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DATA EVALUATION RECORD

STUDY 9

CHEM 129034 Flumioxazin §164-1
CAS No. 103361-09-7
FORMULATION--90--FORMULATION NOT IDENTIFIED

STUDY ID 44295047

Lightle, S. and P. N. Coody. 1997. Soil dissipation of [phenyl-^{14}C]flumioxazin under actual field conditions in soybeans in Indiana. PTRL East, Inc. Project No.: 964. PTRL East, Inc. Report No.: 1926. Unpublished study performed by PTRL East, Inc., Richmond, KY (in-life and analytical phases); and PTRL West, Inc., Richmond, CA (analytical phase); and submitted by Valent U.S.A. Corporation, Walnut Creek, CA.

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CONCLUSIONS

Field Dissipation - Terrestrial

1. This study is scientifically valid and provides supplemental information on the terrestrial field dissipation of flumioxazin in lysimeter-enclosed soybean plots of loam soil in Indiana.

2. Uniformly phenyl ring-labeled [^{14}C]flumioxazin, applied as a pre-emergent at a nominal application rate of 45 g a.i./A (0.361 mg/lysimeter) to lysimeter-enclosed soybean plots of loam soil in Charlestown, IN, dissipated with a registrant-calculated half-life of 4.8 days (0-16 day data; $r^2 = 0.86$); the half-life was determined only from the parent compound detected in the 0- to 3-inch depth. Dissipation was observed to be biphasic with the more rapid phase occurring through 16 days. The observed first half-life occurred between 0 and 2 days posttreatment. Residue data were reported as means of two replicates; concentration data were reported as parent equivalents. The parent compound was initially present in the 0- to 3-inch depth at 88.5% (0.13 ppm) of the applied radioactivity, was 50.2% (0.060 ppm) at 2 days and 28.0-33.5% (0.032-0.045 ppm) from 5 to 9 days posttreatment, and was 0.9% (0.001 ppm) at 106 days. The minor degradates APF and 482-HA were detected at maximums of 8.2% (0.010 ppm, day 2) and 2.6% (0.004 ppm, day 0) of the applied radioactivity, respectively. The minor degradates 482-CA and IMOXA were present at ≤1.9% (≤0.002 ppm, days 2 to72) and ≤1.3% (≤0.001 ppm, days 2 to 106) of the applied radioactivity, respectively. Total [^{14}C]residues were not detected above 0.01 μg/g (designated as the level of analysis) below the 3-inch depth. Nonextractable [^{14}C]residues were initially 7.5% of the applied radioactivity, were 28.6% at 2 days posttreatment, increased to 51.7% by 5 days, and were a maximum of 93.1% at 316 days.

   Total [^{14}C]residues detected in the leachate samples were 0.33% of the applied radioactivity throughout the study period. Characterization data for the leachate samples were reported only for samples containing ≥0.001 μg/mL total [^{14}C]residues. The parent compound was detected at 0.01-0.08% (0.03-0.48 ppb) at 5, 16, 37, and 44 days posttreatment. The minor degradates APF and 482-HA were detected at 0.0-0.19% (0.07-1.6 ppb) and 0.0-0.31% (0.09-12.3 ppb) from 5 to 72 days posttreatment, respectively. Total [^{14}C]residues detected in the run-off samples were 0.55% of the applied radioactivity throughout the study period. Characterization data for the run-off samples were reported only for samples containing ≥0.001 μg/mL total [^{14}C]residues. The parent compound was detected at ≤0.01% (≤0.76 ppb) at 16, 37, and 44 days posttreatment. The minor degradate APF was detected at ≤0.05% (≤1.5 ppb) from 16 to 58 days posttreatment.

METHODOLOGY

Uniformly phenyl ring-labeled [^{14}C]flumioxazin (formulation not reported; V-53482; radiochemical purity ≥99%, specific activity 348 μCi/mg; Figure 1, p. 57), dissolved in dimethyl sulfoxide, was applied once (as a pre-emergent) at a nominal rate of 45 g a.i./A (0.361 mg/lysimeter) to 8-inch diameter steel lysimeter-enclosed soybean plots of loam soil (0-3 inches: 47.6% sand, 35.1% silt, 17.3% clay, 2.2% organic carbon, pH 7.0, CEC 9.7 meq M+/100 g; Table I, p. 48) in Charlestown, IN (pp. 15, 16). Prior to treatment, the test plot was treated twice with Roundup® (glyphosate, formulation not reported; see Comment #15) to destroy vegetation, and 40 steel lysimeters (38-inch length; 8-inch i.d.) were inserted vertically into the soil to a target depth of 36 inches (leaving the rim two inches above the soil surface; p. 17). The lysimeters were inserted on both sides of an access trench (5 feet deep x 5 feet wide x 35 feet long; Appendix 11, Figure 1, p. 248). The lower end of the soil column was fitted with a wire mesh and the lysimeter was equipped with a leachate collection apparatus consisting of a glass funnel inserted into a glass collection jar (p. 17). An overflow collection apparatus, consisting of Teflon tubing inserted through a hole in the lysimeter (0.25 inches above the soil surface) and connected to a glass jar, was used to collect water that pooled on the top of the soil surface. The lysimeters remained untreated for 16 days prior to the initiation of the study; lysimeter-enclosed plots received one inch of water (via irrigation) prior to treatment. Three soybean seeds (var. FFR 398) were planted (one-inch depth) in each lysimeter immediately prior to treatment (p. 18); following germination, the two smallest plants were cut at ground level and removed. The soil surfaces within 29 lysimeters were individually treated drop-wise around the inner six-inch area with the test solution using a glass Pasteur pipette (p. 20); each lysimeter was immediately irrigated with 100 mL of well water following treatment. Of the remaining lysimeters, three were utilized as controls and four were treated with KBr to monitor the wetting front associated with the pesticide treatment (p. 18). The test plot containing the lysimeters was not treated with pesticides for at least twelve years prior to treatment with flumioxazin (p. 16). The depth to the water table was not reported. Environmental data were collected on-site (p. 19) with the exception of pan evaporation data (Appendix 5, pp. 184-189). Precipitation was supplemented with irrigation; total water input (58.8 inches) during the study period was approximately 155% of the 12-year mean annual precipitation (Table III, pp. 50-51; Figure 5, p. 62). Through 97 days posttreatment, pan evaporation was 14.9 inches (reviewer-calculated) and total water input was 13.1 inches (Appendix 5, pp. 184-189; see Comment #2).

Duplicate treated lysimeters were removed at 0, 2, 5, 9, 16, 27, 48, 72, 106, and 316 days posttreatment; single control lysimeters were removed at 0, 72, and 316 days posttreatment; and KBr-treated lysimeters were removed at 106 days (one lysimeter) and 316 days posttreatment (three lysimeters; Table II, p. 49). Samples were collected by removing the entire lysimeter from the plot (p. 21). The top three inches of soil were transferred to sample bags, and the steel lysimeters (0-106 day samples) were cut open with a reciprocating saw. The soil columns within the lysimeters were sectioned into 3-inch (0- to 12-inch depth) and 6-inch (12- to 36-inch depth) increments, and shipped

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frozen (on dry ice) to the PTRL East analytical lab; lysimeters removed at 316 days posttreatment were processed at the analytical lab. At the PTRL East analytical lab, the soil was homogenized and triplicate subsamples were analyzed for total radioactivity by LSC following combustion; the limit of quantitation (56 dpm/g) was twice background. Soil samples containing ≥0.01 μg/g [^{14}C]residues were shipped to PTRL West, Inc., and extracted and analyzed (p. 24). Soil samples were stored frozen at PTRL West, Inc. for less than one week prior to analysis (Appendix 3, p. 98). Control lysimeters (days 72 and 316) were removed and used to quantify background radioactivity, and to determine gravimetric moisture in each soil layer (p. 22). Leachate and run-off water samples were monitored approximately once per week (p. 23). When leachate/run-off was present in the collection jars, samples were placed into collection vials and stored frozen, or immediately shipped frozen to the PTRL East analytical lab.

At PTRL West, Inc., soil samples were analyzed for the parent and the following potential degradates: N-[7-fluoro-3-oxo-4-(2-propynyl)-2H-1,4-benzoxazin-6-yl]-3,4,5,6-tetrahydrophthalamic acid (482-HA); 2-[7-fluoro-3-oxo-6-(3,4,5,6-tetrahydrophthalimido)-2H-1,4-benzoxazin-4-yl]propionic acid (482-CA); 7-fluoro-6-(3,4,5,6-tetrahydrophthalimido)-2H-1,4-benzoxazin-3(4H)-one (IMOXA); 6-amino-7-fluoro-4-(2-propynyl)-2H-1,4-benzoxazin-3(4H)-one (APF); 7-fluoro-6-nitro-4-(2-propynyl)-2H-1,4-benzoxazin-3(4H)-one (PNF); SAT-482; and 482PHO (Appendix 3, Figure B1, p. 119). Soil samples were extracted three times by sonicating and shaking with acetone:0.1 *N* HCl (4:1, v:v) and centrifuged, and the supernatants were decanted (Appendix 3, p. 98; Figure B3, p. 123). The extracts were combined and triplicate aliquots were analyzed for total radioactivity by LSC; the limit of detection was 35 dpm above background. Aliquots of the extracts were concentrated under nitrogen or by rotary evaporation, and redissolved in methanol:water (2:3, v:v). The redissolved extracts were centrifuged (to remove particulates), and triplicate aliquots of the supernatant were analyzed for total radioactivity by LSC. Aliquots of the supernatant were also analyzed by reverse-phase HPLC (Supelcosil LC-DP column) using a mobile phase gradient of water:methanol (both with 0.05% H_3PO_4; 60:40 to 0:100, v:v) with UV (254 nm) and radioactive flow detection (Appendix 3, pp. 95, 96). Samples were co-chromatographed with nonradiolabeled reference standards; the limit of quantitation was not reported. Eluent fractions were collected at one-minute intervals and analyzed for total radioactivity by LSC. To confirm compound identities, selected extracts (2, 9, 27, 48, and 72 days) were concentrated, redissolved in acetonitrile or methanol, and analyzed by two-dimensional TLC using silica gel plates developed in the first dimension with benzene:ethyl acetate (4:1, v:v), and in the second dimension with ethyl acetate:ethanol (4:1, v:v; days 9, 27, and 48), ethyl acetate:ethanol:glacial acetic acid (80:20:0.4, v:v:v; day 72), or 100% ethyl acetate (day 2; Appendix 3, pp. 97, 99; Figure B6, pp. 132-141). Areas of radioactivity were detected by radioimage scanning. Samples were co-chromatographed with nonradiolabeled reference standards which were visualized with UV (254 nm) light and/or iodine staining. Post-extracted soil samples were analyzed for total radioactivity by LSC following combustion.

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Triplicate aliquots of the leachate and run-off samples were analyzed for total radioactivity by LSC at the PTRL East analytical lab; the limit of quantitation (70 dpm/mL) was twice the background (p. 25). Samples containing ≥0.001 μg/mL [^{14}C]residues were shipped to PTRL West, Inc., for characterization of [^{14}C]residues. At PTRL West, Inc., samples were centrifuged (to remove particulates) and triplicate aliquots of the supernatant were analyzed for total radioactivity by LSC (Appendix 3, p. 99). Samples were analyzed by HPLC as previously described for the soil samples. Selected samples (day 16) were concentrated by a nitrogen stream or rotary evaporation, dissolved in acetonitrile or methanol, and analyzed by two-dimensional TLC developed in the first dimension with benzene:ethyl acetate (4:1, v:v), and in the second dimension with ethyl acetate:ethanol (4:1, v:v) or ethyl acetate:ethanol:acetic acid (80:20:0.4, v:v; Appendix 3, Figures B8, B11; pp. 148-151, 165-166).

In a method validation study, duplicate soil samples were fortified with flumioxazin (fortification not specified) and extracted (method not specified); the extracts were combusted, dried, redissolved in methanol:water (2:3, v:v), and analyzed by HPLC as previously described (Appendix 3, p. 102). Recovery of the parent was 91.3% of the applied radioactivity (Appendix 3, Table B1, p. 108).

DATA SUMMARY

Uniformly phenyl ring-labeled [^{14}C]flumioxazin (V-53482; radiochemical purity ≥99%), applied as a pre-emergent at a nominal application rate of 45 g a.i./A (0.361 mg/lysimeter) to lysimeter-enclosed soybean plots of loam soil in Charlestown, IN, dissipated with a registrant-calculated half-life of 4.8 days (0-16 day data; r^2 = 0.86; Appendix 3, Figure B13, p. 169); the half-life was determined only from the parent compound detected in the 0- to 3-inch depth (see Comment #7). Dissipation was observed to be biphasic with the more rapid phase occurring through 16 days. The observed first half-life occurred between 0 and 2 days posttreatment. Residue data were reported as means of two replicates; concentration data were reported as parent equivalents. The parent compound was initially present in the 0- to 3-inch depth at 88.5% (0.13 ppm) of the applied radioactivity, was 50.2% (0.060 ppm) at 2 days and 28.0-33.5% (0.032-0.045 ppm) of the applied from 5 to 9 days posttreatment, decreased to 6.0-13.2% (0.007-0.015 ppm) by 16-48 days posttreatment, and was 0.9% (0.001 ppm) of the applied at 106 days posttreatment (Appendix 3, Tables BV, BVI, pp. 113, 114). The minor degradate 6-amino-7-fluoro-4-(2-propynyl)-2H-1,4-benzoxazin-3(4H)-one (APF) was initially present (day 0) at 5.4% (0.008 ppm) of the applied radioactivity, was a maximum of 8.2% (0.010 ppm) of the applied at 2 days posttreatment, and was last detected at 2.3% (0.003 ppm) at 9 days posttreatment. The minor degradate N-[7-fluoro-3-oxo-4-(2-propynyl)-2H-1,4-benzoxazin-6-yl]-3,4,5,6-tetrahydrophthalamic acid (482-HA) was detected once, at 2.6% (0.004 ppm) of the applied at day 0. The minor degradate 2-[7-fluoro-3-oxo-6-(3,4,5,6-tetrahydrophthalimido)-2H-1,4-benzoxazin-4-yl]propionic acid (482-CA) was present at

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≤1.9% (≤0.002 ppm) of the applied radioactivity from 2 to 72 days posttreatment. The minor degradate 7-fluoro-6-(3,4,5,6-tetrahydrophthalimido)-2H-1,4-benzoxazin-3(4H)-one (IMOXA) was present at ≤1.3% (≤0.001 ppm) of the applied radioactivity from 2 to 106 days posttreatment. An unidentified minor degradate (designated as "D3") was initially present (day 2) at 5.3% (0.006 ppm) of the applied radioactivity, was 3.1% (0.004 ppm) of the applied at 5 days posttreatment, was a maximum of 5.5% (0.007 ppm) of the applied at 9 days posttreatment, and was last detected at 0.8% (0.001 ppm) at 48 days posttreatment. Unidentified radioactivity (designated as "All Others") was present at 1.5-6.3% (0.002-0.007 ppm) of the applied radioactivity from 0 to 106 days posttreatment; unidentified radioactivity consisted of multiple components, each of which was ≤0.002 ppm. Total [^{14}C]residues were not detected above 0.01 μg/g (designated as the level of analysis) below the 3-inch depth (Table V, p. 54). Nonextractable [^{14}C]residues were initially 7.5% of the applied radioactivity, were 28.6% of the applied at 2 days posttreatment, increased to 51.7% of the applied by 5 days posttreatment, and were a maximum of 93.1% of the applied at 316 days posttreatment (Table BIV, pp. 111, 112; see Comment #1).

Total [^{14}C]residues detected in the leachate samples were 0.33% of the applied radioactivity throughout the study period (Table VI, p. 55). Characterization data for the leachate samples were reported only for samples containing ≥0.001 μg/mL total [^{14}C]residues (5, 16, 37, 44, and 72 days). The parent compound was detected at 0.01-0.08% (0.03-0.48 ppb) of the applied at 5, 16, 37, and 44 days posttreatment (Appendix 3, Table BVIII, p. 116). The minor degradates APF and 482-HA were detected at 0.0-0.19% (0.07-1.6 ppb) and 0.0-0.31% (0.09-12.3 ppb) of the applied from 5 to 72 days posttreatment, respectively. Three unidentified minor degradates (designated as "D1, D3, and D4") were detected at ≤0.32% (≤2.7 ppb) of the applied radioactivity. Unidentified radioactivity (designated as "All Others") was detected at 0.0-0.85% (0.37-5.3 ppb) of the applied radioactivity from 5 to 72 days posttreatment; unidentified radioactivity consisted of multiple components, each of which was ≤1.6 ppb.

Total [^{14}C]residues detected in the run-off samples were 0.55% of the applied radioactivity throughout the study period (Table VI, p. 55). Characterization data for the run-off samples were reported only for samples containing ≥0.001 μg/mL total [^{14}C]residues (16, 37, 44, and 58 days). The parent compound was detected at ≤0.01% (≤0.76 ppb) at 16, 37, and 44 days posttreatment (Appendix 3, Table BX, p. 118). The minor degradate APF was detected at ≤0.05% (≤1.5 ppb) from 16 to 58 days posttreatment. Three unidentified minor degradates (designated as "D1, D2, D3, and D4") were detected at ≤0.33% (≤9.6 ppb) of the applied radioactivity from 16 to 58 days posttreatment. Unidentified radioactivity (designated as "All Others") was detected at 0.18% (0.42-3.8 ppb) from 16 to 58 days posttreatment; unidentified radioactivity consisted of multiple components, each of which was <1.6 ppb.

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Material balances (based on LSC analysis) were 96.4-106.1% of the applied radioactivity from 0 to 9 days posttreatment, were 64.9% of the applied at 16 days posttreatment, and were 72.9-81.1% of the applied from 27 to 316 days posttreatment with the exception of 56.4% at 106 days (Table V, p. 54; see Comment #10; also see Table BIII, p. 110).

COMMENTS

1. Nonextractable [^{14}C]residues were considerably high following 2 days posttreatment (Table BIV, pp. 111-112). Nonextractable [^{14}C]residues were 28.6% of the applied radioactivity at 2 days posttreatment, were 51.7% of the applied at 5 days posttreatment, and generally increased to a maximum of 93.1% of the applied by 316 days posttreatment (also see Comment #10). The study author stated that soil samples were extracted three times by sonicating and shaking with acetone:0.1 *N* HCl (4:1, v:v; p. 98). The reviewer noted that the observed first half-life occurred between 0 and 2 days before the nonextractable residues became unreasonably high. Additionally, the reviewer noted that the all residues detected in the soil (above the limit of analysis) remained in the top layer of the soil (0-3 inches). However, water balance data were inconclusive and it could not be confirmed that conditions were favorable for leaching (also see Comment #2).

2. Pan evaporation data were incomplete; data were only reported through 97 days posttreatment. Through 16 days posttreatment, pan evaporation was 3.4 inches and total water input was 3.9 inches (Appendix 5, p. 184), which may have created somewhat favorable conditions for leaching. However, the study authors reported that 2.52 inches of rain fell on the site from 9 to 16 days posttreatment as a result of Hurricane Erin; it is unclear whether preferential flow occurred following the rain (also see Comment #5). Additionally, the reviewer notes that 303 mL of run-off water was collected and removed from the lysimeters through 16 days posttreatment, which might have created a negative water balance by decreasing the actual water input value (Table IV, p. 52). Also, the study authors reported that the recovery of the bromide tracers in the leachate samples were highly variable (see Comment #6). The reviewer notes that the registrant-calculated half-life of the parent was 4.8 days, and that >90% of the parent detected in the 0- to 3-inch soil depth had dissipated by 16 days posttreatment. Based on reported water balance data, however, the reviewer was unable to confirm that conditions were favorable for leaching.

3. The study was not conducted under typical use conditions. The lysimeters (8-inch inner diameter) were too small to be representative of actual use conditions, the method of application was atypical (glass Pasteur pipette), and only limited areas of the plot (the inner six inches of the lysimeter) were treated (p. 20).

4. Storage stability data were not reported. The study authors stated that the degradate 482-HA was stable in a leachate sample which was re-analyzed after 26 days of frozen storage

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(p. 101). If leachate samples were stored for >30 days, a valid stability study must be included to demonstrate stability of the parent and degradates in the leachate. The study authors reported that soil samples were extracted and analyzed within one week of arrival at the analytical lab (p. 98).

5. The study authors reported that the most significant leaching occurred at the day 16 sampling interval (pp. 37, 38, Table VI, p. 55). The study authors stated that the radioactivity found in the leachate could have been caused by "preferential flow" occurring in the lysimeters, or by "edge effects" transporting the test substance down the edge of the soil column due to heavy rainfall. The study authors reported that 2.52 inches of rain fell on the site from 9 to 16 days posttreatment as a result of Hurricane Erin (p. 38).

6. The study authors stated that the recovery of the bromide tracer in leachate samples from the lysimeters treated with KBr was highly variable (p. 12). Cumulative recoveries of bromide in leachate samples were 0.7%, 10.8%, and 14.6% of the applied radioactivity from lysimeters treated with KBr and sampled at 246, 285, and 285 days posttreatment, respectively (p. 40; Figure 7, p. 64; Appendix 9, pp. 226, 227); recoveries in run-off samples were ≤0.8% of the applied radioactivity. The study authors stated that recovery of bromide in leachate samples from the lysimeter sampled through 240 days posttreatment indicated that the lysimeter "was relatively poorly drained and not representative of the general leaching potential at the site" (p. 40).

7. The registrant-calculated half-life was based on data from the 0- to 3-inch depth, rather than the 0- to 6-inch depth. However, the study authors reported that [^{14}C]residues detected below the 0- to 3-inch depth were not detected above the "limit of analysis" (<0.01 ppm; p. 36).

8. The residue data for the parent and degradates were reported as units of concentration and as percentages of the nominal ("dose") radioactivity (Appendix 3, Table BV, p. 113); the reviewer noted, however, that the dose rate (mg parent/g soil) varied between soil columns because the same amount of parent was applied to each column, but each column weighed a different amount thereby resulting in different initial concentrations (Appendix 8, pp. 209-225).

9. The limits of detection and quantitation were not reported for HPLC or TLC analyses. Both limits of detection and quantitation should be reported to allow the reviewer to evaluate the adequacy of the method of the determination of the test compound and its degradates.

10. Material balances are generally not required for terrestrial field dissipation studies and are generally not reported since nonradiolabeled compounds are usually used. Because this study was conducted with radiolabeled test compounds applied in lysimeters, material balances were reported. A general pattern of decline over time was observed in the

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material balances which were 72.9-106.1% of the applied radioactivity from 0 to 316 days posttreatment (Table V, p. 54); however, data were variable over time. The study authors stated that the decrease in the material balances over time was likely due to "co-distillation" during a three-day drying period following the first heavy rainfall at the day-16 sampling interval (p. 39). However, the reviewer questions how the values in Table V were determined since data in Table BIV (p. 111) indicate that nonextractable residues were present at a higher percentage of the applied than would be theoretically possible based on the reported material balances. Based on data in Table BIII (p. 110), material balances were higher than those reported in Table V. The reviewer notes that the terms "% of dose" and "percent accountability" should be clearly defined in terms of the nominal or actual application rate and that it is preferable that the same terms be used consistently throughout the study. Clarification by the registrant is necessary.

11. The study authors stated that, following treatment, the vials used to deliver the test material were analyzed for total radioactivity by LSC to confirm the transfer of the test material to the soil columns (p. 34). Mean radioactivity remaining in the vials was 0.14% of the applied radioactivity.

12. The study was conducted at one site (Indiana). Additional terrestrial field dissipation studies conducted in North Carolina (MRID 44295043), Illinois (MRID 44295044), Mississippi (MRID 44295045), and Iowa (MRID 44295046) were also submitted.

13. The study author reported that the soil at the test site was a Wheeling silt loam soil (pp. 13, 16); however, the study authors stated that "the soil texture was classified as a loam for the entire lysimeter" (p. 32). Based on soil characterization data reported, the reviewer reported the soil as a loam soil.

14. The proposed degradation pathway for flumioxazin is presented in Figure B12 (Appendix 3, p. 167).

15. The study authors stated that cicada-killer wasps (*Sphecius speciosus spp.*) were found nesting in the soil around the lysimeters (August 1995, p. 33). The study authors stated that the eggs were deposited at a shallow depth and did not cause significant damage to the soil profile. Additionally, ants were observed in the lysimeters (August 1995). To control the insect infestation, the soybeans and soil surfaces were treated with malathion (formulation not reported) and diazinon (5% granules) on August 11, 1995 (16 days posttreatment).

16. The study authors reported that the formulation of flumioxazin was prepared with 0.5 mL of a formulation blank (containing 500 mL HPLC-grade water, Morwet D-425, Morwet EFW, and ASP-400P) plus 10 mL of HPLC-grade water in a vial containing [^{14}C]flumioxazin dissolved in dimethyl sulfoxide (p. 20). The reviewer assumes the

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formulation is in the form of a wettable powder; however, the exact formulation was not specified. Clarification by the registrant is necessary.

17. The parent was applied at an exaggerated rate (45 g a.i./A); the reviewer noted in an additional lysimeter study the proposed maximum use rate for flumioxazin is 36.1 g a.i./A for soybeans and 43.4 g a.i./A for peanuts (MRID 44295043, p. 10).

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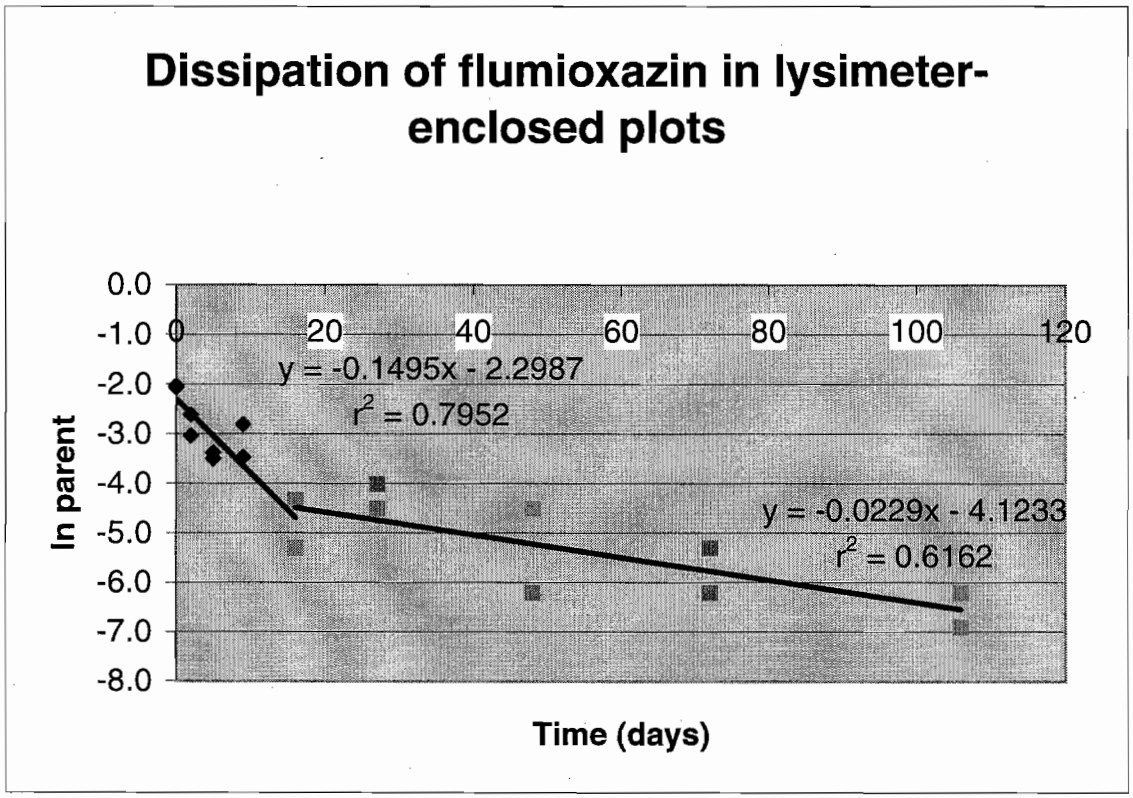
Flumioxazin #9 MRID 44295047 164-1 Wheeling silt loam soil

0- to 3-inch soil depth

Time (days)	parent (ppm)	Ave. parent (ppm)	Time (days)	ln parent
0	0.132		0	-2.0
0	0.127	0.130	0	-2.1
2	0.048		2	-3.0
2	0.073	0.061	2	-2.6
5	0.030		5	-3.5
5	0.034	0.032	5	-3.4
9	0.060		9	-2.8
9	0.031	0.046	9	-3.5
16	0.005		16	-5.3
16	0.013	0.009	16	-4.3
27	0.018		27	-4.0
27	0.011	0.015	27	-4.5
48	0.002		48	-6.2
48	0.011	0.007	48	-4.5
72	0.002		72	-6.2
72	0.005	0.004	72	-5.3
106	0.001		106	-6.9
106	0.002	0.002	106	-6.2



first half-life= 4.6 days

second half-life= 30.3 days

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Table I. Physiochemical Characteristics of the Wheeling Silt Loam Collected from Three Locations and Eight Depths within the Study Area.

Soil Depth	Lysimeter	pH (Std. Units)	Cation Exchange Capacity (meq M+/100g)	Water Holding Capacity at: 0.33 Bar %(w/w)	Organic Carbon %(w/w)	Bulk Density (g/cm^3)	Texture Classification	Sand %(w/w)	Silt %(w/w)	Clay %(w/w)
0–3"	1	7.1	10.75	18.75	2.58	1.16	Loam	48.8	34.4	16.8
	18	6.9	9.68	20.17	2.14	1.16	Loam	46.0	36.4	17.6
	2	7.0	8.60	19.99	1.80	1.26	Loam	48.0	34.4	17.6
	Average	**7.0**	**9.68**	**19.64**	**2.17**	**1.19**	**Loam**	**47.6**	**35.1**	**17.3**
3–6"	1	7.4	6.76	16.09	0.68	1.27	Loam	46.8	34.4	18.8
	18	7.2	6.60	15.03	1.11	1.23	Loam	46.0	36.4	17.6
	2	7.2	8.24	20.10	1.05	1.28	Sandy Loam	54.0	28.4	17.6
	Average	**7.3**	**7.20**	**17.07**	**0.95**	**1.26**	**Loam**	**48.9**	**33.1**	**18.0**
6–9"	1	7.2	6.16	15.41	0.50	1.39	Loam	46.8	36.4	16.8
	18	7.0	5.96	14.45	0.62	1.32	Loam	46.0	36.4	17.6
	2	7.2	9.40	17.55	0.62	1.29	Loam	52.0	30.4	17.6
	Average	**7.1**	**7.17**	**15.80**	**0.58**	**1.33**	**Loam**	**48.3**	**34.4**	**17.3**
9–12"	1	7.1	7.11	18.10	0.31	1.36	Loam	42.8	38.4	18.8
	18	6.9	7.52	14.31	0.50	1.30	Loam	46.0	36.4	17.6
	2	7.2	10.44	17.86	0.34	1.32	Loam	52.0	30.4	17.6
	Average	**7.1**	**8.36**	**16.76**	**0.38**	**1.33**	**Loam**	**46.9**	**35.1**	**18.0**
12–18"	1	6.9	7.63	18.62	0.19	1.36	Loam	42.8	38.4	18.8
	18	6.9	7.24	15.06	0.22	1.26	Loam	52.0	28.4	19.6
	2	6.4	18.00	16.04	0.03	1.34	Loam	52.0	30.4	17.6
	Average	**6.7**	**10.96**	**16.57**	**0.15**	**1.32**	**Loam**	**48.9**	**32.4**	**18.7**
18–24"	1	6.4	5.67	15.39	0.16	1.41	Loam	48.8	36.4	14.8
	18	6.9	7.32	15.81	0.15	1.29	Loam	50.0	30.4	19.6
	2	5.6	6.36	14.52	0.12	1.32	Sandy Loam	62.0	20.4	17.6
	Average	**6.3**	**6.45**	**15.24**	**0.14**	**1.34**	**Loam**	**53.6**	**29.1**	**17.3**
24–30"	1	5.2	7.32	16.07	0.16	1.34	Loam	44.8	36.4	18.8
	18	7.0	2.76	7.29	0.15	1.46	Sandy Loam	74.0	18.4	7.6
	2	5.1	7.92	14.76	0.12	1.30	Loam	52.0	28.4	19.6
	Average	**5.8**	**6.00**	**12.71**	**0.14**	**1.37**	**Loam**	**56.9**	**27.7**	**15.3**
30–36"	1	5.0	7.91	17.09	0.16	1.30	Loam	44.8	36.4	18.8
	18	6.8	5.28	11.24	0.03	1.32	Sandy Loam	78.0	8.4	13.6
	2	5.1	8.92	19.29	0.19	1.36	Loam	40.0	40.4	19.6
	Average	**5.6**	**7.37**	**15.87**	**0.13**	**1.33**	**Loam**	**54.3**	**28.4**	**17.3**

Table II. Sampling Order and Treatment for Lysimeters Used to Study [Phenyl-^{14}C]Flumioxazin.

Lysimeter Number	Treatment	Days After Treatment (DAT)
1	Control	0
3	^{14}C	0
31	^{14}C	0
10	^{14}C	2
11	^{14}C	2
12	^{14}C	5
25	^{14}C	5
4	^{14}C	9
5	^{14}C	9
6	^{14}C	16
33	^{14}C	16
16	^{14}C	27
17	^{14}C	27
8	^{14}C	48
23	^{14}C	48
13	^{14}C	72
24	^{14}C	72
18	Control	72
9	^{14}C	106
27	^{14}C	106
7 [a]	^{14}C	106
26 [a]	KBr	106
2	Control	316
14	KBr	316
15	^{14}C	316
19	^{14}C	316
20	KBr	316
21	^{14}C	316
22	^{14}C	316
28	KBr	316
29	^{14}C	316
30	^{14}C	316
32	^{14}C	316

[a] Lysimeters used for soil hydraulic conductivity testing.

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Table III. Twelve-Year Cumulative Rainfall Data for the Test Site and Cumulative Rainfall and Irrigation Received by Lysimeters.

Study Date			12-Year Average Rainfall (inches)		Water Input in Inches		Water Input as % of 12-Year Average
Calendar	DAT	Julian Date	Weekly	Cumulative[a]	Weekly	Cumulative[b]	
07/28/95	2	209	1.15	0.49	0.54	0.54	110
08/04/95	9	216	0.85	1.34	0.00	0.54	40
08/11/95	16	223	0.79	2.13	3.32	3.86	181
08/18/95	23	230	0.36	2.49	0.26	4.12	165
08/25/95	30	237	0.69	3.18	1.12	5.24	165
09/01/95	37	244	1.21	4.39	1.33	6.57	150
09/08/95	44	251	0.21	4.60	0.26	6.83	148
09/15/95	51	258	0.93	5.53	0.99	7.82	141
09/22/95	58	265	0.91	6.44	1.16	8.98	139
09/29/95	65	272	0.53	6.97	0.43	9.41	135
10/06/95	72	279	0.50	7.47	2.24	11.65	156
10/13/95	79	286	0.54	8.01	0.14	11.79	147
10/20/95	86	293	0.77	8.78	0.52	12.31	140
10/27/95	93	300	0.79	9.57	0.79	13.10	137
11/03/95	100	307	0.44	10.01	0.38	13.48	135
11/10/95	107	314	1.02	11.03	0.29	13.77	125
11/17/95	114	321	0.49	11.52	1.46	15.23	132
11/24/95	121	328	1.35	12.87	0.67	15.90	124
12/01/95	128	335	1.17	14.04	1.23	17.13	122
12/08/95	135	342	0.35	14.39	0.61	17.74	123
12/15/95	142	349	0.70	15.09	1.44	19.18	127
12/22/95	149	356	1.11	16.20	1.82	21.00	130
12/29/95	156	363	1.17	17.37	0.00	21.00	121
01/05/96	163	5	0.53	17.90	0.78	21.78	122
01/12/96	170	12	0.28	18.18	0.96	22.74	125
01/19/96	177	19	0.86	19.04	1.16	23.90	126
01/26/96	184	26	0.43	19.47	1.72	25.62	132
02/02/96	191	33	1.35	20.82	0.00	25.62	123
02/09/96	198	40	0.61	21.43	0.13	25.75	120
02/16/96	205	47	1.12	22.55	0.92	26.67	118
02/23/96	212	54	0.56	23.11	1.02	27.69	120
03/01/96	219	61	0.64	23.75	0.91	28.60	120
03/08/96	226	68	0.52	24.27	0.47	29.07	120
03/15/96	233	75	0.85	25.12	0.37	29.44	117
03/22/96	240	82	0.79	25.91	2.43	31.87	123

[a] Cumulative rainfall for the first week is adjusted for a 3 day period to allow scheduled irrigation on subsequent fridays.

[b] These water input values are cumulative from Day 0.

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Table III (Continued). Twelve-Year Cumulative Rainfall Data for the Test Site and Cumulative Rainfall and Irrigation Received by Lysimeters.

Study Date			12-Year Average Rainfall (inches)		Water Input in Inches		Water Input as % of 12-Year Average
Calendar	DAT	Julian Date	Weekly	Cumulative[a]	Weekly	Cumulative[b]	
03/29/96	247	89	1.28	27.19	0.67	32.54	120
04/05/96	254	96	1.39	28.58	2.49	35.03	123
04/12/96	261	103	0.85	29.43	0.04	35.07	119
04/19/96	268	110	0.67	30.10	1.16	36.23	120
04/26/96	275	117	0.61	30.71	1.94	38.17	124
05/03/96	282	124	1.36	32.07	3.40	41.57	130
05/10/96	289	131	0.78	32.85	4.56	46.13	140[c]
05/17/96	296	138	1.40	34.25	7.49	53.62	157
05/24/96	303	145	1.26	35.51	2.10	55.72	157
05/31/96	310	152	1.09	36.60	2.44	58.16	159
06/05/96	315	157	1.29	37.89	0.61	58.77	155

[a] Cumulative rainfall for the first week is adjusted for a 3 day period to allow scheduled irrigation on subsequent fridays.

[b] These water input values are cumulative from Day 0.

[c] Water input increase to 150% of the 12-year average.

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Table V. Recovery of Radiocarbon by Soil Depth at Each Sampling Time.

	Average Radioactive Recovery [a]																
	0-3 inch		3-6 inch		6-9 inch		9-12 inch		12-18 inch		18-24 inch		24-30 inch		30-36 inch		Total
DAT	% of Dose	µg/g	% of Dose	µg/g	% of Dose	µg/g	% of Dose	µg/g	% of Dose	µg/g	% of Dose	µg/g	% of Dose	µg/g	% of Dose	µg/g	% of Dose
0	106.0	0.156	0.1	<0.010	0.0	<0.010	0.0	<0.010	0.0	<0.010	0.0	<0.010	0.0	<0.010	0.0	<0.010	106.1
2	96.1	0.115	0.2	<0.010	0.1	<0.010	0.0	<0.010	0.0	<0.010	0.0	<0.010	0.0	<0.010	0.0	<0.010	96.4
5	93.5	0.106	1.7	<0.010	1.1	<0.010	0.7	<0.010	0.3	<0.010	0.1	<0.010	0.0	<0.010	0.2	<0.010	97.6
9	97.2	0.127	1.5	<0.010	0.5	<0.010	0.3	<0.010	0.7	<0.010	0.0	<0.010	0.0	<0.010	0.0	<0.010	100.2
16	61.0	0.069	3.3	<0.010	0.6	<0.010	0.0	<0.010	0.0	<0.010	0.0	<0.010	0.0	<0.010	0.0	<0.010	64.9
27	77.1	0.086	1.1	<0.010	0.8	<0.010	0.4	<0.010	0.2	<0.010	0.3	<0.010	0.3	<0.010	0.9	<0.010	81.1
48	73.0	0.079	1.9	<0.010	1.2	<0.010	0.9	<0.010	0.7	<0.010	0.4	<0.010	0.2	<0.010	0.2	<0.010	78.5
72	68.0	0.088	2.8	<0.010	1.1	<0.010	0.7	<0.010	0.9	<0.010	0.5	<0.010	0.4	<0.010	0.2	<0.010	74.6
106	47.2	0.066	5.4	<0.010	1.7	<0.010	1.0	<0.010	0.4	<0.010	0.7	<0.010	0.0	<0.010	0.0	<0.010	56.4
316	58.2	0.079	7.7	<0.010	2.3	<0.010	1.8	<0.010	1.6	<0.010	0.7	<0.010	0.4	<0.010	0.2	<0.010	72.9

[a] Data are averages of values presented as Appendix 8 for all lysimeters taken at the specified sampling time.

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Table VI. Average Recovery of Radiocarbon in Water Samples at each Collection Time.

Leachate/ Runoff Sampling DAT	# of Lysimeters	Recovery of Radioactivity from all Lysimeters Yielding Water: Leachate (% of Applied)	Runoff (% of Applied)	Total (% of Applied)	% Applied Recovery per Lysimeter: Leachate (%)	Runoff (%)	Total (%)
5	28	0.49	0.00	0.49	0.02	0.00	0.02
16	24	5.99	11.00	16.99	0.25	0.46	0.71
23	22	0.00	NA [a]	0.00	0.00	NA	0.00
30	20	NA	0.04	0.04	NA	0.00	0.00
37	20	0.12	0.64	0.76	0.01	0.03	0.04
44	20	0.60	0.24	0.84	0.03	0.01	0.04
58	18	0.00	0.20	0.20	0.00	0.01	0.01
72	18	0.16	0.18	0.34	0.01	0.01	0.02
86	15	0.00	0.00	0.00	0.00	0.00	0.00
93	15	0.08	0.02	0.10	0.01	0.00	0.01
100	15	0.00	0.00	0.00	0.00	0.00	0.00
114	11	0.01	0.00	0.01	0.00	0.00	0.00
121	11	0.00	NA	0.00	0.00	NA	0.00
128	11	0.00	0.01	0.01	0.00	0.00	0.00
135	11	0.00	NA	0.00	0.00	NA	0.00
142	11	0.01	0.02	0.03	0.00	0.00	0.00
149	11	0.01	0.18	0.19	0.00	0.02	0.02
156	11	0.01	0.00	0.01	0.00	0.00	0.00
170	11	0.00	0.01	0.01	0.00	0.00	0.00
177	11	NA	0.07	0.07	NA	0.01	0.01
184	11	0.03	0.05	0.08	0.00	0.00	0.01
198	11	0.00	0.00	0.00	0.00	0.00	0.00
212	11	0.00	0.00	0.00	0.00	0.00	0.00
219	11	0.01	0.01	0.02	0.00	0.00	0.00
233	11	0.00	0.00	0.00	0.00	0.00	0.00
240	11	0.02	0.00	0.02	0.00	0.00	0.00
247	11	0.00	0.02	0.02	0.00	0.00	0.00
254	11	0.03	0.00	0.03	0.00	0.00	0.00
268	11	0.00	0.01	0.01	0.00	0.00	0.00
273	11	0.01	0.01	0.02	0.00	0.00	0.00
280	11	0.03	0.01	0.04	0.00	0.00	0.00
282	11	0.00	NA	0.00	0.00	NA	0.00
285	11	0.01	0.00	0.01	0.00	0.00	0.00
289	11	NA	0.02	0.02	NA	0.00	0.00
296	11	NA	0.01	0.01	NA	0.00	0.00
303	11	NA	0.00	0.00	NA	0.00	0.00
310	11	NA	0.00	0.00	NA	0.00	0.00
314	11	0.00	NA	0.00	0.00	NA	0.00
				Totals	0.33	0.55	0.89

[a] NA=Not Applicable. Sampling for leachate and overflow did not always occur on same dates; therefore, NA in a space indicates that no sample was taken at that time.

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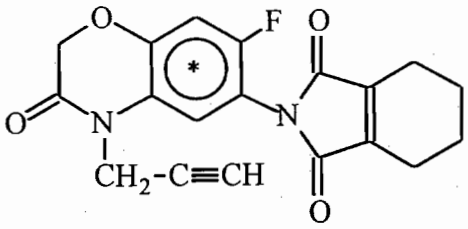
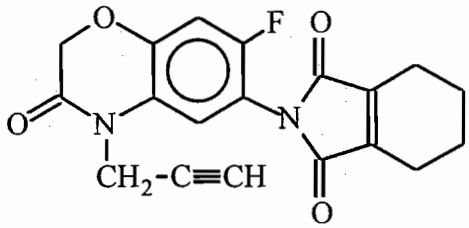


* denotes ^{14}C-label position.

Flumioxazin (also referred to as S-1855)
PTRL East, Inc. No.: 964-534
Lot No.: RIS 93013
Specific Activity: 348 µCi/mg
Radiochemical Purity: >99%
Chemical Purity: not given
Date Received: 7/14/95



Flumioxazin
Code Numbers V-53482 and S-53482
PTRL East, Inc. No.: 964-533
Lot No.: AS 1663 g
Chemical Purity: 99.8%
Date Received: 7/14/95

Figure 1. Chemical Structures and Receipt Data for Radiolabeled Flumioxazin Test Material and Reference Substance.

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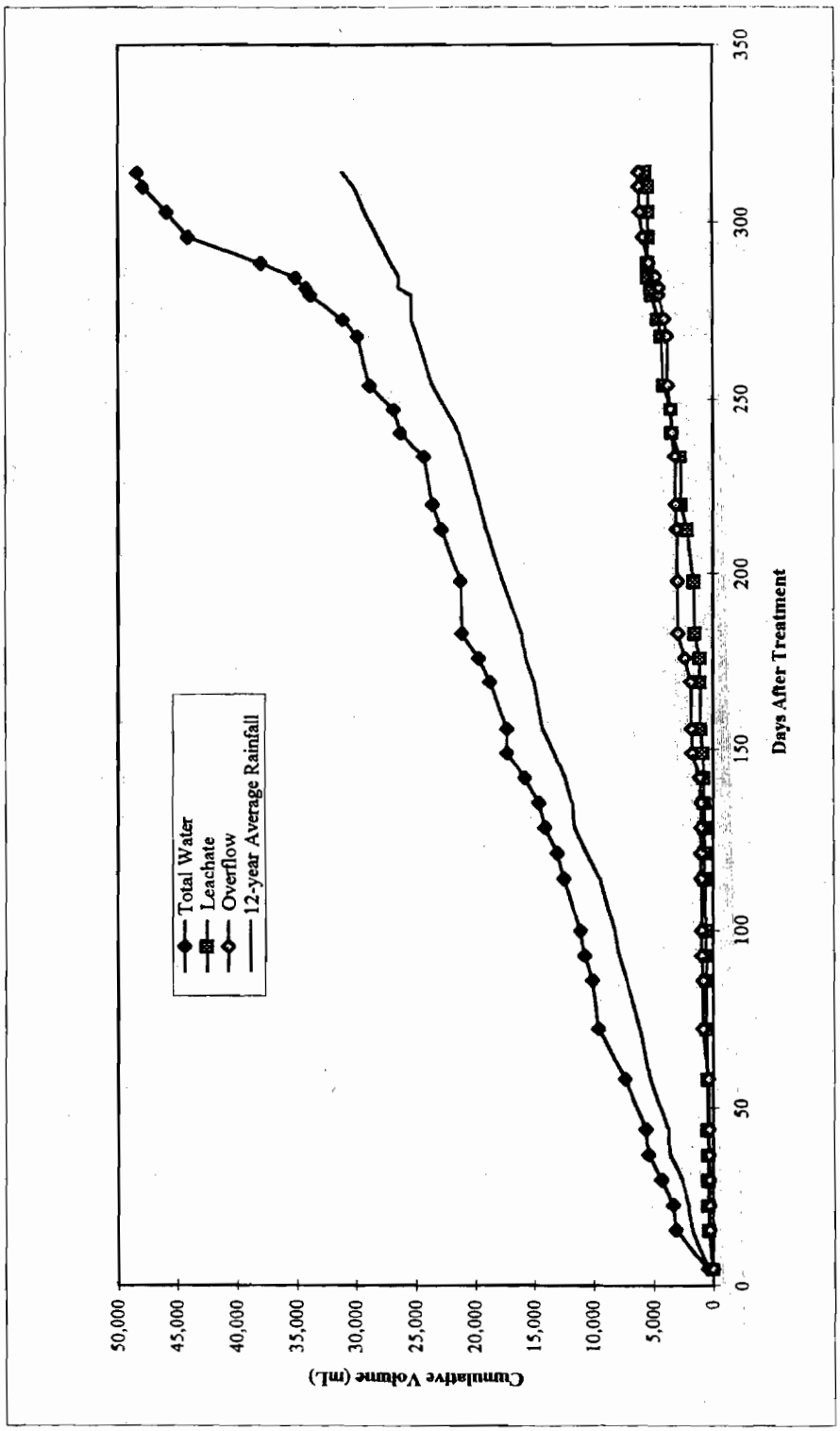

Figure 5. Water Balance for Lysimeters. 18

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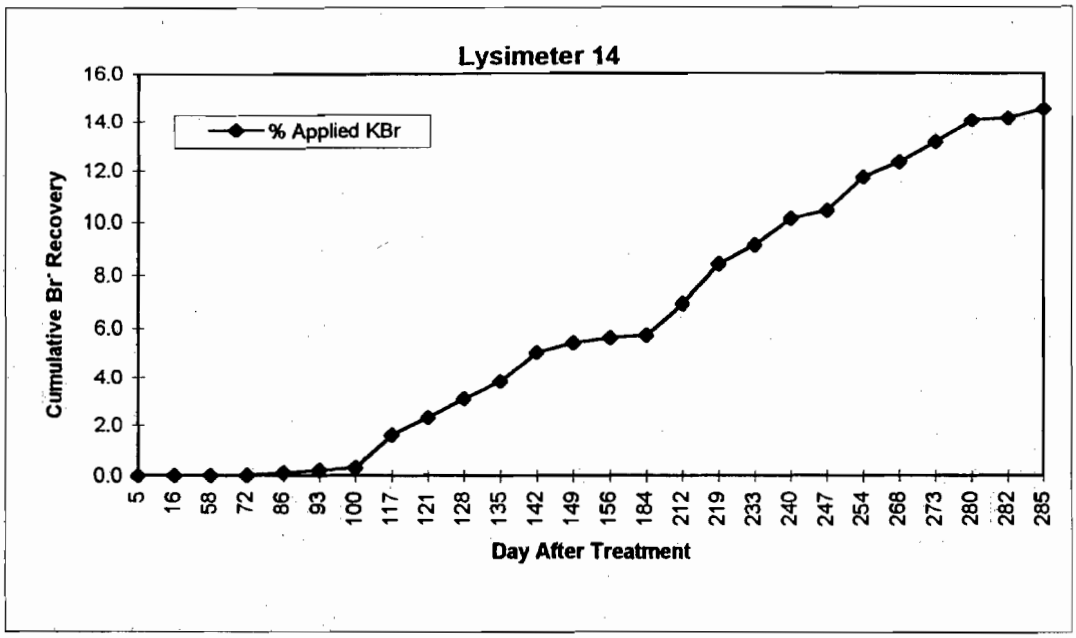

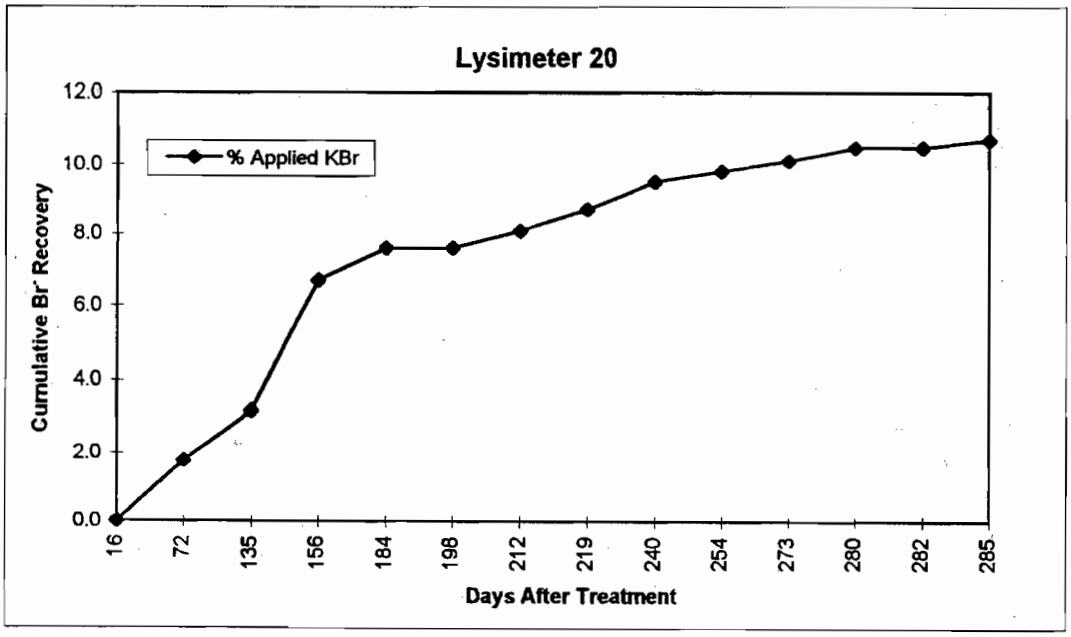

Figure 7. Bromide Concentration in Leachate Collected Below Lysimeters Treated with KBr and Maintained in the Field for 316 Days.

Table BI. Validation of Extraction and Analysis Procedures - Distribution and Recovery of Applied Radiocarbon.

Sample	Rep	% of Dose in Extract	Percent Distribution in Extract (by HPLC)		% of Applied Dose			
			Flumioxazine	All Others	Flumioxazine	All Others	Soil Bound Residues	Radiocarbon Recovery
Spiked	1	93.0					1.4	94.4
Control Soil[a]	2	95.0					1.3	96.3
	Avg	94.0	97.1	3.0	91.3	2.8	1.4	95.4

[a] For HPLC analysis, the extracts of Replicates 1 and 2 were combined prior to analysis.

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Table BII. Chromatographic Characteristics of Analytical Reference Standards.

Standard	PTRL West Number	TLC Mobility R_f[a]	R_f[b]	R_f[c]	R_f[d]	HPLC RT (min)[e]
Flumioxazin	P964E-1	0.67	0.88	0.91	0.97	25
482-HA	P964E-2	0.00	0.38	0.91	0.00	14-17
482-CA	P964E-3	0.00	0.39	0.68	0.07	23
IMOXA	P964E-4	0.20	0.84	0.87	0.84	21
APF	P964E-5	0.41	0.87	0.88	0.95	7-10
PNF	P964E-6	0.70	0.88	0.91	0.97	11-14
SAT-482	P964E-7	0.40	0.87	0.89	0.92	22-23
482-PHO	P964E-8	0.00	0.16	0.59	0.00	15-18

[a] TLC solvent system A was Benzene:Ethyl Acetate (4:1, v:v)

[b] TLC solvent system B was Ethyl Acetate:Ethanol (4:1, v:v)

[c] TLC solvent system C was Ethyl Acetate:Ethanol:Glacial Acetic Acid (80:20:0.4, v:v:v)

[d] TLC solvent system D was Ethyl Ether (100%)
Note, two-dimensional TLC employed solvent system A in the first dimension followed by either B, C, or D in the second dimension.

[e] HPLC retention time values were subject to variation between runs. The size of injection loop used (1 mL for soil extracts and 5 mL for leachate and runoff) had a direct and predictable effect on the observed retention time. Standards were always co-injected with samples and clear separation of standards was achieved.

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Table BIV. Extractability and Concentration of ^{14}C-Flumioxazin Residues in Soil at Various Days after Herbicide Treatment. Values are Presented as Percent of Applied Radioactivity and in ppm as Flumioxazin Equivalents.

Sample	Percent of Recovered ^{14}C Extracted[a]	Percent of Recovered ^{14}C Bound[b]	Percent of Applied Radioactivity In Soil Section[c] (PTRL East)	Extracted	Bound	ppm ^{14}C as Flumioxazin Equivalents In Soil Section[c] (PTRL East)	Extracted	Bound
0-3" Layer Soil:								
964-3-9-1-0 DAT	91.9%	8.1%	106.2%	97.6%	8.6%	0.164	0.1507	0.013
964-31-17-1-0 DAT	93.0%	7.0%	105.8%	98.4%	7.4%	0.147	0.1367	0.010
Average	92.5%	7.5%	106.0%	98.0%	8.0%	0.156	0.1437	0.012
964-10-25-1-2 DAT	66.5%	33.5%	91.8%	61.1%	30.7%	0.103	0.0685	0.035
964-11-33-1-2 DAT	76.3%	23.7%	100.3%	76.6%	23.7%	0.127	0.0969	0.030
Average	71.4%	28.6%	96.1%	68.8%	27.2%	0.115	0.0827	0.032
964-12-41-1-5 DAT	50.2%	49.8%	90.1%	45.3%	44.8%	0.102	0.0512	0.051
964-25-49-1-5 DAT	46.4%	53.6%	96.8%	44.9%	51.9%	0.110	0.0510	0.059
Average	48.3%	51.7%	93.5%	45.1%	48.4%	0.106	0.0511	0.055
964-4-57-1-9 DAT	57.4%	42.6%	95.2%	54.7%	40.5%	0.143	0.0821	0.061
964-5-65-1-9 DAT	43.1%	56.9%	99.1%	42.7%	56.4%	0.111	0.0478	0.063
Average	50.2%	49.8%	97.2%	48.7%	48.5%	0.127	0.0650	0.062
964-6-73-1-16 DAT	25.2%	74.8%	42.2%	10.7%	31.5%	0.049	0.0123	0.037
964-33-81-1-16 DAT	28.7%	71.3%	79.7%	22.8%	56.9%	0.089	0.0255	0.063
Average	27.0%	73.0%	61.0%	16.7%	44.2%	0.069	0.0189	0.050
964-16-89-1-27 DAT	34.5%	65.5%	79.3%	27.4%	51.9%	0.089	0.0307	0.058
964-17-97-1-27 DAT	26.3%	73.7%	74.8%	19.7%	55.1%	0.083	0.0218	0.061
Average	30.4%	69.6%	77.1%	23.5%	53.5%	0.086	0.0263	0.060

[a] Equals extracted DPM / total DPM recovered. DPM data are shown in Table BIII.

[b] Equals unextracted DPM / total DPM recovered. DPM data are shown in Table BIII.

[c] See Appendix B3 for Calculations.

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Table BIV (cont.). Extractability and Concentration of ^{14}C-Flumioxazin Residues in Soil at Various Days after Herbicide Treatment. Values are Presented as Percent of Applied Radioactivity and in ppm as Flumioxazin Equivalents.

Sample	Percent of Recovered ^{14}C Extracted[a]	Percent of Recovered ^{14}C Bound[b]	Percent of Applied Radioactivity In Soil Section[c] (PTRL East)	Extracted	Bound	ppm ^{14}C as Flumioxazin Equivalents In Soil Section[c] (PTRL East)	Extracted	Bound
0-3" Layer Soil:								
964-8-105-1-48 DAT	12.3%	87.7%	59.2%	7.3%	51.9%	0.060	0.0074	0.053
964-23-113-1-48 DAT	21.5%	78.5%	86.7%	18.6%	68.1%	0.097	0.0209	0.076
Average	16.9%	83.1%	73.0%	13.0%	60.0%	0.079	0.0141	0.064
964-13-121-1-72 DAT	11.8%	88.2%	55.8%	6.6%	49.2%	0.066	0.0078	0.058
964-24-129-1-72 DAT	13.0%	87.0%	80.1%	10.4%	69.7%	0.110	0.0143	0.096
Average	12.4%	87.6%	68.0%	8.5%	59.5%	0.088	0.0110	0.077
964-9-145-1-106 DAT	9.3%	90.7%	36.4%	3.4%	33.0%	0.046	0.0043	0.042
964-27-153-1-106 DAT	8.6%	91.4%	57.9%	5.0%	52.9%	0.085	0.0073	0.078
Average	9.0%	91.0%	47.2%	4.2%	43.0%	0.066	0.0058	0.060
964-15-161-1-316 DAT	7.7%	92.3%	58.7%	4.5%	54.2%	0.085	0.0065	0.078
964-19-169-1-316 DAT	6.8%	93.2%	64.3%	4.4%	59.9%	0.072	0.0050	0.067
964-21-177-1-316 DAT	6.4%	93.6%	57.2%	3.6%	53.6%	0.092	0.0059	0.086
964-22-185-1-316 DAT	5.5%	94.5%	60.7%	3.4%	57.3%	0.118	0.0065	0.112
964-29-193-1-316 DAT	6.9%	93.1%	51.9%	3.6%	48.3%	0.053	0.0037	0.049
964-30-201-1-316 DAT	6.8%	93.2%	58.6%	4.0%	54.6%	0.079	0.0053	0.074
964-32-209-1-316 DAT	8.2%	91.8%	55.8%	4.6%	51.2%	0.056	0.0046	0.051
Average	6.9%	93.1%	58.2%	4.0%	54.2%	0.079	0.0054	0.074
3-6" Layer Soil:								
964-15-162-2-316 DAT[d]	10.9%	89.1%	9.2%	1.0%	8.2%	0.010	0.0011	0.009

[a] Equals extracted DPM / total DPM recovered. DPM data are shown in Table BIII.

[b] Equals unextracted DPM / total DPM recovered. DPM data are shown in Table BIII.

[c] See Appendix B3 for Calculations.

[d] This was the only 3-6" layer soil sample received by PTRL West, Inc.

0-3" ?

Table BV. Distribution of Soil Extractable ^{14}C-Flumioxazin Residues at Various Days after Herbicide Treatment. Values are Percent of Applied Radioactivity.[a]

			Percent of Applied Radioactivity as:						
			Degradates:						
Sample	Rep	% of Dose in Extract	APF	482-HA	D3[b]	IMOXA	482-CA	All Others[c]	Flumio-xazin
964-3-9-1-0 DAT	A	97.6	7.2	4.0	0.0	0.0	0.0	0.8	85.6
964-31-17-1-0 DAT	B	98.4	3.5	1.3	0.0	0.0	0.0	2.2	91.4
Average		98.0	5.4	2.6	0.0	0.0	0.0	1.5	88.5
964-10-25-1-2 DAT	A	61.1	8.6	0.0	4.8	0.6	1.2	3.2	42.7
964-11-33-1-2 DAT	B	76.6	7.7	0.0	5.7	0.5	1.1	4.0	57.6
Average		68.8	8.2	0.0	5.3	0.5	1.1	3.6	50.2
964-12-41-1-5 DAT	A	45.3	6.6	0.0	3.2	0.8	1.4	7.0	26.4
964-25-49-1-5 DAT	B	44.9	4.1	0.0	3.1	1.1	1.5	5.5	29.6
Average		45.1	5.3	0.0	3.1	0.9	1.4	6.3	28.0
964-4-57-1-9 DAT	A	54.7	2.1	0.0	5.7	1.0	1.8	4.5	39.7
964-5-65-1-9 DAT	B	42.7	2.5	0.0	5.4	0.9	2.0	4.6	27.3
Average		48.7	2.3	0.0	5.5	1.0	1.9	4.5	33.5
964-6-73-1-16 DAT	A	10.7	0.0	0.0	1.2	1.0	0.5	3.4	4.6
964-33-81-1-16 DAT	B	22.8	0.0	0.0	3.1	1.3	1.2	5.2	11.9
Average		16.7	0.0	0.0	2.2	1.1	0.9	4.3	8.3
964-16-89-1-27 DAT	A	27.4	0.0	0.0	1.8	1.5	1.7	6.4	16.1
964-17-97-1-27 DAT	B	19.7	0.0	0.0	2.0	1.2	1.2	4.9	10.3
Average		23.5	0.0	0.0	1.9	1.3	1.4	5.7	13.2
964-8-105-1-48 DAT	A	7.3	0.0	0.0	0.4	0.7	0.3	3.9	2.0
964-23-113-1-48 DAT	B	18.6	0.0	0.0	1.3	1.2	0.9	5.2	9.9
Average		13.0	0.0	0.0	0.8	1.0	0.6	4.6	6.0
964-13-121-1-72 DAT	A	6.6	0.0	0.0	0.0	0.8	0.6	3.3	1.9
964-24-129-1-72 DAT	B	10.4	0.0	0.0	0.0	0.9	0.9	5.2	3.4
Average		8.5	0.0	0.0	0.0	0.9	0.7	4.3	2.6
964-9-145-1-106 DAT	A	3.4	0.0	0.0	0.4	0.3	0.2	1.9	0.7
964-27-153-1-106 DAT	B	5.0	0.0	0.0	0.3	0.4	0.2	2.9	1.2
Average		4.2	0.0	0.0	0.3	0.3	0.2	2.4	0.9

[a] All of the 316 DAT extracts contained less than 0.01 ppm radioactive equivalents and were not analyzed.

[b] Degradate D3 was a chromatographicaly characterized degradate (HPLC and TLC) with an HPLC retention time of 13-15 minutes using a 1 mL injection loop.

[c] All "others" consist of many minor peaks, none of which was > 2.1% of the applied dose.

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Table BVI. Distribution of Soil Extractable ^{14}C-Flumioxazin Residues at Various Days after Herbicide Treatment. Values are in ppm as Flumioxazin Equivalents.[a]

			ppm equivalents as:						
			Degradates:						
Sample	Rep	ppm in Extract[b]	APF	482-HA	D3	IMOXA	482-CA	All Others[c]	Flumio-xazin
964-3-9-1-0 DAT	A	0.1507	0.011	0.006	0.000	0.000	0.000	0.001	0.132
964-31-17-1-0 DAT	B	0.1367	0.005	0.002	0.000	0.000	0.000	0.003	0.127
Average		0.1437	0.008	0.004	0.000	0.000	0.000	0.002	0.130
964-10-25-1-2 DAT	A	0.0685	0.010	0.000	0.005	0.001	0.001	0.004	0.048
964-11-33-1-2 DAT	B	0.0969	0.010	0.000	0.007	0.001	0.001	0.005	0.073
Average		0.0827	0.010	0.000	0.006	0.001	0.001	0.004	0.060
964-12-41-1-5 DAT	A	0.0512	0.007	0.000	0.004	0.001	0.002	0.008	0.030
964-25-49-1-5 DAT	B	0.0510	0.005	0.000	0.004	0.001	0.002	0.006	0.034
Average		0.0511	0.006	0.000	0.004	0.001	0.002	0.007	0.032
964-4-57-1-9 DAT	A	0.0821	0.003	0.000	0.009	0.001	0.003	0.007	0.060
964-5-65-1-9 DAT	B	0.0478	0.003	0.000	0.006	0.001	0.002	0.005	0.031
Average		0.0650	0.003	0.000	0.007	0.001	0.002	0.006	0.045
964-6-73-1-16 DAT	A	0.0123	0.000	0.000	0.001	0.001	0.001	0.004	0.005
964-33-81-1-16 DAT	B	0.0255	0.000	0.000	0.004	0.001	0.001	0.006	0.013
Average		0.0189	0.000	0.000	0.002	0.001	0.001	0.005	0.009
964-16-89-1-27 DAT	A	0.0307	0.000	0.000	0.002	0.002	0.002	0.007	0.018
964-17-97-1-27 DAT	B	0.0218	0.000	0.000	0.002	0.001	0.001	0.005	0.011
Average		0.0263	0.000	0.000	0.002	0.001	0.002	0.006	0.015
964-8-105-1-48 DAT	A	0.0074	0.000	0.000	0.000	0.001	0.000	0.004	0.002
964-23-113-1-48 DAT	B	0.0209	0.000	0.000	0.001	0.001	0.001	0.006	0.011
Average		0.0141	0.000	0.000	0.001	0.001	0.001	0.005	0.007
964-13-121-1-72 DAT	A	0.0078	0.000	0.000	0.000	0.001	0.001	0.004	0.002
964-24-129-1-72 DAT	B	0.0143	0.000	0.000	0.000	0.001	0.001	0.007	0.005
Average		0.0110	0.000	0.000	0.000	0.001	0.001	0.006	0.003
964-9-145-1-106 DAT	A	0.0043	0.000	0.000	0.000	0.000	0.000	0.002	0.001
964-27-153-1-106 DAT	B	0.0073	0.000	0.000	0.000	0.001	0.000	0.004	0.002
Average		0.0058	0.000	0.000	0.000	0.000	0.000	0.003	0.001

[a] All of the 316 DAT extracts represented less than 0.01 ppm radioactive equivalents and were not analyzed.

[b] From Table BIV, equals (% of recovered ^{14}C in extract / 100) x total ppm in soil (dry weight basis).

[c] All "others" consist of many minor peaks, none of which individually represent greater than 0.002 ppm.

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Table BVII. Distribution of ^{14}C-Flumioxazin Residues in Leachate at Various Days after Herbicide Treatment. Values are Percent of Applied Radioactivity.

Sample	% of Dose in Sample	Percent of Applied Dose in Leachates as: Degradates: D1	APF	482-HA	D3	D4	All Others	Flumio-xazin
964-16-1008-5 DAT	0.49	0.03	0.04	0.31	0.00	0.00	0.11	0.01
964-7-1014-16 DAT	0.33	0.07	0.04	0.08	0.03	0.01	0.09	0.02
964-13-1017-16 DAT	0.40	0.10	0.06	0.09	0.04	0.02	0.08	0.01
964-15-1019-16 DAT	0.12	0.02	0.02	0.02	0.01	0.00	0.04	0.00
964-16-1020-16 DAT	2.27	0.24	0.18	0.72	0.21	0.07	0.85	0.00
964-19-1021-16 DAT	0.96	0.11	0.12	0.35	0.06	0.02	0.23	0.08
964-23-1025-16 DAT	1.80	0.32	0.19	0.60	0.17	0.06	0.46	0.00
964-29-1030-16 DAT	0.02	0.00	0.00	0.01	0.00	0.00	0.01	0.00
964-30-1031-16 DAT	0.09	0.01	0.01	0.02	0.01	0.00	0.03	0.00
964-23-1035-37 DAT	0.12	0.04	0.01	0.01	0.01	0.00	0.05	0.00
964-7-1036-44 DAT	1.01	0.56	0.06	0.06	0.05	0.00	0.26	0.01
964-24-1042-72 DAT	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00

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Table BVIII. Distribution of ^{14}C-Flumioxazin Residues in Leachate at Various Days after Herbicide Treatment. Values are in ppb as Flumioxazin Equivalents.

			ppb as:						
			Degradates:						
Sample	DPM/mL[a]	Total ppb	D1	APF	482-HA	D3	D4	All Others[b]	Flumio-xazin
964-16-1008-5 DAT	15,000	19.40	1.18	1.40	12.28	0.00	0.12	4.21	0.21
964-7-1014-16 DAT	7,050	9.13	1.97	1.01	2.28	0.73	0.35	2.35	0.43
964-13-1017-16 DAT	1,370	1.77	0.45	0.25	0.41	0.19	0.07	0.37	0.04
964-15-1019-16 DAT	1,490	1.92	0.40	0.31	0.34	0.22	0.00	0.58	0.08
964-16-1020-16 DAT	11,000	14.20	1.51	1.14	4.50	1.31	0.44	5.34	0.00
964-19-1021-16 DAT	4,440	5.75	0.63	0.71	2.08	0.34	0.13	1.38	0.48
964-23-1025-16 DAT	11,500	14.90	2.67	1.58	4.94	1.42	0.48	3.83	0.00
964-29-1030-16 DAT	935	1.21	0.17	0.09	0.36	0.11	0.00	1.03	0.00
964-30-1031-16 DAT	5,010	6.49	0.91	0.94	1.49	0.60	0.21	2.13	0.20
964-23-1035-37 DAT	1,370	1.77	0.56	0.12	0.16	0.12	0.03	0.74	0.04
964-7-1036-44 DAT	2,490	3.22	1.79	0.19	0.20	0.17	0.00	0.84	0.03
964-24-1042-72 DAT	1,160	1.50	0.90	0.07	0.09	0.07	0.00	0.37	0.00

[a] DPM/mL (nonclarified solution) based on LSC of 3 aliquots (PTRL East, Inc.).

[b] All "others" consist of many minor peaks, none of which individually represent greater than 1.63 ppb.

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Table BX. Distribution of ^{14}C-Flumioxazin Residues in Runoff at Various Days after Herbicide Treatment. Values are in ppb as Flumioxazin Equivalents.

			ppb as:						
			Degradates:						
Sample ID	DPM/mL[a]	Total ppb	D1	APF	D2	D3	D4	All Others[b]	Flumio-xazin
964-6-5005-16 DAT	9,900	12.80	3.83	0.70	3.51	0.88	0.18	3.70	0.00
964-7-5006-16 DAT	8,460	11.00	2.87	1.24	1.68	0.94	0.38	3.09	0.76
964-8-5007-16 DAT	8,180	10.60	2.43	1.13	3.34	0.71	0.15	2.84	0.00
964-9-5008-16 DAT	6,670	8.63	1.71	1.23	2.22	0.91	0.22	2.35	0.00
964-17-5009-16 DAT	10,400	13.50	2.35	1.11	4.60	1.26	0.28	3.67	0.23
964-19-5011-16 DAT	13,000	16.80	2.91	1.48	9.60	0.00	0.37	2.46	0.00
964-27-5013-16 DAT	3,720	4.82	0.95	0.90	1.13	0.66	0.18	0.86	0.13
964-28-5014-16 DAT	3,260	4.22	0.54	0.33	1.80	0.00	0.00	1.50	0.05
964-29-5015-16 DAT	901	1.17	0.15	0.08	0.47	0.00	0.00	0.42	0.05
964-33-5016-16 DAT	4,730	6.12	1.01	0.62	1.60	0.77	0.14	1.53	0.45
964-19-5018-37 DAT	6,960	9.01	2.69	0.00	1.81	0.43	0.00	3.82	0.25
964-27-5019-37 DAT	1,815	2.35	0.80	0.13	0.14	0.21	0.00	1.08	0.00
964-29-5020-37 DAT	2,715	3.51	1.85	0.31	0.19	0.11	0.00	1.06	0.00
964-9-5022-44 DAT	1,530	1.98	0.61	0.10	0.13	0.10	0.00	1.01	0.03
964-29-5023-44 DAT	2,620	3.39	1.43	0.23	0.22	0.16	0.12	1.24	0.00
964-27-5027-58 DAT	1,720	2.23	0.68	0.13	0.07	0.08	0.04	1.24	0.00

[a] DPM/mL (nonclarified solution) based on LSC of 3 aliquots (PTRL East, Inc.).

[b] All "others" consist of many minor peaks, none of which individually represent greater than 1.63 ppb.

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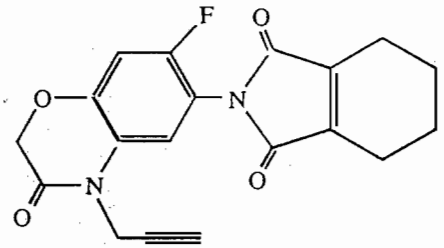
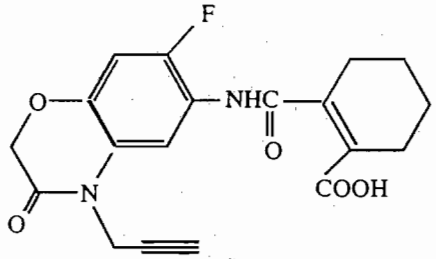
Figure B1. Structures and Chemical Names of Analytical Reference Standards and [^{14}C]Flumioxazin (Used During the Analysis Portion of the Study).



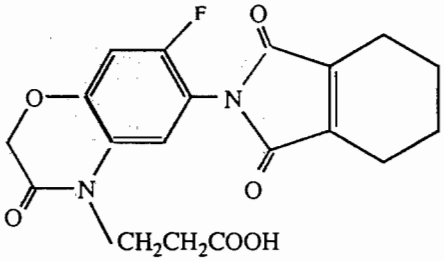
Flumioxazin

7-fluoro-6-(3,4,5,6-tetrahydrophthalimido)
-4-(2-propynyl)-1,4-benzoxazin-3(2H)-one



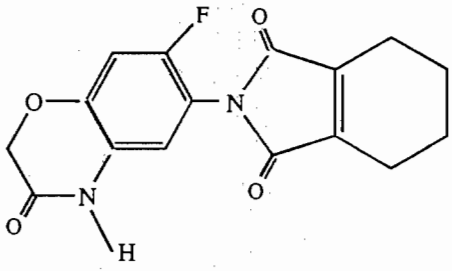
482-HA

N-[7-Fluoro-3-oxo-4-(2-propynyl)-2H-1,4-
benzoxazin-6-yl]-3,4,5,6-tetrahydrophthalamic acid



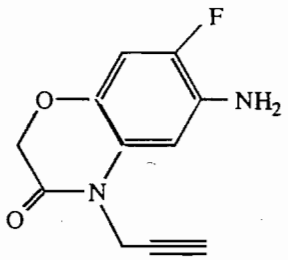
482-CA

2-[7-Fluoro-3-oxo-6-(3,4,5,6-tetrahydrophthalimido)
-2H-1,4-benzoxazin-4-yl]propionic acid



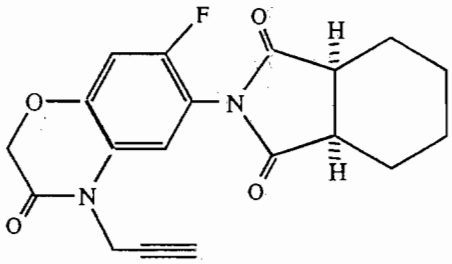
IMOXA

7-Fluoro-6-(3,4,5,6-tetrahydrophthalimido)
-2H-1,4-benzoxazin-3(4H)-one

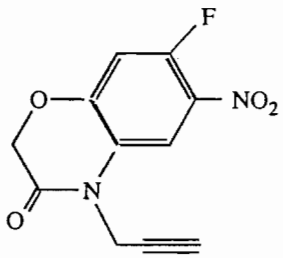


APF

6-Amino-7-fluoro-4-(2-propynyl)
-2H-1,4-benzoxazin-3(4H)-one

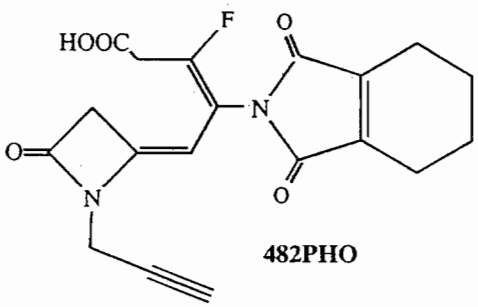


SAT-482



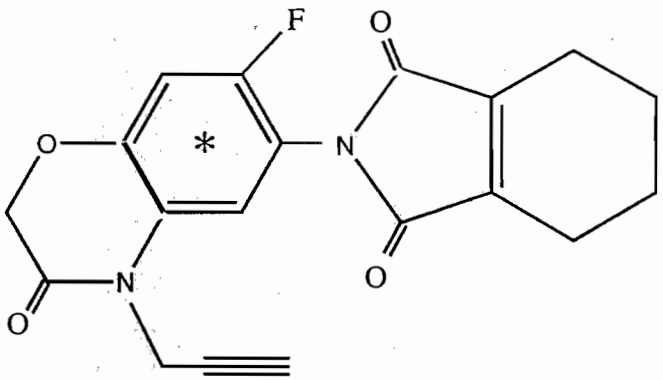
PNF

7-Fluoro-6-nitro-4-(2-propynyl)
-2H-1,4-benzoxazin-3(4H)-one



482PHO

Figure B1 (cont.). Structures of Analytical Reference Standards and [^{14}C]Flumioxazin (Used During the Analysis Portion of the Study).



* Indicates position of ^{14}C

[phenyl-^{14}C]Flumioxazin
7-Fluoro-6-(3,4,5,6-tetrahydrophthalimido)-
4-(2-propynyl)-1,4-benzoxazin-3(2H)-one

CAS No.: 103361-09-7

Supplier: Sumitomo Chemical Company

Lot No.: R1S93013

Specific Activity: 123 mCi/mmol (348 µCi/mg)

Radiochemical Purity: 99.4% as determined by PTRL West, Inc.

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Figure B3. Procedure for the Extraction and Analysis of Soil Samples.

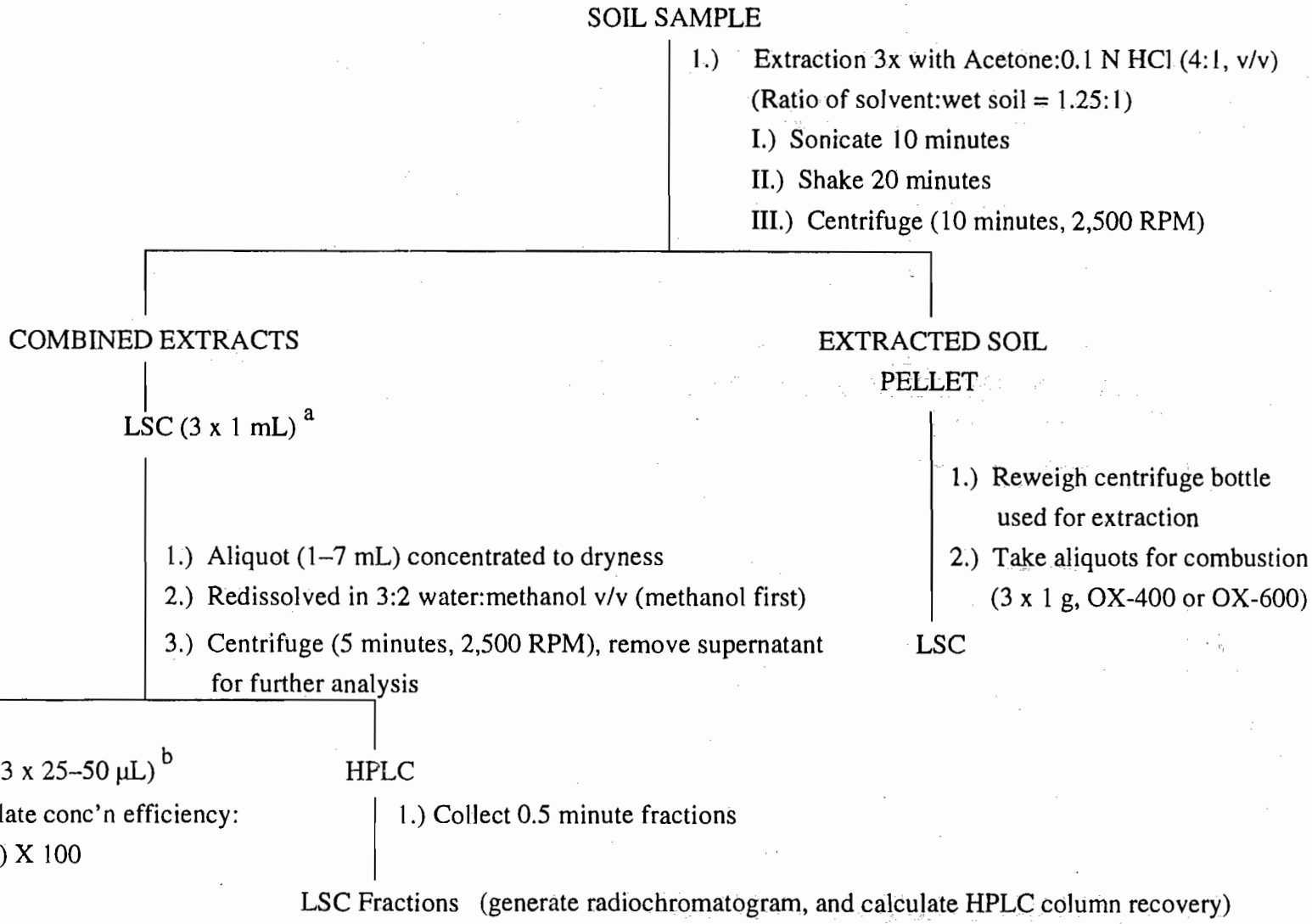

Figure B6. TLC Radiographs of Soil Extracts.

TLC Radiograph with Visualized Standards Overlay —
Extract of Soil Sample: 964-10-25-1-2 DAT

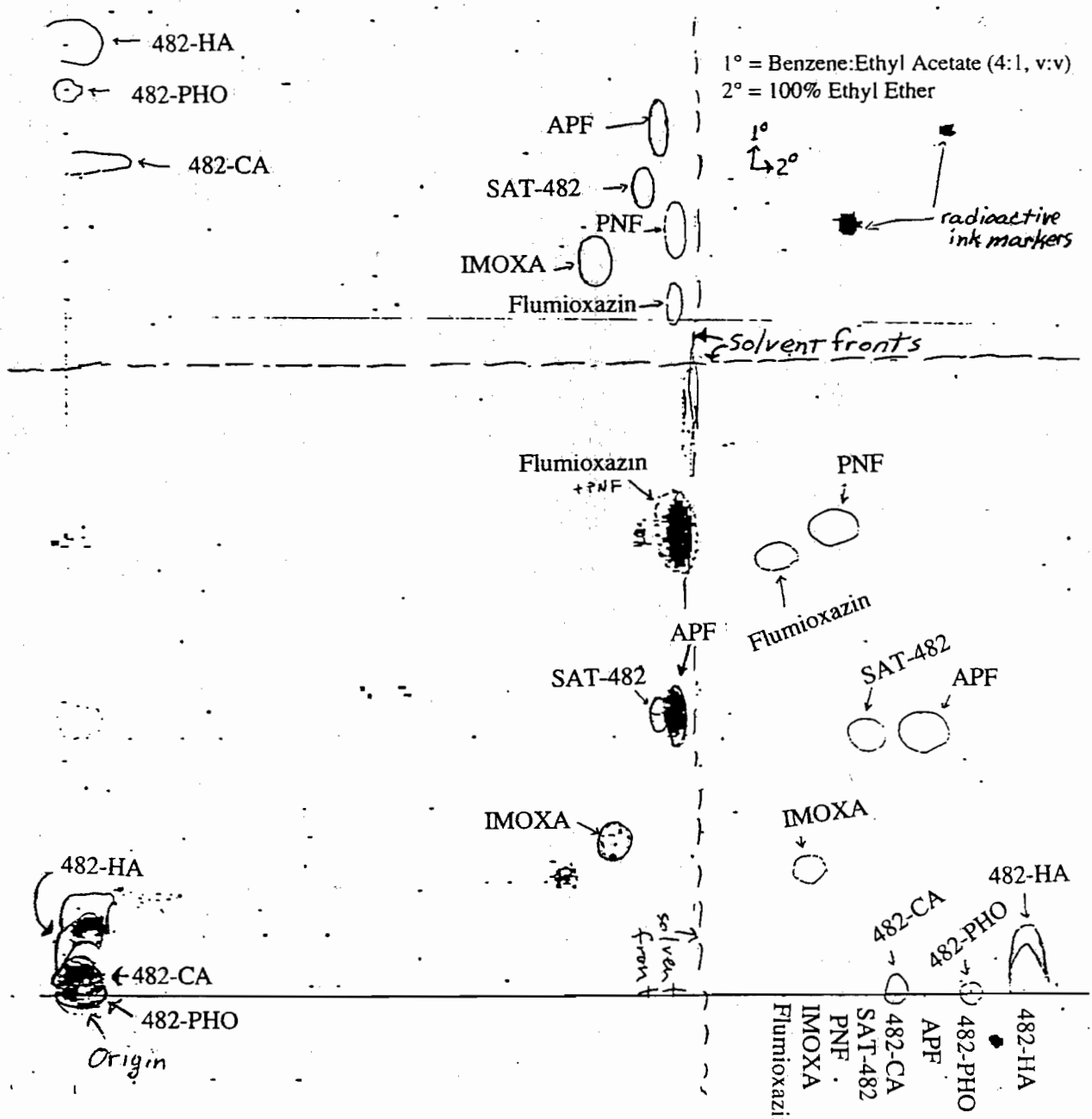

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Figure B6 (cont.). TLC Radiographs of Soil Extracts.

TLC Radiograph With Integration —
Extract of Soil Sample: 964-10-25-1-2 DAT

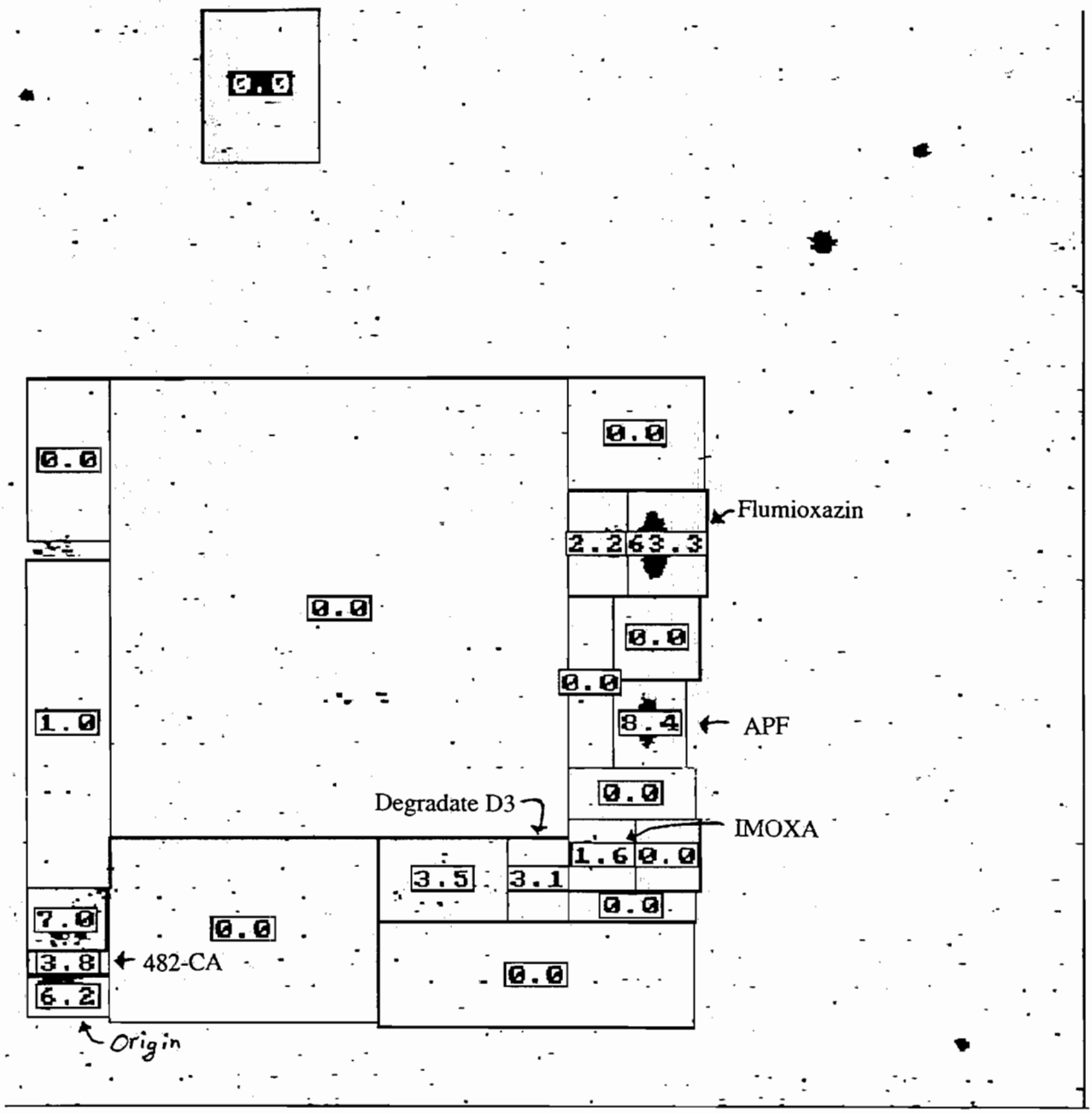

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Figure B6 (cont.). TLC Radiographs of Soil Extracts.

TLC Radiograph with Visualized Standards Overlay — Extract of Soil Sample: 964-4-57-1-9 DAT

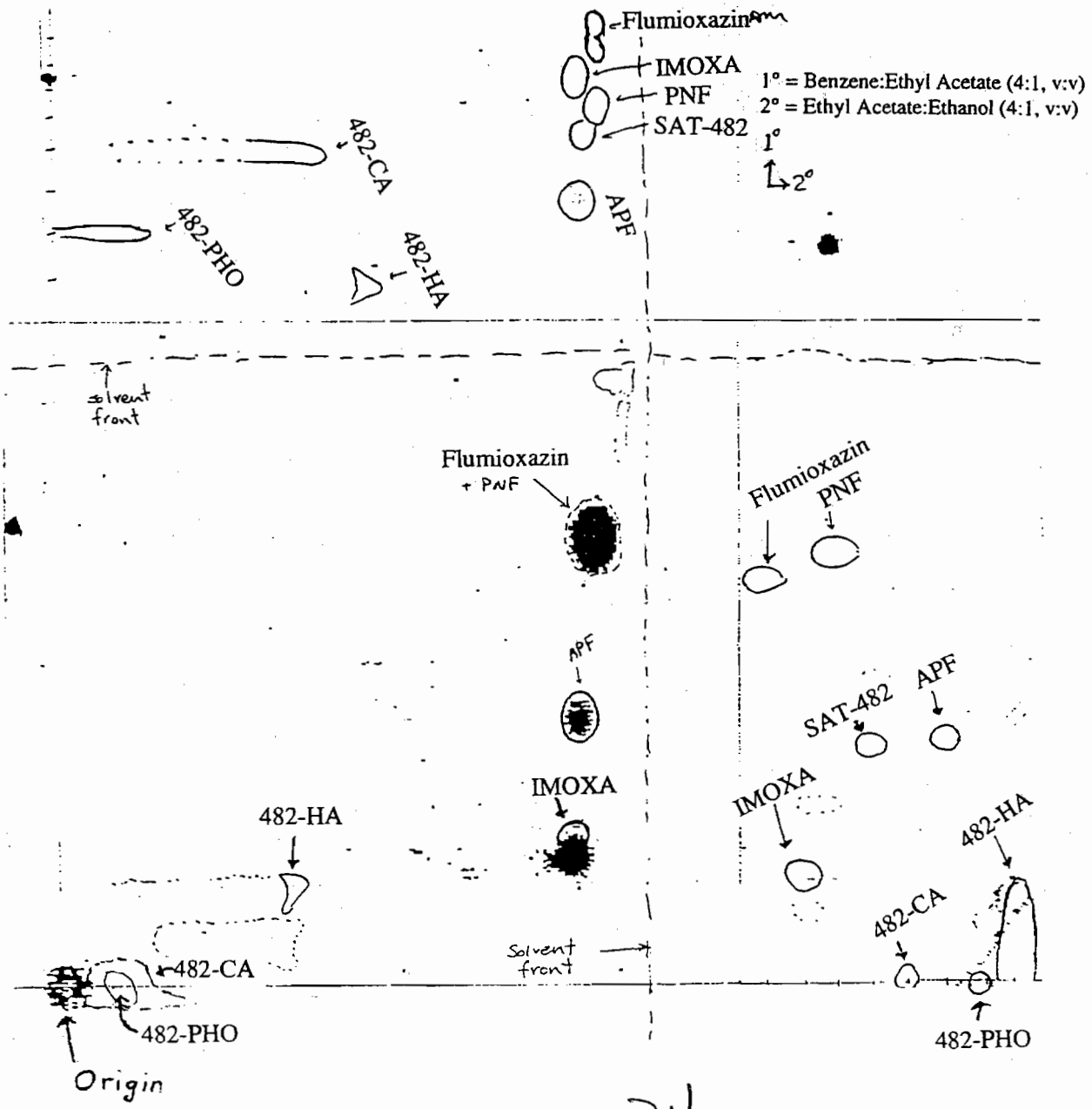

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Figure B6 (cont.). TLC Radiographs of Soil Extracts.

TLC Radiograph With Integration —
Extract of Soil Sample: 964-4-57-1-9 DAT

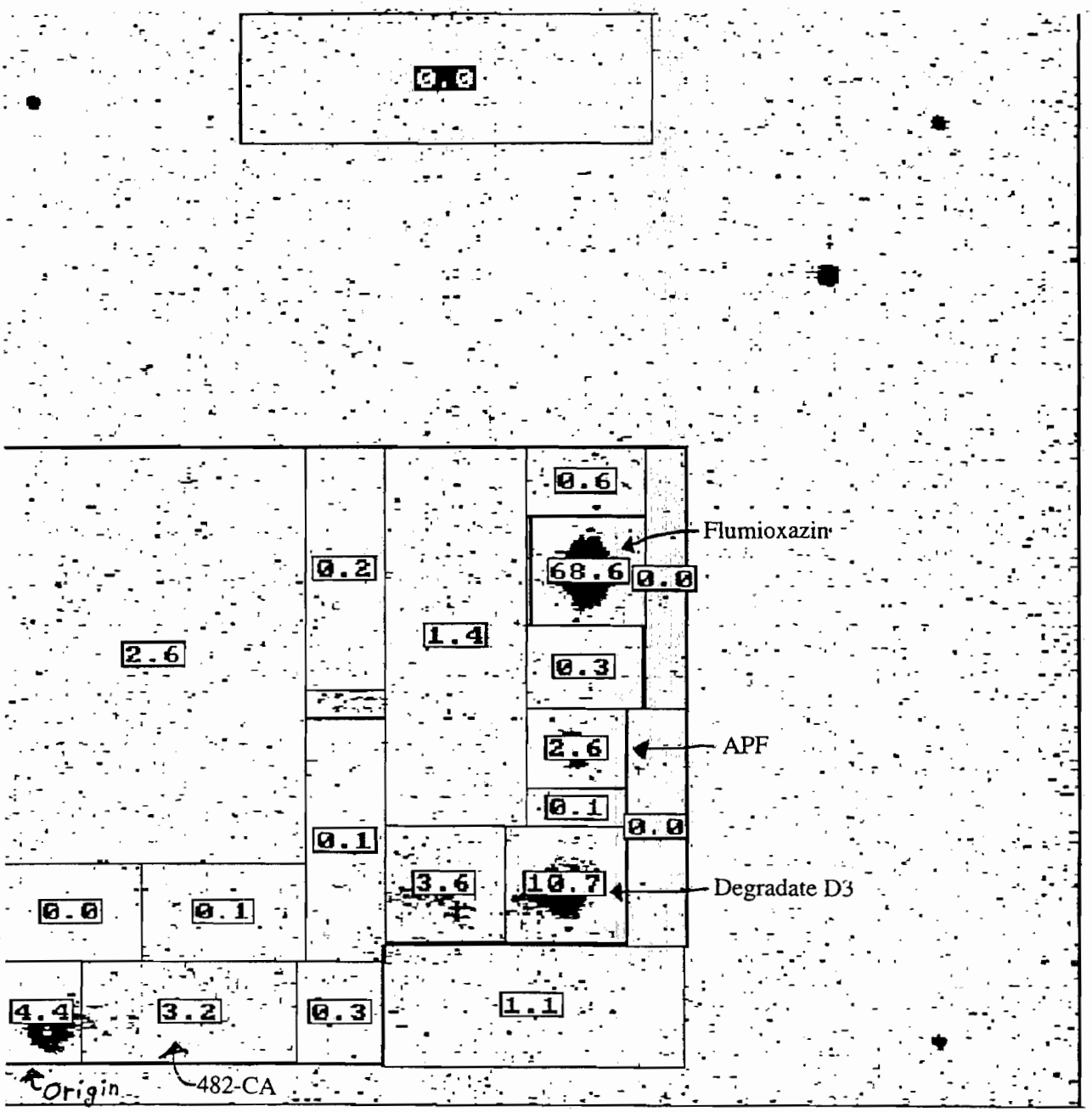

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Figure B6 (cont.). TLC Radiographs of Soil Extracts.

TLC Radiograph with Visualized Standards Overlay — Extract of Soil Sample: 964-17-97-1-27 DAT

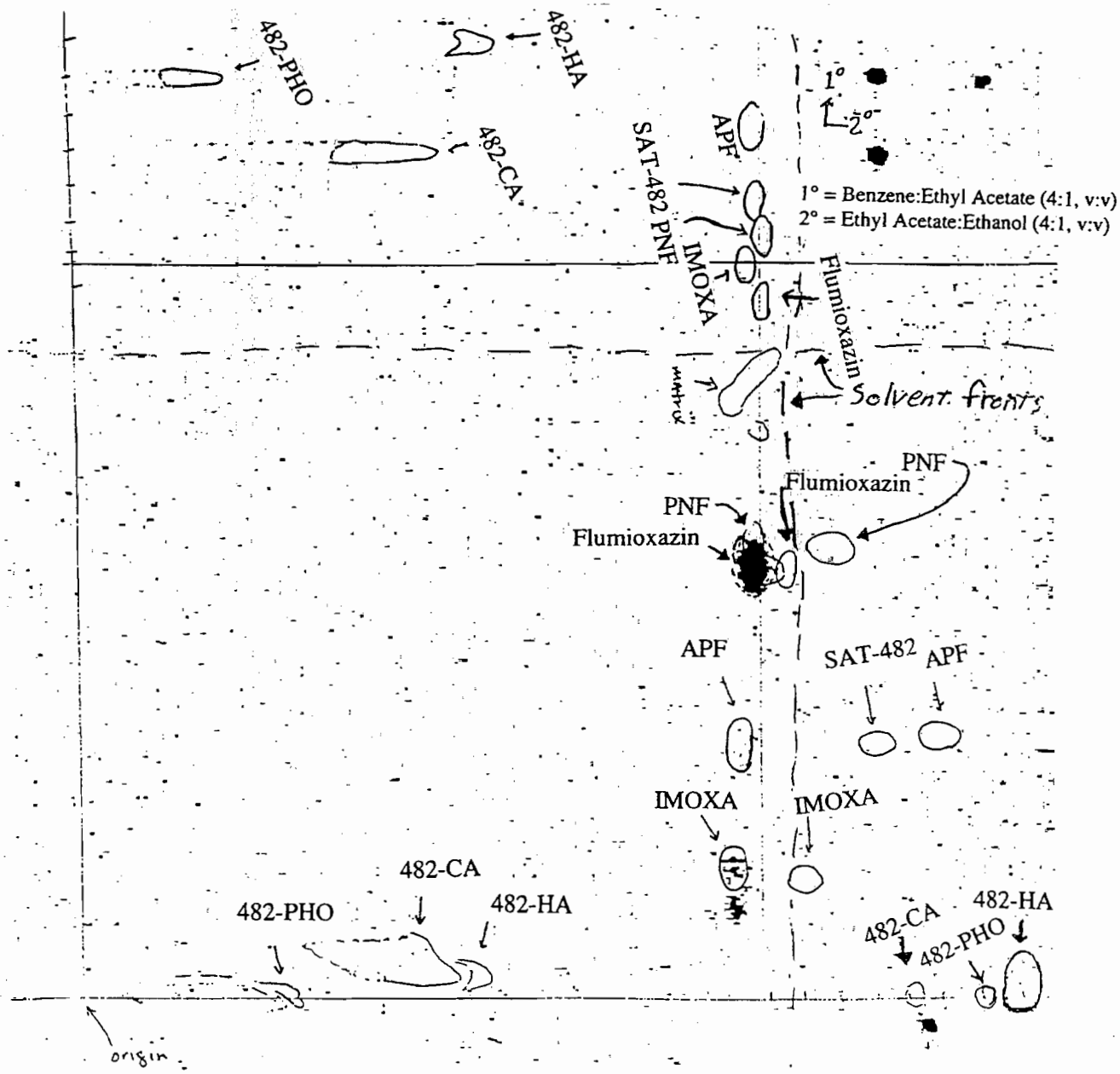

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Figure B6 (cont.). TLC Radiographs of Soil Extracts.

TLC Radiograph With Integration —
Extract of Soil Sample: 964-17-97-1-27 DAT

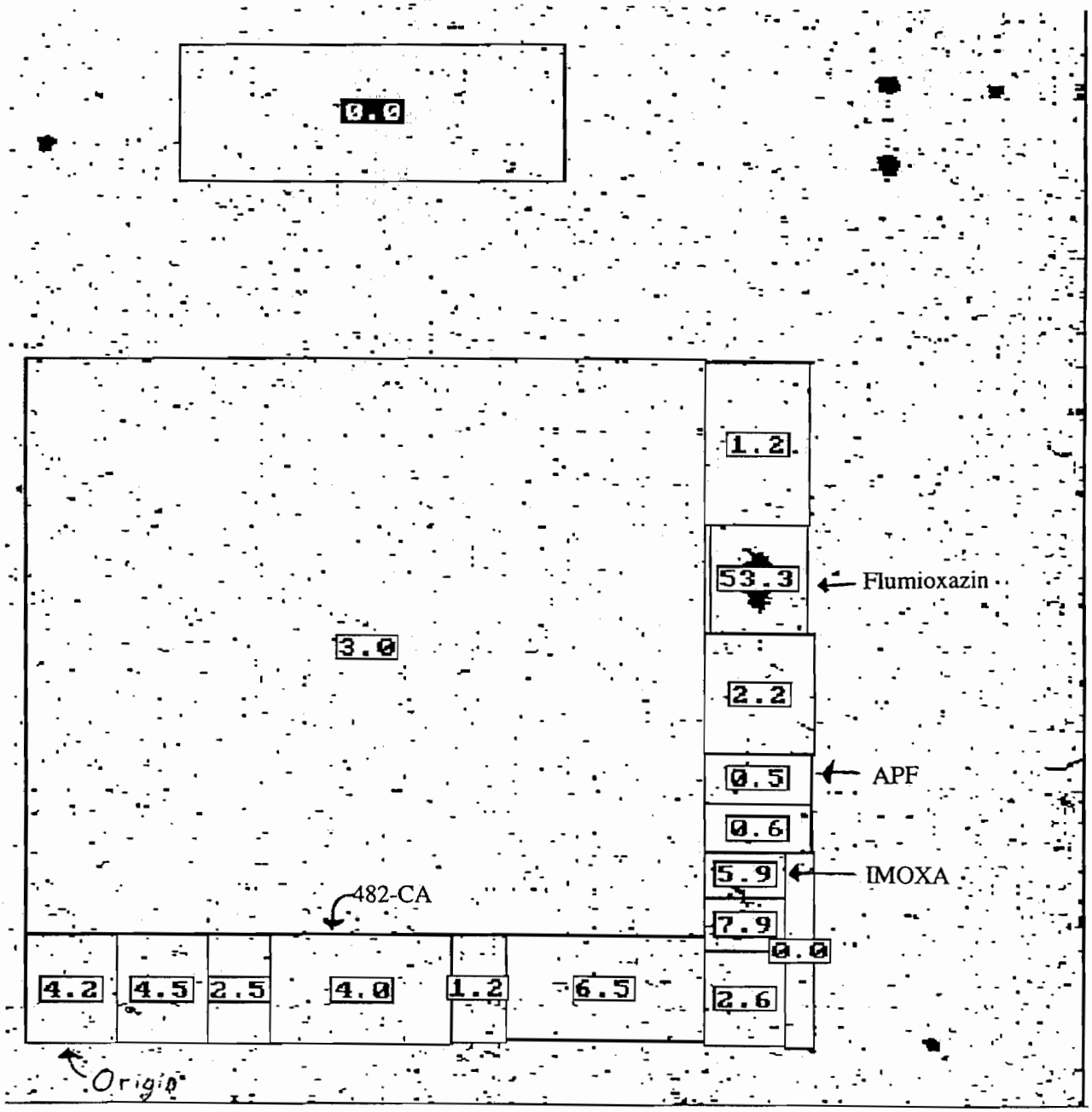

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Figure B6 (cont.). TLC Radiographs of Soil Extracts.

TLC Radiograph with Visualized Standards Overlay — Extract of Soil Sample: 964-8-105-1-48 DAT

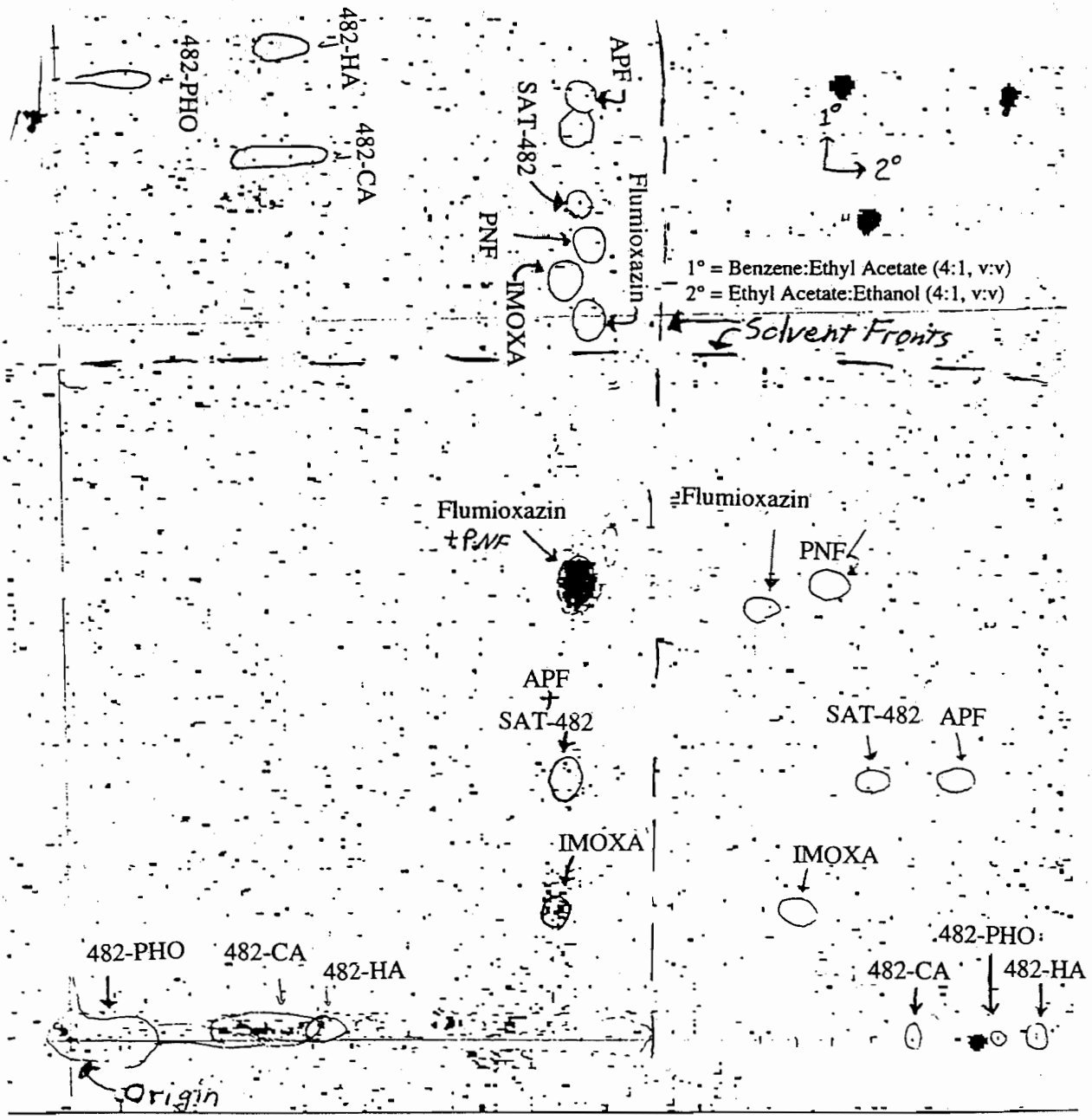

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Figure B6 (cont.). TLC Radiographs of Soil Extracts.

TLC Radiograph With Integration —
Extract of Soil Sample: 964-8-105-1-48 DAT

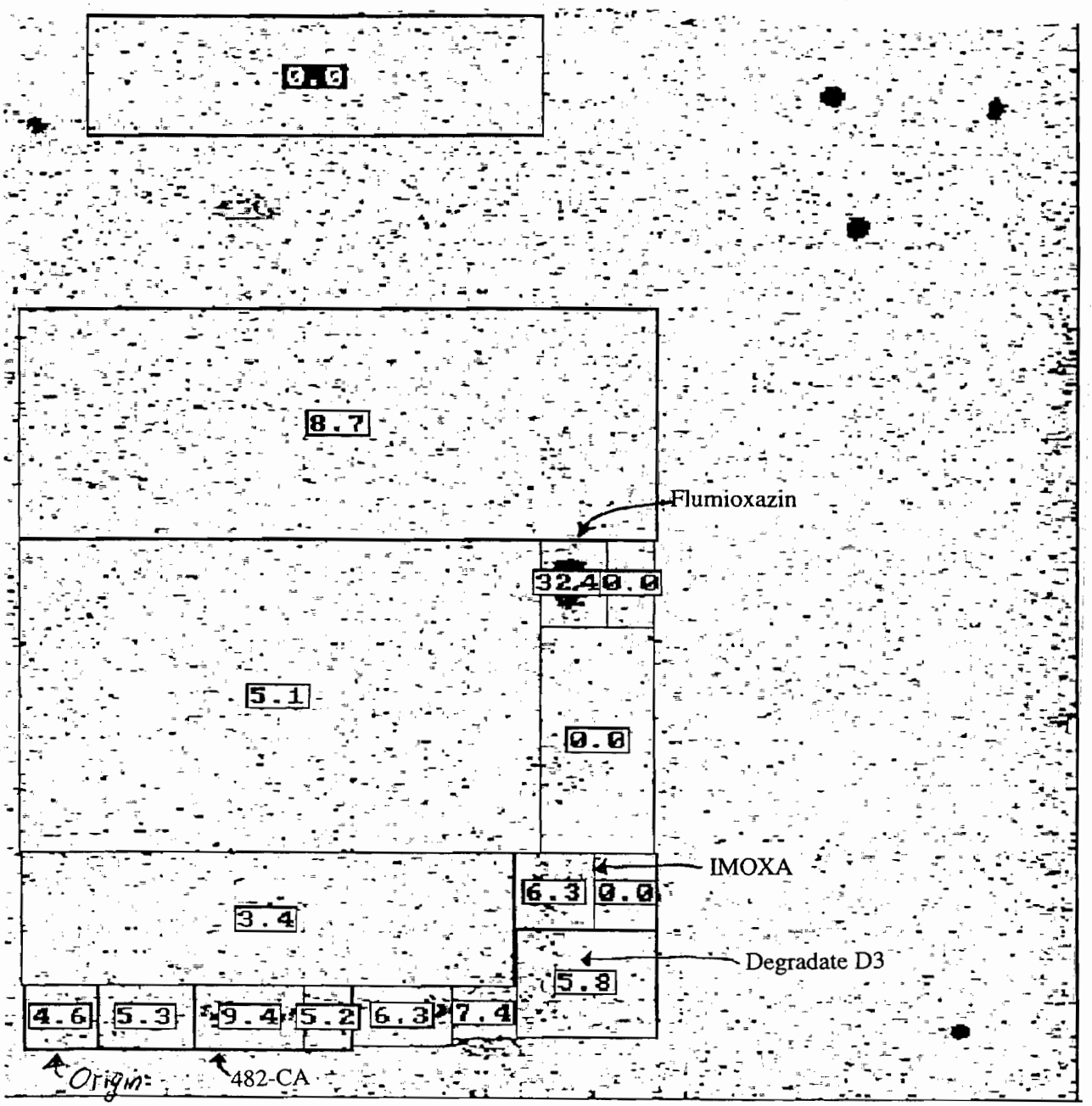

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Figure B6 (cont.). TLC Radiographs of Soil Extracts.

TLC Radiograph with Visualized Standards Overlay —
Extract of Soil Sample: 964-24-129-1-72 DAT

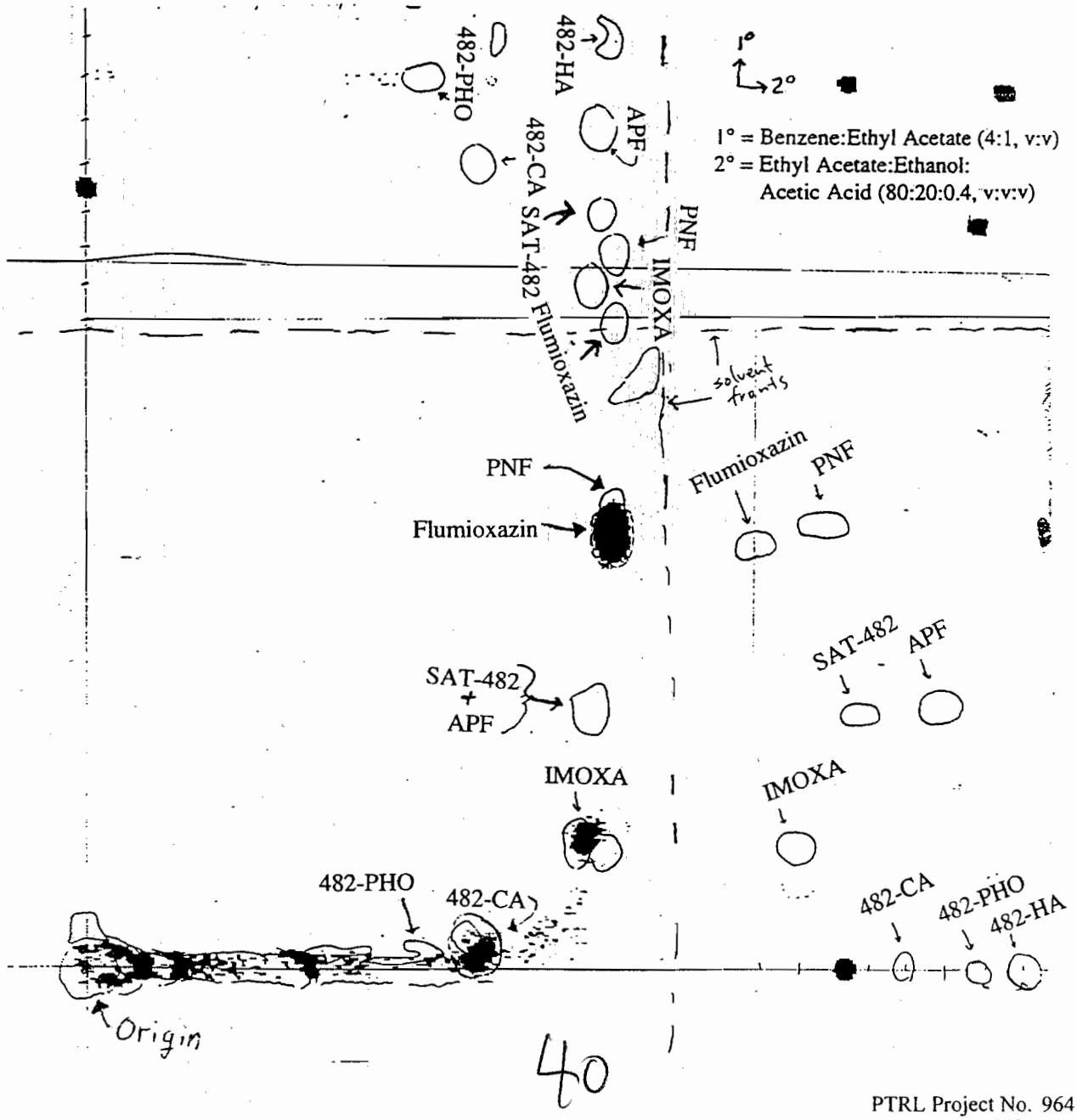

Figure B6 (cont.). TLC Radiographs of Soil Extracts.

TLC Radiograph With Integration —
Extract of Soil Sample: 964-24-129-1-72 DAT

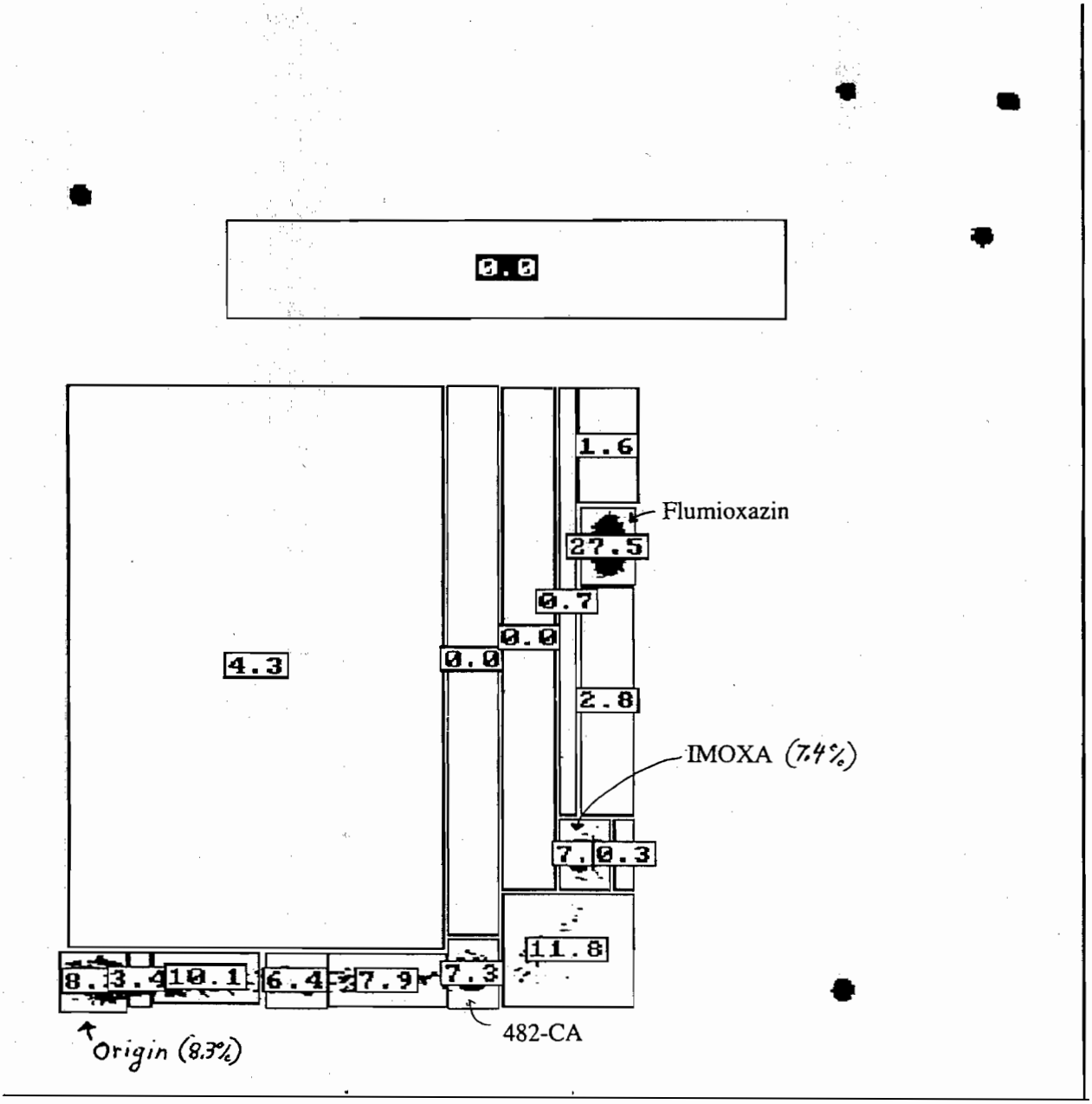

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Figure B8. TLC Radiographs of Leachate.

TLC Radiograph with Visualized Standards Overlay —
Leachate Sample: 964-7-1014-16 DAT

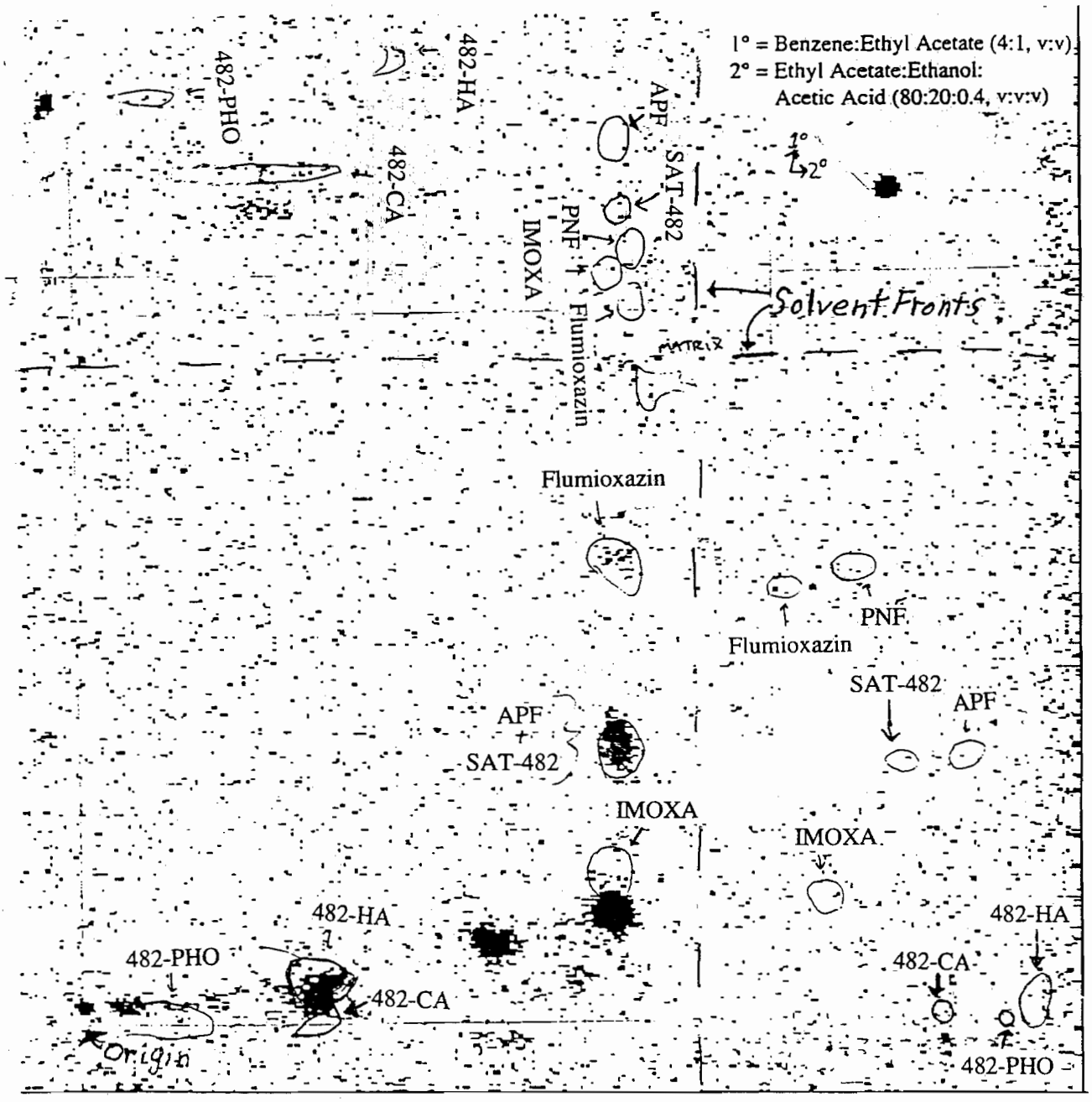

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Figure B8 (cont.). TLC Radiographs of Leachate.

TLC Radiograph With Integration —
Leachate Sample: 964-7-1014-16 DAT

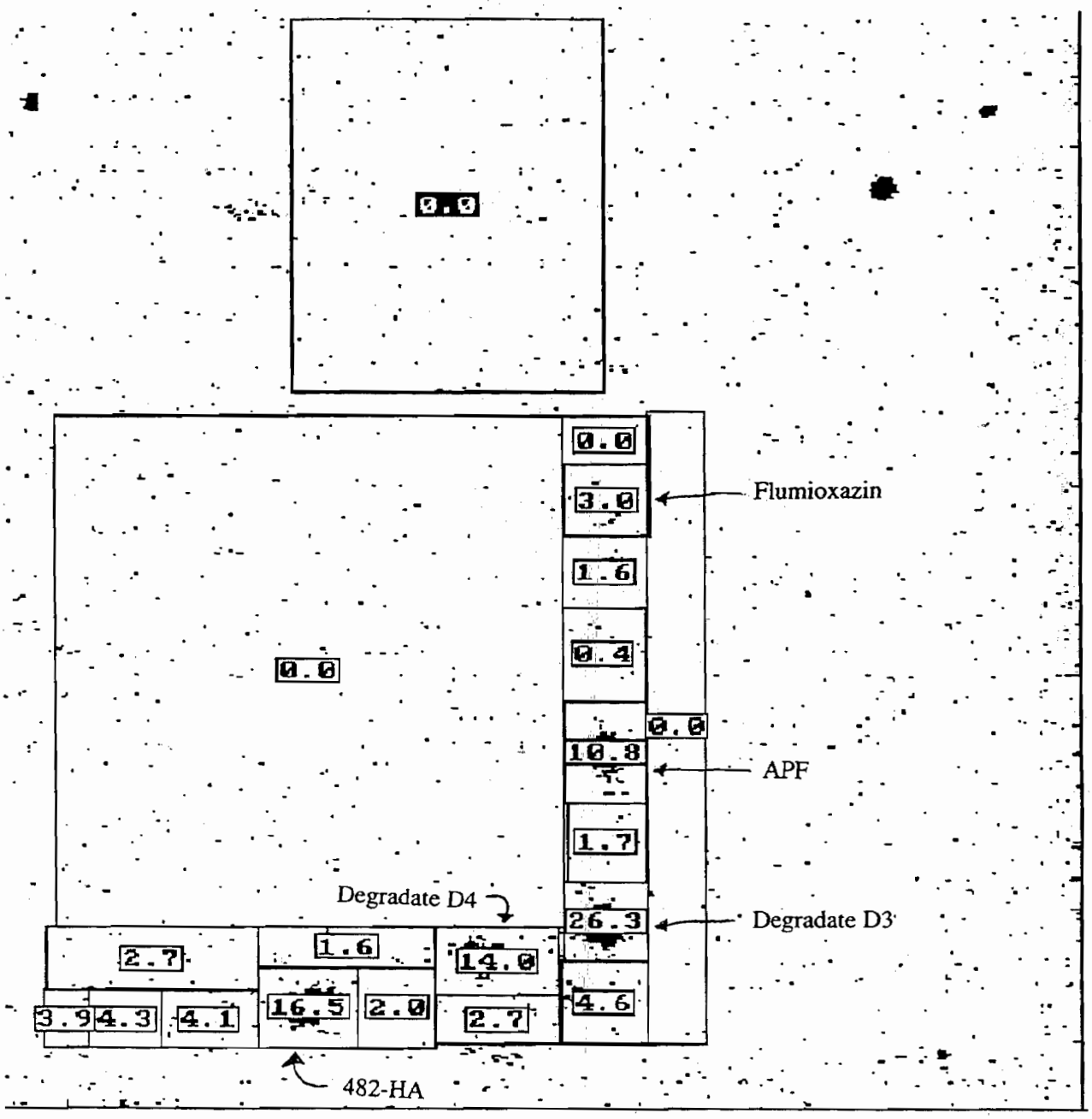

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Figure B8 (cont.). TLC Radiographs of Leachate.

TLC Radiograph with Visualized Standards Overlay — Leachate Sample: 964-19-1021-16 DAT

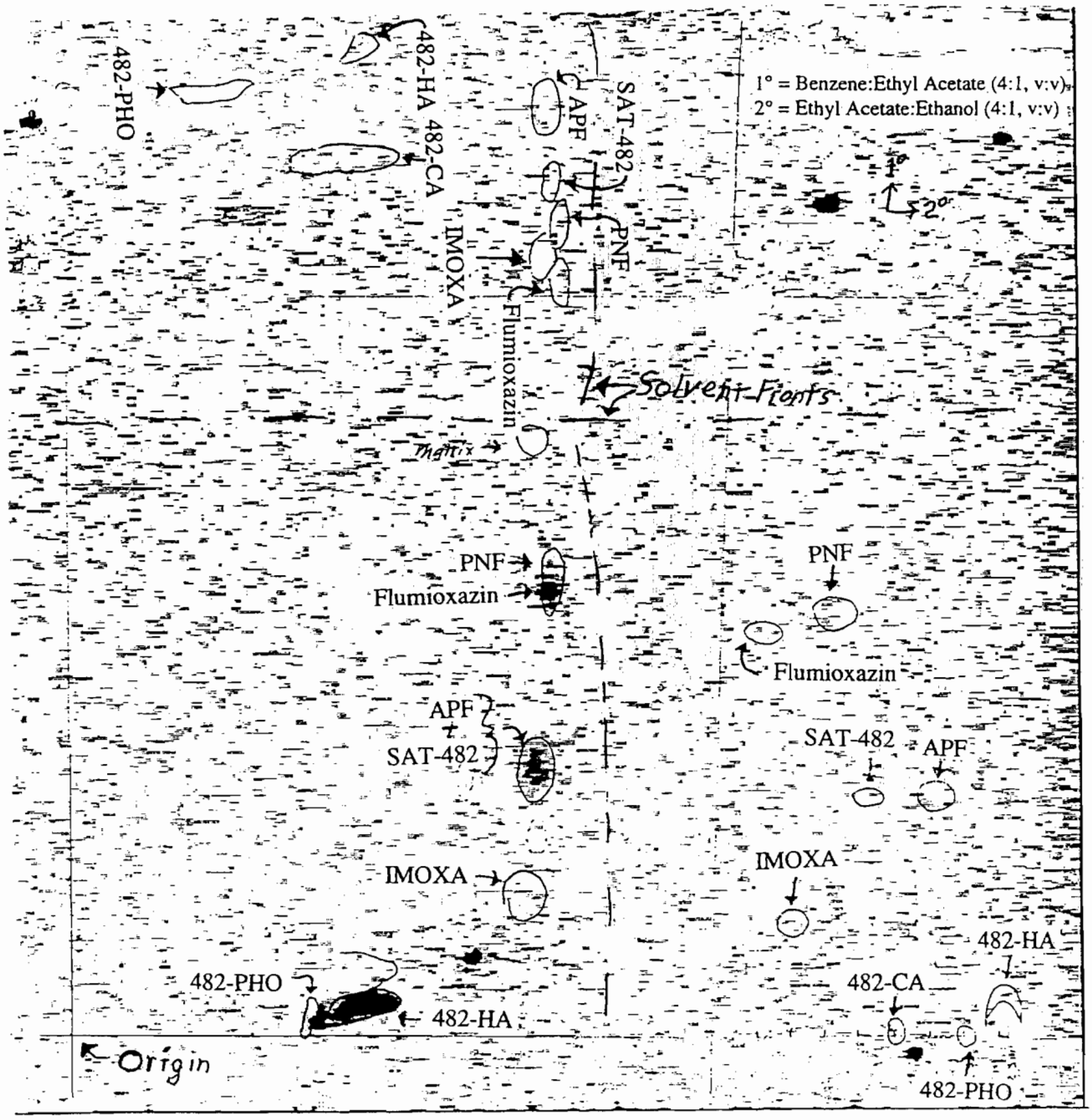

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Figure B8 (cont.). TLC Radiographs of Leachate.

TLC Radiograph With Integration —
Leachate Sample: 964-19-1021-16 DAT

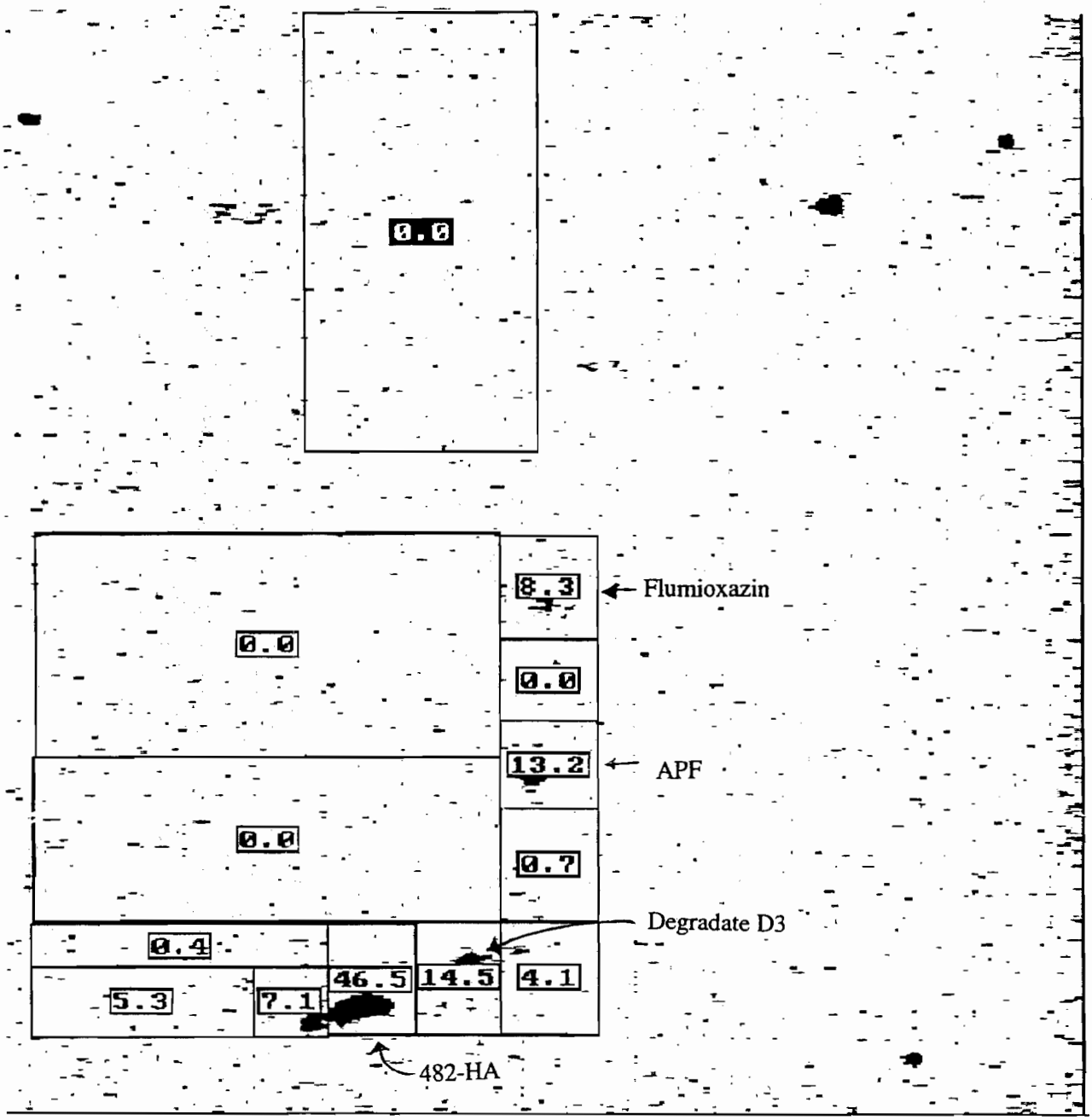

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Figure B11. TLC Radiographs of Runoff.

TLC Radiograph with Visualized Standards Overlay —
Runoff Sample: 964-33-5016-16 DAT

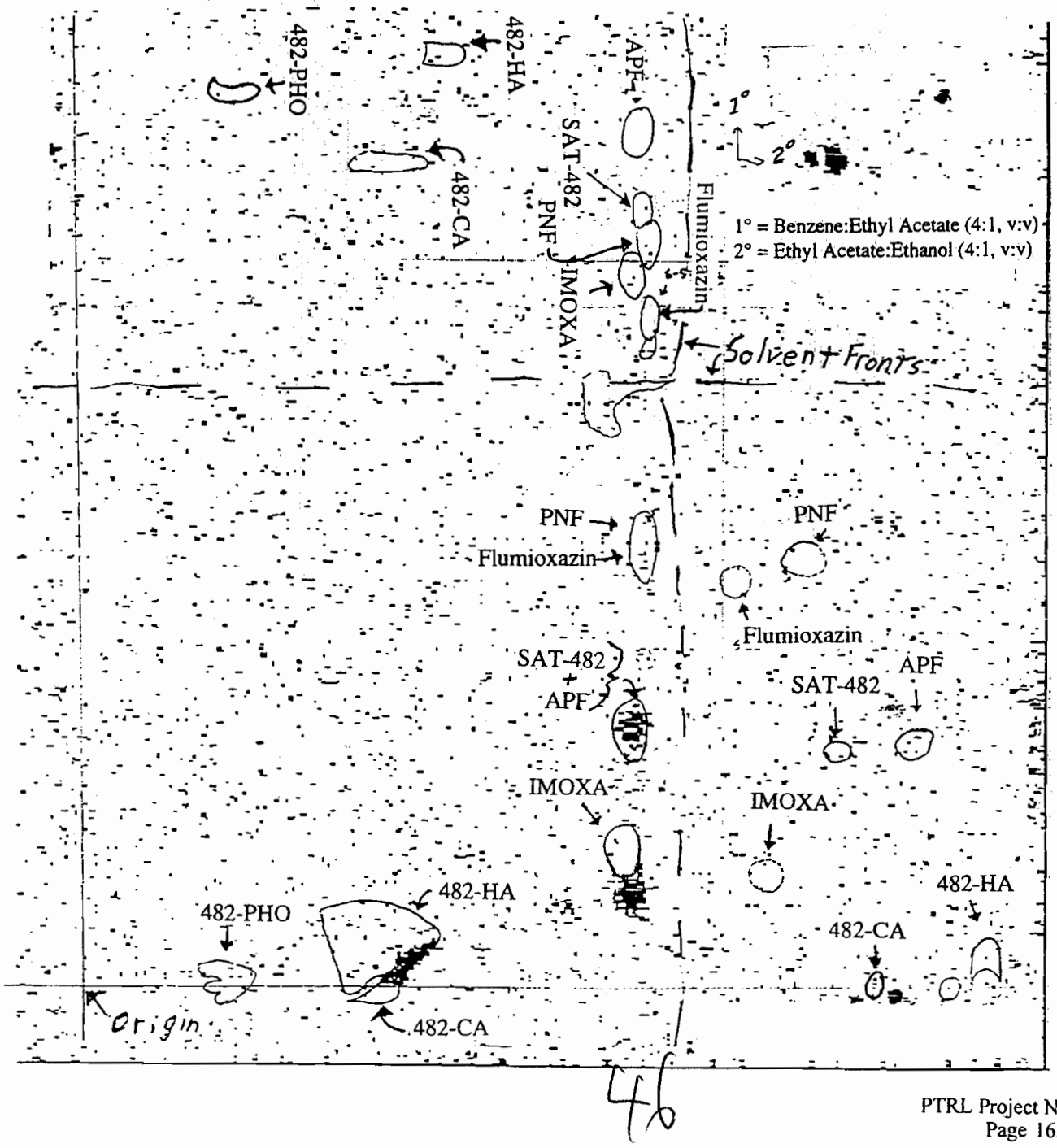

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Figure B11 (cont.). TLC Radiographs of Runoff.

TLC Radiograph With Integration —
Runoff Sample: 964-33-5016-16 DAT

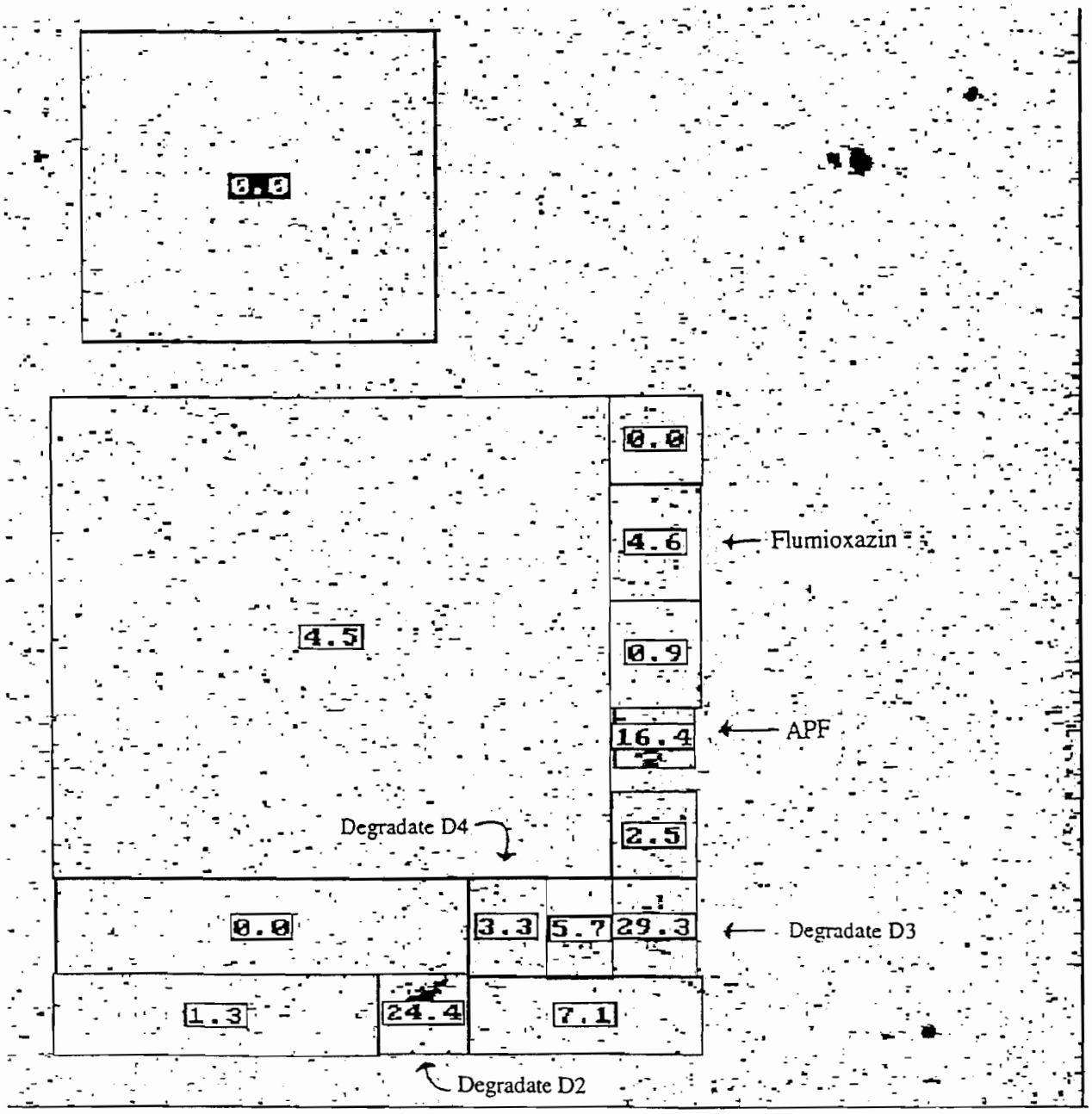

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Figure B12. Proposed Metabolic Pathway.

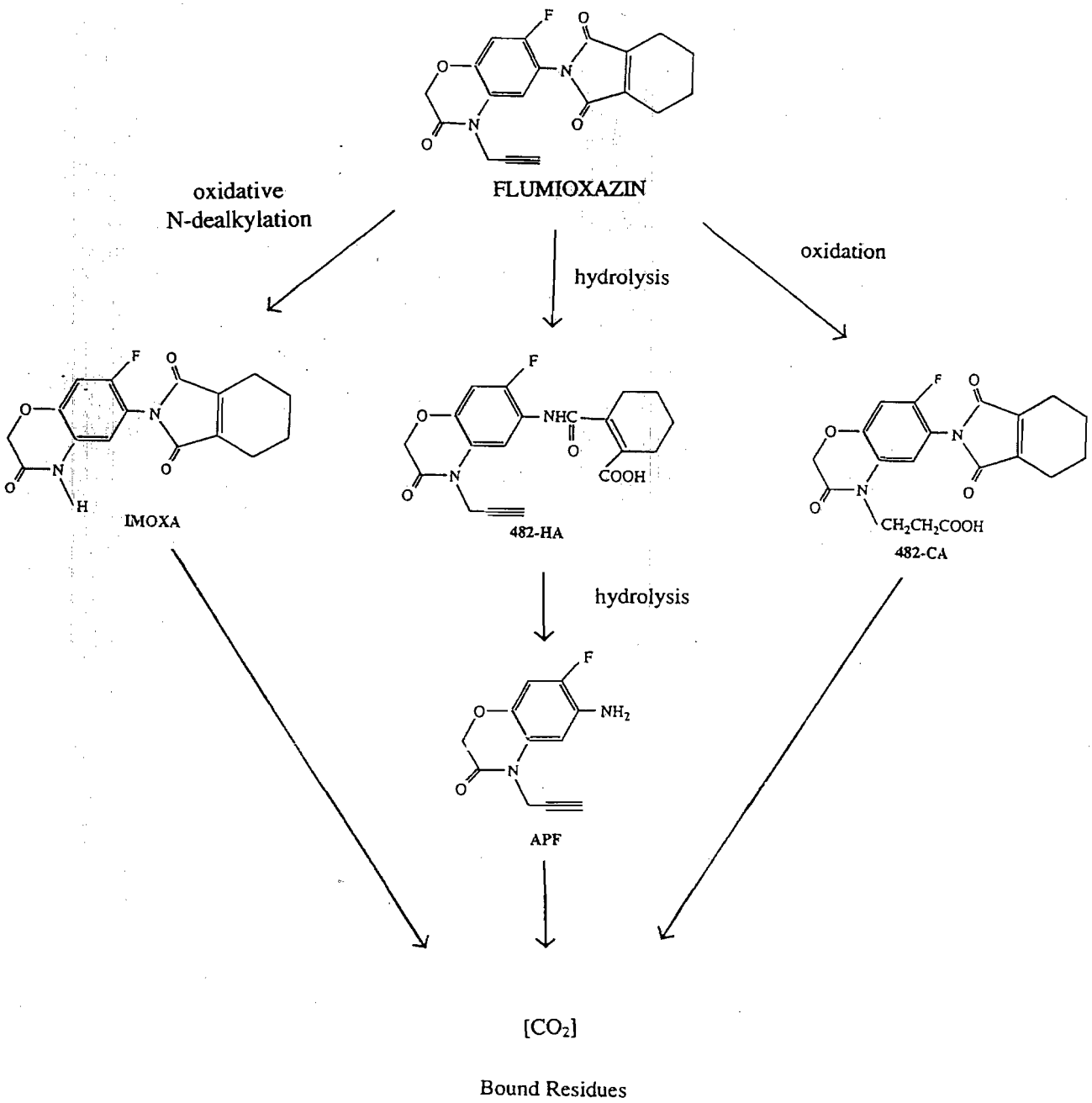

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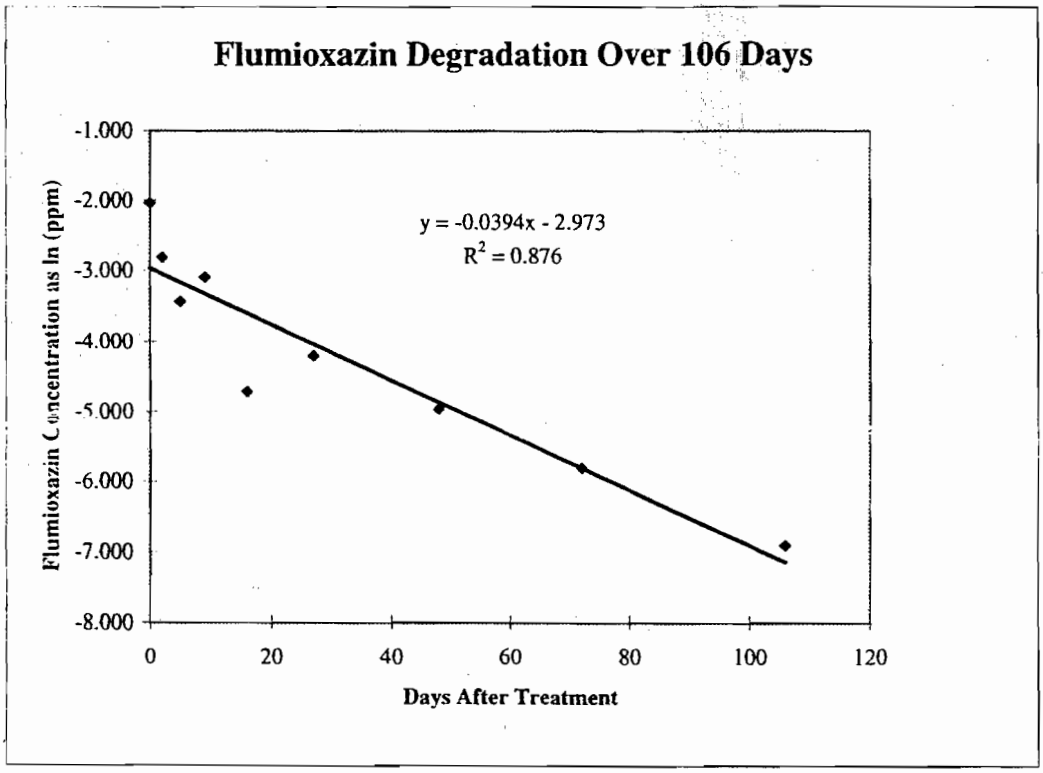
Figure B13. Flumioxazin Degradation Kinetics.

Days After Treatment	Flumioxazine Residues in Soil (ppm)	Natural Log of Flumioxazine Residues in Soil (ppm)
0	0.130	-2.040
2	0.060	-2.813
5	0.032	-3.442
9	0.045	-3.101
16	0.009	-4.711
27	0.015	-4.200
48	0.007	-4.962
72	0.003	-5.809
106	0.001	-6.908



Calculated Half-Life = 0.693/0.0394 = 17.6 Days
Note, the y-intercept correponds to only ~ 0.05 ppm and the actual Time 0 concentration was 0.13 ppm.
This Regression Analysis Was Not Used To Obtain The Definitive Half-Life

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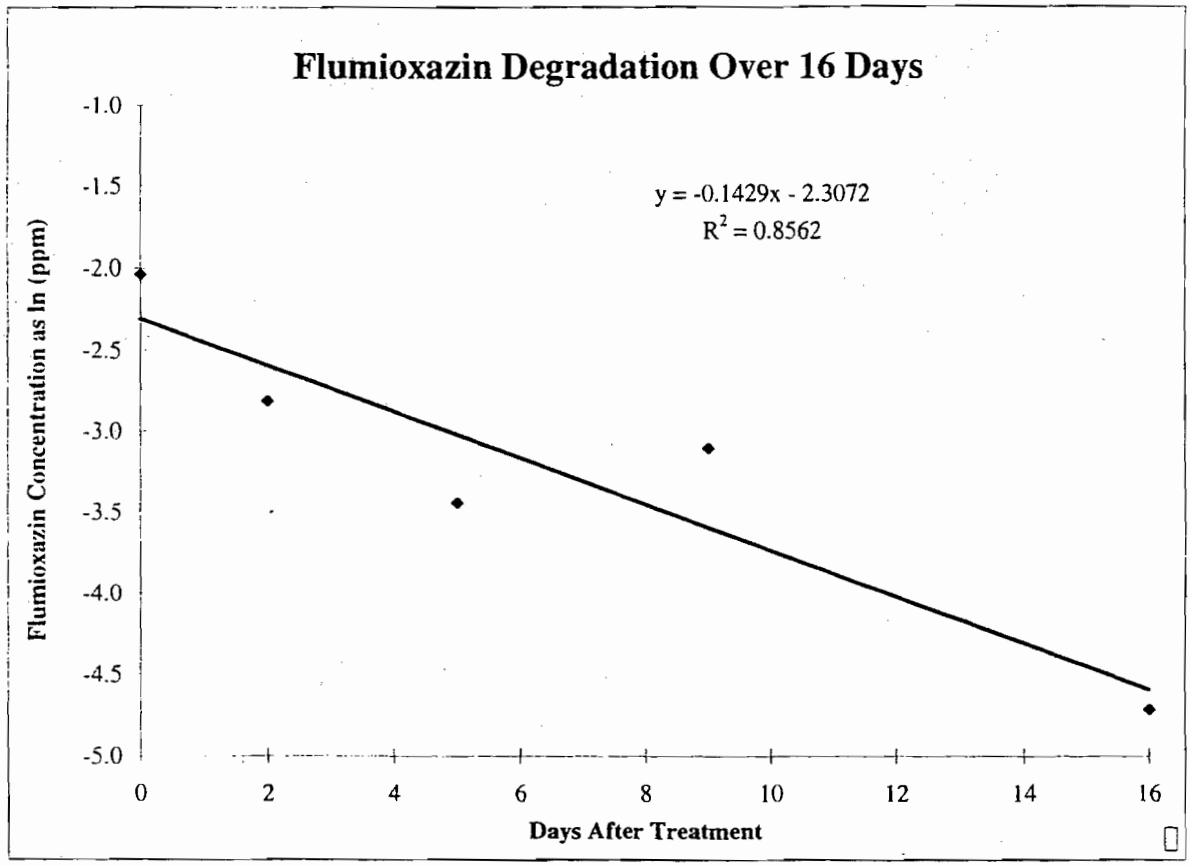
Figure B13 (cont.). Flumioxazin Degradation Kinetics.

DAT	Flumioxazine Residues in Soil (ppm)	Natural Log of Flumioxazine Residues in Soil (ppm)
0	0.130	-2.040
2	0.060	-2.813
5	0.032	-3.442
9	0.045	-3.101
16	0.009	-4.711



Half-Life = 0.693/0.1429 = 4.8 Days

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Project 964 Year	Julian Day	DAT	Daily Rainfall Reaching Lysimeters (inches)	Cumulative Rainfall Reaching Lysimeters (inches)	Irrigation Added (inches)	Cumulative Water Reaching Lysimeters (inches)	Average Air Temperature (degrees C)	Average Soil Temperature (degrees C)	Average Percent Relative Humidity	Pan Evaporation [a] (0.01 inches)
1995	200	−7	0.00				30.57	32.82	49.49	NA [b]
1995	201	−6	0.00				26.03	30.60	69.83	24
1995	202	−5	0.00				25.98	30.13	73.80	23
1995	203	−4	0.74				24.71	29.24	84.40	19
1995	204	−3	1.14				24.50	27.42	89.10	NA
1995	205	−2	0.04				25.18	26.97	85.80	80
1995	206	−1	0.03				25.04	26.96	82.30	19
1995	207	0	0.00	0.00 [c]	0.54	0.54	27.21	27.71	76.30	22
1995	208	1	0.00	0.00		0.54	27.29	28.57	75.90	19
1995	209	2	0.00	0.00		0.54	26.61	28.53	78.30	23
1995	210	3	0.00	0.00		0.54	28.69	30.24	73.80	17
1995	211	4	0.00	0.00		0.54	28.47	31.44	72.50	25
1995	212	5	0.00	0.00		0.54	28.59	31.66	73.00	24
1995	213	6	0.00	0.00		0.54	28.57	32.42	72.50	24
1995	214	7	0.00	0.00		0.54	28.29	32.23	72.70	21
1995	215	8	0.00	0.00		0.54	29.31	32.81	67.23	25
1995	216	9	0.00	0.00		0.54	28.09	32.18	72.60	27
1995	217	10	1.74 [d]	1.74		2.28	23.57	28.23	93.80	15
1995	218	11	0.00 [d]	1.74		2.28	24.68	26.96	86.60	10
1995	219	12	0.73	2.47	0.80	3.81	24.74	27.07	88.60	20
1995	220	13	0.00	2.47		3.81	25.03	26.69	87.90	18
1995	221	14	0.05	2.52		3.86	25.33	27.16	84.60	15
1995	222	15	0.00	2.52		3.86	26.29	27.70	80.00	16
1995	223	16	0.00	2.52		3.86	28.51	29.15	78.90	18
1995	224	17	0.00	2.52	0.22	4.08	28.96	29.89	78.70	20
1995	225	18	0.00	2.52		4.08	29.35	30.84	77.40	25
1995	226	19	0.00	2.52		4.08	29.17	31.42	77.10	25
1995	227	20	0.00	2.52		4.08	28.44	31.19	82.00	20
1995	228	21	0.00	2.52		4.08	29.25	31.08	80.70	17
1995	229	22	0.00	2.52		4.08	28.99	31.50	79.30	20
1995	230	23	0.00	2.52	0.04	4.12	28.11	31.23	80.40	29
1995	231	24	0.00	2.52		4.12	28.08	30.77	77.80	23
1995	232	25	0.00	2.52		4.12	27.33	29.88	81.40	27
1995	233	26	0.00	2.52		4.12	27.95	29.65	80.60	22
1995	234	27	0.00	2.52		4.12	24.88	28.56	70.60	21
1995	235	28	0.00	2.52		4.12	23.37	27.08	71.60	25
1995	236	29	0.00	2.52		4.12	25.27	27.46	73.40	22
1995	237	30	0.00	2.52	1.12	5.24	25.99	28.76	75.50	22
1995	238	31	0.00	2.52		5.24	25.48	28.54	70.40	20
1995	239	32	0.00	2.52		5.24	26.69	29.05	73.80	23
1995	240	33	0.00	2.52		5.24	26.77	29.64	73.50	24
1995	241	34	0.00	2.52		5.24	27.25	29.76	77.00	33
1995	242	35	0.00	2.52		5.24	28.26	30.32	73.90	20
1995	243	36	0.00	2.52		5.24	28.24	30.48	73.70	20
1995	244	37	0.00	2.52	1.33	6.57	23.52	28.66	75.10	NA
1995	245	38	0.00	2.52		6.57	22.26	27.27	70.60	19
1995	246	39	0.00	2.52		6.57	22.54	27.22	68.27	16
1995	247	40	0.00	2.52		6.57	23.47	27.19	67.97	16
1995	248	41	0.00	2.52		6.57	24.18	27.22	68.99	21
1995	249	42	0.00	2.52		6.57	24.22	27.21	69.95	19
1995	250	43	0.00	2.52		6.57	21.60	25.58	78.80	18
1995	251	44	0.12	2.64	0.14	6.83	22.22	24.46	84.60	14
1995	252	45	0.00	2.64		6.83	19.44	23.18	90.40	10

[a] Data obtained from NOAA stations located at Dubois South Indiana Forage Farm, and Nolin River Lake, Kentucky.

[b] Datum is not available.

[c] Cumulative rainfall reaching lysimeters was not calculated until 0 DAT.

[d] Lysimeters were covered during severe weather, therefore daily rainfall reaching lysimeters was less than the actual rainfall (2.27 inches) recorded at the test site.

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Project 964 Year	Julian Day	DAT	Daily Rainfall Reaching Lysimeters (inches)	Cumulative Rainfall Reaching Lysimeters (inches)	Irrigation Added (inches)	Cumulative Water Reaching Lysimeters (inches)	Average Air Temperature (degrees C)	Average Soil Temperature (degrees C)	Average Percent Relative Humidity	Pan Evaporation [a] (0.01 inches)
1995	253	46	0.00	2.64		6.83	19.77	22.53	71.00	NA
1995	254	47	0.00	2.64		6.83	20.00	22.41	66.27	20
1995	255	48	0.15	2.79		6.98	22.94	23.38	84.90	16
1995	256	49	0.02	2.81		7.00	24.30	24.19	83.70	12
1995	257	50	0.00	2.81		7.00	23.73	24.80	76.80	20
1995	258	51	0.00	2.81	0.82	7.82	19.65	22.64	76.70	23
1995	259	52	0.51	3.32		8.33	18.72	21.28	92.10	10
1995	260	53	0.00	3.32		8.33	19.49	21.48	90.90	0
1995	261	54	0.00	3.32		8.33	16.00	20.23	76.60	10
1995	262	55	0.00	3.32		8.33	18.74	20.43	77.90	16
1995	263	56	0.60	3.92		8.93	19.29	21.23	92.90	12
1995	264	57	0.00	3.92		8.93	19.30	21.24	83.20	7
1995	265	58	0.05	3.97		8.98	12.43	19.51	74.30	9
1995	266	59	0.00	3.97		8.98	10.76	16.57	69.14	9
1995	267	60	0.00	3.97		8.98	12.66	16.60	74.40	14
1995	268	61	0.00	3.97		8.98	13.69	16.56	83.50	15
1995	269	62	0.00	3.97		8.98	16.20	17.95	76.20	5
1995	270	63	0.00	3.97		8.98	16.81	18.70	75.60	12
1995	271	64	0.00	3.97		8.98	17.77	19.43	74.90	13
1995	272	65	0.00	3.97	0.43	9.41	18.60	19.98	75.40	14
1995	273	66	0.00	3.97		9.41	19.64	20.47	70.60	18
1995	274	67	0.00	3.97		9.41	19.55	20.15	78.80	18
1995	275	68	0.00	3.97		9.41	19.31	20.42	77.80	17
1995	276	69	0.64	4.61		10.05	18.54	19.98	92.90	1
1995	277	70	0.01	4.62		10.06	16.31	18.68	88.00	NA [b]
1995	278	71	1.59 [c]	6.21		11.65	17.36	18.28	95.70	2
1995	279	72	0.00	6.21		11.65	19.05	19.53	75.60	NA
1995	280	73	0.00	6.21		11.65	14.71	18.23	73.70	NA
1995	281	74	0.00	6.21		11.65	13.53	17.25	79.50	12
1995	282	75	0.00	6.21		11.65	15.04	17.64	79.60	11
1995	283	76	0.00	6.21		11.65	16.43	17.85	80.70	14
1995	284	77	0.00	6.21		11.65	17.79	18.59	79.70	11
1995	285	78	0.00	6.21		11.65	18.08	18.76	76.40	13
1995	286	79	0.14	6.35		11.79	17.91	18.39	83.60	13
1995	287	80	0.01	6.36		11.80	14.35	17.85	77.00	11
1995	288	81	0.00	6.36		11.80	10.66	14.93	64.60	11
1995	289	82	0.00	6.36		11.80	9.90	14.31	71.90	6
1995	290	83	0.00	6.36		11.80	11.91	14.12	67.05	13
1995	291	84	0.00	6.36		11.80	15.33	15.07	70.40	12
1995	292	85	0.00	6.36		11.80	16.45	16.03	75.50	13
1995	293	86	0.51	6.87		12.31	11.59	14.97	84.10	12
1995	294	87	0.00	6.87		12.31	7.10	12.08	78.40	14
1995	295	88	0.00	6.87		12.31	11.76	12.00	67.33	8
1995	296	89	0.00	6.87		12.31	15.47	13.51	58.67	5
1995	297	90	0.13	7.00		12.44	12.33	14.20	71.80	19
1995	298	91	0.00	7.00		12.44	8.62	12.47	77.30	14
1995	299	92	0.00	7.00		12.44	11.53	12.17	76.60	9
1995	300	93	0.66	7.66		13.10	13.87	13.06	84.90	12
1995	301	94	0.01	7.67		13.11	9.61	11.85	80.40	11
1995	302	95	0.00	7.67		13.11	10.04	11.78	68.89	7
1995	303	96	0.00	7.67		13.11	10.19	11.19	72.80	10
1995	304	97	0.00	7.67		13.11	13.98	12.72	74.10	2
1995	305	98	0.16	7.83		13.27	16.83	14.37	85.30	No evap.
1995	306	99	0.21	8.04		13.48	17.60	16.10	90.40	No evap.

[a] Data obtained from NOAA stations located at Dubois South Indiana Forage Farm, and Nolin River Lake, Kentucky.

[b] Datum is not available.

[c] Lysimeters were covered during severe weather, therefore daily rainfall reaching lysimeters was less than the actual rainfall (2.17 inches) recorded at the test site.

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Project 964 Year	Julian Day	DAT	Daily Rainfall Reaching Lysimeters (inches)	Cumulative Rainfall Reaching Lysimeters (inches)	Irrigation Added (inches)	Cumulative Water Reaching Lysimeters (inches)	Average Air Temperature (degrees C)	Average Soil Temperature (degrees C)	Average Percent Relative Humidity	Pan Evaporation [a] (0.01 inches)
1995	307	100	0.00	8.04		13.48	4.48	12.46	70.20	No evap.
1995	308	101	0.00	8.04		13.48	1.05	8.82	73.10	No evap.
1995	309	102	0.00	8.04		13.48	−1.03	5.99	78.70	No evap.
1995	310	103	0.05	8.09		13.53	4.53	5.97	79.20	No evap.
1995	311	104	0.18	8.27		13.71	8.96	8.70	89.60	No evap.
1995	312	105	0.00	8.27		13.71	1.82	6.73	65.00	No evap.
1995	313	106	0.00	8.27		13.71	2.27	5.24	66.26	No evap.
1995	314	107	0.06	8.33		13.77	10.77	6.49	55.71	No evap.
1995	315	108	0.54	8.87		14.31	5.20	7.75	83.00	No evap.
1995	316	109	0.00	8.87		14.31	−0.95	4.02	66.14	No evap.
1995	317	110	0.32	9.19		14.63	3.54	4.68	91.60	No evap.
1995	318	111	0.00	9.19		14.63	1.79	4.62	79.40	No evap.
1995	319	112	0.00	9.19		14.63	0.72	3.75	72.50	No evap.
1995	320	113	0.01	9.20		14.64	2.79	3.71	79.50	No evap.
1995	321	114	0.08	9.28	0.51	15.23	6.96	5.25	76.70	No evap.
1995	322	115	0.00	9.28		15.23	6.81	6.34	85.40	No evap.
1995	323	116	0.00	9.28		15.23	5.86	6.61	77.20	No evap.
1995	324	117	0.00	9.28		15.23	6.89	6.81	77.10	No evap.
1995	325	118	0.00	9.28		15.23	3.69	5.76	62.02	No evap.
1995	326	119	0.09	9.37		15.32	1.35	4.03	66.39	No evap.
1995	327	120	0.24	9.61		15.56	3.74	5.08	88.70	No evap.
1995	328	121	0.00	9.61	0.34	15.90	−0.45	3.63	79.70	No evap.
1995	329	122	0.00	9.61		15.90	2.63	3.68	75.60	No evap.
1995	330	123	0.00	9.61		15.90	9.12	5.18	68.77	No evap.
1995	331	124	0.05	9.66		15.95	13.09	7.79	69.28	No evap.
1995	332	125	0.00	9.66		15.95	2.75	6.11	75.50	No evap.
1995	333	126	0.00	9.66		15.95	1.64	4.86	75.60	No evap.
1995	334	127	0.00	9.66		15.95	2.89	4.02	72.20	No evap.
1995	335	128	0.00	9.66	1.18	17.13	9.85	5.90	56.64	No evap.
1995	336	129	0.00	9.66		17.13	6.72	5.94	78.10	No evap.
1995	337	130	0.00	9.66		17.13	11.12	7.67	78.10	No evap.
1995	338	131	0.00	9.66		17.13	3.82	6.25	75.80	No evap.
1995	339	132	0.00	9.66		17.13	6.85	5.94	60.92	No evap.
1995	340	133	0.00	9.66		17.13	0.03	3.98	58.06	No evap.
1995	341	134	0.07	9.73		17.20	−1.93	3.74	75.70	No evap.
1995	342	135	0.00	9.73	0.54	17.74	−2.33	1.95	81.00	No evap.
1995	343	136	0.00	9.73		17.74	−8.76	1.81	71.50	No evap.
1995	344	137	0.00	9.73		17.74	−11.33	1.16	60.10	No evap.
1995	345	138	0.00	9.73		17.74	−5.08	0.81	61.67	No evap.
1995	346	139	0.05	9.78		17.79	−0.44	0.70	67.71	No evap.
1995	347	140	0.17	9.95		17.96	2.59	1.13	90.90	No evap.
1995	348	141	0.00	9.95		17.96	12.90	5.52	76.70	No evap.
1995	349	142	0.62	10.57	0.60	19.18	7.26	6.52	96.50	No evap.
1995	350	143	0.04	10.61		19.22	4.20	5.89	92.40	No evap.
1995	351	144	0.00	10.61		19.22	2.81	4.07	79.50	No evap.
1995	352	145	1.13	11.74		20.35	4.07	4.34	97.00	No evap.
1995	353	146	0.57	12.31		20.92	1.06	3.92	94.90	No evap.
1995	354	147	0.08	12.39		21.00	−4.79	2.14	86.60	No evap.
1995	355	148	0.00	12.39		21.00	−3.23	1.28	84.30	No evap.
1995	356	149	0.00	12.39		21.00	−2.28	0.97	83.00	No evap.
1995	357	150	0.00	12.39		21.00	−4.19	0.83	85.30	No evap.
1995	358	151	0.00	12.39		21.00	−3.13	0.74	81.90	No evap.
1995	359	152	0.00	12.39		21.00	−2.65	0.63	83.20	No evap.
1995	360	153	0.00	12.39		21.00	−4.00	0.51	81.90	No evap.
1995	361	154	0.00	12.39		21.00	−2.55	0.47	80.00	No evap.
1995	362	155	0.00	12.39		21.00	−2.98	0.37	82.90	No evap.
1995	363	156	0.00	12.39		21.00	−2.98	0.25	85.30	No evap.

[a] Data obtained from NOAA stations located at Dubois South Indiana Forage Farm, and Nolin River Lake, Kentucky.

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1995	364	157	0.01	12.4		21.01	0.01	0.19	81.70	No evap.
1995	365	158	0.26	12.66		21.27	4.39	0.80	89.60	No evap.
1996	1	159	0.00	12.66		21.27	5.78	3.33	95.80	No evap.
1996	2	160	0.50	13.16		21.77	2.35	3.46	95.60	No evap.
1996	3	161	0.00	13.16		21.77	−5.95	1.40	86.50	No evap.
1996	4	162	0.01	13.17		21.78	−3.73	0.95	85.60	No evap.
1996	5	163	0.00	13.17		21.78	−3.01	0.84	87.50	No evap.
1996	6	164	0.00	13.17		21.78	−6.18	0.64	86.00	No evap.
1996	7	165	0.00	13.17		21.78	−7.50	0.56	89.80	No evap.
1996	8	166	0.00	13.17		21.78	−10.22	0.55	81.20	No evap.
1996	9	167	0.00	13.17		21.78	−2.45	0.53	74.80	No evap.
1996	10	168	0.21	13.38		21.99	−2.75	0.51	75.60	No evap.
1996	11	169	0.01	13.39		22.00	−2.25	0.52	82.40	No evap.
1996	12	170	0.00	13.39	0.74	22.74	−2.69	0.50	86.10	No evap.
1996	13	171	0.12	13.51		22.86	−0.26	0.48	89.80	No evap.
1996	14	172	0.01	13.52		22.87	0.43	0.43	88.20	No evap.
1996	15	173	0.00	13.52		22.87	−0.55	0.39	90.90	No evap.
1996	16	174	0.00	13.52		22.87	4.55	0.46	91.40	No evap.
1996	17	175	0.00	13.52		22.87	13.47	5.94	79.50	No evap.
1996	18	176	1.03	14.55		23.90	12.89	8.67	83.60	No evap.
1996	19	177	0.00	14.55		23.90	−8.72	3.28	76.00	No evap.
1996	20	178	0.00	14.55		23.90	−6.03	0.61	74.90	No evap.
1996	21	179	0.00	14.55		23.90	−0.82	0.31	77.40	No evap.
1996	22	180	0.00	14.55		23.90	2.13	0.26	80.80	No evap.
1996	23	181	1.53	16.08		25.43	4.88	2.10	95.30	No evap.
1996	24	182	0.12	16.20		25.55	−0.28	2.65	88.50	No evap.
1996	25	183	0.01	16.21		25.56	−2.41	0.75	80.60	No evap.
1996	26	184	0.06	16.27		25.62	3.88	1.01	79.40	No evap.
1996	27	185	0.00	16.27		25.62	−0.65	1.99	65.72	No evap.
1996	28	186	0.00	16.27		25.62	−2.09	0.55	66.17	No evap.
1996	29	187	0.00	16.27		25.62	4.21	1.43	59.31	No evap.
1996	30	188	0.00	16.27		25.62	−3.55	0.91	70.90	No evap.
1996	31	189	0.00	16.27		25.62	−8.47	0.29	67.23	No evap.
1996	32	190	0.00	16.27		25.62	−8.84	−0.07	66.51	No evap.
1996	33	191	0.00	16.27		25.62	−11.35	−0.20	63.23	No evap.
1996	34	192	0.00	16.27		25.62	−14.84	−0.55	64.53	No evap.
1996	35	193	0.00	16.27		25.62	−16.41	−1.36	64.03	No evap.
1996	36	194	0.01	16.28		25.63	−9.90	−1.74	64.40	No evap.
1996	37	195	0.00	16.28		25.63	−4.31	−1.45	68.75	No evap.
1996	38	196	0.00	16.28		25.63	2.56	−0.54	84.60	No evap.
1996	39	197	0.11	16.39		25.74	7.11	−0.26	93.20	No evap.
1996	40	198	0.01	16.40		25.75	3.23	0.05	89.10	No evap.
1996	41	199	0.00	16.40		25.75	7.83	1.44	84.40	No evap.
1996	42	200	0.03	16.43		25.78	2.91	1.00	73.90	No evap.
1996	43	201	0.06	16.49		25.84	−1.13	0.14	77.20	No evap.
1996	44	202	0.00	16.49		25.84	0.71	0.53	72.70	No evap.
1996	45	203	0.02	16.51		25.86	4.48	1.70	69.71	No evap.
1996	46	204	0.00	16.51		25.86	0.46	1.86	79.20	No evap.
1996	47	205	0.00	16.51	0.81	26.67	−2.68	0.85	73.60	No evap.
1996	48	206	0.00	16.51		26.67	−2.23	0.30	67.77	No evap.
1996	49	207	0.00	16.51		26.67	−1.83	0.11	66.97	No evap.
1996	50	208	0.58	17.09		27.25	3.21	0.60	80.70	No evap.
1996	51	209	0.16	17.25		27.41	8.65	4.65	96.20	No evap.
1996	52	210	0.00	17.25		27.41	8.46	6.29	93.00	No evap.
1996	53	211	0.25	17.50		27.66	9.68	7.93	92.60	No evap.
1996	54	212	0.03	17.53		27.69	14.93	10.06	82.50	No evap.
1996	55	213	0.00	17.53		27.69	9.03	9.28	64.17	No evap.

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1996	56	214	0.00	17.53		27.69	7.13	7.28	77.50	No evap.
1996	57	215	0.18	17.71		27.87	11.83	9.18	93.40	No evap.
1996	58	216	0.51	18.22		28.38	15.36	11.98	94.90	No evap.
1996	59	217	0.00	18.22		28.38	1.89	9.45	76.50	No evap.
1996	60	218	0.00	18.22		28.38	−3.22	4.48	66.62	No evap.
1996	61	219	0.00	18.22	0.22	28.60	−1.01	3.81	63.44	No evap.
1996	62	220	0.00	18.22		28.60	1.99	3.44	68.26	No evap.
1996	63	221	0.00	18.22		28.60	−4.32	2.20	49.69	No evap.
1996	64	222	0.00	18.22		28.60	2.60	2.65	56.63	No evap.
1996	65	223	0.34	18.56		28.94	12.12	5.78	72.10	No evap.
1996	66	224	0.11	18.67		29.05	6.96	7.53	97.50	No evap.
1996	67	225	0.02	18.69		29.07	−3.66	3.59	83.80	No evap.
1996	68	226	0.00	18.69		29.07	−8.15	1.69	70.80	No evap.
1996	69	227	0.00	18.69		29.07	−5.31	0.74	70.70	No evap.
1996	70	228	0.01	18.70		29.08	−2.24	0.63	73.60	No evap.
1996	71	229	0.00	18.70		29.08	1.31	2.39	73.10	No evap.
1996	72	230	0.00	18.70		29.08	4.04	4.22	68.48	No evap.
1996	73	231	0.00	18.70		29.08	8.23	5.92	64.49	No evap.
1996	74	232	0.00	18.70		29.08	13.97	9.09	73.80	No evap.
1996	75	233	0.36	19.06		29.44	12.75	11.00	84.20	No evap.
1996	76	234	0.08	19.14		29.52	6.38	8.10	86.20	No evap.
1996	77	235	0.01	19.15		29.53	9.76	9.75	81.10	No evap.
1996	78	236	0.00	19.15		29.53	6.88	9.02	71.30	No evap.
1996	79	237	1.67	20.82		31.20	2.48	5.74	91.10	No evap.
1996	80	238	0.62	21.44		31.82	0.09	2.57	95.40	No evap.
1996	81	239	0.05	21.49		31.87	−1.71	2.13	88.10	No evap.
1996	82	240	0.00	21.49		31.87	−0.11	3.12	75.90	No evap.
1996	83	241	0.00	21.49		31.87	3.87	4.82	71.80	No evap.
1996	84	242	0.00	21.49		31.87	12.87	7.89	51.52	No evap.
1996	85	243	0.20	21.69		32.07	10.11	9.69	69.04	No evap.
1996	86	244	0.00	21.69		32.07	0.37	6.31	62.24	No evap.
1996	87	245	0.00	21.69		32.07	3.18	5.28	56.90	No evap.
1996	88	246	0.46	22.15		32.53	5.41	6.01	84.20	No evap.
1996	89	247	0.01	22.16		32.54	7.55	7.30	95.10	No evap.
1996	90	248	0.00	22.16		32.54	10.99	9.26	87.30	No evap.
1996	91	249	0.93	23.09		33.47	11.39	10.20	92.00	No evap.
1996	92	250	0.73	23.82		34.20	6.32	9.54	79.60	No evap.
1996	93	251	0.00	23.82		34.20	7.42	8.86	68.94	No evap.
1996	94	252	0.00	23.82		34.20	13.21	10.36	58.28	No evap.
1996	95	253	0.17	23.99		34.37	11.06	10.83	69.01	No evap.
1996	96	254	0.00	23.99	0.66	35.03	2.78	7.47	80.60	No evap.
1996	97	255	0.00	23.99		35.03	4.06	7.16	69.86	No evap.
1996	98	256	0.00	23.99		35.03	4.01	6.71	67.86	No evap.
1996	99	257	0.04	24.03		35.07	3.93	6.78	76.30	No evap.
1996	100	258	0.00	24.03		35.07	1.90	5.25	70.40	No evap.
1996	101	259	0.00	24.03		35.07	6.36	6.88	63.42	No evap.
1996	102	260	0.00	24.03		35.07	12.46	9.70	56.23	No evap.
1996	103	261	0.00	24.03		35.07	19.45	13.84	53.71	No evap.
1996	104	262	0.41	24.44		35.48	14.33	13.93	80.80	No evap.
1996	105	263	0.00	24.44		35.48	9.27	11.53	81.60	No evap.
1996	106	264	0.55	24.99		36.03	10.65	11.38	85.20	No evap.
1996	107	265	0.04	25.03		36.07	7.34	9.77	75.20	No evap.
1996	108	266	0.00	25.03		36.07	10.33	10.63	69.42	No evap.
1996	109	267	0.00	25.03		36.07	16.70	13.11	60.95	No evap.
1996	110	268	0.16	25.19		36.23	19.74	16.16	80.10	No evap.
1996	111	269	0.84	26.03		37.07	18.28	17.08	79.10	No evap.
1996	112	270	0.00	26.03		37.07	16.82	16.93	74.20	No evap.

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1996	113	271	0.00	26.03		37.07	19.15	17.56	74.80	No evap.
1996	114	272	0.72	26.75		37.79	11.37	15.47	90.80	No evap.
1996	115	273	0.00	26.75		37.79	11.02	13.64	73.60	No evap.
1996	116	274	0.10	26.85		37.89	18.40	15.12	50.06	No evap.
1996	117	275	0.28	27.13		38.17	11.37	14.83	78.40	No evap.
1996	118	276	0.00	27.13		38.17	10.49	13.35	67.94	No evap.
1996	119	277	1.08	28.21		39.25	11.07	12.96	86.90	No evap.
1996	120	278	1.63	29.84		40.88	14.56	13.85	95.70	No evap.
1996	121	279	0.02	29.86		40.90	9.18	13.69	75.20	No evap.
1996	122	280	0.14	30.00		41.04	13.47	13.99	69.40	No evap.
1996	123	281	0.00	30.00		41.04	14.85	15.23	74.10	No evap.
1996	124	282	0.53	30.53		41.57	19.15	17.67	82.90	15
1996	125	283	0.09	30.62		41.66	19.20	18.94	87.80	24
1996	126	284	1.00	31.62		42.66	19.32	19.09	87.50	NA [b]
1996	127	285	0.00	31.62		42.66	16.98	18.72	84.10	23
1996	128	286	0.00	31.62		42.66	18.31	17.99	82.60	12
1996	129	287	1.69	33.31		44.35	18.88	18.75	96.60	17
1996	130	288	0.00	33.31		44.35	21.90	20.45	81.20	18
1996	131	289	0.78	34.09	1.00	46.13	21.06	21.62	85.00	26
1996	132	290	1.76	35.85		47.89	13.64	19.17	96.50	NA
1996	133	291	0.00	35.85	1.50	49.39	11.16	17.14	72.00	1
1996	134	292	0.00	35.85		49.39	9.81	15.17	63.16	15
1996	135	293	0.00	35.85	2.13	51.52	12.21	14.90	67.63	12
1996	136	294	0.97	36.82		52.49	16.50	15.68	94.00	NA
1996	137	295	0.00	36.82		52.49	21.92	17.95	87.20	11
1996	138	296	0.00	36.82	1.13	53.62	23.82	20.36	79.10	15
1996	139	297	0.00	36.82		53.62	25.13	22.46	74.90	NA
1996	140	298	0.00	36.82		53.62	25.42	23.70	75.70	32
1996	141	299	0.00	36.82		53.62	25.22	24.35	75.10	36
1996	142	300	0.00	36.82		53.62	22.83	23.14	73.30	33
1996	143	301	0.00	36.82		53.62	20.70	22.11	70.10	28
1996	144	302	0.00	36.82		53.62	21.86	21.98	69.88	24
1996	145	303	0.21	37.03	1.89	55.72	24.99	23.52	76.20	18
1996	146	304	0.00	37.03		55.72	20.77	22.62	84.60	NA
1996	147	305	0.76	37.79		56.48	21.30	22.42	92.50	25
1996	148	306	1.54	39.33		58.02	18.46	21.46	97.90	NA
1996	149	307	0.10	39.43		58.12	21.30	21.55	89.80	NA
1996	150	308	0.04	39.47		58.16	16.35	20.76	91.90	22
1996	151	309	0.00	39.47		58.16	16.66	19.64	67.12	8
1996	152	310	0.00	39.47		58.16	18.41	20.01	73.90	19
1996	153	311	0.00	39.47		58.16	20.07	20.48	72.50	22
1996	154	312	0.25	39.72		58.41	19.00	19.98	87.70	13
1996	155	313	0.36	40.08		58.77	20.51	21.15	83.50	NA
1996	156	314	0.00	40.08		58.77	16.96	20.36	82.80	23
1996	157	315	0.00	40.08		58.77	19.54	20.44	73.20	18

[a] Data obtained from NOAA stations located at Dubois South Indiana Forage Farm, and Nolin River Lake, Kentucky.
[b] Datum is not available.

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Specific Activity (from Sponsor):	348	µCi/mg
dpm to µCi Conversion:	2,220,000	dpm/µCi
Target Treatment/Column:	0.361	mg [Phenyl-^{14}C]Flumioxazin
Calculated Nominal Input:	278,894,160	dpm
Measured Applied Activity:	281,107,125	dpm
Critical 0.01 µg/g dry weight is:	7,726	dpm/dry gram soil

								Soil Moisture Determination							
Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.[a]	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (µg/g dry)
1	1	0	0-3	<LOQ	3,572	0.000E+00	NA	0.990	32.398	31.408	25.823	24.833	0.791	2,824	<LOA [b]
2	Control		3-6	<LOQ	4,678	0.000E+00	NA	0.992	28.579	27.587	24.722	23.730	0.860	4,024	<LOA
3			6-9	<LOQ	4,681	0.000E+00	NA	0.987	30.877	29.890	26.852	25.865	0.865	4,051	<LOA
4			9-12	<LOQ	5,659	0.000E+00	NA	0.990	33.111	32.121	27.999	27.009	0.841	4,758	<LOA
5			12-18	<LOQ	8,053	0.000E+00	NA	0.990	31.033	30.043	25.783	24.793	0.825	6,646	<LOA
6			18-24	<LOQ	10,290	0.000E+00	NA	0.999	35.535	34.536	29.414	28.415	0.823	8,466	<LOA
7			24-30	<LOQ	9,038	0.000E+00	NA	0.992	38.015	37.023	31.387	30.395	0.821	7,420	<LOA
8			30-32	<LOQ	2,683	0.000E+00	NA	0.997	33.883	32.886	27.632	26.635	0.810	2,173	<LOA

[a] Values presented are corrected for a background radioactivity of 28 dpm/g moist soil. Therefore, reported values greater than or equal to 28 dpm are above the Limit of Quantitation (LOQ), which is 28 dpm/g moist soil.

[b] Level of Analysis (LOA) is 0.01 µg/g or 7726 dpm/g dry soil.

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Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt. [a]	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Soil Moisture Determination: Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (μg/g dry)
9	3	0	0-3	100,780	2,961	2.984E+08	106.2	0.985	40.606	39.621	32.541	31.556	0.796	2,358	0.164
10			3-6	32	4,429	1.417E+05	0.1	0.986	42.392	41.406	36.771	35.785	0.864	3,828	<LOA [b]
11			6-9	<LOQ	4,704	0.000E+00	0.0	0.994	33.232	32.238	29.017	28.023	0.869	4,089	<LOA
12			9-12	<LOQ	5,334	0.000E+00	0.0	0.997	29.085	28.088	24.682	23.685	0.843	4,498	<LOA
13			12-18	<LOQ	9,727	0.000E+00	0.0	0.993	29.871	28.878	24.968	23.975	0.830	8,076	<LOA
14			18-24	<LOQ	10,200	0.000E+00	0.0	0.991	34.664	33.673	28.915	27.924	0.829	8,459	<LOA
15			24-30	<LOQ	9,945	0.000E+00	0.0	0.991	32.206	31.215	26.673	25.682	0.823	8,182	<LOA
16			30-34	<LOQ	5,474	0.000E+00	0.0	0.994	36.875	35.881	30.207	29.213	0.814	4,457	<LOA
							106.3 Total ^{14}C Recovery								
17	31	0	0-3	89,178	3,336	2.975E+08	105.8	0.991	45.402	44.411	35.775	34.784	0.783	2,613	0.147
18			3-6	<LOQ	4,719	0.000E+00	0.0	0.989	43.080	42.091	36.774	35.785	0.850	4,012	<LOA
19			6-9	<LOQ	5,033	0.000E+00	0.0	0.998	29.308	28.310	25.509	24.511	0.866	4,358	<LOA
20			9-12	<LOQ	4,053	0.000E+00	0.0	0.989	31.687	30.698	27.910	26.921	0.877	3,554	<LOA
21			12-18	<LOQ	9,853	0.000E+00	0.0	0.998	27.885	26.887	24.466	23.468	0.873	8,600	<LOA
22			18-24	<LOQ	9,860	0.000E+00	0.0	0.993	31.243	30.250	26.613	25.620	0.847	8,351	<LOA
23			24-30	<LOQ	9,099	0.000E+00	0.0	0.991	29.352	28.361	24.486	23.495	0.828	7,538	<LOA
24			30-33	<LOQ	4,134	0.000E+00	0.0	0.994	24.744	23.750	20.620	19.626	0.826	3,416	<LOA
							105.8 Total ^{14}C Recovery								

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Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Soil Moisture Determination: Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (μg/g dry)
25	10	2	0-3	65,081	3,964	2.580E+08	91.8	0.994	41.412	40.418	33.898	32.904	0.814	3,227	0.103
26			3-6	40	4,707	1.883E+05	0.1	0.996	43.550	42.554	38.053	37.057	0.871	4,099	<LOA
27			6-9	<LOQ	4,752	0.000E+00	0.0	0.997	38.173	37.176	33.237	32.240	0.867	4,121	<LOA
28			9-12	<LOQ	4,953	0.000E+00	0.0	0.992	32.599	31.607	28.029	27.037	0.855	4,237	<LOA
29			12-18	<LOQ	9,118	0.000E+00	0.0	0.997	32.760	31.763	27.845	26.848	0.845	7,707	<LOA
30			18-24	<LOQ	9,486	0.000E+00	0.0	1.001	28.377	27.376	24.158	23.157	0.846	8,024	<LOA
31			24-30	<LOQ	9,181	0.000E+00	0.0	0.994	28.765	27.771	24.150	23.156	0.834	7,655	<LOA
32			30-35	<LOQ	8,228	0.000E+00	0.0	0.997	33.525	32.528	27.659	26.662	0.820	6,744	<LOA
							91.9 Total ^{14}C Recovery								
33	11	2	0-3	78,412	3,597	2.820E+08	100.3	0.999	44.777	43.778	36.005	35.006	0.800	2,876	0.127
34			3-6	152	5,452	8.287E+05	0.3	0.996	44.843	43.847	39.189	38.193	0.871	4,749	<LOA
35			6-9	50	4,839	2.420E+05	0.1	0.999	26.451	25.452	23.147	22.148	0.870	4,211	<LOA
36			9-12	<LOQ	4,518	0.000E+00	0.0	0.997	28.268	27.271	24.372	23.375	0.857	3,873	<LOA
37			12-18	<LOQ	9,668	0.000E+00	0.0	1.002	26.594	25.592	22.772	21.770	0.851	8,224	<LOA
38			18-24	<LOQ	9,314	0.000E+00	0.0	0.996	24.823	23.827	21.477	20.481	0.860	8,006	<LOA
39			24-30	<LOQ	9,497	0.000E+00	0.0	1.006	28.296	27.290	24.011	23.005	0.843	8,006	<LOA
40			30-35.5	<LOQ	7,900	0.000E+00	0.0	0.997	27.126	26.129	22.499	21.502	0.823	6,501	<LOA
							100.7 Total ^{14}C Recovery								

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Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Soil Moisture Determination: Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (µg/g dry)
41	12	5	0-3	65,401	3,873	2.533E+08	90.1	0.995	43.301	42.306	35.979	34.984	0.827	3,203	0.102
42			3-6	918	4,329	3.974E+06	1.4	0.995	47.289	46.294	41.395	40.400	0.873	3,778	<LOA
43			6-9	843	4,903	4.133E+06	1.5	0.997	30.942	29.945	26.883	25.886	0.864	4,238	<LOA
44			9-12	764	4,931	3.767E+06	1.3	1.000	31.808	30.808	27.403	26.403	0.857	4,226	<LOA
45			12-18	175	10,033	1.756E+06	0.6	1.000	29.801	28.801	25.324	24.324	0.845	8,473	<LOA
46			18-24	54	9,451	5.104E+05	0.2	1.005	26.747	25.742	22.257	21.252	0.826	7,803	<LOA
47			24-30	<LOQ	9,925	0.000E+00	0.0	1.005	26.129	25.124	21.855	20.850	0.830	8,237	<LOA
48			30-36	138	8,886	1.226E+06	0.4	0.994	24.625	23.631	20.757	19.763	0.836	7,432	<LOA
							95.5 Total ^{14}C Recovery								
49	25	5	0-3	68,665	3,961	2.720E+08	96.8	0.990	46.768	45.778	38.092	37.102	0.810	3,210	0.110
50			3-6	993	5,636	5.597E+06	2.0	0.998	49.667	48.669	43.525	42.527	0.874	4,925	<LOA
51			6-9	386	4,072	1.572E+06	0.6	1.004	28.590	27.586	25.037	24.033	0.871	3,548	<LOA
52			9-12	54	5,494	2.967E+05	0.1	1.000	30.872	29.872	26.771	25.771	0.863	4,740	<LOA
53			12-18	<LOQ	9,513	0.000E+00	0.0	1.002	31.710	30.708	27.333	26.331	0.857	8,157	<LOA
54			18-24	<LOQ	9,159	0.000E+00	0.0	1.004	33.531	32.527	28.708	27.704	0.852	7,801	<LOA
55			24-30	<LOQ	9,933	0.000E+00	0.0	0.999	38.235	37.236	32.371	31.372	0.843	8,369	<LOA
56			30-35.5	<LOQ	8,593	0.000E+00	0.0	1.001	32.215	31.214	27.147	26.146	0.838	7,198	<LOA
							99.5 Total ^{14}C Recovery								

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Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Soil Moisture Determination: Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (μg/g dry)
57	4	9	0-3	91,069	2,938	2.676E+08	95.2	1.004	21.607	20.603	18.016	17.012	0.826	2,426	0.143
58			3-6	765	4,766	3.646E+06	1.3	0.996	20.352	19.356	17.982	16.986	0.878	4,182	<LOA
59			6-9	336	5,148	1.730E+06	0.6	1.004	23.165	22.161	20.350	19.346	0.873	4,494	<LOA
60			9-12	320	4,728	1.513E+06	0.5	1.005	31.790	30.785	27.593	26.588	0.864	4,083	<LOA
61			12-18	418	9,194	3.843E+06	1.4	1.004	27.738	26.734	23.615	22.611	0.846	7,776	<LOA
62			18-24	<LOQ	8,628	0.000E+00	0.0	1.002	32.089	31.087	26.452	25.450	0.819	7,063	<LOA
63			24-30	<LOQ	8,725	0.000E+00	0.0	1.004	28.975	27.971	23.588	22.584	0.807	7,045	<LOA
							99.0 Total ^{14}C Recovery								
65	5	9	0-3	72,123	3,864	2.787E+08	99.1	1.000	26.035	25.035	22.117	21.117	0.843	3,259	0.111
66			3-6	952	4,586	4.366E+06	1.6	1.003	29.906	28.903	26.458	25.455	0.881	4,039	<LOA
67			6-9	175	5,007	8.762E+05	0.3	1.004	23.480	22.476	20.811	19.807	0.881	4,412	<LOA
68			9-12	<LOQ	4,926	0.000E+00	0.0	1.006	27.508	26.502	23.982	22.976	0.867	4,271	<LOA
69			12-18	<LOQ	9,931	0.000E+00	0.0	1.006	29.391	28.385	25.366	24.360	0.858	8,523	<LOA
70			18-24	<LOQ	9,833	0.000E+00	0.0	1.006	29.955	28.949	25.495	24.489	0.846	8,318	<LOA
71			24-30	<LOQ	9,384	0.000E+00	0.0	1.005	32.254	31.249	26.990	25.985	0.832	7,803	<LOA
72			30-30.5	<LOQ	706	0.000E+00	0.0	1.006	27.704	26.698	23.304	22.298	0.835	590	<LOA
							101.0 Total ^{14}C Recovery								

Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Soil Moisture Determination: Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (μg/g dry)
73	6	16	0-3	30,528 [c]	3,890	1.188E+08	42.2	1.000	28.053	27.053	22.896	21.896	0.809	3.148	0.049
74			3-6	1,956	5,223	1.022E+07	3.6	1.008	26.007	24.999	22.787	21.779	0.871	4.550	<LOA
75			6-9	386	4,803	1.854E+06	0.7	1.008	27.986	26.978	24.415	23.407	0.868	4.167	<LOA
76			9-12	<LOQ	5,106	0.000E+00	0.0	1.008	27.430	26.422	23.725	22.717	0.860	4.390	<LOA
77			12-18	<LOQ	8,319	0.000E+00	0.0	1.011	24.032	23.021	20.871	19.860	0.863	7.177	<LOA
78			18-24	<LOQ	10,525	0.000E+00	0.0	1.011	22.933	21.922	19.607	18.596	0.848	8,928	<LOA
79			24-30	<LOQ	9,079	0.000E+00	0.0	1.001	25.601	24.600	21.315	20.314	0.826	7.497	<LOA
80			30-33	<LOQ	3855	0.000E+00	0.0	1.006	23.541	22.535	19.319	18.313	0.813	3.133	<LOA
							46.5 Total ^{14}C Recovery								
81	33	16	0-3	54,453	4,115	2.241E+08	79.7	1.008	27.104	26.096	21.746	20.738	0.795	3.270	0.089
82			3-6	1,728	4,855	8.389E+06	3.0	1.001	22.497	21.496	19.194	18.193	0.846	4.109	<LOA
83			6-9	263	4,503	1.184E+06	0.4	1.001	31.489	30.488	28.147	27.146	0.890	4.009	<LOA
84			9-12	<LOQ	5,530	0.000E+00	0.0	1.008	34.701	33.693	29.827	22.646	0.672	3.717	<LOA
85			12-18	<LOQ	9,925	0.000E+00	0.0	1.008	27.110	26.102	22.949	22.716	0.870	8.638	<LOA
86			18-24	<LOQ	9,521	0.000E+00	0.0	1.003	26.426	25.423	22.039	21.036	0.827	7.878	<LOA
87			24-30	<LOQ	8,338	0.000E+00	0.0	1.010	28.869	27.859	23.726	21.941	0.788	6.567	<LOA
88			30-33	<LOQ	4,643	0.000E+00	0.0	1.002	28.442	27.440	23.648	28.819	1.050	4.876	<LOA
							83.1 Total ^{14}C Recovery								

[c] All oxidation and moisture data for this sample is an average of two data sets.

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Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Soil Moisture Determination: Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (µg/g dry)
89	16	27	0-3	58,506	3,811	2.230E+08	79.3	1.008	24.155	23.147	20.815	19.807	0.856	3,261	0.089
90			3-6	524	4,942	2.590E+06	0.9	1.008	32.037	31.029	28.359	27.351	0.881	4,356	<LOA
91			6-9	337	4,883	1.646E+06	0.6	1.001	32.810	31.809	28.837	27.836	0.875	4,273	<LOA
92			9-12	180	4,930	8.874E+05	0.3	1.002	32.544	31.542	28.128	27.126	0.860	4,240	<LOA
93			12-18	89	9,045	8.050E+05	0.3	1.006	30.845	29.839	26.153	25.147	0.843	7,623	<LOA
94			18-24	163	9,188	1.498E+06	0.5	1.002	32.212	31.210	27.231	26.229	0.840	7,722	<LOA
95			24-30	137	9,273	1.270E+06	0.5	1.001	33.008	32.007	28.043	27.042	0.845	7,835	<LOA
96			30-33	1,006	4,767	4.796E+06	1.7	1.003	32.387	31.384	26.716	25.713	0.819	3,906	<LOA
							84.1 Total ^{14}C Recovery								
97	17	27	0-3	56,336	3,731	2.102E+08	74.8	1.013	27.711	26.698	24.395	23.382	0.876	3,268	0.083
98			3-6	769	4,745	3.649E+06	1.3	1.004	26.376	25.372	23.568	22.564	0.889	4,220	<LOA
99			6-9	462	5,767	2.664E+06	0.9	1.006	33.424	32.418	29.692	28.686	0.885	5,103	<LOA
100			9-12	228	5,220	1.190E+06	0.4	1.001	33.599	32.598	29.149	28.148	0.863	4,507	<LOA
101			12-18	<LOQ	9,244	0.000E+00	0.0	1.005	32.587	31.582	27.759	26.754	0.847	7,831	<LOA
102			18-24	<LOQ	9,364	0.000E+00	0.0	1.007	35.819	34.812	30.403	29.396	0.844	7,907	<LOA
103			24-30	<LOQ	8,993	0.000E+00	0.0	1.008	28.728	27.720	24.895	23.887	0.862	7,749	<LOA
104			30-34	<LOQ	7,396	0.000E+00	0.0	1.005	36.147	35.142	30.495	29.490	0.839	6,206	<LOA
							77.4 Total ^{14}C Recovery								

									Soil Moisture Determination						
Sample Number 964–x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (μg/g dry)
105	8	48	0–3	39,811	4,179	1.664E+08	59.2	1.003	23.403	22.400	20.127	19.124	0.854	3,568	0.060
106			3–6	923	3,176	2.931E+06	1.0	1.008	24.220	23.212	21.401	20.393	0.879	2,790	<LOA
107			6–9	789	5,746	4.534E+06	1.6	1.010	33.974	32.964	29.596	28.586	0.867	4,983	<LOA
108			9–12	690	4,475	3.088E+06	1.1	1.010	25.495	24.485	22.001	20.991	0.857	3,836	<LOA
109			12–18	263	8,791	2.312E+06	0.8	0.992	31.585	30.593	27.250	26.258	0.858	7,545	<LOA
110			18–24	<LOQ	8,528	0.000E+00	0.0	0.992	30.347	29.355	26.227	25.235	0.860	7,331	<LOA
111			24–30	<LOQ	9,764	0.000E+00	0.0	0.989	26.756	25.767	22.155	21.166	0.821	8,021	<LOA
112			30–34	<LOQ	6,475	0.000E+00	0.0	0.987	27.287	26.300	22.253	21.266	0.809	5,236	<LOA
							63.7 Total ^{14}C Recovery								
113	23	48	0–3	66,822	3,648	2.438E+08	86.7	1.007	24.894	23.887	22.362	21.355	0.894	3,261	0.097
114			3–6	2,010	3,876	7.791E+06	2.8	1.007	25.302	24.295	23.489	22.482	0.925	3,587	<LOA
115			6–9	479	4,772	2.286E+06	0.8	1.005	23.915	22.910	22.141	21.136	0.923	4,402	<LOA
116			9–12	436	4,535	1.977E+06	0.7	1.002	29.190	28.188	26.744	25.742	0.913	4,141	<LOA
117			12–18	150	9,212	1.382E+06	0.5	0.989	26.922	25.933	24.086	23.097	0.891	8,205	<LOA
118			18–24	221	8,764	1.937E+06	0.7	0.987	28.265	27.278	24.720	23.733	0.870	7,625	<LOA
119			24–30	121	9,963	1.206E+06	0.4	0.991	28.274	27.283	23.837	22.846	0.837	8,343	<LOA
120			30–35	150	6,855	1.028E+06	0.4	0.992	28.689	27.697	24.059	23.067	0.833	5,709	<LOA
							93.0 Total ^{14}C Recovery								

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									Soil Moisture Determination						
Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (µg/g dry)
121	13	72	0-3	39,852	3,937	1.569E+08	55.8	0.992	23.183	22.191	18.264	17.272	0.778	3,064	0.066
122			3-6	1,758	4,652	8.178E+06	2.9	0.990	24.170	23.180	20.892	19.902	0.859	3,994	<LOA
123			6-9	852	5,410	4.609E+06	1.6	0.990	26.259	25.269	22.470	21.480	0.850	4,599	<LOA
124			9-12	411	6,188	2.543E+06	0.9	0.988	27.186	26.198	23.054	22.066	0.842	5,212	<LOA
125			12-18	185	9,767	1.807E+06	0.6	0.990	27.884	26.894	23.478	22.488	0.836	8,167	<LOA
126			18-24	84	9,754	8.193E+05	0.3	0.992	27.369	26.377	22.947	21.955	0.832	8,119	<LOA
127			24-30	164	8,105	1.329E+06	0.5	0.990	27.364	26.374	22.819	21.829	0.828	6,708	<LOA
128			30-34	125	5,547	6.934E+05	0.2	0.992	27.390	26.398	22.766	21.774	0.825	4,575	<LOA
							62.8 Total ^{14}C Recovery								
129	24	72	0-3	64,393	3,497	2.252E+08	80.1	0.992	22.133	21.141	17.038	16.046	0.759	2,654	0.110
130			3-6	1,457	4,921	7.170E+06	2.6	0.994	24.788	23.794	21.420	20.426	0.858	4,224	<LOA
131			6-9	407	4,022	1.637E+06	0.6	0.997	26.761	25.764	23.325	22.328	0.867	3,486	<LOA
132			9-12	235	5,533	1.300E+06	0.5	0.991	26.012	25.021	22.625	21.634	0.865	4,784	<LOA
133			12-18	419	7,456	3.124E+06	1.1	0.988	27.121	26.133	23.272	22.284	0.853	6,358	<LOA
134			18-24	203	9,051	1.837E+06	0.7	0.997	26.938	25.941	23.879	22.882	0.882	7,984	<LOA
135			24-30	60	8,672	5.203E+05	0.2	0.991	27.630	26.639	24.734	23.743	0.891	7,729	<LOA
136			30-36	73	8,757	6.393E+05	0.2	0.992	27.819	26.827	24.600	23.608	0.880	7,706	<LOA
							86.0 Total ^{14}C Recovery								

									Soil Moisture Determination						
Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (µg/g dry)
137	18	72	0-3	<LOQ	3,196	0.000E+00	0.0	0.990	21.582	20.592	17.405	16.415	0.797	2,548	0.000
138		72	3-6	<LOQ	4,014	0.000E+00	0.0	0.989	27.405	26.416	23.673	22.684	0.859	3,447	<LOA
139		72	6-9	<LOQ	4,869	0.000E+00	0.0	0.984	25.180	24.196	22.101	21.117	0.873	4,249	<LOA
140		72	9-12	<LOQ	5352	0.000E+00	0.0	0.987	26.707	25.720	23.538	22.551	0.877	4,693	<LOA
141		72	12-18	<LOQ	9410	0.000E+00	0.0	0.990	27.162	26.172	23.735	22.745	0.869	8,178	<LOA
142		72	18-24	<LOQ	9657	0.000E+00	0.0	0.992	26.780	25.788	22.808	21.816	0.846	8,170	<LOA
143		72	24-30	<LOQ	8592	0.000E+00	0.0	0.990	26.501	25.511	22.406	21.416	0.839	7,213	<LOA
144		72	30-34.5	<LOQ	8,920	0.000E+00	0.0	0.988	26.205	25.217	22.007	21.019	0.834	7,435	<LOA
							0.0 Total ^{14}C Recovery								

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Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Soil Moisture Determination: Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (μg/g dry)
145	9	106	0-3	28,304	3,614	1.023E+08	36.4	0.994	23.885	22.891	19.406	18.412	0.804	2,907	0.046
146			3-6	1,808	4,211	7.613E+06	2.7	0.986	23.017	22.031	19.826	18.840	0.855	3,601	<LOA
147			6-9	703	5,372	3.777E+06	1.3	0.992	24.415	23.423	21.088	20.096	0.858	4,609	<LOA
148			9-12	433	5,064	2.193E+06	0.8	0.993	26.594	25.601	22.799	21.806	0.852	4,313	<LOA
149			12-18	156	9,560	1.491E+06	0.5	0.994	22.852	21.858	19.603	18.609	0.851	8,139	<LOA
150			18-24	506	7,801	3.947E+06	1.4	0.989	24.882	23.893	21.791	20.802	0.871	6,792	<LOA
151			24-30	<LOQ	8,915	0.000E+00	0.0	0.987	23.968	22.981	20.479	19.492	0.848	7,562	<LOA
152			30-35	<LOQ	7,865	0.000E+00	0.0	0.994	24.462	23.468	20.348	19.354	0.825	6,486	<LOA
							43.1 Total ^{14}C Recovery								
153	27	106	0-3	51,481	3,159	1.626E+08	57.9	0.987	23.335	22.348	18.502	17.515	0.784	2,476	0.085
154			3-6	4,774	4,779	2.281E+07	8.1	0.991	23.461	22.470	19.670	18.679	0.831	3,973	<LOA
155			6-9	1,203	4,914	5.912E+06	2.1	0.993	23.198	22.205	19.951	18.958	0.854	4,195	<LOA
156			9-12	627	4,947	3.102E+06	1.1	0.986	23.767	22.781	20.421	19.435	0.853	4,220	<LOA
157			12-18	51	10,396	5.302E+05	0.2	0.990	22.797	21.807	19.418	18.428	0.845	8,785	<LOA
158			18-24	<LOQ	8,804	0.000E+00	0.0	0.988	23.793	22.805	20.138	19.150	0.840	7,393	<LOA
159			24-30	<LOQ	8,508	0.000E+00	0.0	0.989	22.926	21.937	19.206	18.217	0.830	7,065	<LOA
160			30-32	<LOQ	3,561	0.000E+00	0.0	0.989	24.809	23.820	20.768	19.779	0.830	2,957	<LOA
							69.4 Total ^{14}C Recovery								

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									Soil Moisture Determination						
Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (μg/g dry)
161	15	316	0-3	55,114	2,995	1.651E+08	58.7	1.877	25.780	23.903	21.885	20.008	0.837	2,507	0.085
162			3-6	6,493	3,986	2.588E+07	9.2	1.860	25.114	23.254	22.381	20.521	0.882	3,518	0.010
163			6-9	2,058	4,060	8.355E+06	3.0	1.881	27.355	25.474	24.463	22.582	0.886	3,599	<LOA
164			9-12	1,282	5,909	7.575E+06	2.7	1.865	27.658	25.793	24.527	22.662	0.879	5,192	<LOA
165			12-18	544	9,109	4.955E+06	1.8	3.754	30.635	26.881	26.838	23.084	0.859	7,822	<LOA
166			18-24	162	9,575	1.551E+06	0.6	3.752	31.133	27.381	27.242	23.490	0.858	8,214	<LOA
167			24-30	112	8,488	9.507E+05	0.3	3.756	30.022	26.266	26.529	22.773	0.867	7,359	<LOA
168			30-32	59	3,700	2.183E+05	0.1	3.754	29.936	26.182	25.546	21.792	0.832	3,080	<LOA
							76.4 Total ^{14}C Recovery								
169	19	316	0-3	44,898	4,025	1.807E+08	64.3	1.864	25.466	23.602	21.023	19.159	0.812	3,267	0.072
170			3-6	4,138	3,841	1.589E+07	5.7	1.874	23.598	21.724	20.592	18.718	0.862	3,310	<LOA
171			6-9	1,599	4,223	6.753E+06	2.4	1.881	26.533	24.652	23.182	21.301	0.864	3,649	<LOA
172			9-12	830	5,139	4.265E+06	1.5	1.886	26.067	24.181	22.634	20.748	0.858	4,409	<LOA
173			12-18	345	10,210	3.522E+06	1.3	1.873	28.903	27.030	24.755	22.882	0.847	8,643	<LOA
174			18-24	178	9,024	1.606E+06	0.6	1.879	25.983	24.104	22.027	20.148	0.836	7,543	<LOA
175			24-30	184	9,404	1.730E+06	0.6	1.874	28.704	26.830	24.010	22.136	0.825	7,759	<LOA
176			30-35	263	7,103	1.868E+06	0.7	1.877	35.076	33.199	29.421	27.544	0.830	5,893	<LOA
							77.1 Total ^{14}C Recovery								

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								Soil Moisture Determination							
Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (µg/g dry)
177	21	316	0-3	54,412	2,955	1.608E+08	57.2	3.733	20.513	16.780	16.645	12.912	0.769	2,274	0.092
178			3-6	4,825	5,065	2.444E+07	8.7	3.730	28.185	24.455	24.025	20.295	0.830	4,203	<LOA
179			6-9	2,403	4,163	1.000E+07	3.6	3.736	30.191	26.455	26.130	22.394	0.846	3,524	<LOA
180			9-12	1,110	5,333	5.920E+06	2.1	3.748	29.482	25.734	25.483	21.735	0.845	4,504	<LOA
181			12-18	559	9,404	5.257E+06	1.9	0.998	25.821	24.823	21.854	20.856	0.840	7,901	<LOA
182			18-24	334	8,991	3.003E+06	1.1	0.996	27.311	26.315	23.192	22.196	0.843	7,584	<LOA
183			24-30	124	8,253	1.023E+06	0.4	1.002	26.207	25.205	21.847	20.845	0.827	6,825	<LOA
184			30-32	132	1,294	1.708E+05	0.1	1.857	28.401	26.544	23.778	21.921	0.826	1,069	<LOA
							75.1 Total ^{14}C Recovery								
185	22	316	0-3	70,649	2,417	1.708E+08	60.7	0.998	22.725	21.727	17.820	16.822	0.774	1,871	0.118
186			3-6	3,275	5,572	1.825E+07	6.5	0.995	25.330	24.335	21.701	20.706	0.851	4,741	<LOA
187			6-9	1,671	2,712	4.532E+06	1.6	0.994	27.297	26.303	23.543	22.549	0.857	2,325	<LOA
188			9-12	1,045	5,414	5.658E+06	2.0	1.001	26.058	25.057	22.517	21.516	0.859	4,649	<LOA
189			12-18	620	10,634	6.593E+06	2.3	1.005	26.362	25.357	22.486	21.481	0.847	9,009	<LOA
190			18-24	128	9,102	1.165E+06	0.4	1.001	27.630	26.629	23.778	22.777	0.855	7,785	<LOA
191			24-30	58	9,731	5.644E+05	0.2	1.000	27.034	26.034	23.180	22.180	0.852	8,290	<LOA
192			30-34	38	5,215	1.982E+05	0.1	1.002	28.318	27.316	26.382	25.380	0.929	4,845	<LOA
							73.9 Total ^{14}C Recovery								

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Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Soil Moisture Determination: Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (µg/g dry)
193	29	316	0-3	34,292	4,258	1.460E+08	51.9	3.738	27.270	23.532	23.333	19.595	0.833	3,546	0.053
194			3-6	6,801	4,334	2.948E+07	10.5	3.735	28.294	24.559	24.777	21.042	0.857	3,713	0.010
195			6-9	1,477	3,883	5.735E+06	2.0	3.730	30.011	26.281	26.283	22.553	0.858	3,332	<LOA
196			9-12	1,016	5,464	5.551E+06	2.0	3.729	33.112	29.383	29.002	25.273	0.860	4,700	<LOA
197			12-18	274	8,871	2.431E+06	0.9	1.877	27.731	25.854	23.977	22.100	0.855	7,583	<LOA
198			18-24	101	9,059	9.150E+05	0.3	1.890	28.826	26.936	24.700	22.810	0.847	7,671	<LOA
199			24-30	64	7,919	5.068E+05	0.2	1.872	28.299	26.427	24.372	22.500	0.851	6,742	<LOA
200			30-32	55	918	5.049E+04	0.0	1.873	28.468	26.595	23.740	21.867	0.822	755	<LOA
							67.8 Total ^{14}C Recovery								
201	30	316	0-3	48,208	3,419	1.648E+08	58.6	1.002	24.682	23.680	19.822	18.820	0.795	2,717	0.079
202			3-6	4,377	5,208	2.280E+07	8.1	1.006	24.896	23.890	21.023	20.017	0.838	4,364	<LOA
203			6-9	1,353	4,837	6.544E+06	2.3	1.004	26.409	25.405	22.651	21.647	0.852	4,121	<LOA
204			9-12	821	4,757	3.905E+06	1.4	1.002	27.068	26.066	23.239	22.237	0.853	4,058	<LOA
205			12-18	562	9,331	5.244E+06	1.9	1.001	26.172	25.171	22.756	21.755	0.864	8,065	<LOA
206			18-24	316	8,624	2.725E+06	1.0	0.999	27.189	26.190	23.752	22.753	0.869	7,492	<LOA
207			24-30	129	7,192	9.278E+05	0.3	1.009	25.943	24.934	21.680	20.671	0.829	5,962	<LOA
208			30-33	199	2,661	5.295E+05	0.2	1.000	25.037	24.037	21.711	20.711	0.862	2,293	<LOA
							73.8 Total ^{14}C Recovery								

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Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Soil Moisture Determination: Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (μg/g dry)
209	32	316	0-3	35,594	4,410	1.570E+08	55.8	0.992	25.164	24.172	20.889	19.897	0.823	3,630	0.056
210			3-6	3,432	4,252	1.459E+07	5.2	1.000	23.466	22.466	20.331	19.331	0.860	3,659	<LOA
211			6-9	1,479	1,987	2.939E+06	1.0	0.992	27.467	26.475	23.742	22.750	0.859	1,707	<LOA
212			9-12	1,026	2,372	2.434E+06	0.9	0.991	26.386	25.395	22.477	21.486	0.846	2,007	<LOA
213			12-18	571	6,853	3.913E+06	1.4	0.995	27.246	26.251	23.391	22.396	0.853	5,847	<LOA
214			18-24	350	6,355	2.224E+06	0.8	0.988	27.080	26.092	23.169	22.181	0.850	5,402	<LOA
215			24-29	248	5,929	1.470E+06	0.5	0.988	27.004	26.016	23.113	22.125	0.850	5,042	<LOA
							65.6 Total ^{14}C Recovery								

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Sample Number 964-x	Lysimeter Number	Study Date (DAT)	Sampling Depth (inches)	Average dpm/g moist wt.	Total Moist Soil Weight (grams)	Total ^{14}C Activity Recovered (dpm)	% of Applied in Total Section	Soil Moisture Determination: Tare Weight (grams)	Total Wet Weight (grams)	Net Wet Weight (grams)	Total Dry Weight (grams)	Net Dry Weight (grams)	Fraction Dry Solids	Total Dry Soil Weight (grams)	Flumioxazin Equivalents (μg/g dry)
217	2	316	0-3	<LOQ	3,898	0.000E+00	0.0	1.001	26.325	25.324	21.383	20.382	0.805	3,137	<LOA
218			3-6	<LOQ	4,539	0.000E+00	0.0	0.996	21.714	20.718	18.649	17.653	0.852	3,868	<LOA
219			6-9	<LOQ	4,928	0.000E+00	0.0	1.007	26.436	25.429	22.924	21.917	0.862	4,247	<LOA
220			9-12	<LOQ	5,646	0.000E+00	0.0	0.999	28.408	27.409	24.167	23.168	0.845	4,772	<LOA
221			12-18	<LOQ	8,582	0.000E+00	0.0	0.994	26.726	25.732	23.042	22.048	0.857	7,353	<LOA
222			18-24	<LOQ	9,521	0.000E+00	0.0	0.995	24.044	23.049	20.584	19.589	0.850	8,092	<LOA
223			24-30	<LOQ	8,747	0.000E+00	0.0	1.001	23.837	22.836	20.505	19.504	0.854	7,471	<LOA
224			30-34	<LOQ	3740	0.000E+00	0.0	0.994	27.324	26.330	22.828	21.834	0.829	3,101	<LOA
							0.0 Total ^{14}C Recovery								

Appendix 9. Recovery of Bromide in Leachate and Runoff Samples.

KBr application:	972 mg / lysimeter
Br^- application:	648 mg / lysimeter

Sample Identification	Lysimeter	DAT	Reported Br^- Conc. (ug/ml)	Sample Volume (ml)	Cumulative Leachate Volume (ml)	Br^- Recovery (mg)	Br^- % Applied	Cumulative Br^- Recovery % Applied
964-02-1012-16DAT	2	16	0.13	590	590	0.1	0.0	0.0
964-02-1064-170DAT	2	170	<LOQ[a]	533	1123	0.0	0.0	0.0
964-02-1067-184DAT	2	184	<LOQ	680	1803	0.0	0.0	0.0
964-02-1083-212DAT	2	212	<LOQ	780	2583	0.0	0.0	0.0
964-02-1093-219DAT	2	219	<LOQ	745	3328	0.0	0.0	0.0
964-02-1108-240DAT	2	240	0.15	772	4100	0.1	0.0	0.0
964-02-1122-254DAT	2	254	0.11	640	4740	0.1	0.0	0.0
964-02-1132-268DAT	2	268	0.1	460	5200	0.0	0.0	0.0
964-02-1137-273DAT	2	273	0.33	106	5306	0.0	0.0	0.0
964-02-1146-280DAT	2	280	0.21	796	6102	0.2	0.0	0.0
964-02-1157-285DAT	2	285	0.31	163	6265	0.1	0.0	0.0
Control Lysimeter								
964-14-1006-5DAT	14	5	0.30	43	43	0.0	0.0	0.0
964-14-1018-16DAT	14	16	0.45	142	185	0.1	0.0	0.0
964-14-1037-58DAT	14	58	0.26	59	244	0.0	0.0	0.0
964-14-1039-72DAT	14	72	1.14	143	387	0.2	0.0	0.0
964-14-1044-86DAT	14	86	3.29	210	597	0.7	0.1	0.1
964-14-1046-93DAT	14	93	7.76	52	649	0.4	0.1	0.2
964-14-1047-100DAT	14	100	8.27	105	754	0.9	0.1	0.3
964-14-1048-117DAT	14	117	15.31	552	1306	8.5	1.3	1.6
964-14-1050-121DAT	14	121	22.47	185	1491	4.2	0.6	2.3
964-14-1051-128DAT	14	128	32.98	156	1647	5.1	0.8	3.1
964-14-1052-135DAT	14	135	35.44	129	1776	4.6	0.7	3.8
964-14-1054-142DAT	14	142	43.64	190	1966	8.3	1.3	5.1
964-14-1056-149DAT	14	149	3.35	698	2664	2.3	0.4	5.4
964-14-1058-156DAT	14	156	47.16	34	2698	1.6	0.2	5.7
964-14-1068-184DAT	14	184	9.74	60	2758	0.6	0.1	5.8
964-14-1084-212DAT	14	212	9.97	790	3548	7.9	1.2	7.0
964-14-1094-219DAT	14	219	12.51	770	4318	9.6	1.5	8.5
964-14-1104-233DAT	14	233	24.38	185	4503	4.5	0.7	9.2
964-14-1109-240DAT	14	240	8.48	781	5284	6.6	1.0	10.2
964-14-1119-247DAT	14	247	10.37	200	5484	2.1	0.3	10.5
964-14-1123-254DAT	14	254	11.29	755	6239	8.5	1.3	11.8
964-14-1133-268DAT	14	268	9.16	425	6664	3.9	0.6	12.4
964-14-1138-273DAT	14	273	6.83	700	7364	4.8	0.7	13.2
964-14-1147-280DAT	14	280	8.04	760	8124	6.1	0.9	14.1
964-14-1154-282DAT	14	282	4.85	209	8333	1.0	0.2	14.3
964-14-1158-285DAT	14	285	4.41	510	8843	2.2	0.3	14.6
KBr Lysimeter								
964-18-1040-72DAT	18	72	0.33	22	22	0.0	0.0	0.0
Sampled as Control								
964-20-1022-16DAT	20	16	0.46	350	350	0.2	0.0	0.0
964-20-1041-72DAT	20	72	14.01	835	1185	11.7	1.8	1.8
964-20-1053-135DAT	20	135	28.11	330	1515	9.3	1.4	3.2
964-20-1061-156DAT	20	156	30.21	761	2276	23.0	3.5	6.8
964-20-1070-184DAT	20	184	9.16	640	2916	5.9	0.9	7.7
964-20-1078-198DAT	20	198	0.88	125	3041	0.1	0.0	7.7
964-20-1087-212DAT	20	212	4.53	690	3731	3.1	0.5	8.2
964-20-1097-219DAT	20	219	10.82	330	4061	3.6	0.6	8.7
964-20-1112-240DAT	20	240	7.29	715	4776	5.2	0.8	9.5
964-20-1126-254DAT	20	254	3.21	570	5346	1.8	0.3	9.8
964-20-1141-273DAT	20	273	4.97	510	5856	2.5	0.4	10.2
964-20-1149-280DAT	20	280	3.24	645	6501	2.1	0.3	10.5
964-20-1156-282DAT	20	282	2.62	209	6710	0.5	0.1	10.6
964-20-1160-285DAT	20	285	2.74	418	7128	1.1	0.2	10.8
KBr Lysimeter								
964-26-1027-16DAT	26	16	<LOQ	870	870	0.0	0.0	0.0
964-26-1043-72DAT	26	72	0.19	72	942	0.0	0.0	0.0
Sampled for Conductivity								
964-28-1029-16DAT	28	16	0.17	188	188	0.0	0.0	0.0
964-28-1073-184DAT	28	184	3.82	820	1008	3.1	0.5	0.5
964-28-1100-219DAT	28	219	3.02	170	1178	0.5	0.1	0.6
964-28-1115-240DAT	28	240	3.76	222	1400	0.8	0.1	0.7
KBr Lysimeter (Note: high runoff volume)								

[a] <LOQ=Less than the Limit of Quantitation

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Appendix 9 (Continued). Recovery of Bromide in Leachate and Runoff Samples.

KBr application:	972 mg / lysimeter
Br^- application:	648 mg / lysimeter

Sample Identification	Lysimeter	DAT	Reported Br^- Conc. (ug/ml)	Sample Volume (ml)	Cumulative Runoff Volume (ml)	Br^- Recovery (mg)	Br^- % Applied	Cumulative Br^- Recovery % Applied
964-02-5004-16DAT	2	16	0.18	585	585	0.1	0.0	0.0
964-02-5021-44DAT	2	44	0.50	315	900	0.2	0.0	0.0
964-02-5029-72DAT	2	72	<LOQ [a]	250	1150	0.0	0.0	0.0
964-02-5054-142DAT	2	142	0.38	198	1348	0.1	0.0	0.0
964-02-5066-156DAT	2	156	<LOQ	669	2017	0.0	0.0	0.0
964-02-5067-177DAT	2	177	<LOQ	950	2967	0.0	0.0	0.0
964-02-5075-184DAT	2	184	<LOQ	1105	4072	0.0	0.0	0.0
964-02-5085-212DAT	2	212	<LOQ	125	4197	0.0	0.0	0.0
964-02-5088-219DAT	2	219	<LOQ	322	4519	0.0	0.0	0.0
964-02-5090-233DAT	2	233	<LOQ	70	4589	0.0	0.0	0.0
964-02-5095-240DAT	2	240	<LOQ	1150	5739	0.0	0.0	0.0
964-02-5100-254DAT	2	254	<LOQ	1010	6749	0.0	0.0	0.0
964-02-5104-273DAT	2	273	<LOQ	82	6831	0.0	0.0	0.0
964-02-5114-280DAT	2	280	<LOQ	74	6905	0.0	0.0	0.0
964-02-5121-285DAT	2	285	<LOQ	895	7800	0.0	0.0	0.0
964-14-5001-5DAT	14	5	0.13	122	122	0.0	0.0	0.0
964-14-5025-58DAT	14	58	0.35	59	181	0.0	0.0	0.0
964-14-5032-72DAT	14	72	1.06	1153	1334	1.2	0.2	0.2
964-14-5046-93DAT	14	93	0.30	44	1378	0.0	0.0	0.2
964-14-5057-149DAT	14	149	0.76	1365	2743	1.0	0.2	0.4
964-14-5064-170DAT	14	170	1.61	186	2929	0.3	0.0	0.4
964-14-5068-177DAT	14	177	0.56	848	3777	0.5	0.1	0.5
964-14-5076-184DAT	14	184	0.87	1195	4972	1.0	0.2	0.7
964-14-5086-212DAT	14	212	1.19	250	5222	0.3	0.0	0.7
964-14-5091-233DAT	14	233	<LOQ	150	5372	0.0	0.0	0.7
964-14-5096-240DAT	14	240	<LOQ	960	6332	0.0	0.0	0.7
964-14-5101-254DAT	14	254	<LOQ	920	7252	0.0	0.0	0.7
964-14-5105-273DAT	14	273	<LOQ	605	7857	0.0	0.0	0.7
964-14-5115-280DAT	14	280	<LOQ	1775	9632	0.0	0.0	0.7
964-14-5122-285DAT	14	285	0.12	965	10597	0.1	0.0	0.7
964-14-5125-289DAT	14	289	0.13	473	11070	0.1	0.0	0.7
964-14-5126-289DAT	14	289	0.14	845	11915	0.1	0.0	0.7
964-14-5138-296DAT	14	296	<LOQ	780	12695	0.0	0.0	0.7
964-14-5139-296DAT	14	296	<LOQ	746	13441	0.0	0.0	0.7
964-14-5152-310DAT	14	310	0.43	856	14297	0.4	0.1	0.8
964-18-5010-16DAT	18	16	0.25	77	77	0.0	0.0	0.0
964-18-5034-72DAT	18	72	<LOQ	172	249	0.0	0.0	0.0
964-20-5083-198DAT	20	198	0.66	135	135	0.1	0.0	0.0
964-26-5012-16DAT	26	16	33.68	223	223	7.5	1.2	1.2
964-26-5038-72DAT	26	72	0.47	835	1058	0.4	0.1	1.3
964-28-5014-16DAT	28	16	0.70	470	470	0.3	0.1	0.1
964-28-5041-72DAT	28	72	0.44	1188	1658	0.5	0.1	0.2
964-28-5061-149DAT	28	149	0.38	1620	3278	0.6	0.1	0.3
964-28-5071-177DAT	28	177	<LOQ	1310	4588	0.0	0.0	0.3
964-28-5079-184DAT	28	184	<LOQ	680	5268	0.0	0.0	0.3
964-28-5093-233DAT	28	233	<LOQ	130	5398	0.0	0.0	0.3
964-28-5110-273DAT	28	273	<LOQ	328	5726	0.0	0.0	0.3
964-28-5134-289DAT	28	289	<LOQ	238	5964	0.0	0.0	0.3
964-28-5146-296DAT	28	296	<LOQ	510	6474	0.0	0.0	0.3
964-28-5147-296DAT	28	296	0.12	635	7109	0.1	0.0	0.3
964-28-5150-303DAT	28	303	<LOQ	645	7754	0.0	0.0	0.3
964-28-5153-310DAT	28	310	<LOQ	220	7974	0.0	0.0	0.3

[a] <LOQ=Less than the Limit of Quantitation

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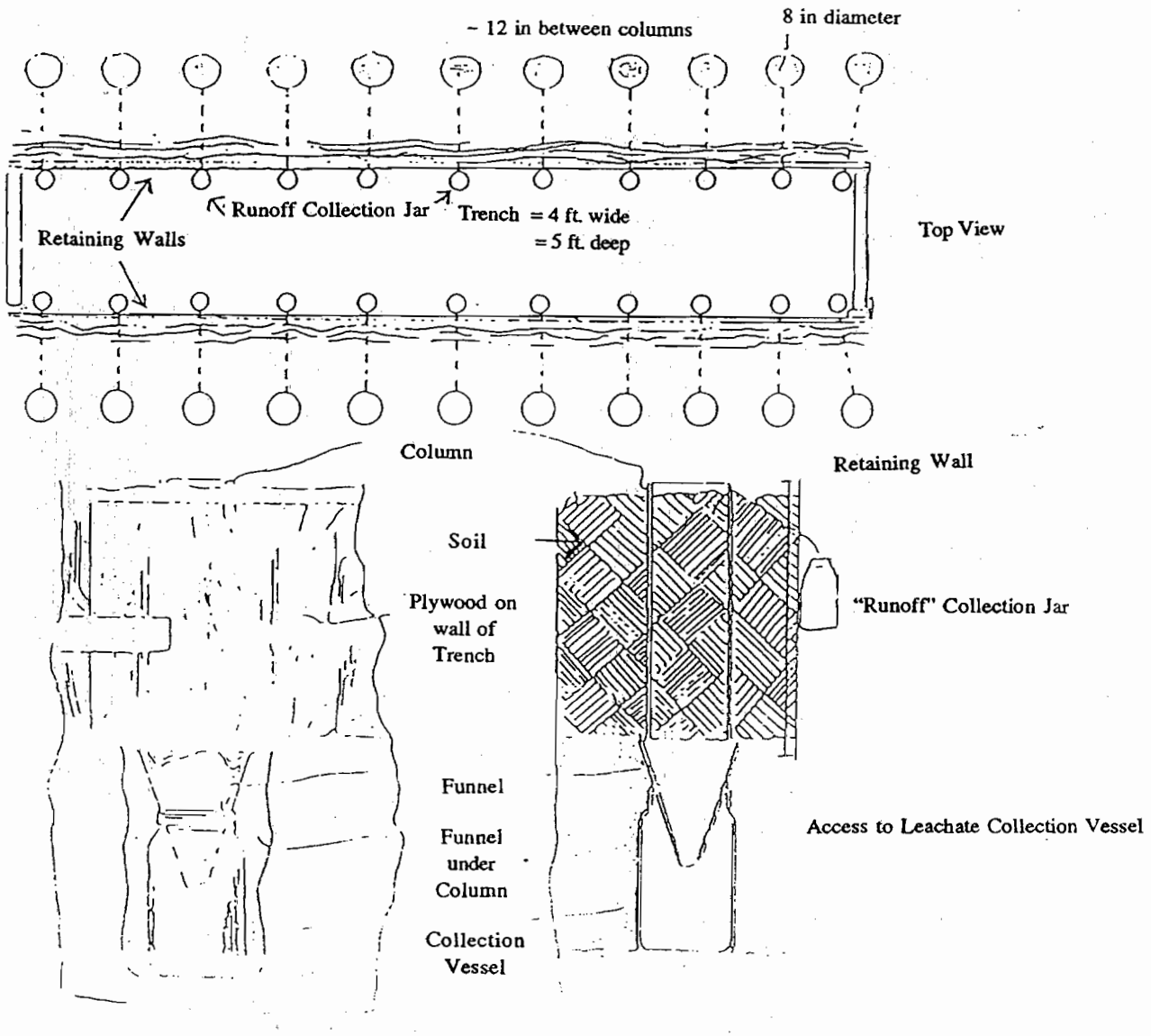

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Figure 1. Diagram of Field Column Study Set-Up.