

US EPA ARCHIVE DOCUMENT

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....} EPA MRID Number 441848-04

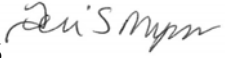
Data Requirement:
 PMRA Data Code: 9.8.4 (TGAI) or 9.8.6 (EP)
 EPA DP Barcode: D237791
 OECD Data Point: IIA 8.12 (TGAI) and IIIA 10.8.1.1 (EP)
 EPA Guideline: 123-1b

Test material: Propazine Technical **Purity:** 98.0%
 Common name: Propazine
 Chemical name: IUPAC: Not reported
 CAS name: Not reported
 CAS No.: 139-40-2
 Synonyms: Not reported

Primary Reviewer: John Marton
Staff Scientist, Cambridge Environmental Inc.

Signature: 
Date: 2/22/06

Secondary Reviewer: Teri S. Myers
Senior Scientist, Cambridge Environmental Inc.

Signature: 
Date: 2/26/06

Primary Reviewer: {.....}
 {EPA/OECD/PMRA}

Date: {.....}

Secondary Reviewer(s): {.....}
 {EPA/OECD/PMRA}

Date: {.....}

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EPA PC Code 080808

Date Evaluation Completed: {dd-mm-yyyy}

CITATION: Schwab, Dave, L. Brian and J. Veltri. 1996. Evaluating the Effects of Propazine on the Emergence and Vegetative Vigor of Non-Target Terrestrial Plants. Performed by ABC Laboratories, Columbia, MO. Laboratory study number 41961. Sponsored by Griffin Corporation, Valdosta, GA. Study completed on June 14, 1996.

DISCLAIMER: This document provides guidance for EPA and PMRA reviewers on how to complete a data evaluation record after reviewing a scientific study concerning the acute toxicity of a pesticide to terrestrial vascular plants. It is not intended to prescribe conditions to any external party for conducting this study nor to establish absolute criteria regarding the assessment of whether the study is scientifically sound and whether the study satisfies any applicable data requirements. Reviewers are expected to review and to determine for each study, on a case-by-case basis, whether it is scientifically sound and provides sufficient information to satisfy applicable data requirements. Studies that fail to meet any of the conditions may be accepted, if appropriate; similarly, studies that meet all of the conditions may be rejected, if appropriate. In sum, the reviewer is to take into account the totality of factors related to the test methodology and results in determining the acceptability of the study.

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EXECUTIVE SUMMARY:

The effects of Propazine Technical on vegetative vigor of monocot (onion, *Allium cepa*; oat, *Avena sativa*; ryegrass, *Lolium perenne*, corn, *Zea mays* and wheat, *Triticum aestivum*) and dicot (cabbage, *Brassica oleracea*, cucumber, *Cucumis sativus*, lettuce, *Lactuca sativa*, radish, *Raphanus sativus*, soybean, *Glycine max* and tomato, *Lycopersicon esculentum*) crops were studied at varying concentrations. The first test was conducted with all species with the exception of wheat. The second test was conducted with cabbage, soybean, tomato and wheat and the third test was conducted with oat. The nominal application rates for corn, cucumber, lettuce, onion, radish and ryegrass were 0 (negative and vehicle controls), 0.075, 0.15, 0.30, 0.60, 1.2 and 2.4 lbs ai/A; measured application rates were 0 (negative and vehicle controls), 0.075, 0.15, 0.31, 0.62, 1.2 and 2.5 lbs ai/A, respectively. The nominal application rates for cabbage and tomato were 0 (negative and vehicle controls), 0.0094, 0.019, 0.038, 0.075, 0.15 and 0.30 lbs ai/A; measured application rates were 0 (negative and vehicle controls), 0.011, 0.020, 0.038, 0.077, 0.15 and 0.33 lbs ai/A, respectively. The nominal application rates for wheat were 0 (negative and vehicle controls), 0.0094, 0.019, 0.038, 0.075, 0.15, 0.30 and 0.60 lbs ai/A; measured application rates were 0 (negative and vehicle controls), 0.011, 0.020, 0.038, 0.080, 0.15, 0.33 and 0.68 lbs ai/A, respectively. The nominal application rates for soybean were 0 (negative and vehicle controls), 0.019, 0.038, 0.075, 0.15, 0.30 and 0.60 lbs ai/A; measured application rates were 0 (negative and vehicle controls), 0.020, 0.038, 0.077, 0.15, 0.33 and 0.68 lbs ai/A, respectively. The nominal application rates for oat were 0 (negative and vehicle controls), 0.0023, 0.0047, 0.0094, 0.019, 0.038, 0.075, 0.15, 0.30, 0.60, 1.2 and 2.4 lbs ai/A; measured application rates were 0 (negative and vehicle controls), 0.0022, 0.0047, 0.010, 0.018, 0.036, 0.071, 0.14, 0.29, 0.61, 1.2 and 1.7 lbs ai/A, respectively. The growth medium used in the first vegetative vigor test was a loam soil composed of 39% sand, 43% silt and 18% clay. The pH was measured to be 7.0 and the organic matter content was determined to be 1.5%. The growth medium used for the second and third vegetative vigor tests was a loam soil composed of 32% sand, 48% silt and 20% clay. The pH was measured to be 5.8 and the organic matter content was determined to be 2.7%. On day 21, the surviving plants per pot were recorded and cut at soil level for measuring the plant height and dry weight. On day 21 or 22, the surviving plants per pot were recorded and cut at soil level for measuring the shoot weight and shoot length.

In the vegetative vigor test, the shoot weight and shoot height of all species, with the exception of corn, were affected by Propazine treatment. The most sensitive monocot species in the vegetative vigor test was wheat shoot weight with an EC₂₅ of 0.046 lbs ai/A. The most sensitive dicot species was cucumber shoot weight with an EC₂₅ of 0.10 lbs ai/A.

Wheat was the most sensitive species with slight effects in the negative and vehicle controls as nominal 0.0094-0.075 lbs ai/A treatment groups and severe effects in the nominal 0.15-0.60 lbs ai/A treatment groups. Tomato and soybean were the two species which were least affected with only slight effects (1-39) being observed for both species. All other species exhibited slight (1-39), moderate (40-69) and severe (70-100) effects. Symptoms which were most frequently observed were chlorosis, stunting, necrosis and mortalities. The effects of chlorosis were associated with shoot weight being a more sensitive indicator of toxicity.

Maximum Labeled Rate: Not reported

Results Synopsis

	Vegetative Vigor Value:	95% C.I.
<u>Monocot:</u>		
Most sensitive monocot: Wheat		
Most sensitive parameter: Shoot Weight		
EC ₅₀ /IC ₅₀ :	0.070 lbs ai/A	0.056-0.088 lbs ai/A
EC ₂₅ /IC ₂₅ :	0.046 lbs ai/A	0.033-0.064 lbs ai/A
EC ₀₅ /IC ₀₅ :	0.025 lbs ai/A	0.015-0.041 lbs ai/A
NOAEC:	0.020 lbs ai/A	
Probit slope:	3.67±0.542	

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Dicot:

Most sensitive dicot: Cucumber

Most sensitive parameter: Shoot Weight

EC ₅₀ /IC ₅₀ :	0.18 lbs ai/A	0.11-0.28 lbs ai/A
EC ₂₅ /IC ₂₅ :	0.10 lbs ai/A	0.052-0.20 lbs ai/A
EC ₀₅ /IC ₀₅ :	0.047 lbs ai/A	0.017-0.13 lbs ai/A
NOAEC:	<0.075 lbs ai/A	
Probit slope:	2.86±0.640	

This toxicity study is classified as [enter acceptability classification, e.g., acceptable/unacceptable/supplementary) and satisfies/does not satisfy the guideline requirement for a Tier II vegetative vigor toxicity study.

Table 1. Endpoint summary by species, in (lbs ai/A)

Species	Endpoint	NOAEC	EC ₀₅	EC ₂₅	EC ₅₀
Corn	None	2.5	>2.5	>2.5	>2.5
Oat	Shoot Weight	0.0022	0.059	0.11	0.17
Onion	Shoot Weight	0.075	0.039	0.096	0.18
Ryegrass	Shoot Weight	0.075	0.061	0.17	0.36
Wheat	Shoot Weight	0.020	0.025	0.046	0.070
Cabbage	Shoot Weight	0.011	0.076	0.13	0.19
Cucumber	Shoot Weight	<0.075	0.047	0.10	0.18
Lettuce	Shoot Weight	0.075	0.065	0.10	0.14
Radish	Shoot Weight	0.075	0.12	0.22	0.33
Soybean	Shoot Weight	0.038	0.12	0.66	2.2
Tomato	Shoot Weight	0.038	0.10	0.15	0.20

I. MATERIALS AND METHODS

GUIDELINE FOLLOWED: Study procedures followed guidelines outlined in U.S. EPA Subdivision J: 123-1 guidelines for seedling emergence and vegetative vigor tests. Deviations from these guidelines included:

1. The maximum label rate of the test material was not reported.
2. A description of the test material was not provided and the physical/chemical properties were not reported.
3. Prior treatment/sterilization and storage of seeds were not reported, the method/depth of seeding was not reported, and the age of the seedlings at the time of test material application was not reported.
4. A NOAEC value was not determined for cucumber shoot weight, however, an EC₀₅ value (with 95% C.I.) was determined.
5. The geographic location, depth of collection, and moisture content of the test soil were not reported.

These deviations did not affect the validity of the study.

COMPLIANCE: This study was conducted in compliance with Good Laboratory Standards

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as published by the U.S. EPA, 40 CFR Part 160. Signed and dated GLP, Quality Assurance and No Data Confidentiality statements were provided.

A. MATERIALS:

1. Test Material	Propazine Technical
Description:	Not reported
Lot No./Batch No. :	309027 (lot number)
Purity:	98.0%
Stability of compound under test conditions:	Measured concentrations ranged from 72-112% of nominal. (<i>OECD recommends chemical stability in water and light</i>)
Storage conditions of test chemicals:	Test material was stored in at room temperature.

Table 2. Physical/chemical properties of Propazine Technical.

Parameter	Values	Comments
Water solubility at 20EC	Not reported	
Vapor pressure	Not reported	
UV absorption	Not reported	
pKa	Not reported	
Kow	Not reported	

2. Test organism:

Monocotyledonous species: Corn (*Zea mays*, Family Graminae, Pioneer 3394, Lot# C93MAA-NT), Ryegrass (*Lolium perenne*, Family Graminae, Manhattan II, Lot # K5247), Oat (*Avena sativa*, Family Graminae, Settler, Lot # K6389), Onion (*Allium cepa*, Family Amaryllidaceae, Yellow Granex, Lot # A) and Wheat (*Triticum aestivum*, Family Graminae, Butte 86, Lot # 1594; *EPA recommends four monocots in two families, including corn.*

Dicotyledonous species: Lettuce (*Lactuca sativa*, Family Compositae, Great Lakes 659, Lot # K1010), Cabbage (*Brassica olearcea*, Family Cruciferae, Copenhagen, Lot # K5787), Radish (*Raphanus sativus*, Family Cruciferae, Crimson Giant, Lot # K1041), Soybean (*Glycine max*, Family Leguminosae, Williams 82, Lot # 4S-26-09), Cucumber (*Beta vulgaris*, Family Cucurbitaceae, Straight Eight, Lot # K1002) and Tomato (*Lycopersicon esculentum*, Family Solanaceae, Beefsteak, Lot # K1067); *EPA recommends six dicots in four families, including soybean and a root crop.*

OECD recommends a minimum of three species selected for testing, at least one from each of the following categories: Category 1: ryegrass, rice, oat, wheat, and sorghum; Category 2: mustard, rape, radish, turnip, and Chinese cabbage;

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Category 3: vetch, mung bean, red clover, fenugreek, lettuce, and cress.

Seed source: Cabbage, Cucumber, Lettuce, Oat, Ryegrass, Radish and Tomato, Royal Seed Co.; Corn, Pioneer Hi-Breed Int.; Onion, Henry Field's Seed & Nursery Co.; Soybean, Missouri Foundation Seed; Wheat, South Dakota Foundation Seeds

Prior seed treatment/sterilization: Not reported

Historical % germination of seed: 85-99%

Seed storage, if any: Not reported

B. STUDY DESIGN:

1. Experimental Conditions

a. Limit test: N/A

b. Range-finding study: A range-finding study was not conducted; however, continuation tests with lettuce, oat, onion, tomato and wheat were conducted using lower application rates in order to determine valid NOAEC values for these species.

c. Definitive Study

Table 3: Experimental Parameters - Vegetative Vigor

Parameters	Vegetative Vigor	
	Details	Remarks <i>Criteria</i>
Duration of the test	21-22 Days	<i>Recommended test duration is 14-21 days.</i>
Number of seeds/plants/species/replicate	Ten plants/rep were initially planted.	<i>Five plants per replicate are recommended.</i>
Number of plants retained after thinning	After thinning, five plants/rep were retained.	
Number of replicates Control: Solvent control: Treated:	4 4 4	<i>Four replicates per dose are recommended</i>

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Parameters	Vegetative Vigor	
	Details	Remarks
		Criteria
Test concentrations (lb a.i./A or g ai/ha)	<u>Corn, Cucumber, Lettuce, Onion, Radish and Ryegrass:</u>	
Nominal:	0 (negative and vehicle controls), 0.075, 0.15, 0.30, 0.30, 1.2 and 2.7 lbs ai/A	<i>Five test concentrations should be used with a dose range of 2X or 3X progression</i>
Measured:	0 (negative and vehicle controls), 0.075, 0.15, 0.31, 0.62, 1.2 and 2.5 lbs ai/A	
Nominal:	<u>Cabbage and Tomato:</u> 0 (negative and vehicle controls), 0.0094, 0.019, 0.038, 0.075, 0.15 and 0.30 lbs ai/A	
Measured:	0 (negative and vehicle controls), 0.011, 0.020, 0.038, 0.077, 0.15 and 0.33 lbs ai/A	
Nominal:	<u>Soybean:</u> 0 (negative and vehicle controls), 0.019, 0.038, 0.075, 0.15, 0.30 and 0.60 lbs ai/A	
Measured:	0 (negative and vehicle controls), 0.020, 0.038, 0.077, 0.15, 0.33 and 0.68 lbs ai/A	
Nominal:	<u>Oat:</u> 0 (negative and vehicle controls), 0.0023, 0.0047, 0.0094, 0.019, 0.038, 0.075, 0.15, 0.30, 0.60, 1.2 and 1.4 lbs ai/A	
Measured:	0 (negative and vehicle controls), 0.0022, 0.0047, 0.010, 0.018, 0.036, 0.071, 0.14, 0.29, 0.61, 1.2 and 1.7 lbs ai/A	
Nominal:	<u>Wheat:</u> 0 (negative and vehicle controls), 0.0094, 0.019, 0.038, 0.075, 0.15, 0.30 and 0.60 lbs ai/A	
Measured:	0 (negative and vehicle controls), 0.011, 0.020, 0.038, 0.080, 0.15, 0.33 and 0.68 lbs ai/A	

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Parameters	Vegetative Vigor	
	Details	Remarks
		Criteria
<u>Method and interval of analytical verification</u> LOQ: LOD:	Samples were taken from definitive test spray mixtures and analyzed on the day of application using high performance liquid chromatography (HPLC). 33.0 mg/L Not reported	Analytical methodologies were based on a GLC method used for chloro-s-triazine, provided by Ciba Geigy Corporation and approved by Ciba for propazine studies. The methodology was modified by ABC Laboratories by directly diluting samples into toluene rather than by reflux extraction.
Solvent (type, percentage, if used)	Acetone in water (90%)	
<u>Test container (pot)</u> Size/Volume Material: (glass/polystyrene)	10 cm square by 12 cm deep Not reported	Test pots were 12-Nu Pots. <hr/> <i>Non-porous containers should be used.</i> <i>OECD recommends that non-porous plastic or glazed pots be used.</i>
Growth facility	<u>Corn, Cucumber, Ryegrass, Radish, Soybean and Tomato:</u> Greenhouse 8 <u>Cabbage:</u> Greenhouse 7 <u>Lettuce, Oat, Onion and Wheat:</u> Greenhouse 9	
Method/depth of seeding	Not reported.	

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Parameters	Vegetative Vigor	
	Details	Remarks
		Criteria
<u>Test material application</u> Application time including the plant growth stage Number of application Application interval Method of application	Test material was applied at test initiation, however, the seedling age was not reported. 1 N/A; one application at test initiation Test material was applied using a track sprayer located at the University of Missouri for the first emergence test. Test material was applied using a De Vries Spray Booth at ABC Laboratories for the second and third emergence tests.	
<u>Details of soil used</u> Geographic location Depth of soil collection Soil texture % sand % silt % clay pH: % organic carbon CEC Moisture at 1/3 atm (%)	<u>Corn, Cucumber, Ryegrass, Radish, Soybean and Tomato:</u> Not reported Not reported Loam Soil 39% 43% 18% 7.0 1.5% 14.7 meq/100 g Not reported	----- <i>EPA prefers soil mixes containing sandy loam, loam, or clay loam soil with no greater than 2% organic matter. Glass beads, rock wool, and 100% acid washed sand are not preferred..</i> <i>OECD prefers the soil to be sieved (0.5 cm) to remove coarse fragments. Carbon content should not exceed 1.5% (3% organic matter). Fine particles (under 20um) makeup should be between 10 and 20%. The recommended pH is between 5.0 and 7.5.</i>
Geographic location Depth of soil collection Soil texture % sand % silt % clay pH: % organic carbon CEC Moisture at 1/3 atm (%)	<u>All other species:</u> Not reported Not reported Loam Soil 32% 48% 20% 5.8 2.7% 16.5 meq/100 g Not reported	

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Parameters	Vegetative Vigor	
	Details	Remarks <i>Criteria</i>
Details of nutrient medium, if used	N/A	
<u>Watering regime and schedules</u> Water source/type: Volume applied: Interval of application: Method of application:	Deionized water Not reported Water was added as needed Hand application	Water was applied to the surface soil, underneath the foliage. ----- <i>EPA prefers that under foliage watering or bottom watering be utilized for vegetative vigor studies so that the chemical is not washed out of the soil during the test.</i>
Any pest control method/fertilization, if used	Not reported	
<u>Test conditions</u> Temperature: Photoperiod: Light intensity and quality: Relative humidity:	<u>Corn, Cucumber, Ryegrass, Radish, Soybean and Tomato:</u> 18-36°C 12L:12D then 14L:10D 560 $\mu\text{Em}^{-2}\text{s}^{-1}$ 10-100%	Natural sunlight was used for all tests, however, during the first test, 600 watt high-pressure sodium lights initially set on a 12L:12D cycle were used as supplemental lighting. Midway through the first test, this cycle was reset to 14L:10D. This lighting configuration was utilized for the second and third tests. ----- <i>EPA prefers that the cold vs warm loving plants be tested in two separate groups to optimize plant growth.</i> ----- <i>OECD prefers that the temperature, humidity and light conditions be suitable for maintaining normal growth of each species for the test period.</i>
Temperature: Photoperiod: Light intensity and quality: Relative humidity:	<u>Cabbage:</u> 18-32°C 14L:10D 550 $\mu\text{Em}^{-2}\text{s}^{-1}$ 52-100%	
Temperature: Photoperiod: Light intensity and quality: Relative humidity:	<u>Onion, Wheat and Lettuce:</u> 18-35°C 14L:10D 530 $\mu\text{Em}^{-2}\text{s}^{-1}$ 62-100%	
<u>Reference chemical (if used)</u> Name: Concentrations:	N/A N/A	
Other parameters, if any	N/A	

2. Observations:

Table 4: Observation Parameters - Vegetative Vigor

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Parameters	Vegetative Vigor	
	Details	Remarks
Parameters measured (i.e., plant height, dry weight or other endpoints)	Shoot length, shoot weight and phytotoxicity.	
Measurement technique for each parameter	For monocots and for the dicots cabbage, lettuce and radish, shoot length was measured as the distance from the base of the stem to the tip of the longest fully extended leaf. For the remaining dicots, shoot length was measured as the distance from the base of the stem to the apical bud. All shoot lengths were measured to the nearest millimeter using a ruler. Seedling weight was determined by clipping each plant at the soil surface and weighing to the nearest hundredth's of a gram. Shoot length and shoot weight were determined 21-22 days after application (at test termination). Phytotoxicity observations were made weekly, at which point two observations were made on each replicate. The first was an overall rating, on a scale of 0-100, assessing the frequency and intensity of the effects compared to that replicate's control. The second was a symptom rating to assess the frequency and intensity of the observed effect (chlorosis, necrosis, etc).	
Observation intervals	Shoot length and shoot weight were determined 21-22 days after application (at test termination). Phytotoxic observations were made weekly.	
	None	

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Parameters	Vegetative Vigor	
	Details	Remarks
Other observations, if any		
Were raw data included?	Only replicate means were reported.	
Phytotoxicity rating system, if used	0, No Effect; 1-39, Slight Effect; 40-69, Moderate Effect; 70-100, Severe Effect	The source for the phytotoxicity rating scale was not provided.

II. RESULTS and DISCUSSION:

A. INHIBITORY EFFECTS:

Vegetative Vigor:

Corn was the only species in which shoot weight and shoot length were not significantly reduced when compared to the controls. All other species exhibited a significant reduction for both endpoints when compared to the controls. The most sensitive monocot and endpoint was wheat shoot weight with a NOAEC, EC₂₅ and EC₅₀ of 0.038, 0.049 and 0.070 lbs ai/A, respectively. The most sensitive dicot and endpoint was cabbage shoot weight with a NOAEC, EC₂₅ and EC₅₀ of 0.019, 0.079 and 0.15 lbs ai/A, respectively.

Wheat was the most sensitive species with slight effects in the negative and vehicle controls as nominal 0.0094-0.075 lbs ai/A treatment groups and severe effects in the nominal 0.15-0.60 lbs ai/A treatment groups. Tomato and soybean were the two species which were least affected with only slight effects (1-39) being observed for both species. All other species exhibited slight (1-39), moderate (40-69) and severe (70-100) effects. Symptoms which were most frequently observed were chlorosis, stunting, necrosis and mortalities. The effects of chlorosis were associated with shoot weight being a more sensitive indicator of toxicity.

Table 5: Effect of Propazine Technical on Vegetative Vigor

Species	NOAEC, EC ₀₅ EC ₂₅ and EC ₅₀ (lbs ai/A)								
	Shoot Weight (g)								
	Shoot Weight*	NOAEC	EC ₀₅	95% C.I.	EC ₂₅	95% C.I.	EC ₅₀	95% C.I.	Slope
Corn	54.29-58.30	2.4	N.R.	N.R.	>2.4	N/A	>2.4	N/A	N/A
Oat	0-20.86	0.15	N.R.	N.R.	0.11	N.R.	0.18	N.R.	N.R.
Onion	0.04-6.50	0.075	N.R.	N.R.	0.11	N.R.	0.18	N.R.	N.R.
Ryegrass	0.86-13.72	0.15	N.R.	N.R.	0.21	N.R.	0.37	N.R.	N.R.
Wheat	0-8.31	0.038	N.R.	N.R.	0.049	N.R.	0.070	N.R.	N.R.
Cabbage	3.67-28.10	0.019	N.R.	N.R.	0.079	N.R.	0.15	N.R.	N.R.

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Species	NOAEC, EC ₀₅ EC ₂₅ and EC ₅₀ (lbs ai/A)								
	Shoot Weight (g)								
	Shoot Weight*	NOAEC	EC ₀₅	95% C.I.	EC ₂₅	95% C.I.	EC ₅₀	95% C.I.	Slope
Cucumber	0-74.25	0.075	N.R	N.R	0.12	N.R.	0.19	N.R.	N.R.
Lettuce	0-81.47	0.075	N.R	N.R	0.14	N.R.	0.15	N.R.	N.R.
Radish	0-20.67	0.15	N.R	N.R	0.21	N.R.	0.31	N.R.	N.R.
Soybean	1.30-45.17 ^c	0.038 ^a	N.R	N.R	0.60 ^b	N.R.	1.4 ^b	N.R.	N.R.
Tomato	0-37.79 ^c	0.038 ^a	N.R	N.R	0.14 ^b	N.R.	0.19 ^b	N.R.	N.R.

*provide the range

^a This NOAEC value was determined by combining the data from the original and continuation study.

^b Value determined from the original study.

^c Range from original study

The range for dry weight and plant length represent the range of treatment means on Day 21-22

NR- Not reported

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Table 5 (cont): Effect of Propazine Technical on Vegetative Vigor

Species	NOAEC, EC ₀₅ EC ₂₅ and EC ₅₀ (lbs ai/A)								
	Shoot Length (mm)								
	Shoot Length*	NOAEC	EC ₀₅	95% C.I.	EC ₂₅	95% C.I.	EC ₅₀	95% C.I.	Slope
Corn	694-727	2.4	N.R.	N.R.	>2.4	N/A	>2.4	N/A	N/A
Oat	0-448	0.15	N.R.	N.R.	0.18	N.R.	0.22	N.R.	N.R.
Onion	5.9-213	0.15	N.R.	N.R.	0.22	N.R.	0.37	N.R.	N.R.
Ryegrass	70-267	0.30	N.R.	N.R.	0.59	N.R.	1.1	N.R.	N.R.
Wheat	0-327	0.038	N.R.	N.R.	0.084	N.R.	0.11	N.R.	N.R.
Cabbage	26-106	0.15	N.R.	N.R.	0.18	N.R.	0.23	N.R.	N.R.
Cucumber	0-350	0.15	N.R.	N.R.	0.19	N.R.	0.28	N.R.	N.R.
Lettuce	0-159	0.15	N.R.	N.R.	0.28	N.R.	0.29	N.R.	N.R.
Radish	0-131	0.30	N.R.	N.R.	0.37	N.R.	0.51	N.R.	N.R.
Soybean ^d	266-282	0.30	N.R.	N.R.	0.68	N.R.	1.0	N.R.	N.R.
Tomato ^d	0-150	0.15	N.R.	N.R.	0.18	N.R.	0.24	N.R.	N.R.

* provide the range

^d Toxicity values from the original study.

The range for dry weight and plant length represent the range of treatment means on Day 21-22

NR- Not reported

Plant Injury Index*										
Corn	Oat	Onion	Ryegrass	Wheat	Cabbage	Cucumber	Lettuce	Radish	Soybean	Tomato
3-8	4-100	0-98	0-80	8-100	3-88	0-100	0-100	10-100	5-95 ^a	0-100 ^a

^a Range from original study.

*0, no effect; 10-30 slight effect; 40-60, moderate effect; 70-90 severe effect; 100, complete effect

US EPA ARCHIVE DOCUMENT

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

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B. REPORTED STATISTICS:

The reviewer had no objections to the study author's statistical analyses. Pages 24 and 25 of the study report are appended to this DER.

C. VERIFICATION OF STATISTICAL RESULTS BY THE REVIEWER:

Any species exhibiting a $\geq 5\%$ reduction in shoot weight or shoot length when compared to the control was statistically analyzed for significance. All analyzed data were tested for normality and homogeneity and if these assumptions of ANOVA were met, the NOAEC values were determined using Dunnett's Test or Bonferoni's Test (parametric) and William's Test or Kruskal-Wallis Test (non-parametric) via Toxstat Statistical Software. The EC_x values (with 95% C.I.) and probit slopes were determined using Nuthatch Statistical Software. The EC₂₅ and EC₅₀ values were determined visually when the % reduction, compared to the control, was $< 25\%$ or $< 50\%$, respectively. All analyses were conducted using the mean-measured treatment concentrations. Replicates with 100% mortality were excluded from the analyses for shoot length and shoot weight. Phytotoxicity was not statistically analyzed as this endpoint is a qualitative value. The negative and vehicle controls were compared using a T-test via Microsoft Excel and results are reported in the Reviewer's Comments Section of this DER. However, if no differences existed between the two controls, a pooled control was not used in the analysis of the treatment data. When EC_x values were greater than the highest application rate, the extrapolated value was not reported. Due to the non-linear responses of several species and endpoints, the reviewer visually determined a more conservative NOAEC value based on the percent reduction when compared to the control instead of the value determined in the analyses. See the Reviewer's Comments section for further detail.

	Vegetative Vigor Value:	95% C.I.
<u>Monocot:</u>		
Most sensitive monocot: Wheat		
Most sensitive parameter: Shoot Weight		
EC ₅₀ /IC ₅₀ :	0.070 lbs ai/A	0.056-0.088 lbs ai/A
EC ₂₅ /IC ₂₅ :	0.046 lbs ai/A	0.033-0.064 lbs ai/A
EC ₀₅ /IC ₀₅ :	0.025 lbs ai/A	0.015-0.041 lbs ai/A
NOAEC:	0.020 lbs ai/A	
Probit slope:	3.67±0.542	
<u>Dicot:</u>		
Most sensitive dicot: Cucumber		
Most sensitive parameter: Shoot Weight		
EC ₅₀ /IC ₅₀ :	0.18 lbs ai/A	0.11-0.28 lbs ai/A
EC ₂₅ /IC ₂₅ :	0.10 lbs ai/A	0.052-0.20 lbs ai/A
EC ₀₅ /IC ₀₅ :	0.047 lbs ai/A	0.017-0.13 lbs ai/A
NOAEC:	<0.075 lbs ai/A	
Probit slope:	2.86±0.640	

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Table 6: Effect of Propazine Technical on Vegetative Vigor

Species	NOAEC, EC ₀₅ EC ₂₅ and EC ₅₀ (lbs ai/A)								
	Shoot Weight (g)								
	Shoot Weight*	NOAEC	EC ₀₅	95% C.I.	EC ₂₅	95% C.I.	EC ₅₀	95% C.I.	Slope
Corn	54.29-58.30	2.5	>2.5	N/A	>2.5	N/A	>2.5	N/A	N/A
Oat	0-20.86	0.0022	0.059	0.028-0.12	0.11	0.069-0.18	0.17	0.13-0.24	3.50±0.771
Onion	0.04-6.50	0.075	0.039	0.017-0.087	0.096	0.055-0.17	0.18	0.12-0.27	2.47±0.360
Ryegrass	0.86-13.72	0.075	0.061	0.030-0.12	0.17	0.11-0.28	0.36	0.26-0.50	2.14±0.253
Wheat	0-8.31	0.020	0.025	0.015-0.041	0.046	0.033-0.064	0.070	0.056-0.088	3.67±0.542
Cabbage	3.67-28.10	0.011	0.076	0.047-0.12	0.13	0.096-0.18	0.19	0.15-0.23	4.20±0.766
Cucumber	0-74.25	<0.075	0.047	0.017-0.13	0.10	0.052-0.20	0.18	0.11-0.28	2.86±0.640
Lettuce	0-81.47	0.075	0.065	0.045-0.092	0.10	0.081-0.13	0.14	0.12-0.17	4.81±0.617
Radish	0-20.67	0.075	0.12	0.077-0.20	0.22	0.16-0.30	0.33	0.27-0.40	3.87±0.617
Soybean	27.78-38.62 ^c	0.038 ^a	0.12 ^d	0.017-0.81 ^d	0.66 ^d	0.36-1.2 ^d	2.2 ^d	0.51-9.3 ^d	1.30±0.678 ^d
Tomato	0-37.79 ^b	0.038 ^a	0.10 ^f	0.078-0.14 ^f	0.15 ^f	0.13-0.18 ^f	0.20 ^f	0.17-0.22 ^f	5.99±0.779 ^f

*provide the range

^a This NOAEC value was determined by combining the data from the original and continuation study.

^b Range from original study.

^c Range from continuation study.

^d Toxicity values determined from continuation study.

^e Toxicity values determined from original study and continuation study.

^f Toxicity values determined from original study.

The range for dry weight and plant length represent the range of treatment means on Day 21-22

ND Not determined

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

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Table 6 (cont): Effect of Propazine Technical on Vegetative Vigor

Species	NOAEC, EC ₀₅ , EC ₂₅ and EC ₅₀ (lbs ai/A)								
	Shoot Length (mm)								
	Shoot Length*	NOAEC	EC ₀₅	95% C.I.	EC ₂₅	95% C.I.	EC ₅₀	95% C.I.	Slope
Corn	694-727	2.5	>2.5	N/A	>2.5	N/A	>2.5	N/A	N/A
Oat	0-448	0.0022	0.060	0.024-0.15	0.13	0.071-0.23	0.21	0.15-0.31	2.97±0.740
Onion	5.9-213	0.075	0.080	0.034-0.19	0.20	0.11-0.35	0.36	0.24-0.54	2.50±0.407
Ryegrass	70-267	0.31	0.14	0.042-0.49	0.46	0.23-0.94	1.0	0.69-1.6	1.90±0.434
Wheat	0-327	0.038	0.036	0.022-0.061	0.071	0.051-0.099	0.11	0.090-0.14	3.33±0.494
Cabbage	26-106	0.077	0.12	0.056-0.26	0.18	0.12-0.29	0.25	0.19-0.32	5.22±1.95
Cucumber	0-350	0.075	0.10	0.036-0.29	0.19	0.095-0.36	0.28	0.18-0.44	3.68±1.16
Lettuce	0-159	0.15	0.13	0.083-0.21	0.21	0.15-0.28	0.28	0.22-0.35	5.14±0.993
Radish	0-131	0.15	0.23	0.12-0.46	0.38	0.27-0.55	0.54	0.45-0.65	4.46±1.49
Soybean	266-282 ^c	0.15 ^a	ND	ND	0.68-1.2 ^c	ND	0.68-1.2 ^c	ND	ND
Tomato	0-150 ^b	0.038 ^a	0.13 ^f	0.070-0.24 ^f	0.19 ^f	0.13-0.28 ^f	0.25 ^f	0.21-0.31 ^f	5.72±1.88 ^f

*provide the range

^a This NOAEC value was determined by combining the data from the original and continuation study.

^b Range from original study.

^c Range from continuation study.

^d Toxicity values determined from continuation study.

^e Toxicity values determined from original study and continuation study.

^f Toxicity values determined from original study.

The range for dry weight and plant length represent the range of treatment means on Day 21-22

ND Not determined

Plant Injury Index*										
Corn	Oat	Onion	Ryegrass	Wheat	Cabbage	Cucumber	Lettuce	Radish	Soybean	Tomato
0-5	1-100	0-85	0-18	4-45	5-78	3-98	0-100	3-70	0-78	8-65

**0, no effect; 10-39 slight effect; 40-69, moderate effect; 70-90 severe effect

D. STUDY DEFICIENCIES:

There were no study deficiencies.

E. REVIEWER'S COMMENTS:

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

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The reviewer's statistical output are reported in the Executive Summary and Conclusions sections of this DER because they are based on mean-measured concentrations and include EC₀₅ values and probit slopes; the study author's toxicity values were based on nominal concentrations and did not include EC₀₅ values or probit slopes.

In the analyses for shoot weight, all NOAEC values were determined visually based on percent reduction when compared to the control group with the exception of corn, lettuce, soybean and tomato. These NOAEC values were determined visually because the percent reduction at the respective treatment levels was <10% and the reductions at the higher treatment levels was ≥10%. A NOAEC value was not determined for cucumber shoot weight, however, an EC₀₅ value (with 95% C.I.) was determined. The NOAEC value for wheat shoot weight (0.020 lbs ai/A) was determined visually based on the 6% reduction when compared to the negative control. There was a 17% reduction in the lowest treatment group (mean-measured 0.011 lbs ai/A), however, the reviewer did not feel that this reduction was significant based on the apparent dose-dependent response in the remaining treatment groups. The NOAEC values for soybean and tomato shoot weight were determined by looking at the percent reductions when compared to the negative controls for both the original and continuation study. In the initial study with soybean (0.075 to 2.5 lbs ai/A), there was a 16% reduction in the lowest mean-measured treatment group (0.075 lbs ai/A). In the continuation study with soybean (0.020 to 0.68 lbs ai/A), percent reduction ranged from -1 to 27% in the mean-measured treatment groups (0.020-0.68 lbs ai/A). Therefore, the reviewer determined the NOAEC value to be 0.038 lbs ai/A (7% reduction in the continuation study when compared to the negative control); the highest level tested in the continuation study that was below the lowest level of the original study (0.075 lbs a./A, which exhibited a 16% reduction when compared to the negative control). For soybean, only raw data from the continuation study were provided, therefore, the reviewer used those values in determining the EC_x values. In the initial study with tomato (0.075 to 2.5 lbs ai/A), there was an 11% reduction in the lowest mean-measured treatment group (0.075 lbs ai/A). In the continuation study with tomato (0.011 to 0.33 lbs ai/A), percent reduction ranged from -6 to 10% in the mean-measured treatment groups (0.011-0.33 lbs ai/A). Therefore, the reviewer determined that the NOAEC value to be 0.038 lbs ai/A (-6% reduction in the continuation study when compared to the negative control); the highest level tested in the continuation study that was below the lowest level of the original study (0.075 lbs a./A, which exhibited an 11% reduction when compared to the negative control). The EC_x values were determined using the data set from the original study as it yielded more conservative toxicity values and 95% confidence intervals.

In the analyses for shoot length, all NOAEC values were determined visually based on percent reduction when compared to the control group with the exception of corn, ryegrass, wheat and lettuce. These NOAEC values were determined visually because the percent reduction at the respective treatment levels was <10% and the reductions at the higher treatment levels was ≥10%. The NOAEC values for soybean and tomato shoot length were determined by looking at the percent reductions when compared to the negative controls for both the original and continuation study. In the initial study with soybean (0.075 to 2.5 lbs ai/A), percent reduction was 5% in the mean-measured 0.15 lbs ai/A treatment group and ≥13% in the mean-measured 0.31-2.5 lbs ai/A treatment groups. In the continuation study with soybean (0.020 to 0.68 lbs ai/A), percent reduction ranged from -1 to 6% in all treatment groups. Therefore, the reviewer determined that the NOAEC value to be 0.15 lbs ai/A based on the fact that it was the highest treatment level in both the original and continuation study that resulted in <10% reduction in shoot length when compared to the control. For soybean, only raw data from the continuation study were provided, however, this data set was not able to produce EC_x values. Therefore, the reviewer visually estimated the range for the EC_x values based on the percent reductions from both the original and continuation studies. In the initial study with tomato (0.075 to 2.5 lbs ai/A), percent reduction was 10% in the lowest treatment group (mean-measured 0.075 lbs ai/A). In the continuation study with tomato (0.011 to 0.33 lbs ai/A), percent reduction ranged from 1 to 13% in all treatment groups. Therefore, the reviewer determined that the NOAEC value to be 0.038 lbs ai/A based on the fact that it was the highest treatment level in both the original and continuation study that resulted in <10% reduction in shoot length when compared to the control. The EC_x values were determined using the data set from the original study as it yielded more conservative toxicity values and 95% confidence intervals.

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The study authors gave dead plants values of 0 for shoot weight and shoot length. Therefore, replicates that experienced 100% mortality had replicate values of 0, and the replicate means in which mortality was <100% were lowered due to the 0 value for dead plants. In order to remain consistent throughout all analyses, the reviewer included dead plants in the statistical verification as there was no way to differentiate replicates that experience mortality or severe reductions due to application of Propazine Technical. The lowered replicate means most likely resulted in more conservative ECx values.

Even though pooled controls were not used in the analysis of end points, the reviewer determined whether or the negative and vehicle controls for each species and endpoint differed significantly. Cucumber shoot weight and radish shoot length were the only species and endpoints in which the negative control significantly differed from the vehicle control.

Initially, only ten species were to be tested, however, wheat was added as a protocol amendment to evaluate an additional monocot species which is typically grown as a rotational crop following propazine application in grain sorghum production. Because a satisfactory NOAEC value was not determined during the initial test, a second continuation test was conducted with cabbage, lettuce, oat and onion; wheat was added to the study design during the first continuation test. A second continuation test was conducted with even lower application rates for lettuce, oat, onion and wheat.

In the analysis of shoot weight, the study authors utilized fresh weight as opposed to dry weight, which does not take into account the variability associated with water-holding capacity. Dry weight is a preferred endpoint for analyzing biomass.

The in-life portion of the vegetative vigor test with corn, cucumber, ryegrass, radish, soybean and tomato was initiated on February 28, 1995 and continued for 21-22 days. The in-life portion of the final seedling emergence test for cabbage was initiated on May 31, 1995 and continued for 21-22 days. The in-life portion of the final seedling emergence test for lettuce, oat, onion and wheat was initiated on August 2, 1995 and continued for 21-22 days.

Propazine analytical standard (batch no. 177-19-1, CAS #139-40-2) was received from Griffin Corporation on May 23, 1994 and was stored at room temperature. The reported purity was 98.2%. Upon receipt, the standard was assigned ABC reference #PS-7296. This standard was used to prepare chromatographic reference standards for GLC.

F. CONCLUSIONS:

Indicate if the study is acceptable/unacceptable/supplementary. The most sensitive monocot was wheat shoot weight with NOAEC, EC₀₅ and EC₂₅ values of 0.020, 0.025 and 0.046 lbs ai/A, respectively. The most sensitive dicot was cucumber shoot weight with NOAEC, EC₀₅ and EC₂₅ values of <0.075, 0.047 and 0.10 lbs ai/A, respectively.

	Vegetative Vigor Value:	95% C.I.
<u>Monocot:</u>		
Most sensitive monocot:	Wheat	
Most sensitive parameter:	Shoot Weight	
EC ₅₀ /IC ₅₀ :	0.070 lbs ai/A	0.056-0.088 lbs ai/A
EC ₂₅ /IC ₂₅ :	0.046 lbs ai/A	0.033-0.064 lbs ai/A
EC ₀₅ /IC ₀₅ :	0.025 lbs ai/A	0.015-0.041 lbs ai/A
NOAEC:	0.020 lbs ai/A	
Probit slope:	3.67±0.542	

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Dicot:

Most sensitive dicot: Cucumber

Most sensitive parameter: Shoot Weight

EC₅₀/IC₅₀: 0.18 lbs ai/A 0.11-0.28 lbs ai/A

EC₂₅/IC₂₅: 0.10 lbs ai/A 0.052-0.20 lbs ai/A

EC₀₅/IC₀₅: 0.047 lbs ai/A 0.017-0.13 lbs ai/A

NOAEC: <0.075 lbs ai/A

Probit slope: 2.86±0.640

III. REFERENCES:

No references were provided.

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

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APPENDIX I. OUTPUT OF REVIEWER'S STATISTICAL VERIFICATION:

Corn shoot weight (g), lbs ai/A; Day 21-22

File: 480vcw Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	36.405	6.068	0.177
Within (Error)	21	720.540	34.311	
Total	27	756.945		

Critical F value = 2.57 (0.05,6,21)

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

Corn shoot weight (g), lbs ai/A; Day 21-22

File: 480vcw 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	neg control	56.090	56.090		
2	0.075	56.460	56.460	-0.089	
3	0.15	57.368	57.368	-0.308	
4	0.31	54.293	54.293	0.434	
5	0.62	58.302	58.302	-0.534	
6	1.2	56.388	56.388	-0.072	
7	2.5	56.715	56.715	-0.151	

Dunnett table value = 2.46 (1 Tailed Value, P=0.05, df=20,6)

Corn shoot weight (g), lbs ai/A; Day 21-22

File: 480vcw 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	neg control	4			
2	0.075	4	10.189	18.2	-0.370
3	0.15	4	10.189	18.2	-1.278
4	0.31	4	10.189	18.2	1.797
5	0.62	4	10.189	18.2	-2.212
6	1.2	4	10.189	18.2	-0.297
7	2.5	4	10.189	18.2	-0.625

Corn shoot weight (g), lbs ai/A; Day 21-22

File: 480vcw Transform: NO TRANSFORM

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WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	56.090	56.090	56.053
2	0.075	4	56.460	56.460	56.053
3	0.15	4	57.368	57.368	56.053
4	0.31	4	54.293	54.293	56.053
5	0.62	4	58.302	58.302	57.135
6	1.2	4	56.388	56.388	57.135
7	2.5	4	56.715	56.715	57.135

Corn shoot weight (g), lbs ai/A; Day 21-22
File: 480vcw 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
neg control	56.053				
0.075	56.053	0.009		1.72	k= 1, v=21
0.15	56.053	0.009		1.80	k= 2, v=21
0.31	56.053	0.009		1.83	k= 3, v=21
0.62	57.135	0.252		1.84	k= 4, v=21
1.2	57.135	0.252		1.85	k= 5, v=21
2.5	57.135	0.252		1.85	k= 6, v=21

s = 5.858

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

Corn shoot length (mm), lbs ai/A; Day 21-22

File: 480vcl Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	3593.669	598.945	0.257
Within (Error)	21	48888.930	2328.044	
Total	27	52482.599		

Critical F value = 2.57 (0.05,6,21)

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

Corn shoot length (mm), lbs ai/A; Day 21-22

File: 480vcl Transform: NO TRANSFORM

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

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
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Group	Identification	Mean	Standard Error	Lower CI	Upper CI
1	neg control	718.800		718.800	
2	0.075	722.450		722.450	-0.107
3	0.15	702.650		702.650	0.473
4	0.31	694.400		694.400	0.715
5	0.62	727.150		727.150	-0.245
6	1.2	715.100		715.100	0.108
7	2.5	725.200		725.200	-0.188

Dunnett table value = 2.46 (1 Tailed Value, P=0.05, df=20,6)

Corn shoot length (mm), lbs ai/A; Day 21-22
File: 480vcl 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	neg control	4			
2	0.075	4	83.930	11.7	-3.650
3	0.15	4	83.930	11.7	16.150
4	0.31	4	83.930	11.7	24.400
5	0.62	4	83.930	11.7	-8.350
6	1.2	4	83.930	11.7	3.700
7	2.5	4	83.930	11.7	-6.400

Corn shoot length (mm), lbs ai/A; Day 21-22
File: 480vcl Transform: NO TRANSFORM

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	718.800	718.800	709.575
2	0.075	4	722.450	722.450	709.575
3	0.15	4	702.650	702.650	709.575
4	0.31	4	694.400	694.400	709.575
5	0.62	4	727.150	727.150	721.125
6	1.2	4	715.100	715.100	721.125
7	2.5	4	725.200	725.200	725.200

Corn shoot length (mm), lbs ai/A; Day 21-22
File: 480vcl 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
neg control	709.575				
0.075	709.575	0.270		1.72	k= 1, v=21
0.15	709.575	0.270		1.80	k= 2, v=21
0.31	709.575	0.270		1.83	k= 3, v=21

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0.62	721.125	0.068	1.84	k= 4, v=21	
1.2	721.125	0.068	1.85	k= 5, v=21	
2.5	725.200	0.188	1.85	k= 6, v=21	

s = 48.250

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

Oat shoot weight (g), lbs ai/A; Day 21-22
File: 480vow Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	9	1560.421	173.380	8.915
Within (Error)	30	583.455	19.448	
Total	39	2143.876		

Critical F value = 2.21 (0.05,9,30)
Since F > Critical F REJECT Ho:All groups equal

Oat shoot weight (g), lbs ai/A; Day 21-22
File: 480vow 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	neg control	19.898	19.898		
2	0.0022	20.859	20.859	-0.308	
3	0.0047	15.137	15.137	1.527	
4	0.010	15.411	15.411	1.439	
5	0.018	15.936	15.936	1.270	
6	0.036	15.288	15.288	1.478	
7	0.071	15.133	15.133	1.528	
8	0.14	12.080	12.080	2.507	
9	0.29	2.971	2.971	5.428	*
10	0.61	0.683	0.683	6.162	*

Dunnett table value = 2.54 (1 Tailed Value, P=0.05, df=30,9)

Oat shoot weight (g), lbs ai/A; Day 21-22
File: 480vow 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	neg control	4			
2	0.0022	4	7.921	39.8	-0.960
3	0.0047	4	7.921	39.8	4.761
4	0.010	4	7.921	39.8	4.487
5	0.018	4	7.921	39.8	3.962

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}	EPA MRID Number 441848-04				
6	0.036	4	7.921	39.8	4.610
7	0.071	4	7.921	39.8	4.766
8	0.14	4	7.921	39.8	7.818
9	0.29	4	7.921	39.8	16.927
10	0.61	4	7.921	39.8	19.215

Oat shoot weight (g), lbs ai/A; Day 21-22
File: 480vow Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	19.898	19.898	20.379
2	0.0022	4	20.859	20.859	20.379
3	0.0047	4	15.137	15.137	15.495
4	0.010	4	15.411	15.411	15.495
5	0.018	4	15.936	15.936	15.495
6	0.036	4	15.288	15.288	15.288
7	0.071	4	15.133	15.133	15.133
8	0.14	4	12.080	12.080	12.080
9	0.29	4	2.971	2.971	2.971
10	0.61	4	0.683	0.683	0.683

Oat shoot weight (g), lbs ai/A; Day 21-22
File: 480vow 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
neg control	20.379				
0.0022	20.379	0.154		1.70	k= 1, v=30
0.0047	15.495	1.412		1.78	k= 2, v=30
0.010	15.495	1.412		1.80	k= 3, v=30
0.018	15.495	1.412		1.81	k= 4, v=30
0.036	15.288	1.478		1.82	k= 5, v=30
0.071	15.133	1.528		1.83	k= 6, v=30
0.14	12.080	2.507	*	1.83	k= 7, v=30
0.29	2.971	5.428	*	1.83	k= 8, v=30
0.61	0.683	6.162	*	1.83	k= 9, v=30

s = 4.410

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.059	0.028	0.12	0.16	0.48
EC10	0.075	0.040	0.14	0.14	0.53
EC25	0.11	0.069	0.18	0.10	0.62
EC50	0.17	0.13	0.24	0.070	0.72

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

Slope = 3.50 Std.Err. = 0.771

Goodness of fit: p = 0.65 based on DF= 7.0 30.

480VOW : Oat shoot weight (g), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	19.9	17.1	2.76	100.	0.00
0.00220	4.00	20.9	17.1	3.72	100.	1.52e-09
0.00470	4.00	15.1	17.1	-2.00	100.	2.00e-06
0.0100	4.00	15.4	17.1	-1.72	100.	0.000700
0.0180	4.00	15.9	17.1	-1.19	100.	0.0279
0.0360	4.00	15.3	17.0	-1.71	99.2	0.825
0.0710	4.00	15.1	15.7	-0.529	91.4	8.60
0.140	4.00	12.1	10.8	1.27	63.1	36.9
0.290	4.00	2.97	3.77	-0.799	22.0	78.0
0.610	4.00	0.683	0.490	0.193	2.86	97.1

Oat shoot length (mm), lbs ai/A; Day 21-22

File: 480vol Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	9	719437.560	79937.507	14.786
Within (Error)	30	162187.000	5406.233	
Total	39	881624.560		

Critical F value = 2.21 (0.05,9,30)

Since F > Critical F **REJECT Ho:All groups equal**

Oat shoot length (mm), lbs ai/A; Day 21-22

File: 480vol 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	neg control	422.400	422.400		
2	0.0022	447.650	447.650	-0.486	
3	0.0047	374.100	374.100	0.929	
4	0.010	353.500	353.500	1.325	
5	0.018	407.800	407.800	0.281	
6	0.036	385.850	385.850	0.703	
7	0.071	387.150	387.150	0.678	
8	0.14	360.750	360.750	1.186	
9	0.29	70.600	70.600	6.766	*
10	0.61	57.200	57.200	7.024	*

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

Dunnett table value = 2.54 (1 Tailed Value, P=0.05, df=30,9)

Oat shoot length (mm), lbs ai/A; Day 21-22
File: 480vol 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	neg control	4			
2	0.0022	4	132.058	31.3	-25.250
3	0.0047	4	132.058	31.3	48.300
4	0.010	4	132.058	31.3	68.900
5	0.018	4	132.058	31.3	14.600
6	0.036	4	132.058	31.3	36.550
7	0.071	4	132.058	31.3	35.250
8	0.14	4	132.058	31.3	61.650
9	0.29	4	132.058	31.3	351.800
10	0.61	4	132.058	31.3	365.200

Oat shoot length (mm), lbs ai/A; Day 21-22
File: 480vol Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	422.400	422.400	435.025
2	0.0022	4	447.650	447.650	435.025
3	0.0047	4	374.100	374.100	381.680
4	0.010	4	353.500	353.500	381.680
5	0.018	4	407.800	407.800	381.680
6	0.036	4	385.850	385.850	381.680
7	0.071	4	387.150	387.150	381.680
8	0.14	4	360.750	360.750	360.750
9	0.29	4	70.600	70.600	70.600
10	0.61	4	57.200	57.200	57.200

Oat shoot length (mm), lbs ai/A; Day 21-22
File: 480vol 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
neg control	435.025				
0.0022	435.025	0.243		1.70	k= 1, v=30
0.0047	381.680	0.783		1.78	k= 2, v=30
0.010	381.680	0.783		1.80	k= 3, v=30
0.018	381.680	0.783		1.81	k= 4, v=30
0.036	381.680	0.783		1.82	k= 5, v=30
0.071	381.680	0.783		1.83	k= 6, v=30

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}	EPA MRID Number 441848-04					
0.14	360.750	1.186		1.83	k= 7, v=30	
0.29	70.600	6.766	*	1.83	k= 8, v=30	
0.61	57.200	7.024	*	1.83	k= 9, v=30	

s = 73.527

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.060	0.024	0.15	0.20	0.40
EC10	0.079	0.036	0.18	0.17	0.45
EC25	0.13	0.071	0.23	0.12	0.56
EC50	0.21	0.15	0.31	0.081	0.68

Slope = 2.97 Std.Err. = 0.740

Goodness of fit: p = 0.39 based on DF= 7.0 30.

480VOL : Oat shoot length (mm), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	422.	405.	17.1	100.	0.00
0.00220	4.00	448.	405.	42.3	100.	1.78e-07
0.00470	4.00	374.	405.	-31.2	100.	4.21e-05
0.0100	4.00	354.	405.	-51.8	100.	0.00387
0.0180	4.00	408.	405.	2.74	99.9	0.0699
0.0360	4.00	386.	401.	-15.2	98.9	1.07
0.0710	4.00	387.	374.	13.0	92.3	7.69
0.140	4.00	361.	288.	73.2	70.9	29.1
0.290	4.00	70.6	142.	-71.0	34.9	65.1
0.610	4.00	57.2	36.2	21.0	8.93	91.1

Onion shoot weight (g), lbs ai/A; Day 21-22

File: 480vnm Transform: NO TRANSFORMATION

KRUSKAL-WALLIS ANOVA BY RANKS - TABLE 1 OF 2

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	RANK SUM
1	neg control	6.220	6.220	99.000
2	0.075	6.198	6.198	94.500
3	0.15	3.365	3.365	76.500
4	0.31	1.823	1.823	57.000
5	0.62	0.643	0.643	37.000
6	1.2	0.120	0.120	25.500
7	2.5	0.038	0.038	16.500

Calculated H Value = 24.443 Critical H Value Table = 12.590
Since Calc H > Crit H **REJECT Ho:All groups are equal.**

Onion shoot weight (g), lbs ai/A; Day 21-22

File: 480vnm Transform: NO TRANSFORMATION

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

DUNNS MULTIPLE COMPARISON - KRUSKAL-WALLIS - TABLE 2 OF 2

GROUP	IDENTIFICATION	TRANSFORMED MEAN	ORIGINAL MEAN	GROUP							
				0	0	0	0	0	0	0	
7	2.5	0.038	0.038	\							
6	1.2	0.120	0.120	.	\						
5	0.62	0.643	0.643	.	.	\					
4	0.31	1.823	1.823	.	.	.	\				
3	0.15	3.365	3.365	.	.	.	.	\
2	0.075	6.198	6.198	*	.	.	.	.	\
1	neg control	6.220	6.220	*	*	.	.	.	.	\

* = significant difference (p=0.05) . = no significant difference
 Table q value (0.05,7) = 3.038 SE = 5.799

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.039	0.017	0.087	0.17	0.44
EC10	0.055	0.027	0.11	0.15	0.49
EC25	0.096	0.055	0.17	0.12	0.57
EC50	0.18	0.12	0.27	0.086	0.67

Slope = 2.47 Std.Err. = 0.360

Goodness of fit: p = 0.70 based on DF= 4.0 21.

480VNW : Onion shoot weight (g), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	6.22	6.57	-0.349	100.	0.00
0.0750	4.00	6.20	5.43	0.769	82.6	17.4
0.150	4.00	3.37	3.80	-0.434	57.8	42.2
0.310	4.00	1.82	1.85	-0.0232	28.1	71.9
0.620	4.00	0.642	0.611	0.0315	9.30	90.7
1.20	4.00	0.120	0.139	-0.0192	2.12	97.9
2.50	4.00	0.0375	0.0160	0.0215	0.243	99.8

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

!!!Warning: EC10 not bracketed by doses evaluated.

Onion shoot length (mm), lbs ai/A; Day 21-22

File: 480vnl Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	188272.454	31378.742	36.972

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....} EPA MRID Number 441848-04

Within (Error)	21	17822.910	848.710
Total	27	206095.364	

Critical F value = 2.57 (0.05,6,21)
 Since F > Critical F **REJECT Ho:All groups equal**

Onion shoot length (mm), lbs ai/A; Day 21-22
 File: 480vnl 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	neg control	207.850	207.850		
2	0.075	212.600	212.600	-0.231	
3	0.15	176.750	176.750	1.510	
4	0.31	132.150	132.150	3.675	*
5	0.62	53.650	53.650	7.485	*
6	1.2	19.350	19.350	9.151	*
7	2.5	5.900	5.900	9.803	*

Dunnett table value = 2.46 (1 Tailed Value, P=0.05, df=20,6)

Onion shoot length (mm), lbs ai/A; Day 21-22
 File: 480vnl 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	neg control	4			
2	0.075	4	50.676	24.4	-4.750
3	0.15	4	50.676	24.4	31.100
4	0.31	4	50.676	24.4	75.700
5	0.62	4	50.676	24.4	154.200
6	1.2	4	50.676	24.4	188.500
7	2.5	4	50.676	24.4	201.950

Onion shoot length (mm), lbs ai/A; Day 21-22
 File: 480vnl Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	207.850	207.850	210.225
2	0.075	4	212.600	212.600	210.225
3	0.15	4	176.750	176.750	176.750
4	0.31	4	132.150	132.150	132.150
5	0.62	4	53.650	53.650	53.650
6	1.2	4	19.350	19.350	19.350

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....} EPA MRID Number 441848-04

7 2.5 4 5.900 5.900 5.900

Onion shoot length (mm), lbs ai/A; Day 21-22
 File: 480vnl 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
neg control	210.225				
0.075	210.225	0.115		1.72	k= 1, v=21
0.15	176.750	1.510		1.80	k= 2, v=21
0.31	132.150	3.675	*	1.83	k= 3, v=21
0.62	53.650	7.485	*	1.84	k= 4, v=21
1.2	19.350	9.151	*	1.85	k= 5, v=21
2.5	5.900	9.803	*	1.85	k= 6, v=21

s = 29.133

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.080	0.034	0.19	0.18	0.43
EC10	0.11	0.053	0.24	0.16	0.47
EC25	0.20	0.11	0.35	0.12	0.56
EC50	0.36	0.24	0.54	0.085	0.67

Slope = 2.50 Std.Err. = 0.407

Goodness of fit: p = 0.92 based on DF= 4.0 21.

480VNL : Onion shoot length (mm), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	208.	215.	-7.36	100.	0.00
0.0750	4.00	213.	206.	6.74	95.7	4.34
0.150	4.00	177.	179.	-2.23	83.2	16.8
0.310	4.00	132.	122.	9.68	56.9	43.1
0.620	4.00	53.6	60.7	-7.01	28.2	71.8
1.20	4.00	19.4	21.1	-1.74	9.80	90.2
2.50	4.00	5.90	3.96	1.94	1.84	98.2

Ryegrass shoot weight (g), lbs ai/A; Day 21-22

File: 480vgw Transform: NO TRANSFORMATION

KRUSKAL-WALLIS ANOVA BY RANKS - TABLE 1 OF 2

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	RANK SUM
1	neg control	12.665	12.665	95.000
2	0.075	13.037	13.037	98.000

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}	EPA MRID Number 441848-04			
3	0.15	11.588	11.588	77.000
4	0.31	7.175	7.175	56.000
5	0.62	4.143	4.143	43.000
6	1.2	1.105	1.105	19.000
7	2.5	0.855	0.855	18.000

Calculated H Value = 24.680 Critical H Value Table = 12.590
 Since Calc H > Crit H **REJECT Ho:All groups are equal.**

Ryegrass shoot weight (g), lbs ai/A; Day 21-22
 File: 480vgw Transform: NO TRANSFORMATION

DUNNS MULTIPLE COMPARISON - KRUSKAL-WALLIS - TABLE 2 OF 2

GROUP	IDENTIFICATION	TRANSFORMED MEAN	ORIGINAL MEAN	GROUP							
				7	6	5	4	3	1	2	
7	2.5	0.855	0.855	\							
6	1.2	1.105	1.105	.	\						
5	0.62	4.143	4.143	.	.	\					
4	0.31	7.175	7.175	.	.	.	\				
3	0.15	11.588	11.588	.	.	.	.	\
1	neg control	12.665	12.665	*	*	.	.	.	\		
2	0.075	13.037	13.037	*	*	.	.	.	.	\

* = significant difference (p=0.05) . = no significant difference
 Table q value (0.05,7) = 3.038 SE = 5.817

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.061	0.030	0.12	0.15	0.49
EC10	0.090	0.048	0.17	0.13	0.53
EC25	0.17	0.11	0.28	0.10	0.62
EC50	0.36	0.26	0.50	0.070	0.72

Slope = 2.14 Std.Err. = 0.253

Goodness of fit: p = 0.12 based on DF= 4.0 21.

480VGW : Ryegrass shoot weight (g), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	12.7	13.5	-0.866	100.	0.00
0.0750	4.00	13.0	12.5	0.504	92.6	7.38
0.150	4.00	11.6	10.7	0.905	78.9	21.1
0.310	4.00	7.18	7.47	-0.292	55.2	44.8
0.620	4.00	4.14	4.11	0.0322	30.4	69.6
1.20	4.00	1.10	1.76	-0.652	13.0	87.0
2.50	4.00	0.855	0.477	0.378	3.52	96.5

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

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

Ryegrass shoot length (mm), lbs ai/A; Day 21-22
File: 480vgl Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	152538.034	25423.006	13.240
Within (Error)	21	40324.480	1920.213	
Total	27	192862.514		

Critical F value = 2.57 (0.05,6,21)
Since F > Critical F **REJECT Ho:All groups equal**

Ryegrass shoot length (mm), lbs ai/A; Day 21-22
File: 480vgl 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	neg control	250.950	250.950		
2	0.075	267.250	267.250	-0.526	
3	0.15	261.600	261.600	-0.344	
4	0.31	232.300	232.300	0.602	
5	0.62	181.800	181.800	2.232	
6	1.2	104.050	104.050	4.741	*
7	2.5	70.450	70.450	5.825	*

Dunnett table value = 2.46 (1 Tailed Value, P=0.05, df=20,6)

Ryegrass shoot length (mm), lbs ai/A; Day 21-22
File: 480vgl 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	neg control	4			
2	0.075	4	76.225	30.4	-16.300
3	0.15	4	76.225	30.4	-10.650
4	0.31	4	76.225	30.4	18.650
5	0.62	4	76.225	30.4	69.150
6	1.2	4	76.225	30.4	146.900
7	2.5	4	76.225	30.4	180.500

Ryegrass shoot length (mm), lbs ai/A; Day 21-22
File: 480vgl Transform: NO TRANSFORMATION

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	250.950	250.950	259.933
2	0.075	4	267.250	267.250	259.933
3	0.15	4	261.600	261.600	259.933
4	0.31	4	232.300	232.300	232.300
5	0.62	4	181.800	181.800	181.800
6	1.2	4	104.050	104.050	104.050
7	2.5	4	70.450	70.450	70.450

Ryegrass shoot length (mm), lbs ai/A; Day 21-22
 File: 480vgl 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
neg control	259.933				
0.075	259.933	0.290		1.72	k= 1, v=21
0.15	259.933	0.290		1.80	k= 2, v=21
0.31	232.300	0.602		1.83	k= 3, v=21
0.62	181.800	2.232	*	1.84	k= 4, v=21
1.2	104.050	4.741	*	1.85	k= 5, v=21
2.5	70.450	5.825	*	1.85	k= 6, v=21

s = 43.820

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.14	0.042	0.49	0.26	0.29
EC10	0.22	0.080	0.62	0.22	0.36
EC25	0.46	0.23	0.94	0.15	0.49
EC50	1.0	0.69	1.6	0.088	0.66

Slope = 1.90 Std.Err. = 0.434

Goodness of fit: p = 0.82 based on DF= 4.0 21.

480VGL : Ryegrass shoot length (mm), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	251.	267.	-15.6	100.	0.00
0.0750	4.00	267.	263.	4.65	98.5	1.47
0.150	4.00	262.	252.	9.51	94.6	5.41
0.310	4.00	232.	225.	7.64	84.3	15.7
0.620	4.00	182.	178.	3.79	66.8	33.2
1.20	4.00	104.	121.	-17.4	45.6	54.4
2.50	4.00	70.4	63.1	7.39	23.7	76.3

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

Wheat shoot weight (g), lbs ai/A; Day 21-22
 File: 480vww Transform: NO TRANSFORMATION

KRUSKAL-WALLIS ANOVA BY RANKS - TABLE 1 OF 2

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	RANK SUM
1	neg control	8.313	8.313	89.000
2	0.011	6.955	6.955	80.000
3	0.020	7.903	7.903	84.000
4	0.038	6.698	6.698	74.000
5	0.077	3.363	3.363	43.000
6	0.15	0.848	0.848	25.500
7	0.33	0.072	0.072	10.500

Calculated H Value = 21.864 Critical H Value Table = 12.590
 Since Calc H > Crit H **REJECT Ho:All groups are equal.**

Wheat shoot weight (g), lbs ai/A; Day 21-22
 File: 490vww Transform: NO TRANSFORMATION

DUNNS MULTIPLE COMPARISON - KRUSKAL-WALLIS - TABLE 2 OF 2

GROUP	IDENTIFICATION	TRANSFORMED MEAN	ORIGINAL MEAN	GROUP							
				0	0	0	0	0	0	0	
7	0.33	0.072	0.072	\							
6	0.15	0.848	0.848	.	\						
5	0.077	3.363	3.363	.	.	\					
4	0.038	6.698	6.698	.	.	.	\				
2	0.011	6.955	6.955	.	.	.	.	\
3	0.020	7.903	7.903	*	.	.	.	.	\
1	neg control	8.313	8.313	*	.	.	.	.	.	\

* = significant difference (p=0.05) . = no significant difference
 Table q value (0.05,7) = 3.038 SE = 5.815

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.025	0.015	0.041	0.11	0.61
EC10	0.031	0.020	0.048	0.092	0.65
EC25	0.046	0.033	0.064	0.070	0.72
EC50	0.070	0.056	0.088	0.048	0.79

Slope = 3.67 Std.Err. = 0.542

Goodness of fit: p = 0.80 based on DF= 4.0 21.

480VWW : Wheat shoot weight (g), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs.	Pred.	Obs.	Pred.	%Change
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Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

	Mean	Mean	-Pred.	%Control		
0.00	4.00	8.31	7.82	0.496	100.	0.00
0.0110	4.00	6.96	7.80	-0.849	99.8	0.160
0.0200	4.00	7.90	7.64	0.265	97.7	2.30
0.0380	4.00	6.70	6.52	0.173	83.5	16.5
0.0770	4.00	3.36	3.44	-0.0728	43.9	56.1
0.150	4.00	0.848	0.878	-0.0301	11.2	88.8
0.330	4.00	0.0725	0.0527	0.0198	0.675	99.3

Wheat shoot length (mm), lbs ai/A; Day 21-22

File: 480vwl Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	382671.229	63778.538	71.579
Within (Error)	21	18711.400	891.019	
Total	27	401382.629		

Critical F value = 2.57 (0.05,6,21)

Since F > Critical F **REJECT Ho:All groups equal**

Wheat shoot length (mm), lbs ai/A; Day 21-22

File: 480vwl 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	neg control	319.750	319.750		
2	0.011	317.050	317.050	0.128	
3	0.020	326.850	326.850	-0.336	
4	0.038	315.600	315.600	0.197	
5	0.077	263.350	263.350	2.672	*
6	0.15	84.400	84.400	11.150	*
7	0.33	26.800	26.800	13.879	*

Dunnett table value = 2.46 (1 Tailed Value, P=0.05, df=20,6)

Wheat shoot length (mm), lbs ai/A; Day 21-22

File: 480vwl 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	neg control	4			
2	0.011	4	51.923	16.2	2.700
3	0.020	4	51.923	16.2	-7.100
4	0.038	4	51.923	16.2	4.150
5	0.077	4	51.923	16.2	56.400

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}	EPA MRID Number 441848-04				
6	0.15	4	51.923	16.2	235.350
7	0.33	4	51.923	16.2	292.950

Wheat shoot length (mm), lbs ai/A; Day 21-22
 File: 480vwl Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	319.750	319.750	321.217
2	0.011	4	317.050	317.050	321.217
3	0.020	4	326.850	326.850	321.217
4	0.038	4	315.600	315.600	315.600
5	0.077	4	263.350	263.350	263.350
6	0.15	4	84.400	84.400	84.400
7	0.33	4	26.800	26.800	26.800

Wheat shoot length (mm), lbs ai/A; Day 21-22
 File: 480vwl 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
neg control	321.217				
0.011	321.217	0.069		1.72	k= 1, v=21
0.020	321.217	0.069		1.80	k= 2, v=21
0.038	315.600	0.197		1.83	k= 3, v=21
0.077	263.350	2.672	*	1.84	k= 4, v=21
0.15	84.400	11.150	*	1.85	k= 5, v=21
0.33	26.800	13.879	*	1.85	k= 6, v=21

s = 29.850

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.036	0.022	0.061	0.11	0.59
EC10	0.047	0.030	0.073	0.095	0.64
EC25	0.071	0.051	0.099	0.071	0.72
EC50	0.11	0.090	0.14	0.048	0.80

Slope = 3.33 Std.Err. = 0.494

Goodness of fit: p = 0.36 based on DF= 4.0 21.

480VWL : Wheat shoot length (mm), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs.	Pred.	Obs.	Pred.	%Change
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US EPA ARCHIVE DOCUMENT

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

	Mean	Mean	-Pred.	%Control	
0.00	4.00	320.	328.	-7.76	100. 0.00
0.0110	4.00	317.	327.	-10.3	100. 0.0368
0.0200	4.00	327.	326.	1.32	99.4 0.604
0.0380	4.00	316.	309.	6.77	94.3 5.70
0.0770	4.00	263.	233.	30.4	71.1 28.9
0.150	4.00	84.4	112.	-27.4	34.2 65.8
0.330	4.00	26.8	19.8	6.97	6.05 93.9

Cabbage shoot weight (g), lbs ai/A; Day 21-22

File: 480vbw Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	1572.213	262.036	28.408
Within (Error)	21	193.704	9.224	
Total	27	1765.918		

Critical F value = 2.57 (0.05,6,21)
Since F > Critical F **REJECT Ho:All groups equal**

Cabbage shoot weight (g), lbs ai/A; Day 21-22

File: 480vbw 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	neg control	27.323	27.323		
2	0.011	25.400	25.400	0.895	
3	0.020	24.605	24.605	1.265	
4	0.038	21.695	21.695	2.620	*
5	0.077	22.827	22.827	2.093	
6	0.15	16.540	16.540	5.021	*
7	0.33	3.665	3.665	11.016	*

Dunnett table value = 2.46 (1 Tailed Value, P=0.05, df=20,6)

Cabbage shoot weight (g), lbs ai/A; Day 21-22

File: 480vbw 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	neg control	4			
2	0.011	4	5.283	19.3	1.922
3	0.020	4	5.283	19.3	2.717
4	0.038	4	5.283	19.3	5.627
5	0.077	4	5.283	19.3	4.495

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}	EPA MRID Number 441848-04				
6	0.15	4	5.283	19.3	10.782
7	0.33	4	5.283	19.3	23.658

Cabbage shoot weight (g), lbs ai/A; Day 21-22
File: 480vbw Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	27.323	27.323	27.323
2	0.011	4	25.400	25.400	25.400
3	0.020	4	24.605	24.605	24.605
4	0.038	4	21.695	21.695	22.261
5	0.077	4	22.827	22.827	22.261
6	0.15	4	16.540	16.540	16.540
7	0.33	4	3.665	3.665	3.665

Cabbage shoot weight (g), lbs ai/A; Day 21-22
File: 480vbw 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
neg control	27.323				
0.011	25.400	0.895		1.72	k= 1, v=21
0.020	24.605	1.265		1.80	k= 2, v=21
0.038	22.261	2.357	*	1.83	k= 3, v=21
0.077	22.261	2.357	*	1.84	k= 4, v=21
0.15	16.540	5.021	*	1.85	k= 5, v=21
0.33	3.665	11.016	*	1.85	k= 6, v=21

s = 3.037

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.076	0.047	0.12	0.10	0.62
EC10	0.093	0.061	0.14	0.087	0.66
EC25	0.13	0.096	0.18	0.064	0.74
EC50	0.19	0.15	0.23	0.042	0.82

Slope = 4.20 Std.Err. = 0.766

Goodness of fit: p = 0.61 based on DF= 4.0 21.

480VBW : Cabbage shoot weight (g), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs.	Pred.	Obs.	Pred.	%Change
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US EPA ARCHIVE DOCUMENT

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

	Mean	Mean	-Pred.	%Control	
0.00	4.00	27.3	24.7	2.64	100. 0.00
0.0110	4.00	25.4	24.7	0.713	100. 1.15e-05
0.0200	4.00	24.6	24.7	-0.0817	100. 0.00223
0.0380	4.00	21.7	24.6	-2.95	99.8 0.180
0.0770	4.00	22.8	23.4	-0.568	94.8 5.23
0.150	4.00	16.5	16.2	0.307	65.8 34.2
0.330	4.00	3.67	3.72	-0.0574	15.1 84.9

Cabbage shoot length (mm), lbs ai/A; Day 21-22

File: 480vbl Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	18735.674	3122.612	7.009
Within (Error)	21	9355.610	445.505	
Total	27	28091.284		

Critical F value = 2.57 (0.05,6,21)
Since F > Critical F **REJECT Ho:All groups equal**

Cabbage shoot length (mm), lbs ai/A; Day 21-22

File: 480vbl 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	neg control	96.800	96.800		
2	0.011	103.300	103.300	-0.436	
3	0.020	103.150	103.150	-0.425	
4	0.038	95.450	95.450	0.090	
5	0.077	101.700	101.700	-0.328	
6	0.15	87.000	87.000	0.657	
7	0.33	25.550	25.550	4.774	*

Dunnett table value = 2.46 (1 Tailed Value, P=0.05, df=20,6)

Cabbage shoot length (mm), lbs ai/A; Day 21-22

File: 480vbl 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	neg control	4			
2	0.011	4	36.715	37.9	-6.500
3	0.020	4	36.715	37.9	-6.350
4	0.038	4	36.715	37.9	1.350
5	0.077	4	36.715	37.9	-4.900

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}	EPA MRID Number 441848-04				
6	0.15	4	36.715	37.9	9.800
7	0.33	4	36.715	37.9	71.250

Cabbage shoot length (mm), lbs ai/A; Day 21-22
File: 480vbl Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	96.800	96.800	101.083
2	0.011	4	103.300	103.300	101.083
3	0.020	4	103.150	103.150	101.083
4	0.038	4	95.450	95.450	98.575
5	0.077	4	101.700	101.700	98.575
6	0.15	4	87.000	87.000	87.000
7	0.33	4	25.550	25.550	25.550

Cabbage shoot length (mm), lbs ai/A; Day 21-22
File: 480vbl 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
neg control	101.083				
0.011	101.083	0.287		1.72	k= 1, v=21
0.020	101.083	0.287		1.80	k= 2, v=21
0.038	98.575	0.119		1.83	k= 3, v=21
0.077	98.575	0.119		1.84	k= 4, v=21
0.15	87.000	0.657		1.85	k= 5, v=21
0.33	25.550	4.774	*	1.85	k= 6, v=21

s = 21.107

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.12	0.056	0.26	0.16	0.47
EC10	0.14	0.074	0.27	0.14	0.53
EC25	0.18	0.12	0.29	0.095	0.64
EC50	0.25	0.19	0.32	0.055	0.77

Slope = 5.22 Std.Err. = 1.95

Goodness of fit: p = 0.99 based on DF= 4.0 21.

480VBL : Cabbage shoot length (mm), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs.	Pred.	Obs.	Pred.	%Change
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US EPA ARCHIVE DOCUMENT

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

	Mean	Mean	-Pred.	%Control	
0.00	4.00	96.8	100.	-3.33	100. 0.00
0.0110	4.00	103.	100.	3.17	100. 8.59e-11
0.0200	4.00	103.	100.	3.02	100. 6.00e-07
0.0380	4.00	95.4	100.	-4.68	100. 0.00110
0.0770	4.00	102.	99.7	1.98	99.6 0.412
0.150	4.00	87.0	87.2	-0.180	87.1 12.9
0.330	4.00	25.5	25.5	0.0157	25.5 74.5

Cucumber shoot weight (g), lbs ai/A; Day 21-22

File: 480vuw Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	4	14044.912	3511.228	31.717
Within (Error)	15	1660.569	110.705	
Total	19	15705.481		

Critical F value = 3.06 (0.05,4,15)
Since F > Critical F **REJECT Ho:All groups equal**

Cucumber shoot weight (g), lbs ai/A; Day 21-22

File: 480vuw 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	neg control	74.248	74.248		
2	0.075	65.715	65.715	1.147	
3	0.15	38.218	38.218	4.843	*
4	0.31	21.895	21.895	7.037	*
5	0.62	3.280	3.280	9.539	*

Dunnnett table value = 2.36 (1 Tailed Value, P=0.05, df=15,4)

Cucumber shoot weight (g), lbs ai/A; Day 21-22

File: 480vuw 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	neg control	4			
2	0.075	4	17.558	23.6	8.533
3	0.15	4	17.558	23.6	36.030
4	0.31	4	17.558	23.6	52.353
5	0.62	4	17.558	23.6	70.968

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

Cucumber shoot weight (g), lbs ai/A; Day 21-22
File: 480vuw Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	74.248	74.248	74.248
2	0.075	4	65.715	65.715	65.715
3	0.15	4	38.218	38.218	38.218
4	0.31	4	21.895	21.895	21.895
5	0.62	4	3.280	3.280	3.280

Cucumber shoot weight (g), lbs ai/A; Day 21-22
File: 480vuw 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
neg control	74.248				
0.075	65.715	1.147		1.75	k= 1, v=15
0.15	38.218	4.843	*	1.84	k= 2, v=15
0.31	21.895	7.037	*	1.87	k= 3, v=15
0.62	3.280	9.539	*	1.88	k= 4, v=15

s = 10.522

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.047	0.017	0.13	0.21	0.36
EC10	0.063	0.026	0.15	0.18	0.41
EC25	0.10	0.052	0.20	0.14	0.51
EC50	0.18	0.11	0.28	0.096	0.63

Slope = 2.86 Std.Err. = 0.640

Goodness of fit: p = 0.58 based on DF= 2.0 15.

480VUW : Cucumber shoot weight (g), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	74.2	74.2	0.000231	100.	0.00
0.0750	4.00	65.7	63.6	2.15	85.6	14.4
0.150	4.00	38.2	43.1	-4.88	58.0	42.0
0.310	4.00	21.9	18.0	3.88	24.3	75.7
0.620	4.00	3.28	4.43	-1.15	5.96	94.0

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

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

!!!Warning: EC10 not bracketed by doses evaluated.

Cucumber shoot length (mm), lbs ai/A; Day 21-22

File: 480vul Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	4	281616.940	70404.235	14.894
Within (Error)	15	70902.970	4726.865	
Total	19	352519.910		

Critical F value = 3.06 (0.05,4,15)
 Since F > Critical F **REJECT Ho:All groups equal**

Cucumber shoot length (mm), lbs ai/A; Day 21-22

File: 480vul 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	neg control	349.800	349.800		
2	0.075	335.600	335.600	0.292	
3	0.15	270.850	270.850	1.624	
4	0.31	162.750	162.750	3.848	*
5	0.62	33.250	33.250	6.511	*

Dunnett table value = 2.36 (1 Tailed Value, P=0.05, df=15,4)

Cucumber shoot length (mm), lbs ai/A; Day 21-22

File: 480vul 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	neg control	4			
2	0.075	4	114.732	32.8	14.200
3	0.15	4	114.732	32.8	78.950
4	0.31	4	114.732	32.8	187.050
5	0.62	4	114.732	32.8	316.550

Cucumber shoot length (mm), lbs ai/A; Day 21-22

File: 480vul Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	349.800	349.800	349.800
2	0.075	4	335.600	335.600	335.600
3	0.15	4	270.850	270.850	270.850
4	0.31	4	162.750	162.750	162.750
5	0.62	4	33.250	33.250	33.250

Cucumber shoot length (mm), lbs ai/A; Day 21-22
 File: 480vul 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
neg control	349.800				
0.075	335.600	0.292		1.75	k= 1, v=15
0.15	270.850	1.624		1.84	k= 2, v=15
0.31	162.750	3.848	*	1.87	k= 3, v=15
0.62	33.250	6.511	*	1.88	k= 4, v=15

s = 68.752

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.10	0.036	0.29	0.21	0.35
EC10	0.13	0.052	0.31	0.19	0.41
EC25	0.19	0.095	0.36	0.14	0.51
EC50	0.28	0.18	0.44	0.091	0.64

Slope = 3.68 Std.Err. = 1.16

Goodness of fit: p = 0.90 based on DF= 2.0 15.

480VUL : Cucumber shoot length (mm), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	350.	341.	8.85	100.	0.00
0.0750	4.00	336.	335.	0.373	98.3	1.68
0.150	4.00	271.	288.	-17.5	84.6	15.4
0.310	4.00	163.	151.	11.3	44.4	55.6
0.620	4.00	33.3	36.2	-2.97	10.6	89.4

Lettuce shoot weight (g), lbs ai/A; Day 21-22

File: 480vul Transform: NO TRANSFORMATION

KRUSKAL-WALLIS ANOVA BY RANKS - TABLE 1 OF 2

TRANSFORMED MEAN CALCULATED IN RANK

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

GROUP	IDENTIFICATION	MEAN	ORIGINAL UNITS	SUM
1	neg control	80.547	80.547	66.000
2	0.075	81.468	81.468	66.000
3	0.15	36.585	36.585	42.000
4	0.31	4.463	4.463	26.000
5	0.62	0.178	0.178	10.000

Calculated H Value = 17.384 Critical H Value Table = 9.490
 Since Calc H > Crit H **REJECT Ho:All groups are equal.**

Lettuce shoot weight (g), lbs ai/A; Day 21-22
 File: 480v1w Transform: NO TRANSFORMATION

DUNNS MULTIPLE COMPARISON - KRUSKAL-WALLIS - TABLE 2 OF 2

GROUP	IDENTIFICATION	TRANSFORMED MEAN	ORIGINAL MEAN	GROUP
5	0.62	0.178	0.178	\
4	0.31	4.463	4.463	. \
3	0.15	36.585	36.585	. . \
1	neg control	80.547	80.547	* . . \
2	0.075	81.468	81.468	* . . . \

* = significant difference (p=0.05) . = no significant difference
 Table q value (0.05,5) = 2.807 SE = 4.182

Estimates of EC%

Parameter	Estimate	95% Bounds	Std.Err.	Lower Bound
		Lower Upper		/Estimate
EC5	0.065	0.045 0.092	0.073	0.70
EC10	0.077	0.056 0.11	0.064	0.73
EC25	0.10	0.081 0.13	0.050	0.79
EC50	0.14	0.12 0.17	0.036	0.84

Slope = 4.81 Std.Err. = 0.617

Goodness of fit: p = 0.57 based on DF= 2.0 15.

480VLW : Lettuce shoot weight (g), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	80.5	84.1	-3.56	100.	0.00
0.0750	4.00	81.5	76.5	5.01	90.9	9.09
0.150	4.00	36.6	38.3	-1.67	45.5	54.5
0.310	4.00	4.46	4.34	0.127	5.15	94.8
0.620	4.00	0.177	0.0876	0.0899	0.104	99.9

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

Lettuce shoot length (mm), lbs ai/A; Day 21-22

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

File: 480v11 Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	4	76514.188	19128.547	40.599
Within (Error)	15	7067.290	471.153	
Total	19	83581.478		

Critical F value = 3.06 (0.05,4,15)
 Since F > Critical F **REJECT Ho:All groups equal**

Lettuce shoot length (mm), lbs ai/A; Day 21-22
 File: 480v11 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	neg control	151.600	151.600		
2	0.075	158.850	158.850	-0.472	
3	0.15	154.450	154.450	-0.186	
4	0.31	60.950	60.950	5.906	*
5	0.62	6.600	6.600	9.447	*

Dunnnett table value = 2.36 (1 Tailed Value, P=0.05, df=15,4)

Lettuce shoot length (mm), lbs ai/A; Day 21-22
 File: 480v11 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	neg control	4			
2	0.075	4	36.222	23.9	-7.250
3	0.15	4	36.222	23.9	-2.850
4	0.31	4	36.222	23.9	90.650
5	0.62	4	36.222	23.9	145.000

Lettuce shoot length (mm), lbs ai/A; Day 21-22
 File: 480v11 Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	151.600	151.600	155.225

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}	EPA MRID Number 441848-04				
2	0.075	4	158.850	158.850	155.225
3	0.15	4	154.450	154.450	154.450
4	0.31	4	60.950	60.950	60.950
5	0.62	4	6.600	6.600	6.600

Lettuce shoot length (mm), lbs ai/A; Day 21-22
File: 480vll 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
neg control	155.225				
0.075	155.225	0.236		1.75	k= 1, v=15
0.15	154.450	0.186		1.84	k= 2, v=15
0.31	60.950	5.906	*	1.87	k= 3, v=15
0.62	6.600	9.447	*	1.88	k= 4, v=15

s = 21.706

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.13	0.083	0.21	0.098	0.62
EC10	0.16	0.10	0.24	0.085	0.66
EC25	0.21	0.15	0.28	0.064	0.73
EC50	0.28	0.22	0.35	0.044	0.81

Slope = 5.14 Std.Err. = 0.993

Goodness of fit: p = 0.77 based on DF= 2.0 15.

480VLL : Lettuce shoot length (mm), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	152.	159.	-7.05	100.	0.00
0.0750	4.00	159.	158.	0.477	99.8	0.172
0.150	4.00	154.	145.	9.12	91.6	8.39
0.310	4.00	60.9	64.2	-3.29	40.5	59.5
0.620	4.00	6.60	5.86	0.737	3.70	96.3

Radish shoot weight (g), lbs ai/A; Day 21-22

File: 480vrw Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	4	805.114	201.279	45.975
Within (Error)	15	65.664	4.378	

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

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Total 19 870.779

Critical F value = 3.06 (0.05,4,15)
 Since F > Critical F **REJECT Ho:All groups equal**

Radish shoot weight (g), lbs ai/A; Day 21-22
 File: 480vrw 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	neg control	18.833	18.833		
2	0.075	19.623	19.623	-0.534	
3	0.15	16.968	16.968	1.261	
4	0.31	10.598	10.598	5.566	*
5	0.62	2.765	2.765	10.860	*

Dunnnett table value = 2.36 (1 Tailed Value, P=0.05, df=15,4)

Radish shoot weight (g), lbs ai/A; Day 21-22
 File: 480vrw 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	neg control	4			
2	0.075	4	3.492	18.5	-0.790
3	0.15	4	3.492	18.5	1.865
4	0.31	4	3.492	18.5	8.235
5	0.62	4	3.492	18.5	16.068

Radish shoot weight (g), lbs ai/A; Day 21-22
 File: 480vrw Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	18.833	18.833	19.228
2	0.075	4	19.623	19.623	19.228
3	0.15	4	16.968	16.968	16.968
4	0.31	4	10.598	10.598	10.598
5	0.62	4	2.765	2.765	2.765

Radish shoot weight (g), lbs ai/A; Day 21-22
 File: 480vrw Transform: NO TRANSFORMATION

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

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WILLIAMS TEST (Isotonic regression model) TABLE 2 OF 2

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
neg control	19.228				
0.075	19.228	0.267		1.75	k= 1, v=15
0.15	16.968	1.261		1.84	k= 2, v=15
0.31	10.598	5.566	*	1.87	k= 3, v=15
0.62	2.765	10.860	*	1.88	k= 4, v=15

s = 2.092

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.12	0.077	0.20	0.099	0.62
EC10	0.15	0.10	0.23	0.085	0.66
EC25	0.22	0.16	0.30	0.062	0.74
EC50	0.33	0.27	0.40	0.039	0.83

Slope = 3.87 Std.Err. = 0.617

Goodness of fit: p = 0.87 based on DF= 2.0 15.

480VRW : Radish shoot weight (g), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	18.8	19.1	-0.310	100.	0.00
0.0750	4.00	19.6	19.0	0.600	99.4	0.628
0.150	4.00	17.0	17.4	-0.424	90.9	9.15
0.310	4.00	10.6	10.4	0.171	54.5	45.5
0.620	4.00	2.77	2.80	-0.0373	14.6	85.4

Radish shoot length (mm), lbs ai/A; Dy 21-22

File: 480vrl Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	4	16301.052	4075.263	12.432
Within (Error)	15	4917.260	327.817	
Total	19	21218.312		

Critical F value = 3.06 (0.05,4,15)

Since F > Critical F **REJECT Ho:All groups equal**

Radish shoot length (mm), lbs ai/A; Dy 21-22

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

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File: 480vrl 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	neg control	118.600	118.600		
2	0.075	127.750	127.750	-0.715	
3	0.15	120.100	120.100	-0.117	
4	0.31	105.750	105.750	1.004	
5	0.62	48.900	48.900	5.444	*

Dunnnett table value = 2.36 (1 Tailed Value, P=0.05, df=15,4)

Radish shoot length (mm), lbs ai/A; Dy 21-22
File: 480vrl 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	neg control	4			
2	0.075	4	30.214	25.5	-9.150
3	0.15	4	30.214	25.5	-1.500
4	0.31	4	30.214	25.5	12.850
5	0.62	4	30.214	25.5	69.700

Radish shoot length (mm), lbs ai/A; Dy 21-22
File: 480vrl Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	118.600	118.600	123.175
2	0.075	4	127.750	127.750	123.175
3	0.15	4	120.100	120.100	120.100
4	0.31	4	105.750	105.750	105.750
5	0.62	4	48.900	48.900	48.900

Radish shoot length (mm), lbs ai/A; Dy 21-22
File: 480vrl 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
neg control	123.175				
0.075	123.175	0.357		1.75	k= 1, v=15
0.15	120.100	0.117		1.84	k= 2, v=15
0.31	105.750	1.004		1.87	k= 3, v=15

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

0.62 48.900 5.444 * 1.88 k= 4, v=15

s = 18.106

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.23	0.12	0.46	0.14	0.50
EC10	0.28	0.16	0.49	0.11	0.57
EC25	0.38	0.27	0.55	0.073	0.70
EC50	0.54	0.45	0.65	0.037	0.83

Slope = 4.46 Std.Err. = 1.49

Goodness of fit: p = 0.85 based on DF= 2.0 15.

480VRL : Radish shoot length (mm), lbs ai/A; Dy 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	119.	122.	-3.87	100.	0.00
0.0750	4.00	128.	122.	5.29	100.	0.00622
0.150	4.00	120.	122.	-1.60	99.4	0.631
0.310	4.00	106.	106.	0.213	86.2	13.8
0.620	4.00	48.9	48.9	-0.0282	40.0	60.0

Soybean shoot weight (g), lbs ai/A; Day 21-22

File: 480vsw Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	343.095	57.183	2.788
Within (Error)	21	430.787	20.514	
Total	27	773.883		

Critical F value = 2.57 (0.05,6,21)

Since F > Critical F **REJECT Ho:All groups equal**

Soybean shoot weight (g), lbs ai/A; Day 21-22

File: 480vsw 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	neg control	37.680	37.680		
2	0.020	37.247	37.247	0.135	
3	0.038	35.410	35.410	0.709	

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}	EPA MRID Number 441848-04			
4	0.077	38.623	38.623	-0.294
5	0.15	33.477	33.477	1.312
6	0.33	32.432	32.432	1.638
7	0.68	27.780	27.780	3.091 *

Dunnett table value = 2.46 (1 Tailed Value, P=0.05, df=20,6)

Soybean shoot weight (g), lbs ai/A; Day 21-22
File: 480vsw 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	neg control	4			
2	0.020	4	7.879	20.9	0.433
3	0.038	4	7.879	20.9	2.270
4	0.077	4	7.879	20.9	-0.943
5	0.15	4	7.879	20.9	4.203
6	0.33	4	7.879	20.9	5.248
7	0.68	4	7.879	20.9	9.900

Soybean shoot weight (g), lbs ai/A; Day 21-22
File: 480vsw Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	37.680	37.680	37.680
2	0.020	4	37.247	37.247	37.247
3	0.038	4	35.410	35.410	37.016
4	0.077	4	38.623	38.623	37.016
5	0.15	4	33.477	33.477	33.477
6	0.33	4	32.432	32.432	32.432
7	0.68	4	27.780	27.780	27.780

Soybean shoot weight (g), lbs ai/A; Day 21-22
File: 480vsw 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
neg control	37.680				
0.020	37.247	0.135		1.72	k= 1, v=21
0.038	37.016	0.207		1.80	k= 2, v=21
0.077	37.016	0.207		1.83	k= 3, v=21
0.15	33.477	1.312		1.84	k= 4, v=21
0.33	32.432	1.638		1.85	k= 5, v=21
0.68	27.780	3.091	*	1.85	k= 6, v=21

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

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s = 4.529

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.12	0.017	0.81	0.41	0.15
EC10	0.22	0.062	0.82	0.27	0.28
EC25	0.66	0.36	1.2	0.13	0.54
EC50	2.2	0.51	9.3	0.30	0.24

Slope = 1.30 Std.Err. = 0.678

Goodness of fit: p = 0.74 based on DF= 4.0 21.

480VSW : Soybean shoot weight (g), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	37.7	37.4	0.298	100.	0.00
0.0200	4.00	37.2	37.2	0.0173	99.6	0.407
0.0380	4.00	35.4	37.0	-1.55	98.9	1.12
0.0770	4.00	38.6	36.3	2.35	97.0	2.96
0.150	4.00	33.5	34.9	-1.46	93.4	6.55
0.330	4.00	32.4	32.0	0.407	85.7	14.3
0.680	4.00	27.8	27.8	-0.0598	74.5	25.5

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

Soybean shoot length (mm), lbs ai/A; Day 21-22

File: 480vsl Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	1408.314	234.719	0.427
Within (Error)	21	11536.890	549.376	
Total	27	12945.204		

Critical F value = 2.57 (0.05,6,21)

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

Soybean shoot length (mm), lbs ai/A; Day 21-22

File: 480vsl 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	neg control	276.450	276.450		

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Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}	EPA MRID Number 441848-04			
2	0.020	269.800	269.800	0.401
3	0.038	261.550	261.550	0.899
4	0.077	266.300	266.300	0.612
5	0.15	281.650	281.650	-0.314
6	0.33	277.600	277.600	-0.069
7	0.68	280.700	280.700	-0.256

Dunnett table value = 2.46 (1 Tailed Value, P=0.05, df=20,6)

Soybean shoot length (mm), lbs ai/A; Day 21-22
File: 480vsl 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	neg control	4			
2	0.020	4	40.771	14.7	6.650
3	0.038	4	40.771	14.7	14.900
4	0.077	4	40.771	14.7	10.150
5	0.15	4	40.771	14.7	-5.200
6	0.33	4	40.771	14.7	-1.150
7	0.68	4	40.771	14.7	-4.250

Soybean shoot length (mm), lbs ai/A; Day 21-22
File: 480vsl Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	276.450	276.450	268.525
2	0.020	4	269.800	269.800	268.525
3	0.038	4	261.550	261.550	268.525
4	0.077	4	266.300	266.300	268.525
5	0.15	4	281.650	281.650	279.625
6	0.33	4	277.600	277.600	279.625
7	0.68	4	280.700	280.700	280.700

Soybean shoot length (mm), lbs ai/A; Day 21-22
File: 480vsl 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
neg control	268.525				
0.020	268.525	0.478		1.72	k= 1, v=21
0.038	268.525	0.478		1.80	k= 2, v=21
0.077	268.525	0.478		1.83	k= 3, v=21
0.15	279.625	0.192		1.84	k= 4, v=21
0.33	279.625	0.192		1.85	k= 5, v=21

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....} EPA MRID Number 441848-04
 0.68 280.700 0.256 1.85 k= 6, v=21

s = 23.439
 Note: df used for table values are approximate when v > 20.

Tomato (test 1) shoot weight (g), lbs ai/A; Day 21-22
 File: 480tlw Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	3	3020.894	1006.965	168.671
Within (Error)	12	71.638	5.970	
Total	15	3092.531		

Critical F value = 3.49 (0.05,3,12)
 Since F > Critical F **REJECT Ho:All groups equal**

Tomato (test 1) shoot weight (g), lbs ai/A; Day 21-22
 File: 480tlw 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	neg control	39.790	39.790		
2	0.075	35.870	35.870	2.269	
3	0.15	28.958	28.958	6.270	*
4	0.31	4.430	4.430	20.466	*

Dunnnett table value = 2.29 (1 Tailed Value, P=0.05, df=12,3)

Tomato (test 1) shoot weight (g), lbs ai/A; Day 21-22
 File: 480tlw 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	neg control	4			
2	0.075	4	3.956	9.9	3.920
3	0.15	4	3.956	9.9	10.833
4	0.31	4	3.956	9.9	35.360

Tomato (test 1) shoot weight (g), lbs ai/A; Day 21-22
 File: 480tlw Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	39.790	39.790	39.790
2	0.075	4	35.870	35.870	35.870
3	0.15	4	28.958	28.958	28.958
4	0.31	4	4.430	4.430	4.430

Tomato (test 1) shoot weight (g), lbs ai/A; Day 21-22
 File: 480tlw 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
neg control	39.790				
0.075	35.870	2.269	*	1.78	k= 1, v=12
0.15	28.958	6.270	*	1.87	k= 2, v=12
0.31	4.430	20.467	*	1.90	k= 3, v=12

s = 2.443

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.10	0.078	0.14	0.057	0.75
EC10	0.12	0.093	0.15	0.050	0.78
EC25	0.15	0.13	0.18	0.038	0.83
EC50	0.20	0.17	0.22	0.026	0.88

Slope = 5.99 Std.Err. = 0.779

Goodness of fit: p = 0.33 based on DF= 1.0 12.

480T1W : Tomato (test 1) shoot weight (g), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	39.8	38.0	1.77	100.	0.00
0.0750	4.00	35.9	37.8	-1.91	99.4	0.622
0.150	4.00	29.0	28.8	0.166	75.7	24.3
0.310	4.00	4.43	4.45	-0.0199	11.7	88.3

Tomato (test 1) shoot length (mm), lbs ai/A; Day 21-22

File: 480t11 Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	3	27826.962	9275.654	26.061

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}	EPA MRID Number 441848-04		
Within (Error)	12	4271.027	355.919
Total	15	32097.989	

Critical F value = 3.49 (0.05,3,12)
 Since F > Critical F **REJECT Ho:All groups equal**

Tomato (test 1) shoot length (mm), lbs ai/A; Day 21-22
 File: 480t11 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	neg control	150.275	150.275		
2	0.075	136.200	136.200	1.055	
3	0.15	129.900	129.900	1.527	
4	0.31	44.000	44.000	7.967	*

Dunnnett table value = 2.29 (1 Tailed Value, P=0.05, df=12,3)

Tomato (test 1) shoot length (mm), lbs ai/A; Day 21-22
 File: 480t11 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	neg control	4			
2	0.075	4	30.549	20.3	14.075
3	0.15	4	30.549	20.3	20.375
4	0.31	4	30.549	20.3	106.275

Tomato (test 1) shoot length (mm), lbs ai/A; Day 21-22
 File: 480t11 Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	150.275	150.275	150.275
2	0.075	4	136.200	136.200	136.200
3	0.15	4	129.900	129.900	129.900
4	0.31	4	44.000	44.000	44.000

Tomato (test 1) shoot length (mm), lbs ai/A; Day 21-22
 File: 480t11 Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 2 OF 2

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

IDENTIFICATION	ISOTONIZED MEAN	CALC. WILLIAMS	SIG P=.05	TABLE WILLIAMS	DEGREES OF FREEDOM
neg control	150.275				
0.075	136.200	1.055		1.78	k= 1, v=12
0.15	129.900	1.527		1.87	k= 2, v=12
0.31	44.000	7.967	*	1.90	k= 3, v=12

s = 18.866

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.13	0.070	0.24	0.13	0.54
EC10	0.15	0.090	0.25	0.10	0.59
EC25	0.19	0.13	0.28	0.072	0.70
EC50	0.25	0.21	0.31	0.038	0.83

Slope = 5.72 Std.Err. = 1.88

Goodness of fit: p = 0.46 based on DF= 1.0 12.

480T1L : Tomato (test 1) shoot length (mm), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	150.	143.	6.79	100.	0.00
0.0750	4.00	136.	143.	-7.11	99.9	0.126
0.150	4.00	130.	130.	0.345	90.3	9.71
0.310	4.00	44.0	44.0	-0.00796	30.7	69.3

Tomato (test 2) shoot weight (g), lbs ai/A; Day 21-22

File: 480t2w Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	81.279	13.547	0.606
Within (Error)	21	469.798	22.371	
Total	27	551.077		

Critical F value = 2.57 (0.05,6,21)

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

Tomato (test 2) shoot weight (g), lbs ai/A; Day 21-22

File: 480t2w Transform: NO TRANSFORMATION

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

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	neg control	34.938	34.938		
2	0.011	37.030	37.030	-0.626	
3	0.020	34.968	34.968	-0.009	
4	0.038	37.450	37.450	-0.751	
5	0.077	35.003	35.003	-0.019	
6	0.15	34.997	34.997	-0.018	
7	0.33	31.778	31.778	0.945	

Dunnett table value = 2.46 (1 Tailed Value, P=0.05, df=20,6)

Tomato (test 2) shoot weight (g), lbs ai/A; Day 21-22
File: 480t2w 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	neg control	4			
2	0.011	4	8.227	23.5	-2.093
3	0.020	4	8.227	23.5	-0.030
4	0.038	4	8.227	23.5	-2.513
5	0.077	4	8.227	23.5	-0.065
6	0.15	4	8.227	23.5	-0.060
7	0.33	4	8.227	23.5	3.160

Tomato (test 2) shoot weight (g), lbs ai/A; Day 21-22
File: 480t2w Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	34.938	34.938	36.096
2	0.011	4	37.030	37.030	36.096
3	0.020	4	34.968	34.968	36.096
4	0.038	4	37.450	37.450	36.096
5	0.077	4	35.003	35.003	35.003
6	0.15	4	34.997	34.997	34.997
7	0.33	4	31.778	31.778	31.778

Tomato (test 2) shoot weight (g), lbs ai/A; Day 21-22
File: 480t2w 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
neg control	36.096				
0.011	36.096	0.346		1.72	k= 1, v=21

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}	EPA MRID Number 441848-04				
0.020	36.096	0.346	1.80	k= 2, v=21	
0.038	36.096	0.346	1.83	k= 3, v=21	
0.077	35.003	0.019	1.84	k= 4, v=21	
0.15	34.997	0.018	1.85	k= 5, v=21	
0.33	31.778	0.945	1.85	k= 6, v=21	

s = 4.730

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.19	0.036	1.0	0.35	0.19
EC10	0.30	0.13	0.69	0.18	0.43
EC25	0.61	0.086	4.4	0.41	0.14
EC50	1.4	0.022	86.	0.87	0.016

Slope = 1.94 Std.Err. = 2.67

Goodness of fit: p = 0.90 based on DF= 4.0 21.

480T2W : Tomato (test 2) shoot weight (g), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	34.9	36.0	-1.04	100.	0.00
0.0110	4.00	37.0	36.0	1.06	100.	0.00251
0.0200	4.00	35.0	36.0	-1.00	100.	0.0192
0.0380	4.00	37.5	35.9	1.52	99.9	0.130
0.0770	4.00	35.0	35.7	-0.691	99.2	0.781
0.150	4.00	35.0	34.8	0.163	96.8	3.17
0.330	4.00	31.8	31.8	-0.0120	88.4	11.6

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

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

Tomato (test 2) shoot length (mm), lbs ai/A; Day 21-22

File: 480t21 Transform: NO TRANSFORMATION

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	1752.460	292.077	0.496
Within (Error)	21	12367.510	588.929	
Total	27	14119.970		

Critical F value = 2.57 (0.05,6,21)

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

Tomato (test 2) shoot length (mm), lbs ai/A; Day 21-22

Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

File: 480t21 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	neg control	194.000	194.000		
2	0.011	193.550	193.550	0.026	
3	0.020	189.350	189.350	0.271	
4	0.038	186.350	186.350	0.446	
5	0.077	191.350	191.350	0.154	
6	0.15	180.200	180.200	0.804	
7	0.33	170.350	170.350	1.378	

Dunnett table value = 2.46 (1 Tailed Value, P=0.05, df=20,6)

Tomato (test 2) shoot length (mm), lbs ai/A; Day 21-22
File: 480t21 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	neg control	4			
2	0.011	4	42.214	21.8	0.450
3	0.020	4	42.214	21.8	4.650
4	0.038	4	42.214	21.8	7.650
5	0.077	4	42.214	21.8	2.650
6	0.15	4	42.214	21.8	13.800
7	0.33	4	42.214	21.8	23.650

Tomato (test 2) shoot length (mm), lbs ai/A; Day 21-22
File: 480t21 Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	neg control	4	194.000	194.000	194.000
2	0.011	4	193.550	193.550	193.550
3	0.020	4	189.350	189.350	189.350
4	0.038	4	186.350	186.350	188.850
5	0.077	4	191.350	191.350	188.850
6	0.15	4	180.200	180.200	180.200
7	0.33	4	170.350	170.350	170.350

Tomato (test 2) shoot length (mm), lbs ai/A; Day 21-22
File: 480t21 Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 2 OF 2

ISOTONIZED	CALC.	SIG	TABLE	DEGREES OF
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Data Evaluation Report on the Acute Toxicity of Propazine to Terrestrial Vascular Plants: Vegetative Vigor

PMRA Submission Number {.....}

EPA MRID Number 441848-04

IDENTIFICATION	MEAN	WILLIAMS	P=.05	WILLIAMS	FREEDOM
neg control	194.000				
0.011	193.550	0.026		1.72	k= 1, v=21
0.020	189.350	0.271		1.80	k= 2, v=21
0.038	188.850	0.300		1.83	k= 3, v=21
0.077	188.850	0.300		1.84	k= 4, v=21
0.15	180.200	0.804		1.85	k= 5, v=21
0.33	170.350	1.378		1.85	k= 6, v=21

s = 24.268

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

Estimates of EC%

Parameter	Estimate	95% Bounds		Std.Err.	Lower Bound /Estimate
		Lower	Upper		
EC5	0.13	0.0076	2.1	0.59	0.061
EC10	0.27	0.063	1.2	0.31	0.23
EC25	1.0	0.044	23.	0.66	0.044
EC50	4.4	0.0060	3.2E+03	1.4	0.0014

Slope = 1.06 Std.Err. = 1.29

Goodness of fit: p = 0.99 based on DF= 4.0 21.

480T2L : Tomato (test 2) shoot length (mm), lbs ai/A; Day 21-22

Observed vs. Predicted Treatment Group Means

Dose	#Reps.	Obs. Mean	Pred. Mean	Obs. -Pred.	Pred. %Control	%Change
0.00	4.00	194.	193.	1.24	100.	0.00
0.0110	4.00	194.	192.	1.34	99.7	0.282
0.0200	4.00	189.	192.	-2.18	99.4	0.635
0.0380	4.00	186.	190.	-3.70	98.6	1.41
0.0770	4.00	191.	187.	4.53	96.9	3.08
0.150	4.00	180.	181.	-1.13	94.1	5.93
0.330	4.00	170.	170.	-0.0954	88.4	11.6

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

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

US EPA ARCHIVE DOCUMENT