.1	12.2
09/15/16	0.00	11.71	74.7	52.8	63.8	94.3	34.5	64.4	9.5
09/16/16	0.00	11.71	79.0	51.9	65.5	95.7	43.9	69.8	11.2
09/17/16	0.80	12.51	76.0	61.6	68.8	95.9	67.0	81.5	8.5
09/18/16	0.00	12.51	80.0	55.5	67.8	96.5	43.1	69.8	9.5

09/19/16	0.00	12.51	83.6	51.0	67.3	96.7	32.2	64.5	8.5
09/20/16	0.00	12.51	84.3	56.3	70.3	91.6	26.6	59.1	12.5
09/21/16	0.03	12.54	84.4	55.6	70.0	94.2	46.2	70.2	15.5
09/22/16	0.00	12.54	83.0	58.9	71.0	96.3	43.5	69.9	6.5
09/23/16	0.00	12.54	74.2	59.7	67.0	94.5	71.5	83.0	12.9
09/24/16	0.00	12.54	74.0	53.4	63.7	90.8	47.9	69.4	11.5
09/25/16	0.00	12.54	76.6	49.7	63.2	93.0	32.2	62.6	10.2
09/26/16	0.12	12.66	68.0	49.8	58.9	94.1	32.6	63.4	23.9
09/27/16	0.00	12.66	68.0	47.4	57.7	83.2	27.5	55.4	16.9
09/28/16	0.19	12.85	65.6	49.5	57.6	94.4	50.4	72.4	15.9
09/29/16	0.73	13.58	63.4	55.0	59.2	95.9	79.7	87.8	17.2
09/30/16	0.12	13.70	60.0	56.9	58.5	96.1	91.7	93.9	17.9
10/01/16	0.38	14.08	66.6	51.2	58.9	96.5	59.5	78.0	10.8
10/02/16	0.00	14.08	66.6	48.1	57.4	96.7	66.8	81.8	6.5
10/03/16	0.01	14.09	65.7	52.0	58.9	96.6	68.0	82.3	8.5
10/04/16	0.00	14.09	73.3	50.0	61.7	96.5	46.5	71.5	13.2
10/05/16	0.03	14.12	80.0	55.8	67.9	95.7	50.9	73.3	13.9
10/06/16	0.01	14.13	79.0	55.2	67.1	97.2	56.7	77.0	10.2
10/07/16	0.00	14.13	82.5	53.1	67.8	93.8	44.6	69.2	21.3
10/08/16	0.00	14.13	60.0	39.2	49.6	94.9	32.3	63.6	23.6
10/09/16	0.00	14.13	63.5	36.1	49.8	96.0	34.7	65.4	9.8
10/10/16	0.00	14.13	65.5	37.5	51.5	95.3	40.4	67.9	11.2
10/11/16	0.00	14.13	71.0	47.0	59.0	91.8	42.6	67.2	8.8
10/12/16	0.32	14.45	75.1	48.0	61.6	95.1	54.2	74.7	14.5
10/13/16	0.00	14.45	59.0	37.6	48.3	95.3	39.0	67.2	11.5
10/14/16	0.00	14.45	63.3	34.8	49.1	97.1	38.5	67.8	9.8
10/15/16	0.00	14.45	71.4	41.8	56.6	93.4	60.0	76.7	12.9
10/16/16	0.58	15.03	65.8	60.9	63.4	96.5	78.8	87.7	11.2
10/17/16	0.01	15.04	78.3	59.7	69.0	96.6	61.6	79.1	18.2
10/18/16	0.00	15.04	76.8	51.1	64.0	93.3	57.9	75.6	15.9
10/19/16	0.04	15.08	72.7	44.7	58.7	96.7	33.4	65.1	8.8
10/20/16	0.41	15.49	55.7	48.2	52.0	96.1	90.1	93.1	11.5

APPENDIX B: DATA SUMMARIES

## Pacific Ag Research

**Evaluation of the efficacy of foliar fertilizers on corn growth and weed control enhancement when used with post emergence herbicides.**

Trial ID:ALB1601M      Location:Albion, MI      Trial Year:2016  
 Protocol ID:ALB1601M      Investigator:Eric Flora  
 Project ID:ALB1601M Corn      Study Director:Brian Cortright  
 Sponsor Contact:Jeremy O'Brien

Pest Type	W Weed SETVI	W Weed SETVI	W Weed CHEAL	W Weed CHEAL	W Weed ABUTH		
Pest Code	Setaria viridi>	Setaria viridi>	Chenopodium al>	Chenopodium al>	Abutilon theop>		
Pest Scientific Name	Green fo>	Green fo>	common lambsqu>	common lambsqu>	velvetleaf		
Pest Name							
Crop Code							
BBCH Scale							
Crop Scientific Name							
Crop Name							
Crop Variety							
Description	% Control	% Control	% Control	% Control	% Control		
Part Assessed	PLANT P	PLANT P	PLANT P	PLANT P	PLANT P		
Assessment Date	07.01.16	07.16.16	07.01.16	07.16.16	07.01.16		
Assessment Type	PESCON	PESCON	PESCON	PESCON	PESCON		
Assessment Unit	%	%	%	%	%		
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT		
Collection Basis, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT		
Number of Subsamples	1	1	1	1	1		
Footnote Number							
SE Group No.	1	1	3	3	4		
Days After First/Last Applic.	9 9	24 24	9 9	24 24	9 9		
Trt-Eval Interval	9 DA-A	24 DA-A	9 DA-A	24 DA-A	9 DA-A		
Plant-Eval Interval	29 DP-1	44 DP-1	29 DP-1	44 DP-1	29 DP-1		
ARM Action Codes							
Number of Decimals	1	1	1	1	1		
Trt Treatment							
No. Name	1	2	3	4	5		
1Buccaneer Plus	1qt/a	A	100.0a	100.0a	91.3a	97.0a	88.8a
2Brandt Smart Trio	1qt/a	A	87.5a	95.0a	80.0a	93.8a	82.5a
Buccaneer Plus	1qt/a	A					
Brandt Smart Trio	1qt/a	B					
3Albion B5	16fl oz/a	A	92.5a	100.0a	71.3a	93.8a	81.3a
Buccaneer Plus	1qt/a	A					
Albion B5	16fl oz/a	B					
4Albion B5	1qt/a	A	95.0a	96.3a	75.0a	91.3a	88.8a
Buccaneer Plus	1qt/a	A					
Albion B5	1qt/a	B					
LSD P=.05	19.41	5.03	21.03	6.95	15.10		
Standard Deviation	12.13	3.15	13.15	4.35	9.44		
CV	12.94	3.22	16.57	4.63	11.06		
Bartlett's X2	0.549	0.1	4.529	2.535	4.184		
P(Bartlett's X2)	0.76	0.751	0.21	0.469	0.242		
Skewness	-1.4656*	-1.5001*	-0.05	-0.6207	-0.6116		
Kurtosis	0.4644	0.4729	-1.6936	-0.791	-1.0078		
Replicate F	0.736	2.684	1.217	3.602	5.912		
Replicate Prob(F)	0.5565	0.1097	0.3586	0.0588	0.0164		
Treatment F	0.736	2.684	1.747	1.176	0.719		
Treatment Prob(F)	0.5565	0.1097	0.2269	0.3718	0.5651		

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.  
 Missing data estimates are included in columns: Yates=12,15,16,17  
 Could not calculate LSD (% mean diff) for columns 7,8,9,10,11 because error mean square = 0.

## Pacific Ag Research

**Evaluation of the efficacy of foliar fertilizers on corn growth and weed control enhancement when used with post emergence herbicides.**

Trial ID:ALB1601M      Location:Albion, MI      Trial Year:2016  
 Protocol ID:ALB1601M      Investigator:Eric Flora  
 Project ID:ALB1601M Corn      Study Director:Brian Cortright  
 Sponsor Contact:Jeremy O'Brien

Pest Type	W Weed	W Weed	W Weed	W Weed	W Weed	
Pest Code	ABUTH	AMBEL	SETVI	CHEAL	ABUTH	
Pest Scientific Name	Abutilon theop>	Ambrosia artem>	Setaria viridi>	Chenopodium al>	Abutilon theop>	
Pest Name	velvetleaf	Common ragweed	Green fo>	common lambsqu>	velvetleaf	
Crop Code						
BBCH Scale						
Crop Scientific Name						
Crop Name						
Crop Variety						
Description	% Control	% Control	Density	Density	Density	
Part Assessed	PLANT P	PLANT P	PLANT P	PLANT P	PLANT P	
Assessment Date	07.16.16	07.01.16	07.01.16	07.01.16	07.01.16	
Assessment Type	PESCON	PESCON	DENSITY	DENSITY	DENSITY	
Assessment Unit	%	%	2FT2	2FT2	2FT2	
Sample Size, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	
Collection Basis, Unit	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	
Number of Subsamples	1	1	1	1	1	
Footnote Number						
SE Group No.	4	2	5	5	5	
Days After First/Last Applic.	24 24	9 9	9 9	9 9	9 9	
Trt-Eval Interval	24 DA-A	9 DA-A	9 DA-A	9 DA-A	9 DA-A	
Plant-Eval Interval	44 DP-1	29 DP-1	29 DP-1	29 DP-1	29 DP-1	
ARM Action Codes						
Number of Decimals	1	1	1	1	1	
Trt Treatment						
No. Name	6	7	8	9	10	
1Buccaneer Plus	1qt/a A	98.8a	100.0a	5.0	19.0	5.0
2Brandt Smart Trio	1qt/a A	95.0a	100.0a	15.0	48.0	3.0
Buccaneer Plus	1qt/a A					
Brandt Smart Trio	1qt/a B					
3Albion B5	16fl oz/a A	100.0a	100.0a	6.0	19.0	5.0
Buccaneer Plus	1qt/a A					
Albion B5	16fl oz/a B					
4Albion B5	1qt/a A	100.0a	100.0a	6.0	14.0	2.0
Buccaneer Plus	1qt/a A					
Albion B5	1qt/a B					
LSD P=.05	7.57	.	.	.	.	.
Standard Deviation	4.73	0.00	.	.	.	.
CV	4.81	0.0	.	.	.	.
Bartlett's X2	4.342	0.0	.	.	.	.
P(Bartlett's X2)	0.037*	.	.	.	.	.
Skewness	-3.6516*	.	1.9382	1.8577	-0.3704	.
Kurtosis	13.7173*	.	3.814	3.5967	-3.9012	.
Replicate F	1.744	0.000				
Replicate Prob(F)	0.2275	1.0000				
Treatment F	1.000	0.000				
Treatment Prob(F)	0.4363	1.0000				

## Pacific Ag Research

**Evaluation of the efficacy of foliar fertilizers on corn growth and weed control enhancement when used with post emergence herbicides.**

Trial ID:ALB1601M      Location:Albion, MI      Trial Year:2016  
 Protocol ID:ALB1601M      Investigator:Eric Flora  
 Project ID:ALB1601M Corn      Study Director:Brian Cortright  
 Sponsor Contact:Jeremy O'Brien

Pest Type								
Pest Code								
Pest Scientific Name								
Pest Name								
Crop Code	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX	ZEAMX
BBCH Scale	BCOR	BCOR	BCOR	BCOR	BCOR	BCOR	BCOR	BCOR
Crop Scientific Name	Zea mays	Zea mays	Zea mays	Zea mays	Zea mays	Zea mays	Zea mays	Zea mays
Crop Name	Corn	Corn	Corn	Corn	Corn	Corn	Corn	Corn
Crop Variety								
Description	Phytotoxicity >	Yield Weight	Percent Moistu>	Test Weight (l>	Bu/Acre	Yield (lb/Ac)		\$3.5 per BU
Part Assessed	PLANT C	EARHAR C	EARHAR C	EARHAR C	EARHAR C	EARHAR C	EARHAR C	EARHAR C
Assessment Date	07.16.16	10.18.16	10.18.16	10.18.16	10.18.16	10.18.16	10.18.16	10.18.16
Assessment Type	PHYGEN	WEIGHT	MOICON	WEIGHT	YIELD	YIELD	INCGRD	
Assessment Unit	%	LB	%	LB	BU	LB	DOLLAR	
Sample Size, Unit	1 PLOT	1 ROW	1 ROW	1 BU	1 A	1 A	1 A	1 A
Collection Basis, Unit	1 PLANT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Number of Subsamples	1	1	1	1	1	1	1	1
Footnote Number		1			1	1	1	1
SE Group No.	6	7	8	9	10	11	12	
Days After First/Last Applic.	24 24	118 91	118 91	118 91	118 91	118 91	118 91	118 91
Trt-Eval Interval	24 DA-A	91 DA-B	91 DA-B	91 DA-B	91 DA-B	91 DA-B	91 DA-B	91 DA-B
Plant-Eval Interval	44 DP-1	138 DP-1	138 DP-1	138 DP-1	138 DP-1	138 DP-1	138 DP-1	138 DP-1
ARM Action Codes					TY1	TY2	T3	
Number of Decimals	1	2	1	1	2	2	2	
Trt Treatment	Rate	Appl						
No. Name	Rate Unit	Code	11	12	13	14	15	16
1Buccaneer Plus	1qt/a A		0.0a	39.15a	18.7A	57.3a	146.57a	8207.64a
2Brandt Smart Trio	1qt/a A		0.0a	36.09a	18.9A	56.5a	134.86a	7552.08a
Buccaneer Plus	1qt/a A							
Brandt Smart Trio	1qt/a B							
3Albion B5	16fl oz/a A		0.0a	39.81a	18.8A	57.0a	148.82a	8333.92a
Buccaneer Plus	1qt/a A							
Albion B5	16fl oz/a B							
4Albion B5	1qt/a A		0.0a	39.91a	18.6A	57.2a	149.97a	8398.25a
Buccaneer Plus	1qt/a A							
Albion B5	1qt/a B							
LSD P=.05				10.302	1.28	3.25	38.697	2167.042
Standard Deviation	0.00			6.318	0.80	2.03	23.732	1328.991
CV	0.0			16.31	4.29	3.57	16.36	16.36
Bartlett's X2	0.0			3.708	6.116	3.917	3.409	3.409
P(Bartlett's X2)				0.295	0.106	0.271	0.333	0.333
Skewness				-1.5207*	0.2892	-0.6261	-1.5949*	-1.5949*
Kurtosis				3.8565*	-0.5562	0.3189	4.1165*	4.1165*
Replicate F	0.000			1.240	2.757	3.592	1.269	1.269
Replicate Prob(F)	1.0000			0.3573	0.1041	0.0592	0.3485	0.3485
Treatment F	0.000			0.324	0.105	0.130	0.342	0.342
Treatment Prob(F)	1.0000			0.8083	0.9551	0.9399	0.7957	0.7957



## Pacific Ag Research

Evaluation of the efficacy of foliar fertilizers on corn growth and weed control enhancement when used with post emergence herbicides.

Trial ID:ALB1601M      Location:Albion, MI      Trial Year:2016  
 Protocol ID:ALB1601M      Investigator:Eric Flora  
 Project ID:ALB1601M Corn      Study Director:Brian Cortright  
 Sponsor Contact:Jeremy O'Brien

### Pest Type

W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop

### Pest Code

SETVI, Setaria viridis, = US  
 CHEAL, Chenopodium album, = US  
 ABUTH, Abutilon theophrasti, = US  
 AMBEL, Ambrosia artemisiifolia, = US

### Crop Code

ZEAMX, BCOR, Zea mays, = US

### Part Assessed

PLANT = plant  
 EARHAR = ear - harvestable  
 P = Pest is Part Rated  
 C = Crop is Part Rated

### Assessment Type

PESCON = pest control  
 PHYGEN = phytotoxicity - general / injury  
 WEIGHT = weight  
 MOICON = moisture content  
 YIELD = yield  
 INCGRO = income - gross / value

### Assessment Unit

% = percent  
 LB = pound  
 BU = bushel  
 DOLLAR = dollar

PLOT = total plot  
 ROW = row  
 BU = bushel  
 A = acre

PLOT = total plot  
 PLANT = plant/plant biomass/shrub

### Plant-Eval Interval

29 DP-1 = 1 ZEAMX 06.02.16  
 44 DP-1 = 1 ZEAMX 06.02.16  
 138 DP-1 = 1 ZEAMX 06.02.16

### ARM Action Codes

TY1 =  $3.889286 * [C12] * (100 - [C13]) / 84.5$   
 TY2 =  $217.8 * [C12] * (100 - [C13]) / 84.5$   
 T3 =  $3.5 * [C15]$

Footnote 1: Plot 202 data was lost and there was no remaining crop for harvest. All 40 rowft of one 5 ft row per plot was harvested (200 ft<sup>2</sup>).



[balchem.com/plant-nutrition](http://balchem.com/plant-nutrition)