

US EPA ARCHIVE DOCUMENT

DATA EVALUATION RECORD
SEEDLING EMERGENCE TEST
GUIDELINE 122-1a (TIER I)

1. CHEMICAL: Mepiquat chloride (109101)
2. TEST MATERIAL: BAS 083 W Technical Grade; 47.0%
3. CITATION:

Author: Chetram, R.S.
Date: 1989
Title: Tier 1 seed germination/seedling emergence
nontarget phytotoxicity of BAS 083 W
Laboratory: Pan-Agricultural Laboratories, Inc.,
Madera, CA
Sponsor: BASF Corporation, Research Triangle Park,
NC
Report #: 89/5092
MRID No.: 414881-09

4. REVIEWED BY:

William Erickson
Biologist
EEB/EFED/EPA

Signature: *W. Erickson*

Date: 2/02/96

5. APPROVED BY:

Harry Craven
Section Head 4
EEB/EFED/EPA

Signature: *Harry Craven*

Date: 2/2/96

6. STUDY PARAMETERS:

Duration of Study: 21 days
Crops: oat, ryegrass, corn, onion,
soybean, lettuce, tomato,
carrot, cabbage, cucumber

7. CONCLUSION: The study is scientifically sound and fulfills the guideline requirement for a Tier 1 plant emergence study. Cabbage was the most sensitive species; seedling emergence was inhibited 16%. Because no measurement endpoints were inhibited more than 25% when compared to the control values, Tier II testing is not required. Seed germination testing is no longer required by the Agency.
8. ADEQUACY OF THE STUDY: Core.
9. MAJOR GUIDELINE DEVIATIONS: None.

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10. MATERIALS AND METHODS:

Test Organisms:

Guideline Criteria	Reported Information
Species: (6 dicots in 4 families including soybean and rootcrop; 4 monocots in 2 families including corn)	Monocots: corn, ryegrass, oat, onion Dicots: soybean, tomato, cucumber, cabbage, carrot, lettuce
No. seeds/rep.: (10) No. reps/dose: (3)	50 5
Source & % germination of seed reported?	source only

Test System:

Guideline Criteria	Reported Information
Solvent:	none
Test site:	greenhouse
Soil type:	sterilized sandy loam (0.6% organic matter)
Fertilizer:	none reported
Pot size and description:	plastic pots (7.5 x 7.5 x 6.0 cm)
No. species per pot:	1
No. seeds per pot:	10
Method of pesticide application:	applied to soil with a belt sprayer equipped with a single TeeJet 8001-E nozzle
Watering method and frequency:	irrigated 1-2X daily for 3-5 min. duration using Perfect Nozzle
Test duration:	21 days for most; 28 days for carrot, tomato, and onion
Growth stage at application: (seed)	seed

Test Design:

Guideline Criteria	Reported Information
Dose range: (2X or 3X)	n/a
Doses: (at least 5)	1
Controls: (negative and solvent)	negative
Parameters observed and measured	% emergence seedling height dry weight phytotoxicity
Maximum labeled application rate:	0.25 lb ai/acre

11. REPORTED RESULTS:

Guideline Criteria	Reported Information
NOEC Observed?	n/a
Measured Initial Chemical Concentrations? (optional)	no
Raw data included? (Y/N)	yes
Quality Assurance Measures?	yes

Seedling emergence:

Species	phytotoxicity rating		% effect ^{2,3}		
	Ctrl	Treat.	emergence	height	weight
Monocots					
corn	0.2	0.3	4	-10	-3
ryegrass	0	0	-5	-13	13
oat	0	0	0	-1	4
onion	0.1	0.2	0	18	25
Dicots					
soybean	0	0.1	7	-4	-8
lettuce	0.1	0	2	4	0

cabbage	0	0	-16	4	8
carrot	-0	0	0	-5	10
cucumber	0	0	-2	1	-1
tomato	0	0	-5	-3	0

¹phytotoxicity ratings were based on a 0-4 scale, with 0 = no effect, 1 = slight effect limited to one leaf, 2 = moderate effect on whole plant, 3 = severe effect on whole plant, and 4 = total effect or plant death

²final observations for all crops were made at 21 days posttreatment except for onion, carrot, and tomato which were made at 28 days

³% effect was determined as $(C-T)/C \times 100$, where C = control value and T = treatment value of the measurement endpoint

The study author concludes that "treatment of the soil surface with an equivalent of 0.25 lb ai/a of BAS 083 W did not result in a significant effect ($P \leq 0.05$) on mean phytotoxicity ratings, regardless of plant species or observation period." None of the plant species tested exhibited >25% inhibition for seedling emergence, seedling height, or seedling weight in the emergence test.

Seed germination: Although no longer required by the Agency, a seed germination test was conducted. The study author reported that the percent effect on radicle length ranged from an 11% increase in oat to a 24-28% decrease in corn and carrot. The percent effect on germination ranged from a 17% increase in cabbage to a 2-6% decrease in lettuce and carrot.

12. **REVIEWER'S COMMENTS/CONCLUSIONS:** The study is scientifically sound and fulfills the guideline requirement for a Tier 1 plant emergence study. Cabbage was the most sensitive species; seedling emergence was inhibited 16%. Because no measurement endpoints were inhibited more than 25% when compared to the control values, Tier II testing is not required. Seed germination testing is no longer required by the Agency.