DATA EVALUATION RECORD
SEEDLING EMERGENCE EC$_{25}$ TEST
§123-1(a) (TIER II)

11/7/03

1. CHEMICAL: Mesosulfuron-methyl

PC Code No.: 122009

2. TEST MATERIAL: AE F130060 (a.i.) +
AE F107892 (adjuvant)

Purity: 74.73% +
3.54%

3. CITATION:

Author: M. T. Christ and J. Abedi

Title: Effect on Seedling Emergence of Non-Target Terrestrial Plants (Tier II), AE F130060 + AE F107892, Water Dispersible Granule (75.3% w/w), Including a Representative Adjuvant

Study Completion Date: August 16, 2002

Laboratory: Aventis CropScience, Ecotoxicology Department
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Laboratory Report ID: CK99W505

MRID No.:   45745702

DP Barcode: D295614

4. REVIEWED BY: Rebecca Bryan, Staff Scientist, Dynamac Corporation

Signature: *Rebecca Bryan*

Date: 11/7/03

APPROVED BY: Teri Myers, Ph.D., Staff Scientist, Dynamac Corporation

Signature: *[signature]*

Date: 11/7/03

5. APPROVED BY: Leo Lasota, OPP/EFED/ERBIII

Signature:

Date:

6. STUDY PARAMETERS:

Scientific Name of Test Organism: <u>Dicots</u>: *Brassica oleracea, Cucumis sativus, Lactuca sativa, Raphanus sativus, Glycine max Lycopersicon esculentum*
<u>Monocots</u>: *Zea mays, Avena sativa, Allium cepa, Triticum aestivum*

Definitive Study Duration: 14 days

Type of Concentrations: Nominal

7. CONCLUSIONS:

Seedling emergence was studied on 10 plant species after application of AE F130060 + AE F107892 75.3% (a.i. Mesosulfuron-methyl,74.73%) at 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha (cabbage was tested at rates of 0.12, 0.24, 0.47, 0.94, 1.88, and 3.75 g a.i./ha). Test species included cabbage, corn, cucumber, lettuce, oat, onion, radish, soybean, tomato, and wheat. With the exception of corn, oat, and wheat, all species and endpoints showed sensitivity to treatment, exhibiting reductions exceeding 25%. Lettuce, a dicot, was the most sensitive species based on shoot length (for which an EC_{25} could be identified; the EC_{25} for cabbage shoot length and dry weight was >3.75 g a.i./ha), with an EC_{25} of 6.0 g a.i./ha; the EC_{05} and NOEC were 2.8 and 3.75 g a.i./ha. Onion was the most sensitive monocot (based on shoot length), with an EC_{25} of 8.4 g a.i./ha; the EC_{05} and NOEC were 3.2 and 7.5 g a.i./ha.

This study is classified as Supplemental. This study is scientifically sound but does not fulfill the guideline requirements for seedling emergence studies (Subdivision J, §123-1 (TIER II)).

Most sensitive monocot: Onion
Most sensitive parameter: Shoot length
NOEC: 7.5 g a.i./ha
EC_{05}: 3.2 g a.i./ha   95% C.I.: 1.1-9.3 g a.i./ha
EC_{25}: 8.4 g a.i./ha   95% C.I.: 5.4-13 g a.i./ha
Slope: 2.28±0.811

Most sensitive dicot: Lettuce
Most sensitive parameter: Shoot length
NOEC: 3.75 g a.i./ha
EC_{05}: 2.8 g a.i./ha   95% C.I.: 1.3-6.2 g a.i./ha
EC_{25}: 6.0 g a.i./ha   95% C.I.: 4.0-9.2 g a.i./ha
Slope: 2.87±0.745

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8. ADEQUACY OF THE STUDY:

A. Classification: Supplemental

B. Rationale: This study is scientifically sound and but does not fulfill the guideline requirements for seedling emergence studies (Subdivision J, §123-1 (TIER II)). Please see guideline deviations for explanation.

C. Repairability: None

9. GUIDELINE DEVIATIONS:

1. The herbicide being tested has an ALS inhibitor mode of action in which morphological symptoms of herbicide injury usually is seen in sensitive plants about 2 weeks after exposure to the herbicide. This delayed symptom is sometimes called the "slow death" syndrome. This study was conducted for 2 weeks. The EFED has recommended that studies that use an ALS inhibitor herbicide be conducted for at least 3 weeks. Because of the uncertainties since this study was not conducted for sufficient amount of time, the EC25 values in this study are considered **to be under reported for phytotoxic sensitivity.**

2. The formulation tested in this study is not the formulation that will used in the U.S. The EFED has stated that for terrestrial plant studies, the study must use a formulation that has the highest percentage active ingredient

10. SUBMISSION PURPOSE: This study was submitted to provide data on the phytotoxicity to non-target crop species of AE F130060 + AE F107892 (a.i. mesosulfuron-methyl) after post-emergent application for the purpose of chemical registration.

11. MATERIALS AND METHODS:

A. Test Organisms

Guideline Criteria	Reported Information
Species: 6 dicots in 4 families, including soybean and a rootcrop; 4 monocots in 2 families, including corn.	Dicots: cabbage, cucumber, lettuce, radish, soybean, and tomato Monocots: corn, oat, onion, and wheat
Number of plants per repetition:	5 seeds per pot (6 replicate pots per control and treatment group)
Source of seed and historical % germination of seed:	See Table 1, p. 28 for seed source information and historical % germination of seed (95-100%).

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B. Test System

Guideline Criteria	Reported Information
Solvent:	N/A (adjuvant contained Synperonic™ and the safener AE F107892 at a concentration of 24 g/L)
Site of test:	Greenhouse Tests were performed at Aventis CropScience Research Center, Ecotoxicology Laboratory, Research Triangle Park, NC.
Planting method/type of pot:	Plastic pots with 6 inch diameter. Corn, cucumber, oat, soybean, and wheat were planted at 2.5 cm depth. Cabbage, lettuce, onion, radish, and tomato were planted at 1.3 cm depth. The sandy loam soil used for planting was a mixture of natural topsoil and sand (pH 5.7 and 1.1% organic matter). The soil was fertilized periodically throughout the study.
Method of application:	Track sprayer enclosed in a fume hood.
Method of watering:	The pots were subirrigated an average of twice a day. The water used was tap water.
Growth stage at application:	Pre-emergent seed

C. Test Design

Guideline Criteria	Reported Information
Dose range: 2x or 3x	2x
Doses: At least 5	0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha (cabbage was tested at rates of 0.12, 0.24, 0.47, 0.94, 1.88, and 3.75 g a.i./ha)

Guideline Criteria	Reported Information
Controls: Negative and solvent	Negative control (deionized water)
Replicates per dose: At least 3	6 replicates
Test duration: 14 days	14 days
Were observations made at least weekly?	Yes
Maximum dosage rate:	The highest treatment was equivalent to a field application rate of 15 g a.i./ha. The application rate for the spray solution was 93.5 L/ha

12. REPORTED RESULTS:

Guideline Criteria	Reported Information
Quality assurance and GLP compliance statements were included in the report?	Yes
Was a NOEC observed for each species?	Yes
Phytotoxic observations:	See p. 21 and Table 6, p. 33 for phytotoxicity rating system.
Were initial chemical concentrations measured? (Optional)	Yes, the spray trial concentrations were measured (99-120% of nominal).
Were adequate raw data included?	Replicate data were provided.

Results for the most sensitive parameter of each species

Results Synopsis

Seedling Emergence

Crop	Emergence* and Survival*		Shoot length*		Dry weight*		Most sensitive parameter
	NOAEC	EC$_{25}$	NOAEC	EC$_{25}$	NOAEC	EC$_{25}$	
Cabbage	15	ND	3.75	>3.75	1.88	>3.75	None
Corn	15	ND	15	>15	15	>15	None
Cucumber	15	ND	7.5	15.2	7.5	15	Dry weight
Lettuce	15	ND	3.75	6.05	7.5	7.44	Shoot length
Oat	15	ND	7.5	>15	15	>15	None
Onion	15	ND	7.5	8.45	7.5	9.50	Shoot length
Radish	15	ND	3.75	6.70	3.75	8.31	Shoot length
Soybean	15	ND	0.94	13.90	0.94	7.20	Dry weight
Tomato	15	ND	3.75	>15	7.5	7.49	Dry weight
Wheat	15	ND	15	>15	15	>15	None

ND = Not determined; NA = Not Applicable
* Units are g a.i./ha

Morphological Observations (negative percent reductions indicate promoted growth)

Cabbage: Percent emergence ranged from 90 to 100% for all treatment groups by 14 days; control emergence was 100%. Seedling survival ranged from 96 to 100% for all treatment groups by 14 days; control survival was 100%.

By 14 days, the percent reductions of mean plant heights were 0, -4, 4, -1, 5, and 11% in the 0.12, 0.24, 0.47, 0.94, 1.88, and 3.75 g a.i./ha treatment groups, respectively, compared to the control group. The percent reductions of mean dry weights were-2, 5, 6, -3, 15, and 19% in the 0.12, 0.24, 0.47, 0.94, 1.88, and 3.75 g a.i./ha treatment groups, respectively, compared to the control group. The dry weight inhibitions were significant in the 3.75 g a.i./ha treatment group.

By 14 days, there were no significant phytotoxic effects.

Corn: Percent emergence ranged from 97 to 100% for all treatment groups by 14 days; control emergence was 100%. Seedling survival ranged from 97 to 100% for all treatment groups by 14 days; control survival was 100%.

By 14 days, the percent reductions of mean plant heights were -9, -2, -3, 1, 6, and 20% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared

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to the control group. The height inhibitions were significant in the 15 g a.i./ha treatment group. The percent reductions of mean dry weights were -30, -9, -11, -9, 0, and 8% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group.

By 14 days, the only significant phytotoxic effect was height inhibition in the 7.5 and 15 g a.i./ha treatment groups.

Cucumber: Percent emergence ranged from 87 to 93% for all treatment groups by 14 days; control emergence was 97%. Seedling survival ranged from 96 to 100% for all treatment groups by 14 days; control survival was 93%.

By 14 days, the percent reductions of mean plant heights were -3, 9, 8, 10, 4, and 27% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The percent reductions of mean dry weights were -11, 9, 11, 17, 10, and 25% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The height and dry weight inhibitions were significant in the 15 g a.i./ha treatment group.

By 14 days, the significant phytotoxic effects included height inhibition and chlorosis in the 15 g a.i./ha treatment group.

Lettuce: Percent emergence was 93, 90, 83, 80, 80, and 47% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, by 14 days; control emergence was 97%. Seedling survival ranged from 96 to 100% for all treatment groups by 14 days; control survival was 100%.

By 14 days, the percent reductions of mean plant heights were 9, 6, -9, 11, 37, and 63% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The height inhibitions were significant in the 7.5 and 15 g a.i./ha treatment groups. The percent reductions of mean dry weights were 12, -4, -24, 8, 23, and 53% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The dry weight inhibitions were significant in the 15 g a.i./ha treatment group.

By 14 days, the only significant phytotoxic effect was height inhibition in the 7.5 and 15 g a.i./ha treatment groups.

Oat: Percent emergence ranged from 87 to 97% for all treatment groups by 14 days; control emergence was 90%. Seedling survival was 100% for all treatment groups and the control by 14 days.

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By 14 days, the percent reductions of mean plant heights were 12, 9, 5, 0, 3, and 24% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The height inhibitions were significant in the 15 g a.i./ha treatment group. The percent reductions of mean dry weights were 14, 6, -2, -9, -15, and 20% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group.

By 14 days, the only significant phytotoxic effect was height inhibition in the 15 g a.i./ha treatment groups.

Onion: Percent emergence was 90, 87, 80, 77, 60, and 77% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, by 14 days; control emergence was 83%. Seedling survival was 100% for all treatment groups and the control by 14 days.

By 14 days, the percent reductions of mean plant heights were -18, 2, -11, 0, 20, and 42% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The percent reductions of mean dry weights were -16, 14, -8, 8, 17, and 40% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The height and dry weight inhibitions were significant in the 15 g a.i./ha treatment group.

By 14 days, the only significant phytotoxic effect was height inhibition in the 7.5 and 15 g a.i./ha treatment groups.

Radish: Percent emergence ranged from 87 to 97% for all treatment groups by 14 days; control emergence was 100%. Seedling survival was 100% for all treatment groups and the control by 14 days.

By 14 days, the percent reductions of mean plant heights were 7, 23, 14, 21, 35, and 59% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The percent reductions of mean dry weights were 3, 19, 13, 16, 26, and 56% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The height and dry weight inhibitions were significant in the 7.5 and 15 g a.i./ha treatment groups.

By 14 days, there were no significant phytotoxic effects.

Soybean: Percent emergence ranged from 80 to 100% for all treatment groups by 14 days; control emergence was 100%. Seedling survival ranged from 96 to 100% for all treatment groups by 14 days; control survival was 100%.

By 14 days, the percent reductions of mean plant heights were 6, 7, 21, 9, 14, and 29% in

the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The percent reductions of mean dry weights were 2, 12, 26, 11, 20, and 33% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The height and dry weight inhibitions were significant in the 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups.

By 14 days, the significant phytotoxic effects were height inhibition and malformed leaves in the 15 g a.i./ha treatment group.

Tomato: Percent emergence ranged from 93 to 100% for all treatment groups by 14 days; control emergence was 90%. Seedling survival ranged from 97 to 100% for all treatment groups by 14 days; control survival was 100%.

By 14 days, the percent reductions of mean plant heights were -4, 3, 7, 1, 14, and 24% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The height inhibitions were significant in the 7.5 and 15 g a.i./ha treatment groups. The percent reductions of mean dry weights were -15, -6, 5, 1, 25, and 42% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The dry weight inhibitions were significant in the 15 g a.i./ha treatment group.

By 14 days, there were no significant phytotoxic effects.

Wheat: Percent emergence ranged from 87 to 97% for all treatment groups by 14 days; control emergence was 83%. Seedling survival was 100% for all treatment groups and the control by 14 days.

By 14 days, the percent reductions of mean plant heights were -2, -8, -8, -9, -4, and -1% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group. The percent reductions of mean dry weights were -1, -7, -14, -3, and 4% in the 0.47, 0.94, 1.88, 3.75, 7.5, and 15 g a.i./ha treatment groups, respectively, compared to the control group.

By 14 days, there were no significant phytotoxic effects.

Statistical Results
Statistical Method: The percent inhibition was calculated using the equation on pp. 21- The Shapiro-Wilk's test was used to determine normal distribution and the Bartlett's Test was used to determine homogeneity of variance for all data. The treatment group data was compared to the control using the Dunnett's one way analysis of variance. If transformations were not successful, the data was analyzed using Steele's Rank Sum Test. The EC_{25} and EC_{50} were calculated using non-linear regression based on Bruce and

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Versteeg or a linear interpolation program. The SAS® Procedure NLIN (Version 6.12) computer software was used to perform all statistical analyses.

Most sensitive monocot: Onion
Most sensitive parameter: Shoot length
NOEC: 7.5 g a.i./ha
EC_{25}: 8.45 g a.i./ha   95% C.I.: 5.42-13.16 g a.i./ha
EC_{50}: >15 g a.i./ha   95% C.I.: N/A
Slope: Not reported

Most sensitive dicot: Lettuce
Most sensitive parameter: Shoot length
NOEC: 3.75 g a.i./ha
EC_{25}: 6.05 g a.i./ha   95% C.I.: 3.96-9.24 g a.i./ha
EC_{50}: 10.38 g a.i./ha   95% C.I.: 8.13-13.26
Slope: Not reported

13. <u>REVIEWER'S VERIFICATION OF STATISTICAL RESULTS</u>:

<u>Statistical Method</u>: Shoot length and dry weight data were analyzed to determine if they satisfied the assumptions of ANOVA (i.e., normal distribution and homogeneity of variances). If they did, the NOEC was determined using ANOVA, followed by Bonferroni's t-test (unequal replicates, non-monotonic response), Dunnett's test (equal replicates, non-monotonic response), or William's test (monotonic response). If the data did not meet these assumptions, transformations (e.g., square-root, inverse square-root, or natural log) were attempted. If these transformations were successful, the NOEC was determined using a method described above. If the transformations were not successful, the NOEC was determined using the non-parametric Kruskal-Wallis test. These analyses were conducted using TOXSTAT statistical software. The EC_{05} and EC_{25} values and their 95% confidence intervals and slopes were determined using the Probit method via Nuthatch statistical software.

Results synopsis

Crop	Shoot length*			Dry weight*			Most sensitive parameter	NOAEC Morphological symptoms at day 14
	NOEC	EC$_{05}$	EC$_{25}$	NOEC	EC$_{05}$	EC$_{25}$		
Cabbage	3.75	1.8	>3.75	3.75[b]	1.0	>3.75	None	ND- control and lowest 2 doses show damage
Corn	1.88[a]	4.5	>15	15	4.0	>15	None	ND - effects at lowest dose
Cucumber	15[b]	9.7	15	7.5	0.51	12[a]	Dry weight	ND - effects at lowest dose
Lettuce	3.75	2.8	6.0	7.5	3.4	7.4	Shoot length	ND - control and 0.94 gm/ha show damage
Oat	15[b]	ND	>15	15	ND	>15	None	ND - effects at lowest dose
Onion	7.5	3.2	8.4	15[b]	4.1	9.5	Shoot length	ND - effects at lowest dose
Radish	3.75	2.5	6.6	3.75	3.8	8.3	Shoot length	ND - effects at lowest dose
Soybean	0.94	0.94	12[a]	0.94	0.25	7.2	Dry weight	ND - control shows damage
Tomato	7.5[b]	3.7	15	7.5	2.2	7.5	Dry weight	0.207
Wheat	15	>15	>15	15	>15	>15	None	ND - control and lower 3 doses show damage

[a]The reviewer's estimate was lower than the study authors'.
[b] The reviewer's estimate was higher than the study authors'.
*units are g a.i./ha
ND=could not determine

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EC$_x$ values, confidence intervals, and slopes

Species	Shoot length*					Dry weight*				
	EC$_{05}$	Confidence interval	EC$_{25}$	Confidence interval	Slope	EC$_{05}$	Confidence interval	EC$_{25}$	Confidence interval	Slope
Cabbage	1.8	0.44-7.5	>3.75	N/A	1.46±1.28	1.0	0.10-11	>3.75	N/A	1.40±1.22
Corn	4.5	1.2-17	>15	N/A	1.76±0.942	4.0	0.27-61	>15	N/A	1.38±1.36
Cucumber	9.7	2.2-42	15	12-19	4.92±7.97	0.51	0.0090-29	12ª	3.1-50	0.700±0.384
Lettuce	2.8	1.3-6.2	6.0	4.0-9.2	2.87±0.745	3.4	1.2-9.6	7.4	4.5-12	2.90±1.08
Oat	ND	ND	>15	N/A	ND	ND	ND	>15	N/A	ND
Onion	3.2	1.1-9.3	8.4	5.4-13	2.28±0.811	4.1	0.83-20	9.5	5.0-18	2.64±1.66
Radish	2.5	0.69-9.2	6.6	3.6-12	2.30±0.874	3.8	1.4-10	8.3	5.2-13	2.88±1.10
Soybean	0.94	0.067-13	12ª	5.0-28	0.881±0.388	0.25	0.011-5.6	7.2	2.3-22	0.666±0.236
Tomato	3.7	0.84-16	15	9.3-25	1.57±0.821	2.2	0.47-11	7.5	3.9-14	1.85±0.774
Wheat	>15	N/A	>15	N/A	N/A	>15	N/A	>15	N/A	N/A

ª The reviewer's estimate was lower than the study authors'.
[b] The reviewer's estimate was higher than the study authors'.
*units are g a.i./ha
ND=could not determine

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Most sensitive monocot: Onion
Most sensitive parameter: Shoot length
NOEC: 7.5 g a.i./ha
EC_{05}: 3.2 g a.i./ha   95% C.I.: 1.1-9.3 g a.i./ha
EC_{25}: 8.4 g a.i./ha   95% C.I.: 5.4-13 g a.i./ha
Slope: 2.28±0.811

Most sensitive dicot: Lettuce
Most sensitive parameter: Shoot length
NOEC: 3.75 g a.i./ha
EC_{05}: 2.8 g a.i./ha   95% C.I.: 1.3-6.2 g a.i./ha
EC_{25}: 6.0 g a.i./ha   95% C.I.: 4.0-9.2 g a.i./ha
Slope: 2.87±0.745

14. REVIEWER'S COMMENTS:

The herbicide being tested has an ALS inhibitor mode of action in which morphological symptoms of herbicide injury usually is seen in sensitive plants about 2 weeks after exposure to the herbicide. This delayed symptom is sometimes called the "slow death" syndrome. This study was conducted for 2 weeks. The EFED has recommended that studies that uses an ALS inhibitor herbicide br conducted for at least 3 weeks. Because this study was not conducted for sufficient amount of time, the EC25 values in this study are considered **to be under reported for phytotoxic sensitivity.**

The formulation tested in this study is not the formulation that will used in the U.S. The EFED has stated that for terrestrial plant studies, the study must use a formulation that has the highest percentage active ingredient.

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The reviewer's conclusions were identical to the study authors'; lettuce, a dicot, was the most sensitive species based on shoot length (for which an EC_{25} could be identified; the EC_{25} for cabbage shoot length and dry weight was >3.75 g a.i./ha), with an EC_{25} of 8.4 g a.i./ha; the EC_{05} and NOEC were 2.8 and 3.75 g a.i./ha. Onion was the most sensitive monocot (based on shoot length), with an EC_{25} of 8.4 g a.i./ha; the EC_{05} and NOEC were 3.2 and 7.5 g a.i./ha.

The definitive study for soybean and wheat conducted from March 20, 2002 to April 3, 2002. The definitive study for corn, oat, and cucumber was conducted from March 18, 2002 to April 1, 2002. The temperature ranged from 21.2 to 26.7°C and the humidity ranged from 19.5 to 67.5%. The light intensity was 157.7 to 511.0 µmol m^{-2}s^{-1}.

The definitive study for onion and radish was conducted from April 18, 2002 to May 2, 2002. The temperature ranged from 21.4 to 26.8°C and the humidity ranged from 26.8 to 75.4%. The light intensity was 246.5 to 482.4 µmol m^{-2}s^{-1}.

The definitive study for cabbage, lettuce, and tomato was conducted from June 5, 2002 to June 19, 2002. The temperature ranged from 26.5 to 29.3°C and the humidity ranged from 36.8 to 66.5%. The light intensity was 182.9 to 462.8 µmol m^{-2}s^{-1}.

A non-GLP range finding test and other previous definitive trials were conducted to determine the treatment concentrations for the final definitive study. The previous trials were not reported due to low germination rates, low analytical recoveries, and changes in the adjuvant/safener rate.

This study was conducted in accordance with USEPA Good Laboratory Practice Standards with the exception of the collection of data for the water and soil contaminant and screening analyses (p. 3). The study includes a Quality Assurance statement.

15. REFERENCES:

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Norberg-King, T.J. (1993) A Linear Interpolation Method for Sublethal Toxicity: The Inhibition Concentration (ICp) Approach (Version 2.0). National Effluent Toxicity Assessment Center Technical Report 03-93. Environmental Protection Agency, Duluth, MN.

APPENDIX I. OUTPUT FROM REVIEWER'S STATISTICAL VERIFICATION:

cabbage length
File: 5702bl   Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	5.137	0.856	1.315
Within (Error)	35	22.777	0.651	
Total	41	27.913		

Critical F value =   2.42   (0.05, 6, 30)
. Since F < Critical F   FAIL TO REJECT   Ho: All groups equal

cabbage length
File: 5702bl   Transform: NO TRANSFORMATION

DUNNETTS TEST   -   TABLE 1 OF 2   Ho: Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	7.433	7.433		
2	0.12	7.467	7.467	-0.072	
3	0.24	7.700	7.700	-0.572	
4	0.47	7.117	7.117	0.680	
5	0.94	7.533	7.533	-0.215	
6	1.88	7.017	7.017	0.894	

18

19

| 7 | | 3.75 | 6.600 | | 6.600 | | 1.789 |

Dunnett table value = 2.40   (1 Tailed Value, P=0.05, df=30,6)

cabbage length
File: 5702bl   Transform: NO TRANSFORMATION

DUNNETTS TEST   -   TABLE 2 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.12	6	1.118	15.0	-0.033
3	0.24	6	1.118	15.0	-0.267
4	0.47	6	1.118	15.0	0.317
5	0.94	6	1.118	15.0	-0.100
6	1.88	6	1.118	15.0	0.417
7	3.75	6	1.118	15.0	0.833

cabbage length
File: 5702bl   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	7.433	7.433	7.533
2	0.12	6	7.467	7.467	7.533
3	0.24	6	7.700	7.700	7.533
4	0.47	6	7.117	7.117	7.325
5	0.94	6	7.533	7.533	7.325
6	1.88	6	7.017	7.017	7.017
7	3.75	6	6.600	6.600	6.600

cabbage length
File: 5702bl   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	7.533				
0.12	7.533	0.215		1.69	k= 1, v=35
0.24	7.533	0.215		1.77	k= 2, v=35
0.47	7.325	0.233		1.79	k= 3, v=35

20

0.94	7.325	0.233	1.80	k= 4, v=35
1.88	7.017	0.895	1.81	k= 5, v=35
3.75	6.600	1.789	1.82	k= 6, v=35

s =   0.807

Note: df used for table values are approximate when v > 20.

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound
		Lower	Upper		/Estimate
EC5	**1.8**	**0.44**	**7.5**	**0.30**	**0.24**
EC10	3.2	1.5	6.7	0.16	0.48
EC25	**8.3**	**1.6**	**43.**	**0.35**	**0.19**
EC50	24.	0.78	7.4E+02	0.74	0.032

Slope =   1.46 Std.Err. =   1.28

Goodness of fit: p =   0.77 based on DF=   4.0   35.

5702BL : cabbage length

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	6.00	7.43	7.48	-0.0469	100.	0.00
0.120	6.00	7.47	7.48	-0.0107	100.	0.0378
0.240	6.00	7.70	7.47	0.233	99.8	0.171
0.470	6.00	7.12	7.43	-0.317	99.4	0.620
0.940	6.00	7.53	7.33	0.201	98.0	1.97
1.88	6.00	7.02	7.09	-0.0690	94.7	5.27
3.75	6.00	6.60	6.59	0.0105	88.1	11.9

!!!Warning: EC25 not bracketed by doses evaluated.

!!!Warning: EC50 not bracketed by doses evaluated.

cabbage dry weight
File: 5702bw   Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	11.486	1.914	1.378
Within (Error)	35	48.609	1.389	
Total	41	60.095		

Critical F value =   2.42   (0.05,6,30)

20

Since F < Critical F FAIL TO REJECT Ho:All groups equal

cabbage dry weight
File: 5702bw   Transform: NO TRANSFORMATION

          DUNNETTS TEST   -   TABLE 1 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	6.555	6.555		
2	0.12	6.773	6.773	-0.321	
3	0.24	6.170	6.170	0.566	
4	0.47	6.112	6.112	0.652	
5	0.94	6.743	6.743	-0.277	
6	1.88	5.615	5.615	1.381	
7	3.75	5.297	5.297	1.849	

Dunnett table value = 2.40   (1 Tailed Value, P=0.05,   df=30,6)

cabbage dry weight
File: 5702bw   Transform: NO TRANSFORMATION

          DUNNETTS TEST   -   TABLE 2 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.12	6	1.633	24.9	-0.218
3	0.24	6	1.633	24.9	0.385
4	0.47	6	1.633	24.9	0.443
5	0.94	6	1.633	24.9	-0.188
6	1.88	6	1.633	24.9	0.940
7	3.75	6	1.633	24.9	1.258

cabbage dry weight
File: 5702bw   Transform: NO TRANSFORMATION

          WILLIAMS TEST   (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	6.555	6.555	6.664
2	0.12	6	6.773	6.773	6.664
3	0.24	6	6.170	6.170	6.342
4	0.47	6	6.112	6.112	6.342
5	0.94	6	6.743	6.743	6.342

```
6                        1.88    6       5.615           5.615           5.615
7                        3.75    6       5.297           5.297           5.297
```

cabbage dry weight
File: 5702bw   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	6.664				
0.12	6.664	0.160		1.69	k= 1, v=35
0.24	6.342	0.314		1.77	k= 2, v=35
0.47	6.342	0.314		1.79	k= 3, v=35
0.94	6.342	0.314		1.80	k= 4, v=35
1.88	5.615	1.382		1.81	k= 5, v=35
3.75	5.297	1.849	*	1.82	k= 6, v=35

s =   1.178
Note: df used for table values are approximate when v > 20.

Estimates of EC%

Parameter	Estimate	95% Bounds Lower	Upper	Std.Err.	Lower Bound /Estimate
EC5	**1.0**	**0.10**	**11.**	**0.50**	**0.097**
EC10	1.9	0.46	7.7	0.30	0.25
EC25	**5.1**	**1.8**	**15.**	**0.23**	**0.35**
EC50	15.	1.0	2.3E+02	0.58	0.066

Slope =   1.40 Std.Err. =   1.22

Goodness of fit: p =   0.64 based on DF=   4.0   35.

5702BW : cabbage dry weight

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	6.00	6.56	6.52	0.0376	100.	0.00
0.120	6.00	6.77	6.51	0.266	99.8	0.153
0.240	6.00	6.17	6.48	-0.311	99.4	0.557
0.470	6.00	6.11	6.41	-0.297	98.3	1.66
0.940	6.00	6.74	6.23	0.513	95.6	4.40
1.88	6.00	5.61	5.87	-0.253	90.0	9.97
3.75	6.00	5.30	5.25	0.0451	80.6	19.4

!!!Warning: EC25 not bracketed by doses evaluated.

23

!!!Warning: EC50 not bracketed by doses evaluated.

corn length
File: 5702nl   Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	300.445	50.074	2.783
Within (Error)	35	629.860	17.996	
Total	41	930.305		

Critical F value =   2.42   (0.05,6,30)
Since F > Critical F REJECT Ho:All groups equal

corn length
File: 5702nl   Transform: NO TRANSFORM

DUNNETTS TEST   -   TABLE 1 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	30.267	30.267		
2	0.47	33.117	33.117	-1.164	
3	0.94	30.933	30.933	-0.272	
4	1.88	31.317	31.317	-0.429	
5	3.75	30.033	30.033	0.095	
6	7.5	28.317	28.317	0.796	
7	15	24.050	24.050	2.538	*

Dunnett table value = 2.40   (1 Tailed Value, P=0.05,   df=30,6)

corn length
File: 5702nl   Transform: NO TRANSFORM

DUNNETTS TEST   -   TABLE 2 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.47	6	5.878	19.4	-2.850
3	0.94	6	5.878	19.4	-0.667
4	1.88	6	5.878	19.4	-1.050
5	3.75	6	5.878	19.4	0.233
6	7.5	6	5.878	19.4	1.950

23

```
    7                  15      6           5.878      19.4       6.217
    ---------------------------------------------------------------------
```

corn length
File: 5702nl   Transform: NO TRANSFORM

WILLIAMS TEST (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	30.267	30.267	31.692
2	0.47	6	33.117	33.117	31.692
3	0.94	6	30.933	30.933	31.125
4	1.88	6	31.317	31.317	31.125
5	3.75	6	30.033	30.033	30.033
6	7.5	6	28.317	28.317	28.317
7	15	6	24.050	24.050	24.050

corn length
File: 5702nl   Transform: NO TRANSFORM

WILLIAMS TEST (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	31.692				
0.47	31.692	0.582		1.69	k= 1, v=35
0.94	31.125	0.350		1.77	k= 2, v=35
1.88	31.125	0.350		1.79	k= 3, v=35
3.75	30.033	0.095		1.80	k= 4, v=35
7.5	**28.317**	**0.796**		**1.81**	**k= 5, v=35**
15	24.050	2.538	*	1.82	k= 6, v=35

```
s =    4.242
```
Note: df used for table values are approximate when v > 20.

Estimates of EC%

Parameter	Estimate	95% Bounds Lower	Upper	Std.Err.	Lower Bound /Estimate
EC5	**4.5**	**1.2**	**17.**	**0.28**	**0.27**
EC10	7.2	3.1	17.	0.18	0.43
EC25	**16.**	**10.**	**25.**	**0.10**	**0.63**
EC50	39.	12.	1.3E+02	0.26	0.30

Slope =   **1.76** **Std.Err. =**   **0.942**

Goodness of fit: p =   0.85   based on DF=   4.0   35.

5702NL : corn length

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	6.00	30.3	31.5	-1.21	100.	0.00
0.470	6.00	33.1	31.5	1.65	100.	0.0386
0.940	6.00	30.9	31.4	-0.472	99.8	0.230
1.88	6.00	31.3	31.1	0.171	98.9	1.06
3.75	6.00	30.0	30.3	-0.262	96.2	3.76
7.50	6.00	28.3	28.2	0.158	89.5	10.5
15.0	6.00	24.1	24.1	-0.0339	76.5	23.5

!!!Warning: EC25 not bracketed by doses evaluated.

!!!Warning: EC50 not bracketed by doses evaluated.

corn dry weight
File: 5702nw   Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	218.264	36.377	1.786
Within (Error)	35	712.961	20.370	
Total	41	931.225		

Critical F value =   2.42   (0.05,6,30)
Since F < Critical F FAIL TO REJECT Ho:All groups equal

corn dry weight
File: 5702nw   Transform: NO TRANSFORMATION

DUNNETTS TEST   -   TABLE 1 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	20.458	20.458		---
2	0.47	26.513	26.513	-2.324	
3	0.94	22.358	22.358	-0.729	
4	1.88	22.780	22.780	-0.891	
5	3.75	22.170	22.170	-0.657	
6	7.5	20.432	20.432	0.010	
7	15	18.768	18.768	0.649	

```
--------------------------------------------------------------------
Dunnett table value =  2.40     (1 Tailed Value, P=0.05,  df=30,6)
```

corn dry weight
File: 5702nw   Transform: NO TRANSFORMATION

		NUM OF	Minimum Sig Diff	% of	DIFFERENCE
GROUP	IDENTIFICATION	REPS	(IN ORIG. UNITS)	CONTROL	FROM CONTROL
1	control	6			
2	0.47	6	6.254	30.6	-6.055
3	0.94	6	6.254	30.6	-1.900
4	1.88	6	6.254	30.6	-2.322
5	3.75	6	6.254	30.6	-1.712
6	7.5	6	6.254	30.6	0.027
7	15	6	6.254	30.6	1.690

DUNNETTS TEST   -   TABLE 2 OF 2   Ho:Control<Treatment

corn dry weight
File: 5702nw   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	20.458	20.458	23.486
2	0.47	6	26.513	26.513	23.486
3	0.94	6	22.358	22.358	22.569
4	1.88	6	22.780	22.780	22.569
5	3.75	6	22.170	22.170	22.170
6	7.5	6	20.432	20.432	20.432
7	15	6	18.768	18.768	18.768

corn dry weight
File: 5702nw   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	23.486				
0.47	23.486	1.162		1.69	k= 1, v=35
0.94	22.569	0.810		1.77	k= 2, v=35
1.88	22.569	0.810		1.79	k= 3, v=35
3.75	22.170	0.657		1.80	k= 4, v=35

```
          7.5    20.432    0.010              1.81     k= 5, v=35
          15     18.768    0.649              1.82     k= 6, v=35
------------------------------------------------------------------------
s =    4.513
Note: df used for table values are approximate when v > 20.
```

Estimates of EC%

```
------------------------------------------------------------------------
Parameter   Estimate    95% Bounds        Std.Err.   Lower Bound
                       Lower    Upper                /Estimate
EC5           4.0      0.27      61.       0.58       0.066
EC10          7.4      1.4       38.       0.35       0.19
EC25          20.      6.0       69.       0.26       0.30
EC50          63.      2.8     1.4E+03     0.67       0.044
```

Slope =   1.38 Std.Err. =   1.36

```
Goodness of fit: p =      0.29  based on DF=      4.0      35.
------------------------------------------------------------------------
5702NW : corn dry weight
------------------------------------------------------------------------
Observed vs. Predicted Treatment Group Means
------------------------------------------------------------------------
   Dose     #Reps.    Obs.     Pred.     Obs.     Pred.    %Change
                      Mean     Mean     -Pred.   %Control

   0.00      6.00     20.5     23.1     -2.69
   0.470     6.00     26.5     23.1      3.41    100.     0.00
   0.940     6.00     22.4     23.0     -0.648   99.8     0.169
   1.88      6.00     22.8     22.7      0.0483  99.4     0.593
   3.75      6.00     22.2     22.1      0.0848  98.2     1.78
   7.50      6.00     20.4     20.8     -0.360   95.4     4.58
   15.0      6.00     18.8     18.6      0.153   89.8     10.2
                                                 80.4     19.6
```

!!!Warning: EC25 not bracketed by doses evaluated.

!!!Warning: EC50 not bracketed by doses evaluated.

cucumber length
File: 5702cl   Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	20.036	3.339	1.579
Within (Error)	35	73.985	2.114	
Total	41	94.021		

Critical F value =   2.42 (0.05,6,30)
Since F < Critical F FAIL TO REJECT Ho:All groups equal

27

cucumber length
File: 5702cl   Transform: NO TRANSFORM

DUNNETTS TEST   -   TABLE 1 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	7.767	7.767		
2	0.47	7.917	7.917	-0.179	
3	0.94	7.133	7.133	0.754	
4	1.88	7.250	7.250	0.615	
5	3.75	6.967	6.967	0.953	
6	7.5	7.317	7.317	0.536	
7	15	5.633	5.633	2.541	*

Dunnett table value =   2.40   (1 Tailed Value, P=0.05,   df=30,6)

cucumber length
File: 5702cl   Transform: NO TRANSFORM

DUNNETTS TEST   -   TABLE 2 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.47	6	2.015	25.9	-0.150
3	0.94	6	2.015	25.9	0.633
4	1.88	6	2.015	25.9	0.517
5	3.75	6	2.015	25.9	0.800
6	7.5	6	2.015	25.9	0.450
7	15	6	2.015	25.9	2.133

cucumber length
File: 5702cl   Transform: NO TRANSFORM

WILLIAMS TEST   (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	7.767	7.767	7.842
2	0.47	6	7.917	7.917	7.842
3	0.94	6	7.133	7.133	7.192
4	1.88	6	7.250	7.250	7.192
5	3.75	6	6.967	6.967	7.142
6	7.5	6	7.317	7.317	7.142

28

```
 7                        15    6       5.633          5.633              5.633
----------------------------------------------------------------------------------
```

cucumber length
File: 5702cl   Transform: NO TRANSFORM

        WILLIAMS TEST   (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	7.842				
0.47	7.842	0.089		1.69	k= 1, v=35
0.94	7.192	0.685		1.77	k= 2, v=35
1.88	7.192	0.685		1.79	k= 3, v=35
3.75	7.142	0.745		1.80	k= 4, v=35
7.5	7.142	0.745		1.81	k= 5, v=35
15	5.633	2.541	*	1.82	k= 6, v=35

s =   1.454
Note: df used for table values are approximate when v > 20.

Estimates of EC%

Parameter	Estimate	95% Bounds Lower	Upper	Std.Err.	Lower Bound /Estimate
EC5	**9.7**	**2.2**	**42.**	**0.32**	**0.23**
EC10	11.	4.6	29.	0.20	0.40
EC25	**15.**	**12.**	**19.**	**0.050**	**0.79**
EC50	21.	7.0	63.	0.24	0.33

        Slope =   4.92 Std.Err. =   7.97

Goodness of fit: p =   0.77 based on DF=   4.0   35.

5702CL : cucumber length

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	6.00	7.77	7.41	0.357	100.	0.00
0.470	6.00	7.92	7.41	0.507	100.	2.40e-14
0.940	6.00	7.13	7.41	-0.276	100.	1.75e-09
1.88	6.00	7.25	7.41	-0.159	100.	1.35e-05
3.75	6.00	6.97	7.41	-0.442	100.	0.0122
7.50	6.00	7.32	7.30	0.0135	98.6	1.43
15.0	6.00	5.63	5.63	-0.000661	76.0	24.0

!!!Warning: EC25 not bracketed by doses evaluated.

!!!Warning: EC50 not bracketed by doses evaluated.

cucumber dry weight
File: 5702cw   Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	83.610	13.935	2.627
Within (Error)	35	185.685	5.305	
Total	41	269.295		

Critical F value =   2.42   (0.05,6,30)
Since F > Critical F REJECT Ho:All groups equal

cucumber dry weight
File: 5702cw   .   Transform: NO TRANSFORMATION

DUNNETTS TEST   -   TABLE 1 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	13.667	13.667		
2	0.47	14.833	14.833	-0.877	
3	0.94	12.393	12.393	0.958	
4	1.88	12.122	12.122	1.162	
5	3.75	11.257	11.257	1.812	
6	7.5	11.795	11.795	1.407	
7	15	10.233	10.233	2.582	*

Dunnett table value = 2.40   (1 Tailed Value, P=0.05,   df=30,6)

cucumber dry weight
File: 5702cw   Transform: NO TRANSFORMATION

DUNNETTS TEST   -   TABLE 2 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.47	6	3.191	23.4	-1.167
3	0.94	6	3.191	23.4	1.273
4	1.88	6	3.191	23.4	1.545
5	3.75	6	3.191	23.4	2.410
6	7.5	6	3.191	23.4	1.872
7	15	6	3.191	23.4	3.433

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cucumber dry weight
File: 5702cw   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	13.667	13.667	14.250
2	0.47	6	14.833	14.833	14.250
3	0.94	6	12.393	12.393	12.393
4	1.88	6	12.122	12.122	12.122
5	3.75	6	11.257	11.257	11.526
6	7.5	6	11.795	11.795	11.526
7	15	6	10.233	10.233	10.233

cucumber dry weight
File: 5702cw   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	14.250				
0.47	14.250	0.439		1.69	k= 1, v=35
0.94	12.393	0.958		1.77	k= 2, v=35
1.88	12.122	1.162		1.79	k= 3, v=35
3.75	11.526	1.610		1.80	k= 4, v=35
7.5	**11.526**	**1.610**		**1.81**	**k= 5, v=35**
15	10.233	2.582	*	1.82	k= 6, v=35

s =   2.303
Note: df used for table values are approximate when v > 20.

Estimates of EC%

Parameter	Estimate	95% Bounds Lower	Upper	Std.Err.	Lower Bound /Estimate
EC5	**0.51**	**0.0090**	**29.**	**0.87**	**0.018**
EC10	1.7	0.10	29.	0.61	0.059
EC25	**12.**	**3.1**	**50.**	**0.30**	**0.25**
EC50	1.1E+02	8.6	1.5E+03	0.56	0.074

Slope =   0.700 Std.Err. =   0.384

Goodness of fit: p =   0.42 based on DF=   4.0   35.

5702CW : cucumber dry weight

```
------------------------------------------------------------------
Observed vs. Predicted Treatment Group Means
------------------------------------------------------------------
   Dose      #Reps.     Obs.      Pred.     Obs.      Pred.     %Change
                        Mean      Mean      -Pred.    %Control

   0.00       6.00      13.7      14.0      -0.356    100.      0.00
   0.470      6.00      14.8      13.4       1.47      95.3     4.73
   0.940      6.00      12.4      13.0      -0.619     92.8     7.21
   1.88       6.00      12.1      12.5      -0.420     89.4    10.6
   3.75       6.00      11.3      11.9      -0.675     85.1    14.9
   7.50       6.00      11.8      11.2       0.625     79.7    20.3
  15.0        6.00      10.2      10.3      -0.0310     73.2    26.8
```

!!!Warning: EC50 not bracketed by doses evaluated.

lettuce length
File: 570211   Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	27.472	4.579	9.933
Within (Error)	34	15.665	0.461	
Total	40	43.138		

```
  Critical F value =   2.42   (0.05,6,30)
  Since  F > Critical F  REJECT  Ho:All groups equal
```

lettuce length
File: 570211   Transform: NO TRANSFORMATION

BONFERRONI T-TEST   -   TABLE 1 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	3.550	3.550		
2	0.47	3.250	3.250	0.765	
3	0.94	3.317	3.317	0.595	
4	1.88	3.800	3.800	-0.638	
5	3.75	3.150	3.150	1.020	
6	7.5	2.200	2.200	3.444	*
7	15	1.160	1.160	5.813	*

Bonferroni T table value = 2.52   (1 Tailed Value, P=0.05, df=34,6)

33

lettuce length
File: 570211　　　　　Transform: NO TRANSFORMATION

　　　　BONFERRONI T-TEST　　-　　TABLE 2 OF 2　　　　　Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.47	6	0.987	27.8	0.300
3	0.94	6	0.987	27.8	0.233
4	1.88	6	0.987	27.8	-0.250
5	3.75	6	0.987	27.8	0.400
6	7.5	6	0.987	27.8	1.350
7	15	5	1.036	29.2	2.390

lettuce length
File: 570211　　　　　Transform: NO TRANSFORMATION

　　　　WILLIAMS TEST　(Isotonic regression model)　　TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	3.550	3.550	3.550
2	0.47	6	3.250	3.250	3.456
3	0.94	6	3.317	3.317	3.456
4	1.88	6	3.800	3.800	3.456
5	3.75	6	3.150	3.150	3.150
6	7.5	6	2.200	2.200	2.200
7	15	5	1.160	1.160	1.160

lettuce length
File: 570211　　　　　Transform: NO TRANSFORMATION

　　　　WILLIAMS TEST　(Isotonic regression model)　　TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	3.550				
0.47	3.456	0.241		1.70	k= 1, v=34
0.94	3.456	0.241		1.78	k= 2, v=34
1.88	3.456	0.241		1.80	k= 3, v=34
3.75	**3.150**	**1.021**		**1.81**	**k= 4, v=34**
7.5	2.200	3.445	*	1.82	k= 5, v=34
15	1.160	5.815	*	1.83	k= 6, v=34

s =　　0.679
Note: df used for table values are approximate when v > 20.

Estimates of EC%
```
------------------------------------------------------------------------
Parameter   Estimate    95% Bounds        Std.Err.   Lower Bound
                        Lower   Upper                 /Estimate
EC5           2.8        1.3     6.2        0.17        0.45
EC10          3.7        1.9     7.1        0.14        0.52
EC25          6.0        4.0     9.2        0.091       0.65
EC50          10.        8.1     13.        0.053       0.78
```

Slope =   2.87 Std.Err. =   0.745

```
Goodness of fit: p =     0.72  based on DF=       4.0      34.
------------------------------------------------------------------------
```
5702LL : lettuce length
```
------------------------------------------------------------------------
```
Observed vs. Predicted Treatment Group Means
```
------------------------------------------------------------------------
   Dose      #Reps.    Obs.      Pred.     Obs.       Pred.     %Change
                       Mean      Mean      -Pred.     %Control

   0.00      6.00      3.55      3.48      0.0657     100.       0.00
   0.470     6.00      3.25      3.48     -0.234      100.       0.00557
   0.940     6.00      3.32      3.48     -0.163       99.9      0.135
   1.88      6.00      3.80      3.43      0.373       98.4      1.64
   3.75      6.00      3.15      3.13      0.0204       89.8     10.2
   7.50      6.00      2.20      2.29     -0.0912       65.8     34.2
   15.0      5.00      1.16      1.13      0.0348       32.3     67.7
```

lettuce dry weight
File: 5702lw   Transform: NO TRANSFORMATION

ANOVA TABLE
```
------------------------------------------------------------------------

SOURCE           DF           SS              MS            F
------------------------------------------------------------------------
Between          6            6.907           1.151         4.604

Within (Error)   34           8.508           0.250
------------------------------------------------------------------------
Total            40           15.414
------------------------------------------------------------------------
```

  Critical F value =   2.42   (0.05,6,30)
  Since F > Critical F REJECT Ho:All groups equal

lettuce dry weight
File: 5702lw   Transform: NO TRANSFORMATION

```
      BONFERRONI T-TEST   -   TABLE 1 OF 2            Ho:Control<Treatment
------------------------------------------------------------------------
                          TRANSFORMED    MEAN CALCULATED IN
GROUP    IDENTIFICATION      MEAN          ORIGINAL UNITS    T STAT  SIG
```

1	control	1.925	1.925		
2	0.47	1.707	1.707	0.756	
3	0.94	1.988	1.988	-0.219	
4	1.88	2.262	2.262	-1.166	
5	3.75	1.727	1.727	0.687	
6	**7.5**	**1.470**	**1.470**	**1.576**	
7	15	0.816	0.816	3.663	*

Bonferroni T table value = .2.52   (1 Tailed Value, P=0.05, df=34,6)

lettuce dry weight
File: 5702lw   Transform: NO TRANSFORMATION

BONFERRONI T-TEST   -   TABLE 2 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.47	6	0.727	37.8	0.218
3	0.94	6	0.727	37.8	-0.063
4	1.88	6	0.727	37.8	-0.337
5	3.75	6	0.727	37.8	0.198
6	7.5	6	0.727	37.8	0.455
7	15	5	0.763	39.6	1.109

lettuce dry weight
File: 5702lw   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	1.925	1.925	1.970
2	0.47	6	1.707	1.707	1.970
3	0.94	6	1.988	1.988	1.970
4	1.88	6	2.262	2.262	1.970
5	3.75	6	1.727	1.727	1.727
6	7.5	6	1.470	1.470	1.470
7	15	5	0.816	0.816	0.816

lettuce dry weight
File: 5702lw   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 2 OF 2

36

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	1.970				
0.47	1.970	0.157		1.70	k= 1, v=34
0.94	1.970	0.157		1.78	k= 2, v=34
1.88	1.970	0.157		1.80	k= 3, v=34
3.75	1.727	0.687		1.81	k= 4, v=34
7.5	1.470	1.575		1.82	k= 5, v=34
15	0.816	3.661	*	1.83	k= 6, v=34

s =   0.500
Note: df used for table values are approximate when v > 20.

Estimates of EC%

Parameter	Estimate	95% Bounds Lower	Upper	Std.Err.	Lower Bound /Estimate
EC5	**3.4**	**1.2**	**9.6**	**0.22**	**0.36**
EC10	4.6	2.0	10.	0.18	0.44
EC25	**7.4**	**4.5**	**12.**	**0.11**	**0.61**
EC50	13.	9.4	17.	0.064	0.74

Slope =   2.90 Std.Err. =   1.08

Goodness of fit: p =   0.44 based on DF=   4.0   34.

5702LW : lettuce dry weight

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	6.00	1.93	1.95	-0.0271	100.	0.00
0.470	6.00	1.71	1.95	-0.245	100.	0.00167
0.940	6.00	1.99	1.95	0.0373	99.9	0.0525
1.88	6.00	2.26	1.94	0.325	99.2	0.810
3.75	6.00	1.73	1.83	-0.104	93.8	6.23
7.50	6.00	1.47	1.46	0.0127	74.7	25.3
15.0	5.00	0.816	0.815	0.00112	41.7	58.3

oat length
File: 5702al   Transform: NO TRANSFORMATION

KRUSKAL-WALLIS ANOVA BY RANKS - TABLE 1 OF 2

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	RANK SUM
1	control	22.667	22.667	174.000
2	0.47	19.500	19.500	91.000
3	0.94	20.517	20.517	86.500
4	1.88	21.583	21.583	130.500
5	3.75	22.733	22.733	175.500

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```
6                          7.5      22.200              22.200          159.500
7                           15      17.200              17.200           86.000
-----------------------------------------------------------------------------------

   Calculated H Value =  11.397        Critical H Value Table =  12.590
   Since  Calc H < Crit H FAIL TO REJECT Ho:All groups are equal.
```

oat length
File: 5702al   Transform: NO TRANSFORMATION

```
   DUNNS MULTIPLE COMPARISON -  KRUSKAL-WALLIS  -  TABLE 2 OF 2
------------------------------------------------------------------------------
                                                    GROUP
                         TRANSFORMED   ORIGINAL    0 0 0 0 0 0 0
   GROUP  IDENTIFICATION     MEAN       MEAN       7 2 3 4 6 1 5
   -----  --------------  -----------  --------    - - - - - - -
     7              15       17.200     17.200     \
     2            0.47       19.500     19.500     . \
     3            0.94       20.517     20.517     . . \
     4            1.88       21.583     21.583     . . . \
     6            7.5        22.200     22.200     . . . . \
     1         control       22.667     22.667     . . . . . \
     5            3.75       22.733     22.733     . . . . . . \
------------------------------------------------------------------------------
```

```
* = significant difference (p=0.05)            . = no significant difference
Table q value (0.05,7) =   3.038               SE =    7.080
```

EC$_{25}$
!!!Failure#1: near-singular matrix, model possibly unsuitable.

oat dry weight
File: 5702aw   Transform: NO TRANSFORMATION

```
                                 ANOVA TABLE
-------------------------------------------------------------------------------

SOURCE             DF              SS              MS              F
-------------------------------------------------------------------------------
Between             6            29.189           4.865           2.638

Within (Error)     35            64.532           1.844
-------------------------------------------------------------------------------
Total              41            93.721
-------------------------------------------------------------------------------
```

```
   Critical F value =   2.42  (0.05,6,30)
   Since  F > Critical F  REJECT  Ho:All groups equal
```

oat dry weight
File: 5702aw   Transform: NO TRANSFORMATION

DUNNETTS TEST - **TABLE 1 OF 2**   Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	7.202	7.202		
2	0.47	5.782	5.782	1.811	
3	0.94	6.632	6.632	0.727	
4	1.88	7.143	7.143	0.074	
5	3.75	7.683	7.683	-0.614	
6	7.5	8.105	8.105	-1.152	
7	15	5.748	5.748	1.854	

Dunnett table value = 2.40   (1 Tailed Value, P=0.05, df=30,6)

oat dry weight
File: 5702aw   Transform: NO TRANSFORMATION

DUNNETTS TEST - TABLE 2 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.47	6	1.882	26.1	1.420
3	0.94	6	1.882	26.1	0.570
4	1.88	6	1.882	26.1	0.058
5	3.75	6	1.882	26.1	-0.482
6	7.5	6	1.882	26.1	-0.903
7	15	6	1.882	26.1	1.453

oat dry weight
File: 5702aw   Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	7.202	7.202	7.202
2	0.47	6	5.782	5.782	7.069
3	0.94	6	6.632	6.632	7.069
4	1.88	6	7.143	7.143	7.069
5	3.75	6	7.683	7.683	7.069
6	7.5	6	8.105	8.105	7.069
7	15	6	5.748	5.748	5.748

oat dry weight

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File: 5702aw   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	7.202				
0.47	7.069	0.169		1.69	k= 1, v=35
0.94	7.069	0.169		1.77	k= 2, v=35
1.88	7.069	0.169		1.79	k= 3, v=35
3.75	7.069	0.169		1.80	k= 4, v=35
7.5	7.069	0.169		1.81	k= 5, v=35
15	5.748	1.854	*	1.82	k= 6, v=35

s =   1.358
Note: df used for table values are approximate when v > 20.

EC_{25}
!!!Failure#1: near-singular matrix, model possibly unsuitable.

onion length
File: 5702ol   Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE.	DF	SS	MS	F
Between	6	60.223	10.037	6.459
Within (Error)	35	54.378	1.554	
Total	41	114.601		

  Critical F value =   2.42   (0.05,6,30)
  Since F > Critical F REJECT Ho:All groups equal

onion length
File: 5702ol   Transform: NO TRANSFORMATION

DUNNETTS TEST   -   TABLE 1 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	6.317	6.317		
2	0.47	7.700	7.700	-1.922	
3	0.94	6.567	6.567	-0.347	
4	1.88	7.250	7.250	-1.297	
5	3.75	6.600	6.600	-0.394	
6	7.5	5.317	5.317	1.389	
7	15	3.833	3.833	3.450	*

```
--------------------------------------------------------------------------
Dunnett table value =  2.40      (1 Tailed Value, P=0.05,  df=30,6)
```

onion length
File: 5702ol   Transform: NO TRANSFORMATION

DUNNETTS TEST - TABLE 2 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.47	6	1.727	27.3	-1.383
3	0.94	6	1.727	27.3	-0.250
4	1.88	6	1.727	27.3	-0.933
5	3.75	6	1.727	27.3	-0.283
6	7.5	6	1.727	27.3	1.000
7	15	6	1.727	27.3	2.483

onion length
File: 5702ol   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	6.317	6.317	7.008
2	0.47	6	7.700	7.700	7.008
3	0.94	6	6.567	6.567	6.908
4	1.88	6	7.250	7.250	6.908
5	3.75	6	6.600	6.600	6.600
6	7.5	6	5.317	5.317	5.317
7	15	6	3.833	3.833	3.833

onion length
File: 5702ol   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	7.008				
0.47	7.008	0.961		1.69	k= 1, v=35
0.94	6.908	0.822		1.77	k= 2, v=35
1.88	6.908	0.822		1.79	k= 3, v=35
3.75	6.600	0.394		1.80	k= 4, v=35

```
                7.5        5.317     1.390                   1.81      k= 5, v=35
                15         3.833     3.451        *          1.82      k= 6, v=35
----------------------------------------------------------------------------------
s =    1.246
Note: df used for table values are approximate when v > 20.
```

Estimates of EC%
```
----------------------------------------------------------------------------------
Parameter   Estimate     95% Bounds          Std.Err.   Lower Bound
                        Lower     Upper                  /Estimate
EC5           3.2        1.1       9.3         0.23        0.34
EC10          4.6        2.0       10.         0.18        0.44
EC25          8.4        5.4       13.         0.095       0.64
EC50          17.        12.       24.         0.074       0.71

        Slope =    2.28  Std.Err. =   0.811


Goodness of fit: p =      0.41  based on DF=      4.0      35.
----------------------------------------------------------------------------------
5702OL : onion length
----------------------------------------------------------------------------------
Observed vs. Predicted Treatment Group Means
----------------------------------------------------------------------------------
   Dose      #Reps.    Obs.     Pred.     Obs.      Pred.    %Change
                       Mean     Mean     -Pred.    %Control

   0.00      6.00      6.32     6.98     -0.668     100.      0.00
   0.470     6.00      7.70     6.98      0.717     100.      0.0203
   0.940     6.00      6.57     6.97     -0.403     99.8      0.219
   1.88      6.00      7.25     6.88      0.372     98.5      1.53
   3.75      6.00      6.60     6.50      0.102     93.0      6.97
   7.50      6.00      5.32     5.49     -0.171     78.6      21.4
   15.0      6.00      3.83     3.78      0.0500    54.2      45.8
```

!!!Warning: EC50 not bracketed by doses evaluated.

onion dry weight
File: 5702ow   Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	0.433	0.072	2.400
Within (Error)	35	1.052	0.030	
Total	41	1.485		

```
  Critical F value =   2.42  (0.05,6,30)
  Since  F < Critical F  FAIL TO REJECT  Ho:All groups equal
```

onion dry weight
File: 5702ow   Transform: NO TRANSFORMATION

DUNNETTS TEST   -   TABLE 1 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	0.520	0.520		
2	0.47	0.662	0.662	-1.417	
3	0.94	0.485	0.485	0.350	
4	1.88	0.603	0.603	-0.833	
5	3.75	0.512	0.512	0.083	
6	7.5	0.478	0.478	0.417	
7	15	0.313	0.313	2.067	

Dunnett table value = 2.40   (1 Tailed Value, P=0.05,   df=30,6)

onion dry weight
File: 5702ow   Transform: NO TRANSFORMATION

DUNNETTS TEST   -   TABLE 2 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.47	6	0.240	46.2	-0.142
3	0.94	6	0.240	46.2	0.035
4	1.88	6	0.240	46.2	-0.083
5	3.75	6	0.240	46.2	0.008
6	7.5	6	0.240	46.2	0.042
7	15	6	0.240	46.2	0.207

onion dry weight
File: 5702ow   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	0.520	0.520	0.591
2	0.47	6	0.662	0.662	0.591
3	0.94	6	0.485	0.485	0.544
4	1.88	6	0.603	0.603	0.544
5	3.75	6	0.512	0.512	0.512
6	7.5	6	0.478	0.478	0.478
7	15	6	0.313	0.313	0.313

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onion dry weight
File: 5702ow   Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	0.591				
0.47	0.591	0.708		1.69	k= 1, v=35
0.94	0.544	0.241	: .:..	1.77	k= 2, v=35
1.88	0.544	0.241		1.79	k= 3, v=35
3.75	0.512	0.083		1.80	k= 4, v=35
7.5	0.478	0.416		1.81	k= 5, v=35
15	0.313	2.065	*	1.82	k= 6, v=35

s =   0.173
Note: df used for table values are approximate when v > 20.

Estimates of EC%

Parameter	Estimate	95% Bounds Lower	Upper	Std.Err.	Lower Bound /Estimate
EC5	**4.1**	**0.83**	**20.**	**0.34**	**0.20**
EC10	5.6	1.7	19.	0.26	0.30
EC25	**9.5**	**5.0**	**18.**	**0.14**	**0.53**
EC50	17.	10.	29.	0.11	0.59

Slope =   2.64 Std.Err. =   1.66

Goodness of fit: p =   0.47 based on DF=   4.0   35.

5702OW : onion dry weight

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	6.00	0.520	0.564	-0.0435	100.	0.00
0.470	6.00	0.662	0.564	0.0981	100.	0.00188
0.940	6.00	0.485	0.563	-0.0783	100.	0.0439
1.88	6.00	0.603	0.560	0.0430	99.4	0.566
3.75	6.00	0.512	0.541	-0.0288	95.9	4.09
7.50	6.00	0.478	0.467	0.0118	82.8	17.2
15.0	6.00	0.313	0.316	-0.00224	56.0	44.0

!!!Warning: EC50 not bracketed by doses evaluated.

radish length
File: 5702rl   Transform: NO TRANSFORMATION

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```
                              ANOVA TABLE
-----------------------------------------------------------------------

SOURCE            DF            SS              MS              F
-----------------------------------------------------------------------
Between           6           132.002         22.000          5.598

Within (Error)    35          137.557          3.930
-----------------------------------------------------------------------
Total             41          269.559
-----------------------------------------------------------------------
```

```
  Critical F value =   2.42   (0.05,6,30)
  Since  F > Critical F  REJECT  Ho:All groups equal
```

radish length
File: 5702rl   Transform: NO TRANSFORMATION

```
      DUNNETTS TEST   -   TABLE 1 OF 2           Ho:Control<Treatment
----------------------------------------------------------------------
                        TRANSFORMED    MEAN CALCULATED IN
GROUP    IDENTIFICATION    MEAN        ORIGINAL UNITS     T STAT   SIG
-----    --------------  -----------   -----------------  ------   ---
  1          control       9.467            9.467
  2          0.47          8.717            8.717          0.655
  3          0.94          6.933            6.933          2.213
  4          1.88          8.000            8.000          1.281
  5          3.75          7.533            7.533          1.689
  6          7.5           6.133            6.133          2.912    *
  7          15            3.650            3.650          5.082    *
----------------------------------------------------------------------
Dunnett table value =  2.40     (1 Tailed Value, P=0.05,   df=30,6)
```

radish length
File: 5702rl   Transform: NO TRANSFORMATION

```
      DUNNETTS TEST   -   TABLE 2 OF 2           Ho:Control<Treatment
----------------------------------------------------------------------
                        NUM OF  Minimum Sig Diff  % of    DIFFERENCE
GROUP    IDENTIFICATION  REPS   (IN ORIG. UNITS)  CONTROL FROM CONTROL
-----    --------------  -----  ----------------- ------- ------------
  1          control      6
  2          0.47         6        2.747           29.0      0.750
  3          0.94         6        2.747           29.0      2.533
  4          1.88         6        2.747           29.0      1.467
  5          3.75         6        2.747           29.0      1.933
  6          7.5          6        2.747           29.0      3.333
  7          15           6        2.747           29.0      5.817
----------------------------------------------------------------------
```

radish length
File: 5702rl   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	9.467	9.467	9.467
2	0.47	6	8.717	8.717	8.717
3	0.94	6	6.933	6.933	7.489
4	1.88	6	8.000	8.000	7.489
5	3.75	6	7.533	7.533	7.489
6	7.5	6	6.133	6.133	6.133
7	15	6	3.650	3.650	3.650

radish length
File: 5702rl   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	9.467				
0.47	8.717	0.655		1.69	k= 1, v=35
0.94	7.489	1.728		1.77	k= 2, v=35
1.88	7.489	1.728		1.79	k= 3, v=35
3.75	**7.489**	**1.728**		**1.80**	**k= 4, v=35**
7.5	6.133	2.912	*	1.81	k= 5, v=35
15	3.650	5.082	*	1.82	k= 6, v=35

s =   1.982
Note: df used for table values are approximate when v > 20.

Estimates of EC%

Parameter	Estimate	95% Bounds Lower	Upper	Std.Err.	Lower Bound /Estimate
EC5	**2.5**	**0.69**	**9.2**	**0.28**	**0.27**
EC10	3.6	1.3	10.	0.22	0.36
EC25	**6.6**	**3.6**	**12.**	**0.13**	**0.54**
EC50	13.	9.1	19.	0.078	0.70

Slope =   2.30   **Std.Err. =**   0.874

Goodness of fit: p =   0.44   based on DF=   4.0   35.

5702RL : radish length

Observed vs. Predicted Treatment Group Means

```
-----------------------------------------------------------------------
   Dose      #Reps.      Obs.      Pred.      Obs.      Pred.    %Change
                         Mean      Mean      -Pred.    %Control
   0.00       6.00       9.47      8.38       1.08      100.       0.00
   0.470      6.00       8.72      8.38       0.338     100.       0.0455
   0.940      6.00       6.93      8.35      -1.41       99.6      0.433
   1.88       6.00       8.00      8.16      -0.160      97.3      2.66
   3.75       6.00       7.53      7.49       0.0449     89.3     10.7
   7.50       6.00       6.13      5.95       0.184      71.0     29.0
  15.0        6.00       3.65      3.73      -0.0778     44.5     55.5
```

radish dry weight
File: 5702rw   Transform: NO TRANSFORMATION

ANOVA TABLE

```
-----------------------------------------------------------------------
SOURCE            DF            SS             MS              F
-----------------------------------------------------------------------
Between            6         215.202         35.867          5.538

Within (Error)    35         226.705          6.477
-----------------------------------------------------------------------
Total             41         441.906
-----------------------------------------------------------------------
```

```
  Critical F value =   2.42   (0.05,6,30)
  Since  F > Critical F  REJECT  Ho:All groups equal
```

radish dry weight
File: 5702rw   Transform: NO TRANSFORMATION

```
     DUNNETTS TEST   -    TABLE 1 OF 2            Ho:Control<Treatment
-----------------------------------------------------------------------
                           TRANSFORMED    MEAN CALCULATED IN
GROUP   IDENTIFICATION        MEAN        ORIGINAL UNITS     T STAT  SIG
-----   --------------     -----------    -----------------  ------  ---
  1         control          12.535           12.535
  2            0.47          12.270           12.270         0.180
  3            0.94           9.508            9.508         2.060
  4            1.88          10.612           10.612         1.309
  5            3.75          10.500           10.500         1.385
  6             7.5           9.077            9.077         2.354
  7              15           5.248            5.248         4.959   *
-----------------------------------------------------------------------
Dunnett table value = 2.40      (1 Tailed Value, P=0.05,   df=30,6)
```

radish dry weight
File: 5702rw   Transform: NO TRANSFORMATION

```
     DUNNETTS TEST   -    TABLE 2 OF 2            Ho:Control<Treatment
```

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.47	6	3.526	28.1	0.265
3	0.94	6	3.526	28.1	3.027
4	1.88	6	3.526	28.1	1.923
5	3.75	6	3.526	28.1	2.035
6	7.5	6	3.526	28.1	3.458
7	15	6	3.526	28.1	7.287

radish dry weight
File: 5702rw   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	12.535	12.535	12.535
2	0.47	6	12.270	12.270	12.270
3	0.94	6	9.508	9.508	10.207
4	1.88	6	10.612	10.612	10.207
5	3.75	6	10.500	10.500	10.207
6	7.5	6	9.077	9.077	9.077
7	15	6	5.248	5.248	5.248

radish dry weight
File: 5702rw   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	12.535				
0.47	12.270	0.180		1.69	k= 1, v=35
0.94	10.207	1.585		1.77	k= 2, v=35
1.88	10.207	1.585		1.79	k= 3, v=35
3.75	10.207	1.585		1.80	k= 4, v=35
7.5	9.077	2.354	*	1.81	k= 5, v=35
15	5.248	4.959	*	1.82	k= 6, v=35

s =   2.545
Note: df used for table values are approximate when v > 20.

Estimates of EC%

Parameter	Estimate	95% Bounds	Std.Err.	Lower Bound

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		Lower	Upper		/Estimate
EC5	3.8	1.4	10.	0.22	0.37
EC10	5.1	2.3	11.	0.17	0.45
EC25	8.3	5.2	13.	0.099	0.63
EC50	14.	11.	19.	0.060	0.75

Slope =   2.88 **Std.Err. =**   1.10

Goodness of fit: p =   0.32 based on DF=   4.0   35.

5702RW : radish dry weight

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	6.00	12.5	11.2	1.29	100.	0.00
0.470	6.00	12.3	11.2	1.03	100.	0.00103
0.940	6.00	9.51	11.2	-1.73	100.	0.0348
1.88	6.00	10.6	11.2	-0.564	99.4	0.578
3.75	6.00	10.5	10.7	-0.199	95.2	4.82
7.50	6.00	9.08	8.85	0.229	78.7	21.3
15.0	6.00	5.25	5.31	-0.0603	47.2	52.8

soybean length
File: 5702sl   Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	227.596	37.933	5.929
Within (Error)	35	223.927	6.398	
Total	41	451.523		

Critical F value =   2.42 (0.05,6,30)
Since F > Critical F REJECT Ho:All groups equal

soybean length
File: 5702sl   Transform: NO TRANSFORMATION

DUNNETTS TEST   -   TABLE 1 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	21.733	21.733		---
2	0.47	20.533	20.533	0.822	

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3	0.94	20.083	20.083	1.130	
4	1.88	17.100	17.100	3.173	*
5	3.75	19.683	19.683	1.404	
6	7.5	18.650	18.650	2.111	
7	15	14.217	14.217	5.147	*

Dunnett table value = 2.40   (1 Tailed Value, P=0.05,   df=30,6)

soybean length
File: 5702sl   Transform: NO TRANSFORMATION

DUNNETTS TEST   -   TABLE 2 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.47	6	3.505	16.1	1.200
3	0.94	6	3.505	16.1	1.650
4	1.88	6	3.505	16.1	4.633
5	3.75	6	3.505	16.1	2.050
6	7.5	6	3.505	16.1	3.083
7	15	6	3.505	16.1	7.517

soybean length
File: 5702sl   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	21.733	21.733	21.733
2	0.47	6	20.533	20.533	20.533
3	0.94	6	20.083	20.083	20.083
4	1.88	6	17.100	17.100	18.478
5	3.75	6	19.683	19.683	18.478
6	7.5	6	18.650	18.650	18.478
7	15	6	14.217	14.217	14.217

soybean length
File: 5702sl   Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM

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```
        control     21.733
        0.47        20.533      0.822                   1.69        k= 1,  v=35
        0.94        20.083      1.130                   1.77        k= 2,  v=35
        1.88        18.478      2.229          *        1.79        k= 3,  v=35
        3.75        18.478      2.229          *        1.80        k= 4,  v=35
        7.5         18.478      2.229          *        1.81        k= 5,  v=35
        15          14.217      5.147          *        1.82        k= 6,  v=35
```

s =   2.529
Note: df used for table values are approximate when v > 20.

Estimates of EC%

| Parameter | Estimate | 95% Bounds | | Std.Err. | Lower Bound |
		Lower	Upper		/Estimate
EC5	0.94	0.067	13.	0.57	0.072
EC10	2.4	0.38	15.	0.40	0.16
EC25	12.	5.0	28.	0.19	0.42
EC50	69.	14.	3.3E+02	0.34	0.21

Slope =   0.881 Std.Err. =   0.388

Goodness of fit: p =   0.061   based on DF=   4.0   35.

5702SL : soybean length

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	6.00	21.7	21.2	0.539	100.	0.00
0.470	6.00	20.5	20.6	-0.0651	97.2	2.81
0.940	6.00	20.1	20.1	-0.0495	95.0	5.01
1.88	6.00	17.1	19.4	-2.31	91.6	8.40
3.75	6.00	19.7	18.4	1.30	86.8	13.2
7.50	6.00	18.6	17.0	1.65	80.2	19.8
15.0	6.00	14.2	15.3	-1.05	72.1	27.9

!!!Warning: EC50 not bracketed by doses evaluated.\

soybean dry weight
File: 5702sw   Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	659.900	109.983	7.021
Within (Error)	35	548.288	15.665	
Total	41	1208.188		

51

Critical F value =   2.42   (0.05,6,30)
Since F > Critical F REJECT Ho:All groups equal

soybean dry weight
File: 5702sw   Transform: NO TRANSFORMATION

        DUNNETTS TEST   -   TABLE 1 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	33.457	33.457		
2	0.47	32.652	32.652	0.352	
3	**0.94**	**29.692**	**29.692**	**1.648**	
4	1.88	24.668	24.668	3.846	*
5	3.75	29.450	29.450	1.753	
6	7.5	26.560	26.560	3.018	*
7	15	21.593	21.593	5.192	*

Dunnett table value = 2.40   (1 Tailed Value, P=0.05, df=30,6)

soybean dry weight
File: 5702sw   Transform: NO TRANSFORMATION

        DUNNETTS TEST   -   TABLE 2 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.47	6	5.484	16.4	0.805.
3	0.94	6	5.484	16.4	3.765
4	1.88	6	5.484	16.4	8.788
5	3.75	6	5.484	16.4	4.007
6	7.5	6	5.484	16.4	6.897
7	15	6	5.484	16.4	11.863

soybean dry weight
File: 5702sw   Transform: NO TRANSFORMATION

        WILLIAMS TEST   (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	33.457	33.457	33.457
2	0.47	6	32.652	32.652	32.652
3	0.94	6	29.692	29.692	29.692

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```
    4                   1.88    6       24.668          24.668          27.059
    5                   3.75    6       29.450          29.450          27.059
    6                   7.5     6       26.560          26.560          26.560
    7                   15      6       21.593          21.593          21.593
    --------------------------------------------------------------------------------
```

soybean dry weight
File: 5702sw   Transform: NO TRANSFORMATION

        WILLIAMS TEST   (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	33.457				
0.47	32.652	0.352		1.69	k= 1, v=35
0.94	29.692	1.648		1.77	k= 2, v=35
1.88	27.059	2.800	*	1.79	k= 3, v=35
3.75	27.059	2.800	*	1.80	k= 4, v=35
7.5	26.560	3.018	*	1.81	k= 5, v=35
15	21.593	5.192	*	1.82	k= 6, v=35

s =   3.958
Note: df used for table values are approximate when v > 20.

Estimates of EC%

Parameter	Estimate	95% Bounds Lower	Upper	Std.Err.	Lower Bound /Estimate
EC5	**0.25**	**0.011**	**5.6**	**0.66**	**0.045**
EC10	0.88	0.092	8.5	0.49	0.10
EC25	**7.2**	**2.3**	**22.**	**0.24**	**0.32**
EC50	74.	16.	3.4E+02	0.33	0.22

        Slope =   0.666 Std.Err. =   0.236

!!!Poor fit: p =   0.047 based on DF=   4.0   35.

5702SW : soybean dry weight

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	6.00	33.5	33.5	-0.0510	100.	0.00
0.470	6.00	32.7	31.1	1.54	92.8	7.16
0.940	6.00	29.7	30.0	-0.356	89.7	10.3
1.88	6.00	24.7	28.7	-4.02	85.6	14.4
3.75	6.00	29.4	27.0	2.45	80.6	19.4
7.50	6.00	26.6	25.0	1.56	74.6	25.4
15.0	6.00	21.6	22.7	-1.12	67.8	32.2

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53

!!!Warning: EC5 not bracketed by doses evaluated.

!!!Warning: EC50 not bracketed by doses evaluated.

tomato length
File: 5702tl   Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	31.690	5.282	2.757
Within (Error)	35	67.047	1.916	
Total	41	98.736		

Critical F value =   2.42   (0.05,6,30)
Since F > Critical F REJECT Ho:All groups equal

tomato length
File: 5702tl   Transform: NO TRANSFORMATION

DUNNETTS TEST   -   TABLE 1 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	9.600	9.600		
2	0.47	10.150	10.150	-0.688	
3	0.94	9.500	9.500	0.125	
4	1.88	9.200	9.200	0.501	
5	3.75	9.650	9.650	-0.063	
6	7.5	8.383	8.383	1.522	
7	15	7.383	7.383	2.774	*

Dunnett table value = 2.40   (1 Tailed Value, P=0.05,   df=30,6)

tomato length
File: 5702tl   Transform: NO TRANSFORMATION

DUNNETTS TEST   -   TABLE 2 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	6			
2	0.47	6	1.918	20.0	-0.550
3	0.94	6	1.918	20.0	0.100
4	1.88	6	1.918	20.0	0.400

5	3.75	6	1.918	20.0	-0.050
6	7.5	6	1.918	20.0	1.217
7	15	6	1.918	20.0	2.217

tomato length
File: 5702tl   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	control	6	9.600	9.600	9.875
2	0.47	6	10.150	10.150	9.875
3	0.94	6	9.500	9.500	9.500
4	1.88	6	9.200	9.200	9.425
5	3.75	6	9.650	9.650	9.425
6	7.5	6	8.383	8.383	8.383
7	15	6	7.383	7.383	7.383

tomato length
File: 5702tl   Transform: NO TRANSFORMATION

WILLIAMS TEST   (Isotonic regression model)   TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
control	9.875				
0.47	9.875	0.344		1.69	k= 1, v=35
0.94	9.500	0.125		1.77	k= 2, v=35
1.88	9.425	0.219		1.79	k= 3, v=35
3.75	9.425	0.219		1.80	k= 4, v=35
7.5	**8.383**	**1.523**		**1.81**	**k= 5, v=35**
15	7.383	2.774	*	1.82	k= 6, v=35

s =   1.384
Note: df used for table values are approximate when v > 20.

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound
		Lower	Upper		/Estimate
EC5	**3.7**	**0.84**	**16.**	**0.32**	**0.23**
EC10	6.3	2.4	17.	0.21	0.38
EC25	**15.**	**9.3**	**25.**	**0.11**	**0.61**
EC50	41.	12.	1.4E+02	0.27	0.29

Slope =   1.57   Std.Err. =   0.821

Goodness of fit: p =   0.78   based on DF=   4.0   35.

5702TL : tomato length

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	6.00	9.60	9.74	-0.136	100.	0.00
0.470	6.00	10.2	9.73	0.425	99.9	0.112
0.940	6.00	9.50	9.69	-0.189	99.5	0.489
1.88	6.00	9.20	9.57	-0.367	98.3	1.74
3.75	6.00	9.65	9.24	0.407	94.9	5.06
7.50	6.00	8.38	8.55	-0.166	87.8	12.2
15.0	6.00	7.38	7.36	0.0261	75.6	24.4

!!!Warning: EC25 not bracketed by doses evaluated.

!!!Warning: EC50 not bracketed by doses evaluated.

tomato dry weight
File: 5702tw   Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	10.823	1.804	3.608
Within (Error)	35	17.504	0.500	
Total	41	28.327		

Critical F value =   2.42   (0.05,6,30)
Since F > Critical F REJECT Ho:All groups equal

tomato dry weight
File: 5702tw   Transform: NO TRANSFORMATION

DUNNETTS TEST   -   TABLE 1 OF 2   Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	2.820	2.820		
2	0.47	3.285	3.285	-1.139	
3	0.94	3.073	3.073	-0.621	
4	1.88	2.808	2.808	0.029	
5	3.75	2.872	2.872	-0.127	
6	7.5	2.187	2.187	1.551	
7	15	1.697	1.697	2.752	*

```
------------------------------------------------------------------------
Dunnett table value =  2.40      (1 Tailed Value, P=0.05,   df=30,6)
```

tomato dry weight
File: 5702tw   Transform: NO TRANSFORMATION

```
        DUNNETTS TEST    -    TABLE 2 OF 2         Ho:Control<Treatment
------------------------------------------------------------------------
                         NUM OF   Minimum Sig Diff  % of    DIFFERENCE
GROUP    IDENTIFICATION  REPS     (IN ORIG. UNITS)  CONTROL FROM CONTROL
-----   --------------   ------   ----------------  ------- ------------
  1           control    6
  2              0.47     6          0.980           34.7      -0.465
  3              0.94     6          0.980           34.7      -0.253
  4              1.88     6          0.980           34.7       0.012
  5              3.75     6          0.980           34.7      -0.052
  6              7.5      6          0.980           34.7       0.633
  7               15      6          0.980           34.7       1.123
------------------------------------------------------------------------
```

tomato dry weight
File: 5702tw   Transform: NO TRANSFORMATION

```
        WILLIAMS TEST   (Isotonic regression model)    TABLE 1 OF 2
------------------------------------------------------------------------
GROUP                              ORIGINAL    TRANSFORMED    ISOTONIZED
         IDENTIFICATION    N        MEAN          MEAN          MEAN
------   --------------   ---    ----------   -----------   -----------
  1          control       6       2.820         2.820         3.059
  2             0.47       6       3.285         3.285         3.059
  3             0.94       6       3.073         3.073         3.059
  4             1.88       6       2.808         2.808         2.840
  5             3.75       6       2.872         2.872         2.840
  6             7.5        6       2.187         2.187         2.187
  7              15        6       1.697         1.697         1.697
------------------------------------------------------------------------
```

tomato dry weight
File: 5702tw   Transform: NO TRANSFORMATION

```
        WILLIAMS TEST   (Isotonic regression model)    TABLE 2 OF 2
------------------------------------------------------------------------
                   ISOTONIZED   CALC.       SIG     TABLE     DEGREES OF
IDENTIFICATION       MEAN      WILLIAMS    P=.05   WILLIAMS    FREEDOM
--------------     ----------  --------    -----   --------   ----------
    control         3.059
       0.47         3.059       0.586               1.69     k= 1,  v=35
       0.94         3.059       0.586               1.77     k= 2,  v=35
       1.88         2.840       0.049               1.79     k= 3,  v=35
       3.75         2.840       0.049               1.80     k= 4,  v=35
```

```
                      7.5      2.187    1.551                1.81     k= 5, v=35
                       15      1.697    2.751       *        1.82     k= 6, v=35
-------------------------------------------------------------------------------
s =    0.707
Note: df used for table values are approximate when v > 20.
```

Estimates of EC%

```
-------------------------------------------------------------------------------
Parameter   Estimate    95% Bounds            Std.Err.   Lower Bound
                        Lower    Upper                   /Estimate
EC5          2.2        0.47     11.          0.34       0.21
EC10         3.5        1.1      12.          0.26       0.30
EC25         7.5        3.9      14.          0.14       0.53
EC50         17.        11.      29.          0.11       0.61

        Slope =    1.85  Std.Err. =    0.774
```

```
Goodness of fit: p =      0.75  based on DF=      4.0       35.
-------------------------------------------------------------------------------
5702TW : tomato dry weight
-------------------------------------------------------------------------------
Observed vs. Predicted Treatment Group Means
-------------------------------------------------------------------------------
    Dose     #Reps.     Obs.     Pred.     Obs.      Pred.     %Change
                        Mean     Mean      -Pred.    %Control

    0.00     6.00       2.82     3.05      -0.233    100.      0.00
    0.470    6.00       3.28     3.05       0.237     99.8     0.190
    0.940    6.00       3.07     3.02       0.0495    99.0     0.968
    1.88     6.00       2.81     2.94      -0.131     96.3     3.73
    3.75     6.00       2.87     2.72       0.153     89.0     11.0
    7.50     6.00       2.19     2.29      -0.102     75.0     25.0
    15.0     6.00       1.70     1.67       0.0271    54.7     45.3
```

!!!Warning: EC50 not bracketed by doses evaluated.

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