DATA EVALUATION RECORD
FRESHWATER FISH EARLY LIFE-STAGE TEST
GUIDELINE 72-4(A)

1. CHEMICAL: Alachlor
   Shaughnessey #: 090501

2. TEST MATERIAL: Alachlor technical
   Purity:

3. CITATION:

   Authors: Rhodes, Jon E. and Michelle Muckerman
   Title: Early Life-Stage Toxicity of Alachlor to the
   Rainbow Trout (Oncorhynchus mykiss) Under Flow-
   Through Conditions
   Study Completion Date: 6/20/95
   Duration of Exposure: 96 days
   Laboratory: ABC Laboratories, Columbia, Mo.
   Laboratory Report ID: ABC # 42187
   Sponsor: Monsanto Chemical Company
   MRID No.: 438626-01
   Barcode: D221890

4. REVIEWED BY: Brian Montague, Fisheries Biologist
   Ecological Effects Branch, EFED
   Signature: [Signature]
   Date: 3/7/96

5. APPROVED BY: Les Foucart PhD, Section Supervisor
   Ecological Effects Branch, EFED (7507C)
   Signature: [Signature]
   Date: 3/8/96

6. CONCLUSIONS: The study has shown Alachlor to be highly toxic
   to rainbow trout when chronically exposed from eggs to 60
   days post hatch. Growth (both length and weight) were
   significantly affected. Survival was also affected at
   higher dosage levels. No effects were observed on hatch
   success or time to hatch (avg 36 days all levels).
   Exophthalmia was noted at 1.63 mg ai/L in some fry as was a
   3 day delay in time to swim-up of larvae.

   Parameter Effected    LOEC    NOEC
   A. Growth (length)    0.388 PPM 0.187 PPM
   B. Growth (wet wt.)   0.388 PPM 0.187 PPM
   C. Posthatch Srv. (60D) 1.63 PPM 0.809 PPM

7. ADEQUACY OF THE STUDY:
   A. Classification: Core

   B. Rationale: Study was conducted according to EPA accepted
      methodology and study director's conclusions are supported
      by the Agency's independent statistical analysis.

   C. Reparability: N.A.
8. **MAJOR GUIDELINE DEVIATIONS:** No major guideline deviations were noted. A finer mesh screen is recommended for embryo cups in Agency guidelines. At termination it was discovered that one control fish was missing and that the dilution control had mysterious gained a new occupant. Since the controls were pooled in the laboratory analysis this would have been accounted for in the overall comparisons.

9. **MATERIALS AND METHODS:**

   **A. Biological System:**

<table>
<thead>
<tr>
<th>Guideline Criteria</th>
<th>Reported Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Species:</strong></td>
<td>Onchorhyncus mykiss</td>
</tr>
<tr>
<td><strong>Source</strong></td>
<td>Unfertilized eggs obtained from Mt. Lassen Trout Farms on March 15, 1995.</td>
</tr>
<tr>
<td><strong>Age at beginning of test:</strong></td>
<td>Eggs were fertilized 1 hour before intro into incubation cups.</td>
</tr>
<tr>
<td>Embryos 2 to 24 hours old.</td>
<td></td>
</tr>
<tr>
<td><strong>Replicates:</strong> Minimum of 20 embryos per replicate cup, 4 replicates per concentration.</td>
<td>30 embryos/cup 4 replicate cups/test level (50 embryos used in dilution control cups)</td>
</tr>
<tr>
<td>Minimum of 30 fish per treatment for post-hatch exposure.</td>
<td></td>
</tr>
<tr>
<td><strong>Post Hatch:</strong> % Viability and Hatch Success</td>
<td>76-90% Viable Eggs-Controls 93-100% Egghatch-All levels</td>
</tr>
<tr>
<td><strong>Feeding:</strong> Feed Schedule and Types of Feed utilized.</td>
<td>12 Days Posthatch-live brine shrimp. 21 Days posthatch-salmon starter added to diet. Finally starter pellets were fed. Feeding-2-3 times per day minimum. Food withheld 24 hours prior to termination.</td>
</tr>
<tr>
<td><strong>Counts:</strong> Posthatch Fry Counts and Observation Frequency</td>
<td>Daily Counts and observations of fry mortality were made.</td>
</tr>
<tr>
<td><strong>Controls Survival:</strong> Mean and Individual Replicate</td>
<td>Control and Solvent Control Survival: Mean=98.7% Min. Replicate=&gt;93%</td>
</tr>
<tr>
<td><strong>Solvent Controls:</strong></td>
<td>Solvent Control employed</td>
</tr>
</tbody>
</table>

**Comments:**
### B. Physical System:

<table>
<thead>
<tr>
<th>Guideline Criteria</th>
<th>Reported Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test Water:</strong></td>
<td>Well water subjected to reverse osmosis and then blended with unfiltered well water. Subsequent blend then polypropene cartridge filtered and UV sterilized. Hardness:136-152 mg/L as CaCO3 pH: 7.94-8.36</td>
</tr>
<tr>
<td>Source</td>
<td>Replicate Means=10.1-10.5°C Overall Range=9.5-11.0°C</td>
</tr>
<tr>
<td>Filtration procedures</td>
<td></td>
</tr>
<tr>
<td>Hardness Range</td>
<td></td>
</tr>
<tr>
<td>pH Range</td>
<td></td>
</tr>
<tr>
<td><strong>Photoperiod and Intensity:</strong></td>
<td>Embryos-darkness until 1 week post hatch. Thereafter, all aquaria at 16D/8N photoperiod at 37-49 footcandle intensity</td>
</tr>
<tr>
<td><strong>Dosing Apparatus:</strong></td>
<td>2-L proportional diluter (Mount and Brungs) with introduction of test solution to each test exposure chamber. Dilution factor=0.5. Construction: Plate glass, silicon adhesive, glass delivery tubing.</td>
</tr>
<tr>
<td>Type and description of construction materials</td>
<td></td>
</tr>
<tr>
<td><strong>Toxicant Mixing:</strong></td>
<td>Flow splitting and mixing cells divided each aliquot before delivery to test aquaria where they were split again. Pretest and day 95 volumetric measurement were made: &lt;10% variation.</td>
</tr>
<tr>
<td><strong>Test Vessels:</strong> Description and materials</td>
<td>Glass aquaria divided in half with a glass partition. Individual chambers measured 15.8x30.4 cm with 24.3 cm depth. Volume-11.7 L. Screened side drains on each chamber. Top screens after swim-up.</td>
</tr>
<tr>
<td><strong>Embryo Cups:</strong> Description and materials.</td>
<td>Glass jars-9 cm diameter-with ends covered with 16 mesh Nytex screen. Suspended on steel wire and oscillated by motor driven rocker arm.</td>
</tr>
</tbody>
</table>
### Guideline Criteria | Reported Information
---|---
**Flow Rate:** Rate and volume replacements per day. | Initial Rate: 95.5 L/replicate/day with an 8.2 volume replacement rate per day. This was gradually increased to 138 L/rep/Day as biomass load increased.

**Biologal Factor** | 0.189 g/L/day at study termin.

**Aeration:** | Not described

**Comments:** No comments.

#### C. Chemical System:

### Guideline Criteria | Reported Information
---|---
**Concentrations:** Nominal concentration spred: | -0.11, 0.23, 0.45, 0.90, 1.8 mg ai/L with solvent & dilution controls.

**Toxicant concentration measurement regime:** | -10 ml concentration samples from 2 of 4 replicates were composited on alternate sample days and analyzed using GL Chromatography with ECD detection. Sample days were days -6, 0, 1, 7, and weekly thereafter.

**Water Quality Measurement:** 2) Freshwater parameters in a control and one concentration must be analyzed once a week. | **DO:** Measured alternately in 2 of 4 reps (each level) on days 0, 1, 7 and weekly thereafter. **Temperature:** measured days 0, 1, 7 and weekly thereafter in 2 of 4 replicates - each conc. Continuous temp. meas - one replicate centrally located. **Conductivity, Hardness, Alkalinity and pH:** Day 0 and weekly thereafter in 1 replicate of control, 0.11, 0.45, and 1.8 test levels.

**Solvents:** | Stock Solutions: 7.452 g alachlor in 100 ml DMF Highest Conc. 0.025 ml DMF/L

**Comments:**

10. **REPORTED RESULTS:**
<table>
<thead>
<tr>
<th>Guideline Criteria</th>
<th>Reported Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data Endpoints</strong></td>
<td>1. % Egg Hatch Success</td>
</tr>
<tr>
<td>Biological Endpoints Monitored during this study:</td>
<td>2. Time to Hatch</td>
</tr>
<tr>
<td></td>
<td>3. Viability</td>
</tr>
<tr>
<td></td>
<td>3. 35 Day and 60 Day Hatch Survival</td>
</tr>
<tr>
<td></td>
<td>4. 35D and 60D Length</td>
</tr>
<tr>
<td></td>
<td>5. 60D blotted wet weight</td>
</tr>
<tr>
<td></td>
<td>6. Time to Swimup</td>
</tr>
<tr>
<td></td>
<td>7. Behavioral and physical aberrations.</td>
</tr>
</tbody>
</table>

**Raw data:** Raw data is included with report.

**Effects Data:** All data below is based on mean of 4 replicates per concentration level.

<table>
<thead>
<tr>
<th>Toxicant Conc. (μg/L)</th>
<th>% Hatch</th>
<th>Time to Hatch</th>
<th>35D Survival</th>
<th>60D Survival</th>
<th>Total Length (mm)</th>
<th>Wet wt (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nom.</strong></td>
<td><strong>M.Meas</strong></td>
<td><strong>%</strong></td>
<td><strong>Days</strong></td>
<td><strong>%</strong></td>
<td><strong>%</strong></td>
<td><strong>35D</strong></td>
</tr>
<tr>
<td>Ctrl</td>
<td>100</td>
<td>36</td>
<td>98.3</td>
<td>98.3</td>
<td>33.9</td>
<td>47.3</td>
</tr>
<tr>
<td>Solv</td>
<td>100</td>
<td>35</td>
<td>100</td>
<td>98.3</td>
<td>34.1</td>
<td>47.8</td>
</tr>
<tr>
<td>0.11</td>
<td>0.0945</td>
<td>100</td>
<td>36</td>
<td>100</td>
<td>100</td>
<td>33.9</td>
</tr>
<tr>
<td>0.23</td>
<td>0.187</td>
<td>100</td>
<td>36</td>
<td>100</td>
<td>98.3</td>
<td>33.9</td>
</tr>
<tr>
<td>0.45</td>
<td>0.388</td>
<td>100</td>
<td>37</td>
<td>100</td>
<td>98.3</td>
<td>33.0</td>
</tr>
<tr>
<td>0.90</td>
<td>0.809</td>
<td>98.3</td>
<td>36</td>
<td>96.7</td>
<td>93.3</td>
<td>33.1</td>
</tr>
<tr>
<td>1.8</td>
<td>1.63</td>
<td>100</td>
<td>37</td>
<td>96.7</td>
<td>88.3</td>
<td>29.3</td>
</tr>
</tbody>
</table>

**Toxicity Observations:** In the 1.63 mg/L concentration fish were observed resting on the bottom, displaying irregular respiration, and exophthalmia. They were not noted in other concentration levels. Time to swimup was delayed in the 1.63 mg ai/L test concentration by 3 days over the lower concentrations and controls (52 days vs. 48-49 days).

**Statistical Results:**
Statistical Method: Contingency tables for proportional scale data. Untransformed ANOVA and one tailed Dunnet's multiple comparison. SAS with p≤0.05.
NOEC: 0.187 mg ai/L  LOEC: 0.388 mg ai/L  MATC: 0.269
Most sensitive endpoint: Growth

Comments: None

11. Reviewer's Statistical Results:

   Statistical Method: Dunnett's, Bonferroni T, and William's Test using Toxstat.

   NOEL: 0.187 PPM  LOEC: 0.388 PPM  MATC: N.D.

   Most sensitive endpoint: Growth, 60 Day length and weight

Comments:

12. COMPLETION OF ONE-LINER FOR STUDY: Yes
### Table 1 of 2

<table>
<thead>
<tr>
<th>IDENTIFICATION</th>
<th>N</th>
<th>MIN</th>
<th>MAX</th>
<th>MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvent Control</td>
<td>4</td>
<td>46.80</td>
<td>48.20</td>
<td>47.800</td>
</tr>
<tr>
<td>Dilution Control</td>
<td>4</td>
<td>46.10</td>
<td>48.40</td>
<td>47.375</td>
</tr>
<tr>
<td>0.0945</td>
<td>4</td>
<td>46.40</td>
<td>48.40</td>
<td>47.425</td>
</tr>
<tr>
<td>0.187</td>
<td>4</td>
<td>46.80</td>
<td>47.20</td>
<td>46.950</td>
</tr>
<tr>
<td>0.388</td>
<td>4</td>
<td>44.70</td>
<td>46.80</td>
<td>45.775</td>
</tr>
<tr>
<td>0.809</td>
<td>4</td>
<td>44.30</td>
<td>45.90</td>
<td>44.800</td>
</tr>
<tr>
<td>1.63</td>
<td>4</td>
<td>34.70</td>
<td>35.70</td>
<td>35.250</td>
</tr>
</tbody>
</table>

### Table 2 of 2

<table>
<thead>
<tr>
<th>IDENTIFICATION</th>
<th>VARIANCE</th>
<th>SD</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvent Control</td>
<td>0.447</td>
<td>0.668</td>
<td>0.334</td>
</tr>
<tr>
<td>Dilution Control</td>
<td>1.143</td>
<td>1.069</td>
<td>0.534</td>
</tr>
<tr>
<td>0.0945</td>
<td>0.749</td>
<td>0.866</td>
<td>0.433</td>
</tr>
<tr>
<td>0.187</td>
<td>0.037</td>
<td>0.191</td>
<td>0.096</td>
</tr>
<tr>
<td>0.388</td>
<td>0.842</td>
<td>0.918</td>
<td>0.459</td>
</tr>
<tr>
<td>0.809</td>
<td>0.553</td>
<td>0.744</td>
<td>0.372</td>
</tr>
<tr>
<td>1.63</td>
<td>0.230</td>
<td>0.480</td>
<td>0.240</td>
</tr>
</tbody>
</table>

### ANOVA Table

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>6</td>
<td>475.387</td>
<td>79.231</td>
<td>138.516</td>
</tr>
<tr>
<td>Within (Error)</td>
<td>21</td>
<td>12.002</td>
<td>0.572</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>487.390</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Critical F value = 2.57 (0.05,6,21)
Since $F >$ Critical F REJECT $H_0$: All groups equal
### DUNNETTS TEST - TABLE 1 OF 2

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>TRANSFORMED MEAN</th>
<th>MEAN CALCULATED IN ORIGINAL UNITS</th>
<th>T STAT</th>
<th>SIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent Control</td>
<td>47.800</td>
<td>47.800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Dilution Control</td>
<td>47.375</td>
<td>47.375</td>
<td>0.795</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>47.425</td>
<td>47.425</td>
<td>0.701</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>46.950</td>
<td>46.950</td>
<td>1.589</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>45.775</td>
<td>45.775</td>
<td>3.787  *</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>44.800</td>
<td>44.800</td>
<td>5.610  *</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>35.250</td>
<td>35.250</td>
<td>23.467 *</td>
<td></td>
</tr>
</tbody>
</table>

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

### Alachlor Rainbow Trout ELS 60D Length

#### DUNNETTS TEST - TABLE 2 OF 2

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>NUM OF REPS</th>
<th>Minimum Sig Diff (IN ORIG. UNITS)</th>
<th>% of CONTROL</th>
<th>DIFFERENCE FROM CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent Control</td>
<td>4</td>
<td>1.316</td>
<td>2.8</td>
<td>0.425</td>
</tr>
<tr>
<td>2</td>
<td>Dilution Control</td>
<td>4</td>
<td>1.316</td>
<td>2.8</td>
<td>0.375</td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>4</td>
<td>1.316</td>
<td>2.8</td>
<td>0.850</td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>4</td>
<td>1.316</td>
<td>2.8</td>
<td>2.025</td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>4</td>
<td>1.316</td>
<td>2.8</td>
<td>3.000</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>4</td>
<td>1.316</td>
<td>2.8</td>
<td>12.550</td>
</tr>
</tbody>
</table>

### Alachlor Rainbow Trout ELS 60D Length

#### ANOVA TABLE

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>6</td>
<td>475.387</td>
<td>79.231</td>
<td>138.516</td>
</tr>
<tr>
<td>Within (Error)</td>
<td>21</td>
<td>12.002</td>
<td>0.572</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>487.390</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Since F > Critical F  REJECT Ho:All groups equal

### Alachlor Rainbow Trout ELS 60D Length

#### NO TRANSFORM
### Bonferroni T-Test

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>TRANSFORMED MEAN</th>
<th>MEAN CALCULATED IN ORIGINAL UNITS</th>
<th>T STAT</th>
<th>SIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent Control</td>
<td>47.800</td>
<td>47.800</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Dilution Control</td>
<td>47.375</td>
<td>47.375</td>
<td>0.795</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>47.425</td>
<td>47.425</td>
<td>0.701</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>46.950</td>
<td>46.950</td>
<td>1.589</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>45.775</td>
<td>45.775</td>
<td>3.787</td>
<td>*</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>44.800</td>
<td>44.800</td>
<td>5.610</td>
<td>*</td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>35.250</td>
<td>35.250</td>
<td>23.467</td>
<td>*</td>
</tr>
</tbody>
</table>

Bonferroni T table value = 2.60 (1 Tailed Value, P=0.05, df=21,6)

### Alachlor Rainbow Trout ELS 60D Length

File: AlacRBT.len Transform: NO TRANSFORM

### Bonferroni T-Test

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>NUM OF REPS</th>
<th>Minimum Sig Diff (IN ORIG. UNITS)</th>
<th>% of CONTROL</th>
<th>DIFFERENCE FROM CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent Control</td>
<td>4</td>
<td>1.392</td>
<td>2.9</td>
<td>0.425</td>
</tr>
<tr>
<td>2</td>
<td>Dilution Control</td>
<td>4</td>
<td>1.392</td>
<td>2.9</td>
<td>0.375</td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>4</td>
<td>1.392</td>
<td>2.9</td>
<td>0.850</td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>4</td>
<td>1.392</td>
<td>2.9</td>
<td>2.025</td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>4</td>
<td>1.392</td>
<td>2.9</td>
<td>3.000</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>4</td>
<td>1.392</td>
<td>2.9</td>
<td>12.550</td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>4</td>
<td>1.392</td>
<td>2.9</td>
<td></td>
</tr>
</tbody>
</table>

### Alachlor Rainbow Trout ELS 60D Length

File: AlacRBT.len Transform: NO TRANSFORM

#### Williams Test (Isotonic regression model)

### Table 1 of 2

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>N</th>
<th>ORIGINAL MEAN</th>
<th>TRANSFORMED MEAN</th>
<th>ISOTONIZED MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent Control</td>
<td>4</td>
<td>47.800</td>
<td>47.800</td>
<td>47.800</td>
</tr>
<tr>
<td>2</td>
<td>Dilution Control</td>
<td>4</td>
<td>47.375</td>
<td>47.375</td>
<td>47.400</td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>4</td>
<td>47.425</td>
<td>47.425</td>
<td>47.400</td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>4</td>
<td>46.950</td>
<td>46.950</td>
<td>46.950</td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>4</td>
<td>45.775</td>
<td>45.775</td>
<td>45.775</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>4</td>
<td>44.800</td>
<td>44.800</td>
<td>44.800</td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>4</td>
<td>35.250</td>
<td>35.250</td>
<td>35.250</td>
</tr>
</tbody>
</table>

### Alachlor Rainbow Trout ELS 60D Length

File: AlacRBT.len Transform: NO TRANSFORM

#### Williams Test (Isotonic regression model)

### Table 2 of 2
<table>
<thead>
<tr>
<th>IDENTIFICATION</th>
<th>ISOTONIZED MEAN</th>
<th>CALC. WILLIAMS</th>
<th>SIG P=.05</th>
<th>TABLE WILLIAMS</th>
<th>DEGREES OF FREEDOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvent Control</td>
<td>47.800</td>
<td></td>
<td></td>
<td>1.72</td>
<td>k= 1, v=21</td>
</tr>
<tr>
<td>Dilution Control</td>
<td>47.400</td>
<td>0.748</td>
<td></td>
<td>1.80</td>
<td>k= 2, v=21</td>
</tr>
<tr>
<td>0.0945</td>
<td>47.400</td>
<td>0.748</td>
<td></td>
<td>1.83</td>
<td>k= 3, v=21</td>
</tr>
<tr>
<td>0.187</td>
<td>46.950</td>
<td>1.590</td>
<td></td>
<td>1.84</td>
<td>k= 4, v=21</td>
</tr>
<tr>
<td>0.388</td>
<td>45.775</td>
<td>3.788</td>
<td>*</td>
<td>1.85</td>
<td>k= 5, v=21</td>
</tr>
<tr>
<td>0.809</td>
<td>44.800</td>
<td>5.612</td>
<td>*</td>
<td>1.85</td>
<td>k= 6, v=21</td>
</tr>
<tr>
<td>1.63</td>
<td>35.250</td>
<td>23.476</td>
<td>*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

s = 0.756

Note: df used for table values are approximate when v > 20.
### SUMMARY STATISTICS ON TRANSFORMED DATA  
#### TABLE 1 of 2

<table>
<thead>
<tr>
<th>_GRP</th>
<th>IDENTIFICATION</th>
<th>N</th>
<th>MIN</th>
<th>MAX</th>
<th>MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent C</td>
<td>4</td>
<td>1.562</td>
<td>1.722</td>
<td>1.677</td>
</tr>
<tr>
<td>2</td>
<td>Dilution C</td>
<td>4</td>
<td>1.498</td>
<td>1.759</td>
<td>1.644</td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>4</td>
<td>1.568</td>
<td>1.743</td>
<td>1.648</td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>4</td>
<td>1.533</td>
<td>1.661</td>
<td>1.587</td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>4</td>
<td>1.343</td>
<td>1.589</td>
<td>1.458</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>4</td>
<td>1.345</td>
<td>1.467</td>
<td>1.396</td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>4</td>
<td>0.618</td>
<td>0.682</td>
<td>0.652</td>
</tr>
</tbody>
</table>

### SUMMARY STATISTICS ON TRANSFORMED DATA  
#### TABLE 2 of 2

<table>
<thead>
<tr>
<th>_GRP</th>
<th>IDENTIFICATION</th>
<th>VARIANCE</th>
<th>SD</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent C</td>
<td>0.006</td>
<td>0.077</td>
<td>0.038</td>
</tr>
<tr>
<td>2</td>
<td>Dilution C</td>
<td>0.015</td>
<td>0.122</td>
<td>0.061</td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>0.008</td>
<td>0.091</td>
<td>0.045</td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>0.004</td>
<td>0.060</td>
<td>0.030</td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>0.012</td>
<td>0.108</td>
<td>0.054</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>0.003</td>
<td>0.051</td>
<td>0.026</td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>0.001</td>
<td>0.027</td>
<td>0.014</td>
</tr>
</tbody>
</table>

### ANOVA TABLE

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>6</td>
<td>3.145</td>
<td>0.524</td>
<td>74.857</td>
</tr>
<tr>
<td>Within</td>
<td>21</td>
<td>0.143</td>
<td>0.007</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>3.288</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Critical F value = 2.57 (0.05,6,21)  
Since F > Critical F  REJECT Ho:All groups equal
### Dunnett's Test - Table 1 of 2

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>TRANSFORMED MEAN</th>
<th>MEAN CALCULATED IN ORIGINAL UNITS</th>
<th>T STAT</th>
<th>SIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent C</td>
<td>1.677</td>
<td>1.677</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Dilution C</td>
<td>1.644</td>
<td>1.644</td>
<td>0.562</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>1.648</td>
<td>1.648</td>
<td>0.503</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>1.587</td>
<td>1.587</td>
<td>1.534</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>1.458</td>
<td>1.458</td>
<td>3.702</td>
<td>*</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>1.396</td>
<td>1.396</td>
<td>4.754</td>
<td>*</td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>0.652</td>
<td>0.652</td>
<td>17.338</td>
<td>*</td>
</tr>
</tbody>
</table>

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

---

### Alachlor Rainbow Trout 60D Mean Wet Wt

#### Table 2 of 2

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>NUM OF REPS</th>
<th>Minimum Sig Diff (IN ORIG. UNITS)</th>
<th>% of CONTROL</th>
<th>DIFFERENCE FROM CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent C</td>
<td>4</td>
<td>0.146</td>
<td>8.7</td>
<td>0.033</td>
</tr>
<tr>
<td>2</td>
<td>Dilution C</td>
<td>4</td>
<td>0.146</td>
<td>8.7</td>
<td>0.030</td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>4</td>
<td>0.146</td>
<td>8.7</td>
<td>0.091</td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>4</td>
<td>0.146</td>
<td>8.7</td>
<td>0.219</td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>4</td>
<td>0.146</td>
<td>8.7</td>
<td>0.281</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>4</td>
<td>0.146</td>
<td>8.7</td>
<td>1.026</td>
</tr>
</tbody>
</table>

---

### ANOVA Table

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>6</td>
<td>3.145</td>
<td>0.524</td>
<td>74.857</td>
</tr>
<tr>
<td>Within (Error)</td>
<td>21</td>
<td>0.143</td>
<td>0.007</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>3.288</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

---

### Alachlor Rainbow Trout 60D Mean Wet Wt

#### Table 2 of 2

---

### ANOVA Table

---

Critical F value = 2.57 (0.05,6,21)
Since F > Critical F REJECT Ho:All groups equal
### Bonferroni T-Test

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>TRANSFORMED MEAN</th>
<th>MEAN CALCULATED IN ORIGINAL UNITS</th>
<th>T STAT</th>
<th>SIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent C</td>
<td>1.677</td>
<td>1.677</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Dilution C</td>
<td>1.644</td>
<td>1.644</td>
<td>0.562</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>1.648</td>
<td>1.648</td>
<td>0.503</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>1.587</td>
<td>1.587</td>
<td>1.534</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>1.458</td>
<td>1.458</td>
<td>3.702  *</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>1.396</td>
<td>1.396</td>
<td>4.754  *</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>0.652</td>
<td>0.652</td>
<td>17.338 *</td>
<td></td>
</tr>
</tbody>
</table>

Bonferroni T table value = 2.60 (1 Tailed Value, P=0.05, df=21,6)

### Williams Test (Isotonic regression model)

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>N</th>
<th>ORIGINAL MEAN</th>
<th>TRANSFORMED MEAN</th>
<th>ISOTONIZED MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent C</td>
<td>4</td>
<td>1.677</td>
<td>1.677</td>
<td>1.677</td>
</tr>
<tr>
<td>2</td>
<td>Dilution C</td>
<td>4</td>
<td>1.644</td>
<td>1.644</td>
<td>1.646</td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>4</td>
<td>1.648</td>
<td>1.648</td>
<td>1.646</td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>4</td>
<td>1.587</td>
<td>1.587</td>
<td>1.587</td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>4</td>
<td>1.458</td>
<td>1.458</td>
<td>1.458</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>4</td>
<td>1.396</td>
<td>1.396</td>
<td>1.396</td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>4</td>
<td>0.652</td>
<td>0.652</td>
<td>0.652</td>
</tr>
<tr>
<td>IDENTIFICATION</td>
<td>ISOTONIZED MEAN</td>
<td>CALC. WILLIAMS</td>
<td>SIG P=.05</td>
<td>TABLE WILLIAMS</td>
<td>DEGREES OF FREEDOM</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------</td>
<td>---------------</td>
<td>-----------</td>
<td>----------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Solvent C</td>
<td>1.677</td>
<td>0.541</td>
<td></td>
<td>1.72</td>
<td>k = 1, v = 21</td>
</tr>
<tr>
<td>Dilution C</td>
<td>1.646</td>
<td>0.541</td>
<td></td>
<td>1.80</td>
<td>k = 2, v = 21</td>
</tr>
<tr>
<td>0.0945</td>
<td>1.646</td>
<td>0.541</td>
<td></td>
<td>1.83</td>
<td>k = 3, v = 21</td>
</tr>
<tr>
<td>0.187</td>
<td>1.587</td>
<td>1.557</td>
<td>*</td>
<td>1.84</td>
<td>k = 4, v = 21</td>
</tr>
<tr>
<td>0.388</td>
<td>1.458</td>
<td>3.759</td>
<td>*</td>
<td>1.85</td>
<td>k = 5, v = 21</td>
</tr>
<tr>
<td>0.809</td>
<td>1.396</td>
<td>4.827</td>
<td>*</td>
<td>1.85</td>
<td>k = 6, v = 21</td>
</tr>
<tr>
<td>1.63</td>
<td>0.652</td>
<td>17.604</td>
<td>*</td>
<td>1.85</td>
<td></td>
</tr>
</tbody>
</table>

s = 0.082

Note: df used for table values are approximate when v > 20.
Alachlor ELS Rainbow Trt 60D Posthatch
File: Alachsrv.60D Transform: NO TRANSFORM

SUMMARY STATISTICS ON TRANSFORMED DATA

<table>
<thead>
<tr>
<th>GRP</th>
<th>IDENTIFICATION</th>
<th>N</th>
<th>MIN</th>
<th>MAX</th>
<th>MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent Control</td>
<td>4</td>
<td>14.00</td>
<td>15.00</td>
<td>14.750</td>
</tr>
<tr>
<td>2</td>
<td>Dilution C</td>
<td>4</td>
<td>14.00</td>
<td>15.00</td>
<td>14.750</td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>4</td>
<td>15.00</td>
<td>15.00</td>
<td>14.750</td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>4</td>
<td>14.00</td>
<td>15.00</td>
<td>14.750</td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>4</td>
<td>14.00</td>
<td>15.00</td>
<td>14.750</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>4</td>
<td>12.00</td>
<td>15.00</td>
<td>14.000</td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>4</td>
<td>12.00</td>
<td>14.00</td>
<td>13.250</td>
</tr>
</tbody>
</table>

SUMMARY STATISTICS ON TRANSFORMED DATA

<table>
<thead>
<tr>
<th>GRP</th>
<th>IDENTIFICATION</th>
<th>VARIANCE</th>
<th>SD</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent Control</td>
<td>0.250</td>
<td>0.500</td>
<td>0.250</td>
</tr>
<tr>
<td>2</td>
<td>Dilution C</td>
<td>0.250</td>
<td>0.500</td>
<td>0.250</td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>0.250</td>
<td>0.500</td>
<td>0.250</td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>0.250</td>
<td>0.500</td>
<td>0.250</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>2.000</td>
<td>1.414</td>
<td>0.707</td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>0.917</td>
<td>0.957</td>
<td>0.479</td>
</tr>
</tbody>
</table>

Alachlor ELS Rainbow Trt 60D Posthatch
File: Alachsrv.60D Transform: NO TRANSFORM

ANOVA TABLE

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>6</td>
<td>9.214</td>
<td>1.536</td>
<td>2.743</td>
</tr>
<tr>
<td>Within (Error)</td>
<td>21</td>
<td>11.750</td>
<td>0.560</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>20.964</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Critical F value = 2.57 (0.05, 6, 21)
Since F > Critical F REJECT Ho:All groups equal
### DUNNETTS TEST - TABLE 1 OF 2

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>TRANSFORMED MEAN</th>
<th>MEAN CALCULATED IN ORIGINAL UNITS</th>
<th>T STAT</th>
<th>SIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent Control</td>
<td>14.750</td>
<td>14.750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Dilution C</td>
<td>14.750</td>
<td>14.750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>15.000</td>
<td>15.000</td>
<td>-0.472</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>14.750</td>
<td>14.750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>14.750</td>
<td>14.750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>14.000</td>
<td>14.000</td>
<td>1.417</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>13.250</td>
<td>13.250</td>
<td>2.835</td>
<td>*</td>
</tr>
</tbody>
</table>

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

### Alachlor ELS Rainbow Trt 60D Post hatch

File: Alachsrv.60D  
Transform: NO TRANSFORM

### DUNNETTS TEST - TABLE 2 OF 2

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>NUM OF REPS</th>
<th>Minimum Sig Diff (IN ORIG. UNITS)</th>
<th>% of CONTROL</th>
<th>DIFFERENCE FROM CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent Control</td>
<td>4</td>
<td>1.302</td>
<td>8.8</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Dilution C</td>
<td>4</td>
<td>1.302</td>
<td>8.8</td>
<td>-0.250</td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>4</td>
<td>1.302</td>
<td>8.8</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>4</td>
<td>1.302</td>
<td>8.8</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>4</td>
<td>1.302</td>
<td>8.8</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>4</td>
<td>1.302</td>
<td>8.8</td>
<td>0.750</td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>4</td>
<td>1.302</td>
<td>8.8</td>
<td>1.500</td>
</tr>
</tbody>
</table>

### Alachlor ELS Rainbow Trt 60D Post hatch

File: Alachsrv.60D  
Transform: NO TRANSFORM

### ANOVA TABLE

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>DF</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>6</td>
<td>9.214</td>
<td>1.536</td>
<td>2.743</td>
</tr>
<tr>
<td>Within (Error)</td>
<td>21</td>
<td>11.750</td>
<td>0.560</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
<td>20.964</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Critical F value = 2.57 (0.05,6,21)
Since F > Critical F REJECT Ho:All groups equal
### BONFERRONI T-TEST - TABLE 1 OF 2

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>TRANSFORMED MEAN</th>
<th>MEAN CALCULATED IN ORIGINAL UNITS</th>
<th>T STAT</th>
<th>SIG</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent Control</td>
<td>14.750</td>
<td>14.750</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Dilution C</td>
<td>14.750</td>
<td>14.750</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>15.000</td>
<td>15.000</td>
<td>-0.472</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>14.750</td>
<td>14.750</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>14.750</td>
<td>14.750</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>14.000</td>
<td>14.000</td>
<td>1.417</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>13.250</td>
<td>13.250</td>
<td>2.835</td>
<td>*</td>
</tr>
</tbody>
</table>

Bonferroni T table value = 2.60  (1 Tailed Value, P=0.05, df=21,6)

### Alachlor ELS Rainbow Trt 60D Posthatch
**File:** AlachSrv.60D  Transform: NO TRANSFORM

### BONFERRONI T-TEST - TABLE 2 OF 2

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>NUM OF REPS</th>
<th>Minimum Sig Diff (IN ORIG. UNITS)</th>
<th>% of CONTROL</th>
<th>DIFFERENCE FROM CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent Control</td>
<td>4</td>
<td>1.377</td>
<td>9.3</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Dilution C</td>
<td>4</td>
<td>1.377</td>
<td>9.3</td>
<td>-0.250</td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>4</td>
<td>1.377</td>
<td>9.3</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>4</td>
<td>1.377</td>
<td>9.3</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>4</td>
<td>1.377</td>
<td>9.3</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>4</td>
<td>1.377</td>
<td>9.3</td>
<td>0.750</td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>4</td>
<td>1.377</td>
<td>9.3</td>
<td>1.500</td>
</tr>
</tbody>
</table>

### Alachlor ELS Rainbow Trt 60D Posthatch
**File:** AlachSrv.60D  Transform: NO TRANSFORM

### WILLIAMS TEST (Isotonic regression model) - TABLE 1 OF 2

<table>
<thead>
<tr>
<th>GROUP</th>
<th>IDENTIFICATION</th>
<th>N</th>
<th>ORIGINAL MEAN</th>
<th>TRANSFORMED MEAN</th>
<th>ISOTONIZED MEAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solvent Control</td>
<td>4</td>
<td>14.750</td>
<td>14.750</td>
<td>14.833</td>
</tr>
<tr>
<td>2</td>
<td>Dilution C</td>
<td>4</td>
<td>14.750</td>
<td>14.750</td>
<td>14.833</td>
</tr>
<tr>
<td>3</td>
<td>0.0945</td>
<td>4</td>
<td>15.000</td>
<td>15.000</td>
<td>14.833</td>
</tr>
<tr>
<td>4</td>
<td>0.187</td>
<td>4</td>
<td>14.750</td>
<td>14.750</td>
<td>14.750</td>
</tr>
<tr>
<td>5</td>
<td>0.388</td>
<td>4</td>
<td>14.750</td>
<td>14.750</td>
<td>14.750</td>
</tr>
<tr>
<td>6</td>
<td>0.809</td>
<td>4</td>
<td>14.000</td>
<td>14.000</td>
<td>14.000</td>
</tr>
<tr>
<td>7</td>
<td>1.63</td>
<td>4</td>
<td>13.250</td>
<td>13.250</td>
<td>13.250</td>
</tr>
</tbody>
</table>

### Alachlor ELS Rainbow Trt 60D Posthatch
**File:** AlachSrv.60D  Transform: NO TRANSFORM

### WILLIAMS TEST (Isotonic regression model) - TABLE 2 OF 2
<table>
<thead>
<tr>
<th>IDENTIFICATION</th>
<th>ISOTONIZED MEAN</th>
<th>CALC. WILLIAMS</th>
<th>SIG P=.05</th>
<th>TABLE WILLIAMS</th>
<th>DEGREES OF FREEDOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solvent Control</td>
<td>14.833</td>
<td>0.158</td>
<td>1.72</td>
<td>k= 1, v=2:</td>
<td></td>
</tr>
<tr>
<td>Dilution C</td>
<td>14.833</td>
<td>0.158</td>
<td>1.80</td>
<td>k= 2, v=2:</td>
<td></td>
</tr>
<tr>
<td>0.0945</td>
<td>14.750</td>
<td>0.000</td>
<td>1.83</td>
<td>k= 3, v=2:</td>
<td></td>
</tr>
<tr>
<td>0.187</td>
<td>14.750</td>
<td>0.000</td>
<td>1.84</td>
<td>k= 4, v=2:</td>
<td></td>
</tr>
<tr>
<td>0.388</td>
<td>14.000</td>
<td>1.418</td>
<td>1.85</td>
<td>k= 5, v=2:</td>
<td></td>
</tr>
<tr>
<td>0.809</td>
<td>13.250</td>
<td>2.836</td>
<td>*</td>
<td>k= 6, v=2:</td>
<td></td>
</tr>
</tbody>
</table>

s = 0.748
Note: df used for table values are approximate when v > 20.
The material not included contains the following type of information:

___ Identity of product inert ingredients.
___ Identity of product impurities.
___ Description of the product manufacturing process.
___ Description of quality control procedures.
___ Identity of the source of product ingredients.
___ Sales or other commercial/financial information.
___ A draft product label.
___ The product confidential statement of formula.
___ Information about a pending registration action.
___ FIFRA registration data.
___ The document is a duplicate of page(s) _____.
___ The document is not responsive to the request.

The information not included is generally considered confidential by product registrants. If you have any questions, please contact the individual who prepared the response to your request.