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HEALTH EFFECTS DIVISION
SCIENTIFIC DATA REVIEWS
EPA SERIES 801

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Thidiazuron/120301/Aventis CropScience
DACO 7.4.1/OPPTS 860.1500/OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
Crop Field Trial - Cottonseed and Gin Trash

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STUDY REPORTS:

MRID No. 46341001. Sandra J. W. Mackie (June 13, 2001). DROPP® SC: Magnitude of Residue in Cottonseed and Gin Trash Resulting from Foliar Applications of DROPP® SC under Maximum Proposed Label Specifications (2000). Lab Project Number: B003303. Unpublished study prepared by Sandra J. W. Mackie. 336 pages.

EXECUTIVE SUMMARY:

Supervised crop field trials were conducted to quantify residues of thidiazuron (TDZ) and its metabolite photo-thidiazuron (P-TDZ) in/on cottonseed and gin trash at an 1x application rate of 0.3 lb a.i./A/season (0.337 kg a.i./ha/season) with a pre-harvest interval (PHI) of 5 days. Application sites were located in EPA Region II, Pikeville, North Carolina; Region IV, Proctor, Arkansas and Greenville, Mississippi; Region VI, East Bernard, Texas; Region VIII, Edmonson, Texas, Floydada, Texas, Uvalde, Texas and Levelland, Texas; and Region X, Maricopa, Arizona and Kerman, California.

The analytical method used to quantify TDZ was Method AW/02/96, "Determination of Thidiazuron and Photo-Thidiazuron in Cottonseed and Gin Trash by HPLC." The Agency has reviewed the Residue Analytical Method (D225339, 10/27/04, T. Jimerson) and the Independent Laboratory Validation trial (D246804, 1/21/99, S. Mason) submitted for method AW/02/96. The Agency will withhold a final conclusion on the adequacy of the method as an enforcement method pending receipt of the requested petition method validation (PMV) report. Method AW/02/96 is adequate for data collection.

The limit of quantitation (LOQ) for TDZ and P-TDZ was 0.05 ppm for cottonseed and 0.5 ppm for gin trash. The limit of detection (LOD) was determined to be ≤ 0.03 ppm for cottonseed and ≤ 0.25 ppm for gin trash. Method verification and procedural recoveries for cottonseed and gin trash were included in this study, each yielding acceptable results. The



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residue of concern in cotton consists of the parent only, thidiazuron. Residues for cottonseed and gin trash treated samples are as follows. For cottonseed, TDZ residues above LOQ (0.05 ppm) were found in 8/10 samples, and 2 sample residues were above LOQ for P-TDZ. The residue range for cottonseed was 0.05-0.21 ppm for TDZ and 0.05-0.06 ppm for P-TDZ. For gin trash, TDZ residues above the LOQ (0.5 ppm) were found in all samples, and P-TDZ residues above LOQ were found in 9/10 trials. The residues range for gin trash was 1.62-22.12 ppm for TDZ and 0.54-7.17 ppm for P-TDZ.

Additionally, a residue decline trial was conducted in Proctor, Arkansas with PHI's of 3, 5, 6, 12, and 14 days. Residue decline data showed that thidiazuron and photo-thidiazuron both decrease in cottonseed and gin trash with increasing pre-harvest intervals.

According to the data submitted, the crop field trial study is adequate pending submission of storage stability data.

STUDY/WAIVER ACCEPTABILITY/DEFICIENCIES/CLARIFICATIONS:

Under the conditions and parameters used in the study, the field trial residue data are classified as scientifically acceptable upon receipt of an adequate storage stability study for cottonseed.

The following amendments were made to this protocol:

1. The lot number of the DRO P[®] SC test substance was added to the protocol.
2. The code number of the test substance was corrected.
3. A typographical error was corrected to change one of the decline sampling events from 12 days after last application (DALA) to 14 DALA.
4. The analytical portion of this study was performed in an external laboratory instead of the Aventis laboratory.
5. The "shipped to" address was changed to allow the processed fractions from the North Carolina trial to go directly to the analytical laboratory.

These changes had no negative impact on the study.

The acceptability of this study for regulatory purposes is addressed in the forthcoming U.S. EPA Residue Chemistry Summary Document.

COMPLIANCE:

Signed and dated GLP, Quality Assurance and Data Confidentiality statements were provided. Reported deviations from regulatory requirements are relatively minor and include the following:



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1. Weather data were generally not collected following strict adherence to GLP standards because it is not typical for NOAA or field site weather stations to operate under GLP standards. [40 CFR 160.63]
2. Some data entries were not initialed and dated at the time of entry or were made after the activity had occurred. [40 CFR 160.130(e)]
3. The following exceptions were noted at one or more of the field or analytical testing facilities:
 - a. Facility management served as a principal investigator. Therefore, there was not adequate separation between QA and study personnel. [40 CFR 160.35(a)]
 - b. Some SOPs did not reflect current practices. [40 CFR 160.81]
 - c. Inadequate training files. [40 CFR 160.29(b)]
 - d. Limited access to facility archives was not maintained. [40 CFR 160.51]
 - e. Some equipment maintenance/calibration logs did not contain all the required elements. [40 CFR 160.63]

A. BACKGROUND INFORMATION

Thidiazuron has one registered use as a cotton defoliant. Currently, the combined residues of thidiazuron and its aniline containing metabolites are regulated (40 CFR180.403). The Metabolism Assessment Review Committee (9/29/95, F. Fort) has determined that the residue of concern in plant commodities consists of the parent thidiazuron only, and that the residues of concern in animal commodities consist of the parent thidiazuron, 4-hydroxythidiazuron, and phenyl urea. Tolerances are established in/on cottonseed (0.4 ppm), cottonseed hulls (0.8 ppm), eggs (0.1 ppm), and milk (0.05 ppm). Additional tolerances are set at 0.2 ppm for the fat, meat and meat by-products of cattle, goats, hogs, horses, poultry and sheep. The chemical structure and nomenclature for thidiazuron and photo-thidiazuron are presented in Tables A.1 and A.2.

| Compound | Chemical Structure |
|--------------------|--|
| | |
| Common name | Thidiazuron |
| IUPAC name | 1-phenyl-3-(1,2,3-thiazol-5-yl)urea |
| CAS name | <u>N</u> -phenyl- <u>N'</u> -1,2,3-thiadiazol-5-ylurea |
| CAS # | 51707-55-2 |
| End-use product/EP | DROPP® SC |



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| | |
|-------------|-------------------------------------|
| Compound | Chemical structure |
| | |
| Common name | Photo-thidiazuron |
| IUPAC name | 1-phenyl-1-(1,2,5-thiazol-3-yl)urea |
| CAS name | N-phenyl-1-(1,2,5-thiazol-3-yl)urea |
| CAS # | 71769-74-0 |

B. EXPERIMENTAL DESIGN

B.1. Study Site Information

| Trial Identifier (City, State/Year) | Soil Type |
|-------------------------------------|-------------------------------|
| Pikeville, NC, 2000 | Norfolk Sandy Loam |
| Proctor, AK, 2000 | Commerce Silt Loam |
| Greenville, MS, 2000 | Dundee Silt Loam |
| East Bernard, TX, 2000 | Bernard Sandy Clay Loam |
| Edmonson, TX, 2000 | Pullman Clay Loam |
| Floydada, TX, 2000 | Pullman Clay Loam |
| Uvalde, TX, 2000 | Uvalde Clay Loam |
| Levelland, TX, 2000 | Amarillo Sandy Loam |
| Maricopa, AZ, 2000 | Casa Grande Mohall Sandy Loam |
| Kerman, CA, 2000 | Hanford Sandy Loam |

The actual temperature and rainfall average recordings were within average historical values for the residue study period. Irrigation was used to supplement as needed for each site. No meteorological abnormalities were reported during the conduct of the study. Recorded weather data and irrigation application data are presented in Appendix I.



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TABLE B.1.2. Study Use Pattern.

| Trial ID (City, State/Year) | EP ¹ | Application | | | | | Tank Mix Adjuvants ³ | Harvest Procedures ⁴ |
|-----------------------------------|--------------------------|--|------------------------------------|----------------------------|---------------------------|--|------------------------------------|------------------------------------|
| | | Treat. No. and Crop Stage at Application | Rate, lb a.i./A (kg a.i./ha) | RTI ² (days) | Method | Total Rate, lb a.i./A (kg a.i./ha) | | |
| Pikeville, NC, 2000 | DROPP [®] SC | Late Season | 0.100; 0.202 | 7 | Broadcast Foliar Spray | 0.302 | N/S | Picker |
| Proctor, AK, 2000 | DROPP [®] SC | Late Season | 0.101; 0.202 | 7 | Broadcast Foliar Spray | 0.303 | N/S | Picker |
| Greenville, MS, 2000 | DROPP [®] SC | Late Season | 0.100; 0.199 | 7 | Broadcast Foliar Spray | 0.299 | N/S | Picker |
| East Bernard, TX, 2000 | DROPP [®] SC | Late Season | 0.100; 0.200 | 7 | Broadcast Foliar Spray | 0.300 | N/S | Picker |
| Edmonson, TX, 2000 | DROPP [®] SC | Late Season | 0.100; 0.200 | 7 | Broadcast Foliar Spray | 0.300 | N/S | Stripper |
| Floydada, TX, 2000 | DROPP [®] SC | Late Season | 0.100; 0.198 | 7 | Broadcast Foliar Spray | 0.298 | N/S | Stripper |
| Uvalde, TX, 2000 | DROPP [®] SC | Late Season | 0.101; 0.201 | 7 | Broadcast Foliar Spray | 0.302 | N/S | Stripper |
| Levelland, TX, 2000 | DROPP [®] SC | Late Season | 0.100; 0.200 | 7 | Broadcast Foliar Spray | 0.300 | N/S | Stripper |
| Maricopa, AZ, 2000 | DROPP [®] SC | Late Season | 0.099; 0.205 | 7 | Broadcast Foliar Spray | 0.304 | N/S | Picker |
| Kerman, CA, 2000 | DROPP [®] SC | Late Season | 0.098; 0.197 | 7 | Broadcast Foliar Spray | 0.295 | N/S | Picker |

¹EP = End-use Product

²RTI = Retreatment Interval

³N/S = Not Specified

⁴Based on the submitted sample collection weights from each trial, it is assumed that the harvesting procedure listed above was implemented. [100 lbs./sample= picker; 75 lbs./sample = stripper]

B.2. Analytical Methodology

Method AW/02/96, "Determination of Thidiazuron and Photo-Thidiazuron in Cottonseed and Gin Trash by HPLC," was used to quantify TDZ residues. The Agency has reviewed the Residue Analytical Method and the Independent Laboratory Validation trial submitted for method AW/02/96. The method and the results of the ILV have been forwarded to EPA's Analytical Chemistry Laboratory (Beltsville, MD) for validation. The Agency will withhold a final conclusion on the adequacy of this method as an analytical enforcement method pending receipt of the PMV report. However, this method is adequate for data collection. A brief description of method AW/02/96 follows.

For cottonseed, samples are blended with acetonitrile (ACN). The resulting extract is filtered, concentrated by rotary evaporation, and partitioned with hexane. The ACN fraction is evaporated to dryness, and the dried extract is redissolved in a mixture of ethyl



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acetate/cyclopentane (70:30; v:v). The reconstituted extract is filtered and cleaned up on a GPC Optima Prep column. The eluate containing residues of TDZ and P-TDZ is concentrated to dryness, redissolved in ACN:water (50:40; v:v), and quantified by HPLC with UV detection at 290 nm. The reported LOQ for both TDZ and P-TDZ is 0.05 ppm in cottonseed.

For cotton gin trash, samples are blended with ACN:water (80:20; v:v). The extract is filtered, concentrated by rotary evaporation, diluted with a saturated sodium chloride solution, and extracted three times with dichloromethane (DCM). The DCM extracts are combined, evaporated to dryness by rotary evaporation, redissolved in ACN, and partitioned with hexane. The ACN extract is evaporated to dryness, residues are redissolved in methanol (MeOH), and cleaned up on an aluminum oxide chromatography column. Residues are concentrated to dryness, redissolved in DCM, and further purified using a solid phase extraction (SPE) silica cartridge. Residues are eluted with 1 and 4% MeOH in DCM, the eluates are evaporated to dryness, residues are redissolved in ACN:water (60:40; v:v), and quantified by HPLC with UV detection at 290 nm. The reported LOQ is 0.50 ppm for residues in/on cotton gin byproducts.

C. RESULTS AND DISCUSSION

Crop field trials were submitted for cottonseed and gin trash from EPA Regions II, IV, VI, VIII, and X, the major cotton producing regions. All 10 crop field trials submitted were adequate. Both stripper and picker harvesting techniques must be used for all cotton gin trash field trials. It was not said explicitly which method was used for each trial. However, based on the submitted sample collection weights from each trial, it is assumed that 4 trials implemented the stripper harvesting procedure and the remaining 6 trials used the picker harvesting procedure.

Method AW/02/96 was used to quantify TDZ and P-TDZ residues. The LOQ for this method is 0.05 ppm for cottonseed and 0.50 ppm for gin trash. The LOD was calculated to be \leq 0.03 ppm for cottonseed and \leq 0.25 ppm for gin trash. Additionally, chromatograms of control samples for both matrices were submitted, and are free from interferences.

Method verification and procedural recoveries for both matrices were included in this study, each yielding acceptable results. Method verification control samples were fortified at the LOQ, 5 X LOQ and 50 X LOQ. Cottonseed average method verification recoveries were 82.9% and 83.6% for TDZ and P-TDZ, respectively. Gin trash average method verification recoveries were 80.8% and 92.4%, respectively (Table VI).



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**Table VI. Recoveries from Method Verification
 Thidiazuron and photo-Thidiazuron in Cotton Matrices**

| Fortification Level | % Recovery | | | |
|---------------------|-------------|-------------------|-------------|-------------------|
| | GIN TRASH | | COTTONSEED | |
| | Thidiazuron | Photo-Thidiazuron | Thidiazuron | Photo-Thidiazuron |
| LOQ | 90.5 | 101.7 | 117.1 | 109.2 |
| LOQ | 90.5 | 103.7 | 99.2 | 93.1 |
| 5 X LOQ | 67.8 | 81.0 | 75.2 | 92.6 |
| 5X LOQ | 74.3 | 82.2 | 78.3 | 67.2 |
| 50X LOQ | 81.4 | 95.2 | 65.4 | 72.3 |
| 50X LOQ | 80.4 | 90.3 | 62.1 | 67.1 |
| Mean | 80.8 | 92.4 | 82.9 | 83.6 |
| SD | 8.9 | 9.6 | 21.2 | 17.3 |

Grand Mean: 84.9
Standard Deviation: 14.9
Minimum: 62.1
Maximum: 117.1

Procedural recoveries were fortified at the LOQ, 2X LOQ, 5X LOQ, 10X LOQ, 20X LOQ and 50X LOQ for both cottonseed and gin trash samples. Cottonseed average procedural recoveries were 83.4% and 93.8% for TDZ and P-TDZ, respectively (Table VIII). Gin trash average procedural recoveries were 82.1% and 90.7%, respectively (Table VII).

**Table VIII. Procedural Recoveries from Cottonseed Matrix
 Fortified with Thidiazuron and photo-Thidiazuron**

| Aventis Sample ID | Field Trial Number | Fortification Level (ppm) | % Recovery | |
|----------------------------|--------------------|---------------------------|-------------|-------------------|
| | | | Thidiazuron | photo-Thidiazuron |
| AV00-010512 | 25588-02 | 0.05 | 108.1 | 117.2 |
| AV00-010527 | 25588-02 | 0.05 | 63.2 | 88.5 |
| AV00-010545 | 25588-03 | 0.05 | 101.0 | 112.4 |
| AV00-010581 | 25588-07 | 0.05 | 94.1 | 82.8 |
| AV00-010503 | 25588-01 | 0.05 | 113.9 | 107.0 |
| AV00-010563 | 25588-05 | 0.05 | 88.7 | 98.3 |
| AV00-010608 | 25588-10 | 0.05 | 66.1 | 75.6 |
| AV00-010545 | 25588-03 | 0.10 | 83.2 | 92.7 |
| AV00-010608 | 25588-10 | 0.10 | 77.3 | 70.5 |
| AV00-010581 | 25588-07 | 0.20 | 78.8 | 98.4 |
| AV00-010527 | 25588-02 | 0.25 | 75.9 | 91.6 |
| AV00-010563 | 25588-05 | 0.50 | 66.7 | 82.5 |
| AV00-010503 | 25588-01 | 1.00 | 78.8 | 99.5 |
| AV00-010512 | 25588-02 | 2.50 | 71.9 | 95.6 |
| Mean: | | | 83.4 | 93.8 |
| Standard Deviation: | | | 15.8 | 13.3 |
| Grand Mean: | | | 88.6 | |
| Standard Deviation: | | | 15.3 | |

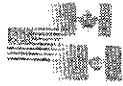


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Table VII. Procedural Recoveries from Gin Trash Matrix Fortified with Thidiazuron and photo-Thidiazuron

| Aventis Sample ID | Field Trial Number | Fortification Level (ppm) | % Recovery | |
|----------------------------|--------------------|---------------------------|-------------|-------------------|
| | | | Thidiazuron | photo-Thidiazuron |
| AV00-010511 | 25588-02 | 0.5 | 100.6 | 113.8 |
| AV00-010526 | 25588-02 | 0.5 | 78.4 | 117.1 |
| AV00-010553 | 25588-04 | 0.5 | 86.6 | 90.0 |
| AV00-010580 | 25588-07 | 0.5 | 84.4 | 113.1 |
| AV00-010502 | 25588-01 | 0.5 | 93.3 | 84.8 |
| AV00-010562 | 25588-05 | 0.5 | 63.8 | 72.2 |
| AV00-010607 | 25588-10 | 0.5 | 86.1 | 78.4 |
| AV00-010502 | 25588-01 | 1.0 | 80.5 | 83.4 |
| AV00-010526 | 25588-02 | 2.5 | 78.8 | 90.9 |
| AV00-010553 | 25588-04 | 5.0 | 91.5 | 92.7 |
| AV00-010580 | 25588-07 | 5.0 | 74.3 | 87.9 |
| AV00-010562 | 25588-05 | 5.0 | 75.3 | 82.8 |
| AV00-010607 | 25588-10 | 0.0 | 82.2 | 83.9 |
| AV00-010511 | 25588-02 | 25.0 | 73.5 | 78.5 |
| Mean: | | | 82.1 | 90.7 |
| Standard Deviation: | | | 9.4 | 14.1 |
| Grand Mean: | | | 86.4 | |
| Standard Deviation: | | | 12.5 | |

Residues values for cottonseed and gin trash treated samples are as follows. For cottonseed, TDZ residues above LOQ (0.05 ppm) were found in 8/10 samples, and 2 sample residues were above LOQ for P-TDZ. The residue range for cottonseed was 0.05-0.21 ppm for TDZ and 0.05-0.06 ppm for P-TDZ (Table X). For gin trash, TDZ residues above the LOQ (0.5 ppm) were found in all samples, and P-TDZ residues above LOQ were found in 9/10 trials. The residue range for gin trash was 1.62-22.12 ppm for TDZ and 0.54-7.17 ppm for P-TDZ (Table IX). Residue decline data from the Arkansas trial shows that thidiazuron and photo-thidiazuron both decrease in cottonseed and gin trash with increasing pre-harvest intervals. In cottonseed, TDZ residues declined from 0.11 ppm, 3 day PHI, to none detected by the 7 day PHI (Table X). There were no residues of P-TDZ detected in any of the cottonseed samples from the decline trial. In gin trash, TDZ residues declined from 13.07 ppm, 3 day PHI, to 2.13 ppm, 14 day PHI. P-TDZ residues declined from 3.41 ppm, 3 day PHI, to 1.40 ppm, 14 day PHI (Table IX).



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Table X. Results of Analysis of Cottonseed Samples

| Trial Number | Location | EPA Region | Sample Number | Treatment | DALA | Thidiazuron Residues | |
|--------------|----------|------------|---------------|-----------|------|----------------------|-------|
| | | | | | | TDZ | p-TDZ |
| 25588-01 | NC | II | AV00-010503 | UTC | 5 | ND | ND |
| | | | AV00-010508 | Treated | | 0.08 | < LOQ |
| | | | AV00-010509 | Treated | | 0.07 | < LOQ |
| 25588-02 | AR | IV | AV00-010512 | UTC | 3 | ND | ND |
| | | | AV00-010515 | Treated | 3 | 0.11 | ND |
| | | | AV00-010518 | UTC | 5 | < LOQ | ND |
| | | | AV00-010523 | Treated | 5 | < LOQ | ND |
| | | | AV00-010524 | Treated | 5 | < LOQ | ND |
| | | | AV00-010527 | UTC | 6 | ND | ND |
| | | | AV00-010530 | Treated | 6 | ND | ND |
| | | | AV00-010533 | UTC | 12 | ND | ND |
| | | | AV00-010536 | Treated | 12 | ND | ND |
| | | | AV00-010539 | UTC | 14 | ND | ND |
| AV00-010542 | Treated | 14 | ND | ND | | | |
| 25588-03 | MS | IV | AV00-010545 | UTC | 5 | ND | ND |
| | | | AV00-010550 | Treated | | < LOQ | ND |
| | | | AV00-010551 | Treated | | < LOQ | ND |
| 25588-04 | TX | VI | AV00-010554 | UTC | 5 | ND | ND |
| | | | AV00-010559 | Treated | | ND | ND |
| | | | AV00-010560 | Treated | | ND | ND |
| 25588-05 | TX | VIII | AV00-010563 | UTC | 5 | ND | ND |
| | | | AV00-010568 | Treated | | < LOQ | ND |
| | | | AV00-010569 | Treated | | 0.07 | ND |
| 25588-06 | TX | VIII | AV00-010572 | UTC | 5 | ND | ND |
| | | | AV00-010577 | Treated | | 0.07 | 0.06 |
| | | | AV00-010578 | Treated | | 0.11 | 0.05 |
| 25588-07 | TX | VIII | AV00-010581 | UTC | 5 | ND | ND |
| | | | AV00-010586 | Treated | | 0.15 | 0.06 |
| | | | AV00-010587 | Treated | | 0.11 | < LOQ |
| 25588-08 | TX | VIII | AV00-010590 | UTC | 5 | ND | ND |
| | | | AV00-010595 | Treated | | 0.21 | < LOQ |
| | | | AV00-010596 | Treated | | 0.17 | < LOQ |
| 25588-09 | AZ | X | AV00-010599 | UTC | 5 | ND | ND |
| | | | AV00-010604 | Treated | | < LOQ | < LOQ |
| | | | AV00-010605 | Treated | | 0.05 | < LOQ |
| 25588-10 | CA | X | AV00-010608 | UTC | 5 | ND | ND |
| | | | AV00-010613 | Treated | | < LOQ | ND |
| | | | AV00-010614 | Treated | | 0.05 | ND |



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Table IX. Results of Analysis of Gin Trash Samples

| Trial Number | Location | EPA Region | Sample Number | Treatment | DALA | Thidiazuron Residues | |
|--------------|----------|------------|---------------|-----------|------|----------------------|-------|
| | | | | | | TDZ | p-TDZ |
| 25588-01 | NC | II | AV00-010502 | Untreated | 5 | ND | ND |
| | | | AV00-010506 | Treated | | 21.78 | 6.87 |
| | | | AV00-010507 | Treated | | 22.12 | 7.17 |
| 25588-02 | AR | IV | AV00-010511 | Untreated | 3 | ND | ND |
| | | | AV00-010514 | Treated | 3 | 13.07 | 3.41 |
| | | | AV00-010517 | Untreated | 5 | < LOQ | ND |
| | | | AV00-010521 | Treated | 5 | 6.78 | 2.21 |
| | | | AV00-010522 | Treated | 5 | 4.26 | 3.20 |
| | | | AV00-010526 | Untreated | 6 | < LOQ | ND |
| | | | AV00-010529 | Treated | 6 | 9.97 | 3.13 |
| | | | AV00-010532 | Untreated | 12 | ND | ND |
| | | | AV00-010535 | Treated | 12 | 3.20 | 2.03 |
| | | | AV00-010538 | Untreated | 14 | < LOQ | ND |
| AV00-010541 | Treated | 14 | 2.13 | 1.40 | | | |
| 25588-03 | MS | IV | AV00-010544 | Untreated | 5 | ND | ND |
| | | | AV00-010548 | Treated | | 6.15 | 1.39 |
| | | | AV00-010549 | Treated | | 7.96 | 1.68 |
| 25588-04 | TX | VI | AV00-010553 | Untreated | 5 | ND | ND |
| | | | AV00-010557 | Treated | | 3.63 | 1.99 |
| | | | AV00-010558 | Treated | | 4.58 | 2.56 |
| 25588-05 | TX | VIII | AV00-010562 | Untreated | 5 | ND | ND |
| | | | AV00-010566 | Treated | | 4.52 | 0.54 |
| | | | AV00-010567 | Treated | | 5.83 | 0.78 |
| 25588-06 | TX | VIII | AV00-010571 | Untreated | 5 | ND | ND |
| | | | AV00-010575 | Treated | | 1.62 | ND |
| | | | AV00-010576 | Treated | | 2.87 | < LOQ |
| 25588-07 | TX | VIII | AV00-010580 | Untreated | 5 | ND | ND |
| | | | AV00-010584 | Treated | | 5.47 | 2.54 |
| | | | AV00-010585 | Treated | | 6.29 | 3.01 |
| 25588-08 | TX | VIII | AV00-010589 | Untreated | 5 | ND | ND |
| | | | AV00-010593 | Treated | | 6.54 | 1.86 |
| | | | AV00-010594 | Treated | | 10.17 | 2.84 |
| 25588-09 | AZ | X | AV00-010598 | Untreated | 5 | ND | ND |
| | | | AV00-010602 | Treated | | 8.56 | 1.30 |
| | | | AV00-010603 | Treated | | 8.49 | 1.30 |
| 25588-10 | CA | X | AV00-010607 | Untreated | 5 | ND | ND |
| | | | AV00-010611 | Treated | | 9.49 | 1.46 |
| | | | AV00-010612 | Treated | | 13.78 | 2.65 |

Data depicting the frozen storage stability of thidiazuron in cotton commodities stored for intervals reflecting the maximum storage intervals incurred by samples is required in order for any magnitude of residue study to be accepted. The maximum storage interval incurred from this study was 147 days. The previously submitted cottonseed storage stability study (D195636, F. Fort, 1994) was not adequate due to the nonspecificity of the method and high background levels of thidiazuron; thus, it cannot be used to validate the stability of thidiazuron in this study.



Thidiazuron/120301/Aventis CropScience
DACO 7.4.1/OPPTS 860.1500/OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
Crop Field Trial - Cottonseed and Gin Trash

D. CONCLUSION

The crop field trials submitted for cottonseed and gin trash are adequate. No meteorological abnormalities were reported during the conduct of the study. Both stripper and picker harvesting techniques were implemented as required by the OPPTS Guidelines. However, this study cannot be accepted until supporting storage stability study for cottonseed is submitted.

E. REFERENCES

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MRID No. 44558701. DP Barcode D246804. Sherrie L. Mason. January 21, 1999. Independent Laboratory Validation of Analytical Method AW/02/96 for the Analysis of Thidiazuron and Photo-thidiazuron in/on Cottonseed Commodities.

MRID No. 43922701. DP Barcode D225339. Toiya Jimerson. October 27, 2004. Thidiazuron: Registrant's Response to Residue Chemistry Data Requirements.

F. DOCUMENT TRACKING

RDI: T. Jimerson (11/29/04)
DP Barcode(s): D
PC Code: 120301



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DACO 7.4.1/OPPTS 860.150 /OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
Crop Field Trial - Cottonseed and Gin Trash

Appendix I: Application Site Weather Reports



Thidiazuorn/120301/Aventis CropScience
 DACO 7.4.1/OPPTS 860.1500/OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Cottonseed and Gin Trash

Pikeville, NC

Trial Precipitation Data Source: Aventis CropScience on-site Weather Station located 0.25 mi from the test site.
Trial Air Temperature Data Source: Aventis CropScience on-site Weather Station located 0.25 mi from the test site.
Historical Weather Data Source: NOAA weather station #3510 in Goldsboro, NC. (Collected from 1989 to 1998)

| Trial Month | Trial Air Minimum | Historical Air Minimum | Trial Air Maximum | Historical Air Maximum | Trial Total Precipitation | Historical Total Precipitation |
|-------------|-------------------|------------------------|-------------------|------------------------|---------------------------|--------------------------------|
| May | 59 | 60 | 84 | 81 | 0.96 | 4.06 |
| June | 68 | 68 | 88 | 88 | 5.67 | 4.15 |
| July | 69 | 73 | 87 | 91 | 6.29 | 5.49 |
| August | 69 | 70 | 87 | 88 | 5.58 | 5.90 |
| September | 63 | 65 | 81 | 83 | 5.95 | 4.40 |
| October | 47 | 53 | 75 | 75 | 0.00 | 3.75 |

| Irrigation Date | Irrigation Method | Water Source | Irrigation Amount (in) |
|-----------------|-------------------|--------------|------------------------|
| No Irrigation | | | |



Thidiazuron/120301/Aventis CropScience
 DACO 7.4.1/OPPTS 860.150 /OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Cottonseed and Gin Trash

Proctor, AR

Trial Precipitation Data Source: MSAG on-site weather station, Proctor, AR located 0.5 Mi from the test site.

Trial Air Temperature Data Source: MSAG on-site weather station, Proctor, AR located 0.5 Mi from the test site.

Historical Weather Data Source: NOAA weather station #5954-04 in Memphis, TN, located 10 Mi from the test site.
 (Collected from 1990 to 1999)

| Trial Month | Trial Air Minimum | Historical Air Minimum | Trial Air Maximum | Historical Air Maximum | Trial Total Precipitation | Historical Total Precipitation |
|-------------|-------------------|------------------------|-------------------|------------------------|---------------------------|--------------------------------|
| May | 64 | 56 | 83 | 81 | 4.83 | 4.7 |
| June | 68 | 64 | 88 | 88 | 3.42 | 4.8 |
| July | 70 | 67 | 94 | 92 | 0.16 | 5.1 |
| August | 71 | 65 | 97 | 90 | 3.47 | 2.5 |
| September | 62 | 58 | 87 | 85 | 0.97 | 3.1 |

| Irrigation Date | Irrigation Method | Water Source | Irrigation Amount (in) |
|-----------------|-------------------|--------------|------------------------|
| No Irrigation | | | |



Thidiazuorn/120301/Aventis CropScience
 DACO 7.4.1/OPPTS 860.1500/OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Cottonseed and Gin Trash

Greenville, MS

Trial Precipitation Data Source: Campbell Weather Station on-site located 200 yds from the test site.

Trial Air Temperature Data Source: Campbell Weather Station on-site located 200 yds from the test site.

Historical Weather Data Source: Campbell Weather Station on-site located 200 yds from the test site and NOAA weather station in Stoneville, Mississippi. Historical Weather Data collected from 1990 to 1999.

| Trial Month | Trial Air Minimum | Historical Air Minimum | Trial Air Maximum | Historical Air Maximum | Trial Total Precipitation | Historical Total Precipitation |
|-------------|-------------------|------------------------|-------------------|------------------------|---------------------------|--------------------------------|
| May | 65 | 60 | 84 | 85 | 6.51 | 4.53 |
| June | 69 | 68 | 88 | 91 | 4.98 | 3.09 |
| July | 71 | 72 | 93 | 93 | 1.16 | 4.3 |
| August | 72 | 70 | 97 | 92 | 0.00 | 1.86 |
| September | 63 | 62 | 86 | 88 | 2.27 | 2.74 |

| Irrigation Date | Irrigation Method | Water Source | Irrigation Amount (in) |
|-----------------|-------------------|--------------|------------------------|
| 8/10/2000 | Overhead | Well | 2.5 |



Thidiazuorn/120301/Aventis CropScience
 DACO 7.4.1/OPPTS 860.150 /OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Cottonseed and Gin Trash

East Bernard, TX

Trial Precipitation Data Source: Texas Ag Experiment Station, Eagle Lake, Texas located ≈12 mi from the test site.

Trial Air Temperature Data Source: Coastal Ag Research on site Rain Gauge.

Historical Weather Data Source: NOAA Thompsons 3WSW, Texas, located ≈30 mi from the test site.

(Collected from 1990 to 1999)

| Trial Month | Trial Air Minimum | Historical Air Minimum | Trial Air Maximum | Historical Air Maximum | Trial Total Precipitation | Historical Total Precipitation |
|-------------|-------------------|------------------------|-------------------|------------------------|---------------------------|--------------------------------|
| May | 66 | 67 | 84 | 86 | 5.07 | 5.14 |
| June | 67 | 73 | 84 | 92 | 2.74 | 5.1 |
| July | 69 | 74 | 95 | 94 | 1.26 | 1.88 |
| August | 69 | 74 | 94 | 94 | 1.36 | 3.71 |
| September | 62 | 69 | 87 | 91 | 0.65 | 3.71 |

| Irrigation Date | Irrigation Method | Water Source | Irrigation Amount (in) |
|-----------------|-------------------|--------------|------------------------|
| 7/4/2000 | Furrow | Well | 2 |
| 7/21/2000 | Furrow | Well | 2 |
| 8/18/2000 | Furrow | Well | 2 |



Thidiazuorn/120301/Aventis CropScience
 DACO 7.4.1/OPPTS 860.1500/OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Cottonseed and Gin Trash

Edmonson, TX

Trial Precipitation Data Source: Texas A&M Experiment Station in Halfway, Texas, located 15 mi from the test site.

Trial Air Temperature Data Source: Texas A&M Experiment Station in Halfway, Texas, located 15 mi from the test site.

Historical Weather Data Source: Plainview, Texas NOAA Station located 20 mi from the test site. (Collected from 1980 to 1999)

| Trial Month | Trial Air Minimum | Historical Air Minimum | Trial Air Maximum | Historical Air Maximum | Trial Total Precipitation | Historical Total Precipitation |
|-------------|-------------------|------------------------|-------------------|------------------------|---------------------------|--------------------------------|
| May | 43 | 54 | 72 | 80 | 0.10 | 2.95 |
| June | 63 | 63 | 84 | 88 | 3.95 | 3.13 |
| July | 65 | 67 | 93 | 92 | 0.57 | 2.33 |
| August | 62 | 66 | 94 | 89 | 0.26 | 2.24 |
| September | 54 | 58 | 90 | 82 | 0.01 | 2.40 |
| October | 50 | 47 | 71 | 73 | 3.24 | 1.63 |

| Irrigation Date | Irrigation Method | Water Source | Irrigation Amount (in) |
|-----------------|-------------------|--------------|------------------------|
| 4/27/2000 | Furrow | Well | 6 |
| 5/15/2000 | Furrow | Well | 4 |
| 7/31/2000 | Furrow | Well | 4 |



Thidiazuom/120301/Aventis CropScience
 DACO 7.4.1/OPPTS 860.150 /OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Cottonseed and Gin Trash

Floydada, TX

Trial Precipitation Data Source: Texas A&M Experiment Station in Halfway, TX, located 58 miles from the test site.

Trial Air Temperature Data Source: Texas A&M Experiment Station in Halfway, TX, located 58 miles from the test site.

Historical Weather Data Source: Plainville, Texas NOAA Station located 35 miles from the test site. (Collected from 1980 to 1999)

| Trial Month | Trial Air Minimum | Historical Air Minimum | Trial Air Maximum | Historical Air Maximum | Trial Total Precipitation | Historical Total Precipitation |
|-------------|-------------------|------------------------|-------------------|------------------------|---------------------------|--------------------------------|
| May | 41 | 54 | 72 | 80 | 0.04 | 2.95 |
| June | 63 | 63 | 84 | 88 | 3.95 | 3.13 |
| July | 65 | 67 | 93 | 92 | 0.57 | 2.33 |
| August | 62 | 66 | 94 | 89 | 0.26 | 2.24 |
| September | 54 | 58 | 90 | 82 | 0.01 | 2.40 |
| October | 50 | 47 | 71 | 73 | 3.24 | 1.63 |

| Irrigation Date | Irrigation Method | Water Source | Irrigation Amount (In) |
|-----------------|-------------------|--------------|------------------------|
| 4/19/2000 | Furrow | well | 6 |
| 6/10/2000 | Furrow | well | 4 |
| 7/14/2000 | Furrow | well | 4 |
| 8/23/2000 | Furrow | well | 4 |



Thidiazuron/120301/Aventis CropScience
 DACO 7.4.1/OPPTS 860.1500/OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Cottonseed and Gin Trash

Uvalde, TX

Trial Precipitation Data Source: STAR Weather station located on-site.

Trial Air Temperature Data Source: STAR Weather located on-site.

Historical Weather Data Source: Texas Agricultural Experiment Station located 5 mi from the test site. (Collected from 1990 to 1999)

| Trial Month | Trial Air Minimum | Historical Air Minimum | Trial Air Maximum | Historical Air Maximum | Trial Total Precipitation | Historical Total Precipitation |
|-------------|-------------------|------------------------|-------------------|------------------------|---------------------------|--------------------------------|
| March | 56 | 50 | 81 | 75 | 0.68 | 2.40 |
| April | 60 | 57 | 86 | 82 | 0.83 | 2.46 |
| May | 70 | 66 | 93 | 90 | 2.60 | 2.66 |
| June | 73 | 72 | 92 | 96 | 5.50 | 3.26 |
| July | 74 | 73 | 102 | 98 | 0.06 | 2.21 |
| August | 74 | 73 | 100 | 98 | 0.04 | 1.99 |

| Irrigation Date | Irrigation Method | Water Source | Irrigation Amount (in) |
|-----------------|-------------------|--------------|------------------------|
| 7/5/2000 | Furrow | Well | 4 |
| 7/15/2000 | Furrow | Well | 4 |



Thidiazuorn/120301/Aventis CropScience
 DACO 7.4.1/OPPTS 860.150 /OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Cottonseed and Gin Trash

Levelland, TX

Trial Precipitation Data Source: STAR-HP: 2 on-site weather station.

Trial Air Temperature Data Source: STAR-HP32 on-site weather station.

Historical Weather Data Source: Lubbock OAA weather station located ≈ 32 mi. from the test site.

(Collected from 1990 to 1999)

| Trial Month | Trial Air Minimum | Historical Air Minimum | Trial Air Maximum | Historical Air Maximum | Trial Total Precipitation | Historical Total Precipitation |
|-------------|-------------------|------------------------|-------------------|------------------------|---------------------------|--------------------------------|
| May | 59 | 57 | 91 | 84 | 0.07 | 2.57 |
| June | 64 | 65 | 84 | 92 | 6.26 | 2.83 |
| July | 66 | 69 | 93 | 93 | 2.51 | 1.61 |
| August | 65 | 67 | 94 | 91 | 0.60 | 2.09 |
| September | 57 | 59 | 91 | 85 | 0.00 | 2.41 |
| October | 50 | 47 | 73 | 76 | 4.72 | 0.93 |

| Irrigation Date | Irrigation Method | Water Source | Irrigation Amount (in) |
|-----------------|-------------------|--------------|------------------------|
| 8/25/2000 | furrow | well | 2 |



Thidiazuorn/120301/Aventis CropScience
 DACO 7.4.1/OPPTS 860.1500/OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Cottonseed and Gin Trash

Maricopa, AZ

Trial Precipitation Data Source: Maricopa AZMET Monthly located 0.2 mi. from the test site.
Trial Air Temperature Data Source: Maricopa AZMET Monthly located 0.2 mi. from the test site.
Historical Weather Data Source: Maricopa AZMET Weather Data located 0.2 mi. from the test site. (Collected from 1990 to 1999)

| Trial Month | Trial Air Minimum | Historical Air Minimum | Trial Air Maximum | Historical Air Maximum | Trial Total Precipitation | Historical Total Precipitation |
|-------------|-------------------|------------------------|-------------------|------------------------|---------------------------|--------------------------------|
| April | 52 | 50 | 89 | 84 | 0 | 0.25 |
| May | 61 | 59 | 99 | 94 | 0 | 0.23 |
| June | 70 | 66 | 103 | 102 | 0.75 | 0.04 |
| July | 76 | 74 | 106 | 104 | 0 | 0.79 |
| August | 76 | 74 | 102 | 103 | 2.09 | 0.85 |
| September | 69 | 67 | 102 | 98 | 0.04 | 0.82 |
| October | 57 | 52 | 83 | 89 | 2.05 | 0.26 |

| Irrigation Date | Irrigation Method | Water Source | Irrigation Amount (in) |
|-----------------|-------------------|--------------|------------------------|
| 4/24/2000 | Furrow | River | 4 |
| 5/3/2000 | Furrow | River | 4 |
| 5/26/2000 | Furrow | River | 4 |
| 6/22/2000 | Furrow | River | 4 |
| 6/30/2000 | Furrow | River | 4 |
| 7/21/2000 | Furrow | River | 4 |
| 7/27/2000 | Furrow | River | 4 |
| 8/4/2000 | Furrow | River | 4 |
| 8/16/2000 | Furrow | River | 4 |
| 8/23/2000 | Furrow | River | 4 |
| 9/5/2000 | Furrow | River | 4 |



Thidiazuron/120301/Aventis CropScience
 DACO 7.4.1/OPPTS 860.1500/OECD IIA 6.3.1, 6.3.2, 6.3.3 and IIIA 8.3.1, 8.3.2, 8.3.3
 Crop Field Trial - Cottonseed and Gin Trash

Kerman, CA

Trial Precipitation Data Source: Cimis Station #2, Five Points, CA located 10 mi from the test site.

Trial Air Temperature Data Source: Cimis Station #2, Five Points, CA located 10 mi from the test site.

Historical Weather Data Source: Cimis Station #2, Five Points, CA located 10 mi from the test site.
 (Collected from 1969 to 1999)

| Trial Month | Trial Air Minimum | Historical Air Minimum | Trial Air Maximum | Historical Air Maximum | Trial Total Precipitation | Historical Total Precipitation |
|-------------|-------------------|------------------------|-------------------|------------------------|---------------------------|--------------------------------|
| May | 54 | 50 | 85 | 84 | 0.00 | 0.13 |
| June | 60 | 57 | 93 | 91 | 0.04 | 0.12 |
| July | 58 | 62 | 92 | 96 | 0.00 | 0.03 |
| August | 59 | 61 | 95 | 94 | 0.04 | 0.04 |
| September | 55 | 57 | 89 | 88 | 0.00 | 0.27 |
| October | 48 | 50 | 77 | 79 | 1.81 | 0.26 |

| Irrigation Date | Irrigation Method | Water Source | Irrigation Amount (in) |
|-----------------|-------------------|--------------|------------------------|
| 6/4/2000 | Furrow | Well | 6 |
| 6/12/2000 | Furrow | Well | 3 |
| 6/25/2000 | Furrow | Well | 3 |
| 7/3/2000 | Furrow | Well | 3 |
| 7/15/2000 | Furrow | Well | 3 |
| 7/24/2000 | Furrow | Well | 3 |
| 8/14/2000 | Furrow | Well | 3 |
| 8/25/2000 | Furrow | Well | 4 |
| 9/7/2000 | Furrow | Well | 4 |



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|--------------------------|--------------------------------|
| Chemical: | Thidiazuron |
| PC Code: | 120301 |
| HED File Code | 11000 Chemistry Reviews |
| Memo Date: | 12/06/2004 |
| File ID: | DPD294542 |
| Accession Number: | 412-05-0088 |

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