

RD4AG-Research Designed for Agriculture

Phytoxicity of Kalo Drift -X when used with herbicides in Tomatoes or Cotton

Trial ID: Kalo Drift-X Location: Yuma, AZ Trial Year: 2019
 Protocol ID: Kalo Drift-X Investigator: Steve West
 Project ID: Study Director: Steve West
 Sponsor Contact: David Gehrts

Crop Type, Code	C LYPES	C LYPES	C LYPES	C LYPES
BBCH Scale	BVSO	BVSO	BVSO	BVSO
Crop Scientific Name	Solanum lycopersicon	Solanum lycopersicon	Solanum lycopersicon	Solanum lycopersicon
Crop Name	Tomato	Tomato	Tomato	Tomato
Rating Date	3 Jun 2019	8 Jun 2019	11 Jun 2019	15 Jun 2019
Part Rated	PLANT C	PLANT C	PLANT C	PLANT C
Rating Type	PHYTO	PHYTO	PHYTO	PHYTO
Rating Unit	%	%	%	%
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Number of Subsamples	1	1	1	1
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH
Crop Stage Majority	74	74	74	74
Assessed By	JC, GC, FB	JC, GC, FB	JC, GC, FB	JC, GC, FB
Data Entry Date	3 Jun 2019	12 Jun 2019	12 Jun 2019	29 Aug 2019
Trt-Eval Interval	2 DA-A	7 DA-A	10 DA-A	14 DA-A
Trt No.	1*	2*	3*	4*
Treatment Name				
Rate				
Unit				
Appl Code				
1 Drift-X	0.0 -	0.0 -	0.0 -	0.0 -
2 Metribuzin	0.0 -	0.0 -	0.0 -	0.0 -
3 Drift-X	0.0 -	0.0 -	0.0 -	0.0 -
Metribuzin				
4 Metribuzin	0.0 -	0.0 -	0.0 -	0.0 -
5 Drift-X	0.0 -	0.0 -	0.0 -	0.0 -
Metribuzin				
LSD P=.05 (% mean diff)	.	.	.	.
Standard Deviation	0.00	0.00	0.00	0.00
CV	0.0	0.0	0.0	0.0
Grand Mean	0.00	0.00	0.00	0.00
Levene's F	0.00	0.00	0.00	0.00
Levene's Prob(F)	.	.	.	.
Skewness	.	.	.	.
Kurtosis	.	.	.	.
Minimum Replicates (power = 80)	.	.	.	.
Largest Mean Difference (% mean diff)	.	.	.	.

Means followed by same letter or symbol do not significantly differ (P=.05, LSD).
 * Adjusted means
 Could not calculate LSD (% mean diff) for columns 1,2,3,4 because error mean square = 0.
 Could not calculate Largest Mean Difference (% mean diff) for columns 1,2,3,4 because Grand Mean = 0 which results in division by 0.

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Randomized Complete Block (RCB) Least square estimation AOV For C LYPES BVSO Solanum lycopersicum Tomato 3 Jun 2019 PLANT C
PHYTO % 1 PLOT 1 BBCH 74 JC, GC, FB 3 Jun 2019 2 DA-A (Data Column 1)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	19	0.0000000000000000^			
Replicate	3	0.0000000000000000	0.0000000000000000	0.000	1.0000
Treatment Type III	4	0.0000000000000000	0.0000000000000000	0.000	1.0000
Error(adj)	12	0.0000000000000000			

^ Total Sum of Squares may not equal Sum of Squares reported on this table because adjusted sum of squares are reported.

Randomized Complete Block (RCB) Least square estimation AOV For C LYPES BVSO Solanum lycopersicum Tomato 8 Jun 2019 PLANT C
PHYTO % 1 PLOT 1 BBCH 74 12 Jun 2019 7 DA-A (Data Column 2)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	19	0.0000000000000000^			
Replicate	3	0.0000000000000000	0.0000000000000000	0.000	1.0000
Treatment Type III	4	0.0000000000000000	0.0000000000000000	0.000	1.0000
Error(adj)	12	0.0000000000000000			

^ Total Sum of Squares may not equal Sum of Squares reported on this table because adjusted sum of squares are reported.

Randomized Complete Block (RCB) Least square estimation AOV For C LYPES BVSO Solanum lycopersicum Tomato 11 Jun 2019 PLANT C
PHYTO % 1 PLOT 1 BBCH 74 JC, GC, FB 12 Jun 2019 10 DA-A (Data Column 3)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	19	0.0000000000000000^			
Replicate	3	0.0000000000000000	0.0000000000000000	0.000	1.0000
Treatment Type III	4	0.0000000000000000	0.0000000000000000	0.000	1.0000
Error(adj)	12	0.0000000000000000			

^ Total Sum of Squares may not equal Sum of Squares reported on this table because adjusted sum of squares are reported.

Randomized Complete Block (RCB) Least square estimation AOV For C LYPES BVSO Solanum lycopersicum Tomato 15 Jun 2019 PLANT C
PHYTO % 1 PLOT 1 BBCH 74 29 Aug 2019 14 DA-A (Data Column 4)

Source	DF	Sum of Squares	Mean Square	F	Prob(F)
Total	19	0.0000000000000000^			
Replicate	3	0.0000000000000000	0.0000000000000000	0.000	1.0000
Treatment Type III	4	0.0000000000000000	0.0000000000000000	0.000	1.0000
Error(adj)	12	0.0000000000000000			

^ Total Sum of Squares may not equal Sum of Squares reported on this table because adjusted sum of squares are reported.

Crop Type, Code

C, G-ByrC7 = EPPO species (Bayer) codes
LYPES, BVSO, Solanum lycopersicum, Tomato = US

Part Rated

PLANT = plant
C = Crop is Part Rated

Rating Unit

% = percent

PLOT = total plot

Crop Stage Scale

BBCH = BBCH uniform plant stages

Crop Stage Majority

74 = 4th fruit cluster: first fruit typical size(T). 4th fruit typical size/form (P,A)

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 Project ID: Study Director: Steve West
 Sponsor Contact: David Gehrts

General Trial Information

Study Director: Steve West **Title:** Research Director
Investigator: Steve West **Title:** Research Director

Discipline: J adjuvant
Trial Status: R reviewed and reported

Trial Reliability: HIGH

ARM Trial Created On: 29 May 2019

Initiation Date: 1 Jun 2019 **Planned Completion Date:** 30 Jun 2019

Completion Date: 29 Aug 2019

Trial Location

City: Yuma **Country:** USA United States
State/Prov.: Arizona
Postal Code: 85365 **Climate Zone:** USDES US Desert

Latitude of LL Corner °: 32.738976 N
Longitude of LL Corner °: 114.53725 W
Altitude of LL Corner: 135.00 ft

Directions:

From Yuma, cross the old bridge off 1st Street and turn right at the Levee Road, just before the Paradise Casino. Proceed 5 miles or so until the road curves and you are going generally NNE. At the sign for the River Ranch RV Park, turn in, and at the Yellow gate, make a left and follow along the dunes until the open 20 acre field on the right.

Conducted Under GLP: No
Conducted Under GEP: No

Objectives:

Determine crop safety with Drift X mixed in with metribuzen at various rates on tomatoes

Conclusions:

No phytotoxicity or plant health issues observed from any rates or combinations of the products. Combinations tested are safe in tomatoes.

Trial was located approx 500 meters from California border

Contacts

Study Director: Steve West **Title:** Research Director
Organization: Research Designed for Agriculture
Address: 11479 S Ave D **Phone No.:** 928.783.3552
City+State/Prov: Yuma, AZ **Mobile No.:** 928.941.0611
Postal Code: 85365 **E-mail:** Steve@rd4ag.com
Country: USA United States

Investigator: Steve West **Title:** Research Director
Organization: Research Designed for Agriculture
Address: 11479 S Ave D **Phone No.:** 928 783-3552
City+State/Prov: Yuma, AZ
Postal Code: 85365 **E-mail:** Steve@rd4ag.com
Country: USA United States

Cooperator/Landowner

Cooperator: River Ranch Research Farm
Organization: Research Designed for Agriculture
Address 1: 11479 S Ave D
City: Yuma
State/Prov: AZ
Postal Code: 85365

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Crop Description

Crop 1: C LYPES Solanum lycopersicum Tomato **BBCH Scale:** BVSO
Entry Date: 29 Aug 2019
Variety: H 1241
Attributes: Processing
Planting Date: 27 Feb 2019
Depth: 2 IN
Rows per Plot: 1
Row Spacing: 60 IN
Spacing within Row: 18 IN
Emergence Date: 27 Feb 2019

Planting Method: TRANSP transplanted
Planting Equipment: HA by hand
Seed Bed: SMOOTH smooth
Soil Moisture: FAIR fair

Site and Design

Treated Plot Width: 7 FT **Site Type:** FIELD field
Treated Plot Length: 30 FT
Treated Plot Area: 210 FT² **Treatments:** 5 **Tillage Type:** CONTIL conventional-till
Replications: 4 **Study Design:** RACOB� Randomized Complete Block (RCB)
% Slope: 0

Maintenance

No.	Date	Type	Maintenance Product Name	Rate	Rate Unit
1.	11 Apr 2019	FERT	AN20	10	GAL/A
2.	27 Apr 2019	FERT	UN32	5	GAL/A
3.	9 May 2019	FERT	UN32	20	GAL/A
4.	14 May 2019	FERT	UN32	20	GAL/A
5.	21 May 2019	FERT	UN32	40	GAL/A
6.	12 Jun 2019	CULT	Weeded		
7.	1 Jul 2019	CULT	Weeded		
8.	2 Jul 2019	CULT	Weeded		
9.	29 Jun 2019	CULT	Weeded		

Field Prep./Maintenance:

ig bed land preparation. Disked twice, and then ripped 1.5 feet deep. The block was then plowed 10 inches deep, disked again and then laser leveled to zero/dead level slope. Fertilizer was then spread and the rows put up (listed). Beds were pulled to a 36" bed top with a Kennco SuperBedder Power Mulcher. Drip tape was injected 5 inches deep in the center of the bed, plants were hand transplanted into prepunched holes at 18 inches between plants.

Soil Description

Description Name: River Ranch
% Sand: 41 **% OM:** 0.8 **Texture:** L loam
% Silt: 48 **pH:** 8.3 **Soil Name:** Indio Silt Loam with some Rositas Sand
% Clay: 11 **CEC:** 11 **Fert. Level:** G good
Soil Drainage: G good

Moisture and Weather Conditions

Overall Moisture Conditions: NORMAL normal
Closest Weather Station: AZMET North Gila **Distance:** 0.75 MI

No.	Date	Moisture Total	Unit	Min Temp	Max Temp	Avg Temp	Temp Unit	% Relative Humidity	Avg Wind	Unit	Avg Shortwave Radiation	Unit	Avg Soil Temp	Unit
1.	1 Apr 2019	0	IN	12.5	32.1	22.7	C	21.1	1.5	MPS	24.98	MJ/m ²	23	C
2.	2 Apr 2019	0	IN	14.4	31.7	22.7	C	29	3.2	MPS	23.78	MJ/m ²	23.2	C
3.	3 Apr 2019	1.5	IN	15.8	27.8	20.8	C	39.2	4.3	MPS	24.51	MJ/m ²	22.8	C
4.	4 Apr 2019	0	IN	13.5	29	21	C	43.2	2.2	MPS	23.31	MJ/m ²	23.6	C
5.	5 Apr 2019	1.5	IN	15.8	27	20.9	C	40.3	4.1	MPS	23.68	MJ/m ²	23.6	C
6.	6 Apr 2019	0	IN	15.4	28.6	21.1	C	38.8	3.4	MPS	24.68	MJ/m ²	23.6	C
7.	7 Apr 2019	0	IN	11.2	33.4	22.9	C	36.5	1.6	MPS	24.76	MJ/m ²	23.9	C
8.	8 Apr 2019	1.5	IN	12.5	37.7	25.4	C	31.9	1.2	MPS	24.46	MJ/m ²	24.8	C

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9.	9 Apr 2019	1.75	IN	15.5	35.8	25.7	C	27.8	5.1	MPS	23.52	MJ/m2	24.8	C
10.	10 Apr 2019	1.25	IN	14.3	27.6	21	C	21.8	4.5	MPS	26.79	MJ/m2	22.7	C
11.	11 Apr 2019	0	IN	8.3	29.1	20.7	C	21.6	2.4	MPS	24.2	MJ/m2	22.4	C
12.	12 Apr 2019	0	IN	15.1	27.9	21.3	C	28.9	3.6	MPS	20.94	MJ/m2	23.3	C
13.	13 Apr 2019	0	IN	10.1	30.4	21.2	C	32.1	2.5	MPS	27.02	MJ/m2	23.7	C
14.	14 Apr 2019	0	IN	10.7	32.1	21.5	C	34.9	1.7	MPS	24.63	MJ/m2	23.9	C
15.	15 Apr 2019	0	IN	14.1	30.5	22.8	C	28.4	1.7	MPS	24.13	MJ/m2	25	C
16.	16 Apr 2019	0.06	IN	14.5	22.9	18.8	C	46.4	3.9	MPS	13.42	MJ/m2	21.9	C
17.	17 Apr 2019	0	IN	10.4	30.6	21.1	C	41.1	2.1	MPS	27.16	MJ/m2	22.9	C
18.	18 Apr 2019	0	IN	10.7	34.5	23.3	C	36.1	1.4	MPS	27.12	MJ/m2	24.5	C
19.	19 Apr 2019	0	IN	13.6	37.4	26.4	C	31.9	1.5	MPS	27.65	MJ/m2	26.1	C
20.	20 Apr 2019	2.5	IN	16.5	34.9	26.7	C	20.1	4.2	MPS	27.36	MJ/m2	26.9	C
21.	21 Apr 2019	0	IN	13.9	31.1	22.9	C	26.2	3.5	MPS	28.14	MJ/m2	25.5	C
22.	22 Apr 2019	0	IN	12.3	32.4	22.7	C	35.3	2.1	MPS	26.06	MJ/m2	26	C
23.	23 Apr 2019	0	IN	12.4	35.1	25	C	38.6	2	MPS	27.29	MJ/m2	27.2	C
24.	24 Apr 2019	0	IN	15	36.6	25.8	C	43.6	1.5	MPS	26.56	MJ/m2	28.5	C
25.	25 Apr 2019	0	IN	16	37.8	26.9	C	39	1.3	MPS	27.36	MJ/m2	29.1	C
26.	26 Apr 2019	0	IN	16.6	38.5	27.7	C	32.1	1.6	MPS	27.51	MJ/m2	29.6	C
27.	27 Apr 2019	0	IN	15.3	37	26.6	C	34.3	1.8	MPS	27.72	MJ/m2	29.8	C
28.	28 Apr 2019	0	IN	16.5	36.1	26.2	C	36.8	1.6	MPS	23.58	MJ/m2	29.1	C
29.	29 Apr 2019	1.75	IN	17.3	28.6	23.2	C	37.3	5.3	MPS	23.86	MJ/m2	27.6	C
30.	30 Apr 2019	0	IN	13.8	29.9	21.6	C	43.1	3	MPS	26.42	MJ/m2	26.7	C
31.	1 May 2019	1.5	IN	13.4	31.3	22.5	C	38.5	1.8	MPS	27.42	MJ/m2	27.4	C
32.	2 May 2019	1	IN	12.5	31.5	22.5	C	42.1	1.1	MPS	14.7	MJ/m2	26.7	C
33.	3 May 2019	0	IN	13.8	34.6	24.5	C	39	1.2	MPS	21.11	MJ/m2	27.7	C
34.	4 May 2019	1.5	IN	15	35.7	25.2	C	35.7	1.6	MPS	21.55	MJ/m2	28.9	C
35.	5 May 2019	0	IN	14.1	34.3	25.9	C	21.6	3.8	MPS	20.52	MJ/m2	28.2	C
36.	6 May 2019	1.25	IN	18.3	28.7	22.4	C	36.6	6.1	MPS	17.89	MJ/m2	26.5	C
37.	7 May 2019	0	IN	15.2	30.5	22.6	C	39.4	3.8	MPS	21.51	MJ/m2	27	C
38.	8 May 2019	1.25	IN	13.6	31.9	22.7	C	46.5	1.7	MPS	27.96	MJ/m2	28.1	C
39.	9 May 2019	0.5	IN	16.3	31.6	23	C	49	2.7	MPS	25.7	MJ/m2	28.3	C
40.	10 May 2019	0	IN	14.1	28.9	21.6	C	57.9	2	MPS	26.22	MJ/m2	28.1	C
41.	11 May 2019	1	IN	15.2	28.8	22	C	54.3	1.4	MPS	25.24	MJ/m2	28.7	C
42.	12 May 2019	0	IN	16.6	32.8	24	C	51.5	1.6	MPS	26.57	MJ/m2	29.3	C
43.	13 May 2019	0	IN	17.5	34.6	25.8	C	47	2.2	MPS	28.37	MJ/m2	30.4	C
44.	14 May 2019	1	IN	17.1	37.3	27.5	C	39.1	1.3	MPS	28.53	MJ/m2	31.3	C
45.	15 May 2019	1.5	IN	17.5	37.2	28	C	33.5	2.3	MPS	27.42	MJ/m2	31.4	C
46.	16 May 2019	1.25	IN	15.8	30.9	23.7	C	34.5	6.8	MPS	26.99	MJ/m2	28.8	C
47.	17 May 2019	0	IN	12.4	28	20.8	C	37	4.2	MPS	29.34	MJ/m2	26.5	C
48.	18 May 2019	0	IN	16.5	31.6	23.9	C	34.8	2.5	MPS	28.05	MJ/m2	28.2	C
49.	19 May 2019	0	IN	16.4	27.5	21.4	C	35.9	5.1	MPS	22.21	MJ/m2	27	C
50.	20 May 2019	0	IN	14.1	25.9	19.7	C	39.2	5.7	MPS	29.88	MJ/m2	25.4	C
51.	21 May 2019	1	IN	12.6	27.7	19.5	C	39.2	6.2	MPS	28.47	MJ/m2	24.8	C
52.	22 May 2019	0	IN	13.2	24.6	18.8	C	40.4	4.7	MPS	19.92	MJ/m2	23.5	C
53.	23 May 2019	0	IN	8.6	27.5	19	C	45.8	2.2	MPS	28.08	MJ/m2	24.5	C
54.	24 May 2019	3	IN	11.2	31.1	21.9	C	42.8	1	MPS	29.89	MJ/m2	27.2	C
55.	25 May 2019	0	IN	12.6	32.8	22.9	C	35.7	2.4	MPS	30.07	MJ/m2	27.9	C
56.	26 May 2019	0	IN	15.5	29.6	21.5	C	37.1	4.4	MPS	29.27	MJ/m2	27.2	C
57.	27 May 2019	0	IN	14.9	26.6	20.4	C	36.3	4.6	MPS	29.87	MJ/m2	26.4	C
58.	28 May 2019	0	IN	10.7	30.6	21.8	C	37.5	1.2	MPS	29.53	MJ/m2	27.5	C
59.	29 May 2019	3	IN	13.5	34.5	24.5	C	39.9	1.3	MPS	28.61	MJ/m2	29.3	C
60.	30 May 2019	0	IN	15.4	35.9	26	C	35.2	2.1	MPS	29.07	MJ/m2	30.4	C
61.	31 May 2019	0	IN	15	35.5	25.9	C	32.9	2.1	MPS	29.39	MJ/m2	30.2	C

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62.	1 Jun 2019	0	IN	14.6	34.2	25.7	C	33.5	2.5	MPS	29.48	MJ/m2	30.3	C
63.	2 Jun 2019	0	IN	16.1	33.6	25.3	C	37.6	2.2	MPS	29.27	MJ/m2	30.6	C
64.	3 Jun 2019	2	IN	15.4	34.9	25.5	C	35.7	1.8	MPS	29.43	MJ/m2	30.8	C
65.	4 Jun 2019	0	IN	16.2	36.9	26.6	C	36.8	1.8	MPS	29.05	MJ/m2	31.5	C
66.	5 Jun 2019	1	IN	18	38.8	28.4	C	31.7	2.4	MPS	29	MJ/m2	32.1	C
67.	6 Jun 2019	0	IN	19.1	38.1	28.5	C	35.4	3	MPS	29.22	MJ/m2	32.2	C
68.	7 Jun 2019	0	IN	16.8	37.9	27.9	C	38	2.4	MPS	28.94	MJ/m2	32.4	C
69.	8 Jun 2019	1.25	IN	18.5	38	28.3	C	39.7	1.6	MPS	29.21	MJ/m2	33.2	C
70.	9 Jun 2019	0	IN	16.2	41.1	29.2	C	32.5	1.3	MPS	29.19	MJ/m2	33.3	C
71.	10 Jun 2019	0	IN	18.3	43.5	32.1	C	24.7	1.5	MPS	29.39	MJ/m2	34.6	C
72.	11 Jun 2019	2	IN	19.5	45.2	32.8	C	25.4	1.3	MPS	28.42	MJ/m2	35	C
73.	12 Jun 2019	3	IN	21	45.8	34.5	C	25.7	1.5	MPS	29.05	MJ/m2	36.1	C
74.	13 Jun 2019	0	IN	26.7	42	34.5	C	19.2	3.3	MPS	24.75	MJ/m2	35.8	C
75.	14 Jun 2019	0	IN	18.3	40.1	30.6	C	20.9	2.7	MPS	29.6	MJ/m2	34.2	C
76.	15 Jun 2019	0	IN	20.4	40.2	30.5	C	35.7	1.9	MPS	29.1	MJ/m2	34.9	C
77.	16 Jun 2019	0	IN	20.6	40.5	30.4	C	28.8	2.4	MPS	28.73	MJ/m2	34.7	C
78.	17 Jun 2019	0	IN	20.1	38.8	29.7	C	35.6	1.8	MPS	28.94	MJ/m2	35	C
79.	18 Jun 2019	1.25	IN	19.9	39.5	29.7	C	27.2	1.3	MPS	30.01	MJ/m2	35.1	C
80.	19 Jun 2019	2	IN	17.1	39.8	29.4	C	30	1.9	MPS	29.83	MJ/m2	34.6	C
81.	20 Jun 2019	3	IN	18.8	41.2	30.7	C	28.7	2.4	MPS	29.27	MJ/m2	34.7	C
82.	21 Jun 2019	0	IN	19.7	38.2	29.4	C	28.8	2.9	MPS	29.42	MJ/m2	34.6	C
83.	22 Jun 2019	0	IN	20.7	38.2	29.1	C	33.5	2.8	MPS	29.59	MJ/m2	34.2	C
84.	23 Jun 2019	0	IN	17.1	40.2	29.1	C	34.9	1.5	MPS	30.19	MJ/m2	34.6	C
85.	24 Jun 2019	1.5	IN	17.1	40.5	29.7	C	30.9	1.3	MPS	29.77	MJ/m2	34.5	C
86.	25 Jun 2019	0	IN	18.6	39.1	29.5	C	27.2	2.7	MPS	28.54	MJ/m2	33.5	C
87.	26 Jun 2019	3	IN	20.5	38.5	29.2	C	27.9	2.6	MPS	29.43	MJ/m2	33.9	C
88.	27 Jun 2019	3	IN	18.5	39.7	29.4	C	25.2	2.1	MPS	30.26	MJ/m2	33.8	C
89.	28 Jun 2019	1.5	IN	18.5	40.5	30.8	C	23	1.9	MPS	26.81	MJ/m2	33.6	C
90.	29 Jun 2019	2.5	IN	25.5	41.1	33.7	C	15.6	2.7	MPS	17.57	MJ/m2	33.8	C
91.	30 Jun 2019	0	IN	24.4	42.3	34.6	C	18.4	3	MPS	27.34	MJ/m2	35.8	C
92.	1 Jul 2019	2.5	IN	26	44.1	35.8	C	15.2	3.1	MPS	29.29	MJ/m2	36.9	C
93.	2 Jul 2019	1.5	IN	21.9	41.7	32.3	C	30.1	1.9	MPS	29.43	MJ/m2	36.6	C
94.	3 Jul 2019	0	IN	19.1	40.5	31.1	C	30.3	2	MPS	29.13	MJ/m2	36.1	C
95.	4 Jul 2019	3	IN	19.6	40.5	31.1	C	26.5	1.6	MPS	29.42	MJ/m2	36.1	C
96.	5 Jul 2019	0	IN	20.5	40.7	31.2	C	29.9	1.9	MPS	29.26	MJ/m2	36.1	C
97.	6 Jul 2019	0	IN	20.8	41	31.3	C	25	1.9	MPS	29.39	MJ/m2	35.8	C
98.	7 Jul 2019	0	IN	19.9	40	30.9	C	23.2	2	MPS	24.95	MJ/m2	34.7	C
99.	8 Jul 2019	0	IN	18.2	39.8	30.4	C	24.2	1.9	MPS	29.36	MJ/m2	34.9	C
100.	9 Jul 2019	3	IN	19.3	40.5	30.9	C	27.3	1.1	MPS	29.21	MJ/m2	35.7	C
101.	10 Jul 2019	0	IN	21.4	42.8	32.8	C	27.8	1.3	MPS	28.57	MJ/m2	36.3	C
102.	11 Jul 2019	1.5	IN	24.2	41.2	34	C	25.6	1.8	MPS	13.45	MJ/m2	34.9	C
103.	12 Jul 2019	0	IN	23.6	46.2	35.5	C	29.1	1.2	MPS	27.37	MJ/m2	36.8	C
104.	13 Jul 2019	0	IN	27.4	42.8	34.8	C	38	3.5	MPS	27.61	MJ/m2	38.5	C
105.	14 Jul 2019	0	IN	28	43.2	34.9	C	40.6	2.4	MPS	26.97	MJ/m2	38.9	C
106.	15 Jul 2019	0	IN	26.4	46.3	36.6	C	24.8	2.1	MPS	28.03	MJ/m2	38.9	C
107.	16 Jul 2019	0	IN	26	45.5	37	C	19.1	3.3	MPS	28.48	MJ/m2	38.3	C
108.	17 Jul 2019	0	IN	24.7	41.1	32.8	C	45	3.9	MPS	27.04	MJ/m2	38.4	C
109.	18 Jul 2019	0	IN	24.5	42.2	33.6	C	33.6	1.6	MPS	28.02	MJ/m2	38.2	C
110.	19 Jul 2019	0	IN	27.5	42.5	34.9	C	15.6	2.5	MPS	28.72	MJ/m2	37.7	C
111.	20 Jul 2019	0	IN	21.6	42.2	33.3	C	26.9	1.9	MPS	27.91	MJ/m2	37.8	C
112.	21 Jul 2019	0	IN	25.5	40.8	33.5	C	49.6	3.2	MPS	27.07	MJ/m2	38.4	C
113.	22 Jul 2019	0	IN	29	39.7	33.3	C	48.5	2.4	MPS	14.68	MJ/m2	37.7	C

RD4AG-Research Designed for Agriculture**Phytotoxicity of Kalo Drift -X when used with herbicides in Tomatoes or Cotton**

Trial ID: Kalo Drift-X
 Protocol ID: Kalo Drift-X
 Project ID:

Location: Yuma, AZ
 Investigator: Steve West
 Study Director: Steve West
 Sponsor Contact: David Gehrts

Trial Year: 2019

Application Description

	A
Application Date	1 Jun 2019
Appl. Start Time	9:21 AM
Appl. Stop Time	9:32 AM
Application Method	SPRAY
Application Timing	POST
Application Placement	FOLIAR
Applied By	Gerry Cervantes
Appl. Entry Date	1 Jun 2019
Air Temperature Start, Stop	83 83 F
% Relative Humidity Start, Stop	25
Wind Velocity+Dir. Start	3 MPH
Wind Velocity+Dir. Stop	5 MPH
Wind Velocity+Dir. Max	5 MPH
Wet Leaves (Y/N)	N no
Soil Moisture	SLIWET
Soil Surface Condition	SMOOTH
% Cloud Cover	0

Protocol Application Directions:

Broadcast over the top in 20 GPA with finer tips (twinjet 2's) at 40 psi

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale	LYPES BVSO
Days after Emergence	94
Stage Majority, Percent	65
Stage Minimum, Percent	65
Stage Maximum, Percent	65
Height Average	18 in
Crop Coverage (%)	70

Application Equipment

	A
Appl. Equipment	RshrshSpryr
Equipment Type	SPRAYE
Operation Pressure	40 PSI
Nozzle Type	Twinjet
Nozzle Size	11003, D5/DC25
Nozzle Spacing	20 in
Nozzles/Row	3
Band Width	5 FT
% Coverage	100
Row Sides Applied	3
Boom Length	7 FT
Boom Height	2 FT
Ground Speed	3.54 MPH
Carrier	WATER
Application Amount	20 GAL/AC
Mix Size	1 GAL
Spray pH	7.5
Propellant	COMAIR
Tank Mix (Y/N)	Y yes

RD4AG-Research Designed for Agriculture

Trial ID: Kalo Drift-X Protocol ID: Kalo Drift-X Project ID:	Phytotoxicity of Kalo Drift -X when used with herbicides in Tomatoes or Cotton Location: Yuma, AZ Trial Year: 2019 Investigator: Steve West Study Director: Steve West Sponsor Contact: David Gehrts	
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Equipment Comment: Drop nozzles with cones on side, twin jet on top. Plants were well covered

Date	By	Context	Notes
29 May 2019	Steve West	STATUS	Automatically added by ARM: Trial Status updated to 'S' during trial creation.
1 Jun 2019	Kenny Roche, DPH	STATUS	Automatically added by ARM: Trial Status updated to 'E' when Application Date entered.

SE Definitions

	1.	2.	3.	4.
Rating Timing	A1	A2	A3	A4
SE Name	X001	X001	X001	X001
SE Description	% General phyto on plants (all symptoms)	% General phyto on plants (all symptoms)	% General phyto on plants (all symptoms)	% General phyto on plants (all symptoms)
Part Rated	PLANT	PLANT	PLANT	PLANT
Rating Type	PHYGEN	PHYGEN	PHYGEN	PHYGEN
Rating Unit	%	%	%	%
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Collection Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Reporting Basis	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Calculation	NC	NC	NC	NC
Crop Type, Code	C	C	C	C

Geographic Area/Environmental Considerations:

California Like Conditions

Cropping Considerations:

Crops that are sensitive to herbicides

Data to Collect:

3 7 10 and 14 days after application looking for Phytotoxicity

Statistical Analysis:

Anova p 0.05 and full write up for California Submission

RD4AG-Research Designed for Agriculture

Phytotoxicity of Kalo Drift -X when used with herbicides in Tomatoes or Cotton

Trial ID: Kalo Drift-X
 Protocol ID: Kalo Drift-X
 Project ID:

Location: Yuma, AZ
 Investigator: Steve West
 Study Director: Steve West
 Sponsor Contact: David Gehrts

Trial Year: 2019

Block	1		2	
	13602	5	13502	1
	13603	3	13503	4
	13604	2	13504	5
	13605	4	13505	3
	13606	1	13506	2
	13607	5	13507	3
	13608	2	13508	4
	13609	1	13509	5
	13610	4	13510	1
	13611	3	13511	2

RD4AG-Research Designed for Agriculture

Trial ID: Kalo Drift-X		Phytotoxicity of Kalo Drift -X when used with herbicides in Tomatoes or Cotton	
Protocol ID: Kalo Drift-X		Location: Yuma, AZ	Trial Year: 2019
Project ID:		Investigator: Steve West	
		Study Director: Steve West	
		Sponsor Contact: David Gehrts	

Reps: 4 Appl Code: A Plots: 7 by 30 feet
 Appl. Amount: 20 GAL/AC Mix Size: 1 GAL (total for 4 plots; minimum=0.3857 GAL)

Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Appl Unit	Appl Code	Amt Product to Measure	Rep 1	Rep 2	Rep 3	Rep 4
1	Drift-X	8.33 LB/GAL	EC	EC	1 % v/v	A	A	37.85 mL/mx	13609	13606	13510	13502
2	Metribuzin	75 %	DF	DF	0.667 lb ai/a	A	A	20.17 g/mx	13608	13604	13511	13506
3	Drift-X	8.33 LB/GAL	EC	EC	1 % v/v	A	A	37.85 mL/mx	13611	13603	13507	13505
	Metribuzin	75 %	DF	DF	0.667 lb ai/a	A	A	20.17 g/mx				
4	Metribuzin	75 %	DF	DF	1.33 lb ai/a	A	A	40.22 g/mx	13610	13605	13508	13503
5	Drift-X	8.33 LB/GAL	EC	EC	1 % v/v	A	A	37.85 mL/mx	13607	13602	13509	13504
	Metribuzin	75 %	DF	DF	1.33 lb ai/a	A	A	40.22 g/mx				

Sort Order: Application Code, Treatment

Product quantities required for listed treatments and applications of trials included in this table:

Amount*	Unit	Treatment Name	Form Conc	Form Unit	Form Type	Lot Code
141.938	mL	Drift-X	8.33	LB/GAL	EC	
150.970	g	Metribuzin	75	%	DF	

* 'Per area' calculations based on application amount= 20 GAL/AC, mix size= 1 GAL (mix size basis).

* Product amount calculations increased 25 % for overage adjustment.

* 'Per volume' calculations use spray volume= 20 GAL/AC, mix size= 1 GAL.

RD4AG-Research Designed for Agriculture**Phototoxicity of Kalo Drift -X when used with herbicides in Tomatoes or Cotton**

Trial ID: Kalo Drift-X
 Protocol ID: Kalo Drift-X
 Project ID:

Location: Yuma, AZ
 Investigator: Steve West
 Study Director: Steve West
 Sponsor Contact: David Gehrts
 Trial Year: 2019

Crop Type, Code	C LYPES	C LYPES	C LYPES	C LYPES
BBCH Scale	BVSO	BVSO	BVSO	BVSO
Crop Scientific Name	Solanum lycopersicum	Solanum lycopersicum	Solanum lycopersicum	Solanum lycopersicum
Crop Name	Tomato	Tomato	Tomato	Tomato
Rating Date	3 Jun 2019	8 Jun 2019	11 Jun 2019	15 Jun 2019
Part Rated	PLANT C	PLANT C	PLANT C	PLANT C
Rating Type	PHYTO	PHYTO	PHYTO	PHYTO
Rating Unit	%	%	%	%
Sample Size	1 PLOT	1 PLOT	1 PLOT	1 PLOT
Number of Subsamples	1	1	1	1
Crop Stage Scale	BBCH	BBCH	BBCH	BBCH
Crop Stage Majority	74	74	74	74
Assessed By	JC, GC, FB	JC, GC, FB	JC, GC, FB	JC, GC, FB
Data Entry Date	3 Jun 2019	12 Jun 2019	12 Jun 2019	29 Aug 2019
Trt-Eval Interval	2 DA-A	7 DA-A	10 DA-A	14 DA-A
Trt Treatment	Rate	Appl		
No. Name	Rate	Unit	Code	Plot
1 Drift-X	1 % v/v	A		
				1
				2
				3
				4
13609				0.0
13606				0.0
13510				0.0
13502				0.0
Mean =				0.0
2 Metribuzin 0.667 lb ai/a A				
				1
				2
				3
				4
13608				0.0
13604				0.0
13511				0.0
13506				0.0
Mean =				0.0
3 Drift-X 1 % v/v A				
Metribuzin 0.667 lb ai/a A				
				1
				2
				3
				4
13611				0.0
13603				0.0
13507				0.0
13505				0.0
Mean =				0.0
4 Metribuzin 1.33 lb ai/a A				
				1
				2
				3
				4
13610				0.0
13605				0.0
13508				0.0
13503				0.0
Mean =				0.0
5 Drift-X 1 % v/v A				
Metribuzin 1.33 lb ai/a A				
				1
				2
				3
				4
13607				0.0
13602				0.0
13509				0.0
13504				0.0
Mean =				0.0

Crop Type, Code

C, G-ByrC7 = EPPO species (Bayer) codes
 LYPES, BVSO, Solanum lycopersicum, Tomato = US

Part Rated

PLANT = plant
 C = Crop is Part Rated

Rating Unit

% = percent

PLOT = total plot

Crop Stage Scale

BBCH = BBCH uniform plant stages

Crop Stage Majority

74 = 4th fruit cluster: first fruit typical size(T). 4th fruit typical size/form (P,A)