DRAFT

12-7-95

1-EEB-02C

MRID No. 430699-01

DATA EVALUATION RECORD
SEED GERMINATION TEST
§ 122-1 & 123-1 (TIER I & II)

1. **CHEMICAL:** Propanil — PC Code No.: 028201

2. **TEST MATERIAL:** Propanil technical — Purity: 97.6%

3. **CITATION**

Author: Karen P. Christensen
Title: Propanil Technical - Determination of Effects on Seed Germination, Seedling Emergence and Vegetative Vigor of Ten Plant Species.
Study Completion Date: November 4, 1993
Laboratory: Springborn Laboratories, Inc., Wareham, MA
Sponsor: Rohm and Haas Company, Spring House, PA
Laboratory Report ID: 92-11-4510
MRID No.: 430699-01
DP Barcode: D199383

4. **REVIEWED BY:** Mark Mossler, M.S., Toxicologist, KBN Engineering and Applied Sciences, Inc.

Signature: [signature] **Date:** 12/5/95

APPROVED BY: Pim Kosalwat, Ph.D., Senior Scientist KBN Engineering and Applied Sciences, Inc.

Signature: P. Kosalwat **Date:** 12/5/95

5. **APPROVED BY:**

Signature: **Date:**

DRAFT

6. **STUDY PARAMETERS**

Definitive Study Duration: 5 days

7. **CONCLUSIONS:** This study is scientifically sound and fulfills the guideline requirements for a Tier I and II seed germination test with terrestrial plants.

Results Synopsis:
Most sensitive monocot: Onion
Most sensitive parameter: radicle length
EC_{25}: 3.5 lb ai/A
Slope: Not reported
NOEL: 0.3 lb ai/A

69 total

2028018

SOLVENT CRTL = packed control

cabbage radicle length Note: BLANK CRTL: Treatment
File: cab Transform: NO TRANSFORM

t-test of Solvent and Blank Controls Ho:GRP1 MEAN = GRP2 MEAN

GRP1 (SOLVENT CRTL) MEAN =	43.0667	CALCULATED t VALUE =	2.0234
GRP2 (BLANK CRTL) MEAN =	33.8667	DEGREES OF FREEDOM =	7
DIFFERENCE IN MEANS =	9.2000		

TABLE t VALUE (0.05 (2), 7) =	2.365	NO significant difference at alpha=0.05
TABLE t VALUE (0.01 (2), 7) =	3.499	NO significant difference at alpha=0.01

corn radicle length Note: SOLVENT CRTL = SOLVENT CONTROL
File: corn Transform: NO TRANSFORM BLANK CRTL = Treatment

t-test of Solvent and Blank Controls Ho:GRP1 MEAN = GRP2 MEAN

GRP1 (SOLVENT CRTL) MEAN =	87.1000	CALCULATED t VALUE =	1.7743
GRP2 (BLANK CRTL) MEAN =	63.8000	DEGREES OF FREEDOM =	4
DIFFERENCE IN MEANS =	23.3000		

TABLE t VALUE (0.05 (2), 4) =	2.776	NO significant difference at alpha=0.05
TABLE t VALUE (0.01 (2), 4) =	4.604	NO significant difference at alpha=0.01

Note. SOLVENT CRTL = SOLVENT CONTROL
BLANK CRTL = TREATMENT

soybean radicle length
File: soy Transform: NO TRANSFORM

t-test of Solvent and Blank Controls Ho:GRP1 MEAN = GRP2 MEAN

GRP1 (SOLVENT CRTL) MEAN =	51.1333	CALCULATED t VALUE =	-1.0042
GRP2 (BLANK CRTL) MEAN =	53.4333	DEGREES OF FREEDOM =	4
DIFFERENCE IN MEANS =	-2.3000		

TABLE t VALUE (0.05 (2), 4) =	2.776	NO significant difference at alpha=0.05
TABLE t VALUE (0.01 (2), 4) =	4.604	NO significant difference at alpha=0.01

oat radicle length

Estimated EC Values and Confidence Limits

Point	Conc.	Lower 95% Confidence Limits	Upper 95% Confidence Limits
EC 1.00	0.6731	0.2509	1.0671
EC 5.00	1.4043	0.8008	1.8634
EC10.00	2.0785	1.4534	2.5661
EC15.00	2.7082	2.1078	3.2835
EC50.00	8.2882	6.0853	15.5149
EC85.00	25.3655	14.0447	91.7036
EC90.00	33.0502	17.0594	140.0978
EC95.00	48.9172	22.7352	262.7324
EC99.00	102.0586	38.8938	855.9974

$Y = 2.13(x) + 3.04$

$EC_{25} = 4.016$ ai/A

oat radicle length
File: oat Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	sol. cont.	3	86.767	86.767	86.767
2	0.33 lb ai/A	3	75.267	75.267	79.344
3	0.65 lb ai/A	3	80.833	80.833	79.344
4	1.3 lb ai/A	3	81.933	81.933	79.344
5	2.6 lb ai/A	3	77.867	77.867	77.867
6	5.1 lb ai/A	3	56.667	56.667	56.667

oat radicle length
File: oat 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
sol. cont.	86.767				
0.33 lb ai/A	79.344	0.732		1.78	k= 1, v=12
0.65 lb ai/A	79.344	0.732		1.87	k= 2, v=12
1.3 lb ai/A	79.344	0.732		1.90	k= 3, v=12
2.6 lb ai/A	77.867	0.878		1.92	k= 4, v=12
5.1 lb ai/A	56.667	2.969	*	1.93	k= 5, v=12

s = 12.416
Note: df used for table values are approximate when v > 20.

NOEL = 2.6 lb ai/A

onion radicle length

Estimated EC Values and Confidence Limits

Point	Conc.	Lower 95% Confidence Limits	Upper 95% Confidence Limits
EC 1.00	0.2434	0.0186	0.5776
EC 5.00	0.7467	0.1755	1.2445
EC10.00	1.3574	0.5670	1.9189
EC15.00	2.0318	1.2001	2.6790
EC50.00	11.1760	6.7540	46.4318
EC85.00	61.4756	21.5826	1417.1982
EC90.00	92.0188	28.2923	3195.0522
EC95.00	167.2715	42.2104	10666.1572
EC99.00	513.1231	89.2205	102511.6410

$Y = 1.40(x) + 3.53$

$EC_{25} = 3.716$ ai/A

onion radicle length
File: oni Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	sol. cont.	3	10.400	10.400	10.400
2	0.33 lb ai/A	3	10.167	10.167	10.167
3	0.65 lb ai/A	3	9.233	9.233	9.367
4	1.3 lb ai/A	3	9.500	9.500	9.367
5	2.6 lb ai/A	3	8.333	8.333	8.333
6	5.1 lb ai/A	3	7.133	7.133	7.133

onion radicle length
File: oni 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
sol. cont.	10.400				
0.33 lb ai/A	10.167	0.432		1.78	k= 1, v=12
0.65 lb ai/A	9.367	1.914	*	1.87	k= 2, v=12
1.3 lb ai/A	9.367	1.914	*	1.90	k= 3, v=12
2.6 lb ai/A	8.333	3.828	*	1.92	k= 4, v=12
5.1 lb ai/A	7.133	6.051	*	1.93	k= 5, v=12

s = 0.661
Note: df used for table values are approximate when v > 20.

NOEL = 0.33 lb ai/A

ryegrass radicle length

Estimated EC Values and Confidence Limits

Point	Conc.	Lower 95% Confidence Limits	Upper 95% Confidence Limits
EC 1.00	0.4247	0.0961	0.7872
EC 5.00	1.0428	0.4479	1.5132
EC10.00	1.6834	0.9953	2.1926
EC15.00	2.3258	1.6491	2.9136
EC50.00	9.1190	6.2412	21.6308
EC85.00	35.7534	16.7376	226.6327
EC90.00	49.3972	21.0560	396.6242
EC95.00	79.7449	29.5562	909.7566
EC99.00	195.8059	55.7259	4324.8901

$Y = 1.75(x) + 3.32$

$EC_{25} = 3.8$ lb ai/A

ryegrass radicle length
File: rye Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	sol. cont.	3	37.733	37.733	37.733
2	0.33 lb ai/A	3	34.067	34.067	34.067
3	0.65 lb ai/A	3	32.333	32.333	33.717
4	1.3 lb ai/A	3	35.100	35.100	33.717
5	2.6 lb ai/A	3	31.500	31.500	31.500
6	5.1 lb ai/A	3	25.267	25.267	25.267

ryegrass radicle length
File: rye 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
sol. cont.	37.733				
0.33 lb ai/A	34.067	1.714		1.78	k= 1, v=12
0.65 lb ai/A	33.717	1.878	*	1.87	k= 2, v=12
1.3 lb ai/A	33.717	1.878		1.90	k= 3, v=12
2.6 lb ai/A	31.500	2.914	*	1.92	k= 4, v=12
5.1 lb ai/A	25.267	5.828	*	1.93	k= 5, v=12

s = 2.620
Note: df used for table values are approximate when v > 20.

NOEL = 1.3 lb ai/A

cucumber radicle length

Estimated EC Values and Confidence Limits

Point	Conc.	Lower 95% Confidence Limits	Upper 95% Confidence Limits
EC 1.00	0.8669	0.4955	1.1446
EC 5.00	1.3693	0.9904	1.6371
EC10.00	1.7471	1.4063	2.0185
EC15.00	2.0594	1.7457	2.3730
EC50.00	4.1271	3.3653	6.0826
EC85.00	8.2708	5.7263	17.6644
EC90.00	9.7493	6.4764	22.7926
EC95.00	12.4395	7.7666	33.2755
EC99.00	19.6469	10.9032	67.7619

$Y = 3.43(x) + 2.89$

$EC_{25} = 2.616$ ai/A

cucumber radicle length
File: cuc Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	sol. cont.	3	39.700	39.700	41.244
2	0.37 lb ai/A	3	40.300	40.300	41.244
3	0.73 lb ai/A	3	43.733	43.733	41.244
4	1.5 lb ai/A	3	36.400	36.400	36.400
5	2.9 lb ai/A	3	28.133	28.133	29.117
6	5.8 lb ai/a	3	30.100	30.100	29.117

cucumber radicle length
File: cuc 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
sol. cont.	41.244				
0.37 lb ai/A	41.244	0.423		1.78	k= 1, v=12
0.73 lb ai/A	41.244	0.423		1.87	k= 2, v=12
1.5 lb ai/A	36.400	0.903		1.90	k= 3, v=12
2.9 lb ai/A	29.117	2.898	*	1.92	k= 4, v=12
5.8 lb ai/a	29.117	2.898	*	1.93	k= 5, v=12

s = 4.473
Note: df used for table values are approximate when v > 20.

NOEL = 1.5 lb ai/A

lettuce radicle length

Estimated EC Values and Confidence Limits

Point	Conc.	Lower 95% Confidence Limits	Upper 95% Confidence Limits
EC 1.00	0.0017	0.0000	0.0147
EC 5.00	0.0213	0.0006	0.0847
EC10.00	0.0813	0.0069	0.2182
EC15.00	0.2006	0.0344	0.4188
EC50.00	9.1070	4.7756	40.8376
EC85.00	413.5139	72.2098	36607.4530
EC90.00	1019.8680	135.5661	185189.4690
EC95.00	3885.3408	343.9760	2049738.3800
EC99.00	47745.1560	1964.8860	186896304.0000

$Y = 0.62(x) + 4.40$

$EC_{25} = 0.7716$ ai/A

lettuce radicle length
File: let Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	sol. cont.	3	32.800	32.800	32.800
2	0.37 lb ai/A	3	26.200	26.200	26.200
3	0.73 lb ai/A	3	25.133	25.133	25.133
4	1.5 lb ai/A	3	22.667	22.667	22.667
5	2.9 lb ai/A	3	19.700	19.700	19.700
6	5.8 lb ai/a	3	18.367	18.367	18.367

lettuce radicle length
File: let 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
sol. cont.	32.800				
0.37 lb ai/A	26.200	4.479	*	1.78	k= 1, v=12
0.73 lb ai/A	25.133	5.203	*	1.87	k= 2, v=12
1.5 lb ai/A	22.667	6.877	*	1.90	k= 3, v=12
2.9 lb ai/A	19.700	8.891	*	1.92	k= 4, v=12
5.8 lb ai/a	18.367	9.795	*	1.93	k= 5, v=12

s = 1.805
Note: df used for table values are approximate when v > 20.

NOEL < 0.37 lb ai/A

from probit model EC_5 = 0.02 lb ai/A

radish radicle length

Estimated EC Values and Confidence Limits

Point	Conc.	Lower 95% Confidence Limits	Upper 95% Confidence Limits
EC 1.00	0.0001	0.0000	0.0060
EC 5.00	0.0050	0.0000	0.0589
EC10.00	0.0397	0.0000	0.2038
EC15.00	0.1608	0.0004	0.4896
EC50.00	59.5631	11.3502	1159332.5000
EC85.00	22065.2324	373.1383	% 259678120.0000E+07
EC90.00	89421.2500	843.8203	% 427646050.0000E+09
EC95.00	711024.1900	2821.0811	% 100000002.0000E+12
EC99.00	34733160.0000	27032.1133	% 100000002.0000E+12

NOTE - Upper limits greater than or equal to 1.E20 are really infinite

$Y = 0.40(x) + 4.28$

$Y = 1.3$ lb ai/A

radish radicle length
File: rad Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	sol. cont.	3	66.200	66.200	66.200
2	0.37 lb ai/A	3	53.900	53.900	53.900
3	0.73 lb ai/A	3	50.867	50.867	50.867
4	1.5 lb ai/A	3	47.800	47.800	49.567
5	2.9 lb ai/A	3	51.333	51.333	49.567
6	5.8 lb ai/A	3	42.567	42.567	42.567

radish radicle length
File: rad 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
sol. cont.	66.200				
0.37 lb ai/A	53.900	1.694		1.78	k= 1, v=12
0.73 lb ai/A	50.867	2.112	*	1.87	k= 2, v=12
1.5 lb ai/A	49.567	2.291	*	1.90	k= 3, v=12
2.9 lb ai/A	49.567	2.291	*	1.92	k= 4, v=12
5.8 lb ai/A	42.567	3.255	*	1.93	k= 5, v=12

s = 8.892
Note: df used for table values are approximate when v > 20.

NOEL = 0.37 lb ai/A

tomato radicle length

Estimated EC Values and Confidence Limits

Point	Conc.	Lower 95% Confidence Limits	Upper 95% Confidence Limits
EC 1.00	0.4023	0.0929	0.7611
EC 5.00	0.9861	0.4105	1.4679
EC10.00	1.5904	0.8931	2.1149
EC15.00	2.1959	1.4790	2.7614
EC50.00	8.5857	6.1887	17.1815
EC85.00	33.5696	16.8868	163.9325
EC90.00	46.3497	21.3114	280.8699
EC95.00	74.7524	30.0518	624.3896
EC99.00	183.2134	57.1363	2799.6177

$Y = 1.75(x) + 3.37$

$EC_{25} = 3.5$ lb ai/A

tomato radicle length
File: tom Transform: NO TRANSFORMATION

WILLIAMS TEST (Isotonic regression model) TABLE 1 OF 2

GROUP	IDENTIFICATION	N	ORIGINAL MEAN	TRANSFORMED MEAN	ISOTONIZED MEAN
1	sol. cont.	3	38.833	38.833	39.333
2	0.37 lb ai/A	3	38.900	38.900	39.333
3	0.73 lb ai/A	3	40.267	40.267	39.333
4	1.5 lb ai/A	3	35.500	35.500	35.500
5	2.9 lb ai/A	3	30.733	30.733	30.733
6	5.8 lb ai/A	3	23.900	23.900	23.900

tomato radicle length
File: tom 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
sol. cont.	39.333				
0.37 lb ai/A	39.333	0.186		1.78	k= 1, v=12
0.73 lb ai/A	39.333	0.186		1.87	k= 2, v=12
1.5 lb ai/A	35.500	1.243		1.90	k= 3, v=12
2.9 lb ai/A	30.733	3.021	*	1.92	k= 4, v=12
5.8 lb ai/A	23.900	5.569	*	1.93	k= 5, v=12

s = 3.284
Note: df used for table values are approximate when v > 20.

NOEL = 1.5 lb ai/A