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This DER was originally prepared under contract by Dynamac Corporation (1910 Sedwick Rd., Building 100, Suite B; Durham, NC 27713; submitted 2/20/2005). This DER has been reviewed by the HED and revised to reflect current OPP policies.

STUDY REPORT:

45322108 Manning, M.J. (1997) Acetochlor Residues in Oat Rotational Crop Raw Agricultural Commodities Following Application of Acetochlor Herbicide to Sweet or Field Corn: Lab Project Number: MSL-14117: 94-27-R-4. Unpublished study prepared by Monsanto Co. and American Agricultural Services, Inc. 449 p.

EXECUTIVE SUMMARY:

Seventeen field rotational crop trials on oats were conducted at field sites throughout the U.S. during 1995. At each test site, acetochlor (6.4 lb/gal EC) was applied to a primary crop of field or sweet corn as a preplant incorporated or preemergence broadcast application at 2.86-3.32 lb ai/A. The corn was grown and harvested following common agricultural practices. At each site, a rotational crop of oats was planted 285-388 days after treatment (DAT). Single control and duplicate treated samples of forage were collected at 31-72 days after planting (DAP), hay was collected at 54-109 DAP, and grain and straw were collected at 83-129 DAP. Samples were stored frozen for up to 5 months prior to analysis, an interval supported by available storage stability data

A High Performance Liquid Chromatography/Oxidative Coulometric Electrochemical Detection (HPLC/OCED) method was used to determine residues containing the ethyl methyl aniline (EMA) and hydroxyethyl methyl aniline (HEMA) moieties in oat grain, forage, hay and straw. The method, which is equivalent to the current tolerance enforcement method, was adequately validated in conjunction with the analysis of field rotational crop samples. For oat commodities, the method LOQs are 0.017 and 0.018 ppm for EMA and HEMA, respectively, and the LOD is 0.005 ppm for both analytes.

Residues of EMA for each test site were <LOQ-0.02 ppm in grain, <LOQ-0.06 ppm in forage, <LOQ-0.14 ppm in hay, and <LOQ-0.23 ppm in straw. Residues of HEMA for each test site were also <LOQ in oat grain, <LOQ-0.07 ppm in forage, <LOQ-0.06 ppm in hay and straw. Combined residues for each site were all <LOQ in oat grain, <LOQ-0.13 ppm in forage, <LOQ-0.20 ppm in hay, and <LOQ-0.20 ppm in straw. The overall average combined residues across all test sites were <0.035 ppm in grain, 0.04 ppm in forage, 0.05 ppm in straw, and 0.04 ppm in hay.

STUDY/WAIVER ACCEPTABILITY/DEFICIENCIES/CLARIFICATIONS:

Under the conditions and parameters used in this study, the field rotational crop data are classified as scientifically acceptable. The acceptability of this study for regulatory purposes is addressed in the forthcoming U. S. EPA document entitled *Acetochlor: Petitions for Tolerances on Sweet Corn and Rotational Crops of Nongrass Animal Feeds (Group 18), Sugar Beets, Dried Shelled Beans and Peas (Subgroup 6C), Sunflowers, Potatoes, Cereal Grains (Group 15), and Forage, Fodder, and Straw of Cereal Grains (Group 16). Summary of Analytical Chemistry and Residue Data* (D. Davis, D230310).

COMPLIANCE:

Signed and dated GLP, quality assurance, and data confidentiality statements were provided. No deviations from regulatory requirements were noted that would impact the study results or their interpretation.

A. BACKGROUND INFORMATION

Acetochlor is a chloroacetanilide herbicide used for preemergence control of weeds in corn. In the United States, acetochlor is conditionally registered for use on corn to the Acetochlor Registration Partnership (ARP), which is comprised of Monsanto and Dow AgroSciences. Acetochlor is formulated as a variety of emulsifiable concentrate (EC), emulsion in water (EW), microencapsulated (Mcap), or granular (G) formulations that can be applied to corn as a preplant, preemergence, or early postemergence application using only ground equipment. Tolerances are established for the combined residues of acetochlor and its metabolites convertible to EMA or HEMA, to be analyzed as acetochlor, and expressed as acetochlor equivalents [40 CFR §180.470]. Tolerances range from 0.05 to 1.5 ppm in/on corn commodities resulting from the direct use of acetochlor and from 0.02 to 1.0 ppm in commodities from rotational crops of sorghum, soybean, or wheat.

The ARP has submitted a petition (PP#1F6263) proposing tolerances for inadvertent residues of acetochlor in rotated dried peas and beans (subgroup 6C), sugar beets, sunflowers, potatoes, cereal grains (group 15, except corn and rice), and the forage, fodder, and straw of cereal grains (group 16, except corn and rice).

TABLE A.1. Acetochlor Nomenclature

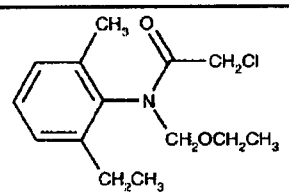
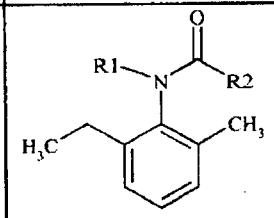
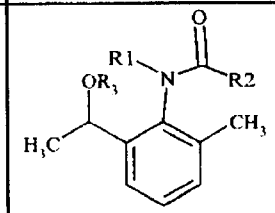
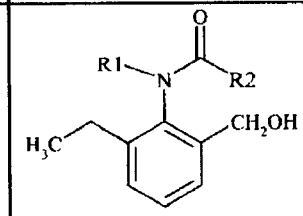
Chemical structure	
Common name	Acetochlor
Molecular Formula	$C_{14}H_{20}ClNO_2$
Molecular Weight	269.8
IUPAC name	2-chloro-N-ethoxymethyl-6'-ethylacet-o-toluidide
CAS name	2-chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide
CAS #	34256-82-1
PC Code	121601
End-use Product	6.4 lb/gal EC

TABLE A.2. Physicochemical Properties of Acetochlor.

Parameter	Value	Reference
Boiling point/range	163 °C at 10 mm Hg; decomposition occurs before the boiling point at atmospheric pressure; (calculated by extrapolation of vapor pressure at lower temperature)	HED Chapter of the Acetochlor TRED, 3/1/06
pH	4.41, 1% solution in acetone:water (1:1, v:v)	
Density at 20 °C	1.123 g/mL	

TABLE A.2. Physicochemical Properties of Acetochlor.		
Parameter	Value	Reference
Water solubility at 25 °C	223 mg/L	
Solvent solubility at 25 °C	Infinitely soluble in acetone, benzene, carbon tetrachloride, ethanol, chloroform, and toluene	
Vapor pressure at 25 °C	0.045 μ Hg (4.5×10^{-5} mm Hg)	
Dissociation constant, pK_a	Not applicable because acetochlor is neither an acid nor a base.	
Octanol/water partition coefficient	970 or 1082	
UV/visible absorption spectrum	Not available	

Table A.3. Acetochlor Metabolite Structures	
Metabolite Type	Structure
EMA-type metabolites	
HEMA-type metabolites	
HMEA-type metabolites	

B. EXPERIMENTAL DESIGN

B.1. Study Site Information

Seventeen field rotational crop trials were conducted on oats at field sites throughout the U.S. during 1995 (Table B.1.1). At each test site, acetochlor (6.4 lb/gal EC) was applied to a primary crop of field or sweet corn at ~3 lb ai/A (1x the maximum seasonal use rate) using ground equipment (Table B.1.2). At each site, a rotational crop of oats was planted the following spring, 285-388 DAT (10-12 months). Detailed soil characteristics and meteorological data were provided, as well as maintenance pesticides and detailed plot history. Rainfall was supplemented with irrigation as needed. No adverse weather conditions were noted at any of the field sites, and a comparison of historical climatic data with conditions during the field trials indicated that conditions were generally normal and were not expected to adversely impact the residue data.

TABLE B.1.1. Trial Site Conditions.

Trial Identification (City, State, Year)	Soil characteristics			
	Type	%OM	pH	CEC (meq/g)
Hamburg, PA 1995 95-27-R-4-PA	Silt Loam	2.3	7.1	11.6
Whitakers, NC 1995 95-27-R-4-NC	Sandy Loam	1.4	6.1	5.8
Hebron, MD1995 95-27-R-4-MD	Sandy Loam	2.6	5.3	6.7
Northwood, ND1995 95-27-R-4-ND1	Silt Loam	5.5	6.8	28.9
Bondville, IL1995 95-27-R-4-IL1	Silty Clay Loam	4.1	6.8	24.8
Janesville, WI 1995 95-27-R-4-WI	Silt Loam	4.3	6.5	22.4
Monmouth, IL 1995 95-27-R-4-IL2	Silt Loam	3.6	4.9	16.1
Waukee, IA 1995 95-27-R-4-IA	Clay Loam	3.6	6.8	26.6
Mankato, MN 1995 95-27-R-4-MN	Clay Loam	7.6	7.1	32.3
Jerseyville, IL 1995 95-27-R-4-IL3	Silt Loam	3.2	6.6	19.3
Lockbourne, OH 1995 95-27-R-4-OH	Clay Loam	3.0	5.6	15.4
West Lafayette, IN 1995 95-27-R-4-IN	Silty Clay Loam	2.8	7.5	16.6
Spink, SD 1995 95-27-R-4-SD1	Silt Loam	3.9	5.5	23.9
Uvalde TX 1995 95-27-R-4-TX	Loam	2.6	8.4	24.4
Miller, SD 1995 95-27-R-4-SD2	Silty Loam	3.1	6.3	21.0
New Rockford, ND 1995 95-27-R-4-ND	Fine Sandy Loam	3.0	7.4	21.9
Ault, CO 1995 95-27-R-4-CO	Sandy Clay Loam	1.7	7.9	31.2

TABLE B.1.2. Study Use Pattern to Primary Corn Crop.

Location (County, State) Year, Trial ID	End-use Product	Application Information				Rotational Crop
		Method [1]; Timing	Vol. (GPA)	Application Rate (lb ai/A)	PBI[2] (days)	
Ault, CO 1995 95-27-R-4-CO	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	14.8	3.00	351	oats
Bondville, IL1995 95-27-R-4-IL1	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	20	3.00	310	oats
Hamburg, PA 1995 95-27-R-4-PA	6.4 lb/gal EC	Broadcast Soil: preemergence	20.4	3.09	325	oats
Hebron, MD1995 95-27-R-4-MD	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	16.7	3.32	310	oats
Janesville, WI 1995 95-27-R-4-WI	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	22.7	3.00	341	oats
Jerseyville, IL 1995 95-27-R-4-IL3	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	20	3.00	285	oats
Lockbourne, OH 1995 95-27-R-4-OH	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	20	3.00	312	oats
Mankato, MN 1995 95-27-R-4-MN	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	9.5	2.85	360	oats
Miller, SD1995 95-27-R-4-SD1	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	19.9	3.01	331	oats
Monmouth, IL 1995 95-27-R-4-IL2	6.4 lb/gal EC	Broadcast Soil: preemergence	18.4	3.07	299	oats
New Rockford, ND 1995 95-27-R-4-ND	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	9.6	2.86	388	oats
Northwood, ND1995 95-27-R-4-ND1	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	20	3.01	349	oats
Spink, SD 1995 95-27-R-4-SD2	6.4 lb/gal EC	Broadcast Soil: preemergence	14.8	2.90	340	oats
Uvalde TX 1995 95-27-R-4-TX	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	19.9	2.99	292	oats
Waukee, IA 1995 95-27-R-4-IA	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	21.8	3.24	319	oats
West Lafayette, IN 1995 95-27-R-4-IN	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	17.1	3.12	306	oats
Whitakers, NC 1995 95-27-R-4-NC	6.4 lb/gal EC	Broadcast Soil: preplant incorporated	14.8	2.97	324	oats

[1] All applications were made using ground equipment.
[3] Plant-back Interval.

TABLE B.1.3. Trial Numbers and Geographical Locations.

NAFTA Growing Zones[1]	Oats		
	Submitted	Requested	
		Canada	US
1	1	NA	1
2	2	NA	1
3	--	NA	--
4	--	NA	--
5	10	NA	9
6	1	NA	1
7	2	NA	3
8	1	NA	1
9	--	NA	--
10	--	NA	--
11	--	NA	--
12	--	NA	--
Total	17	NA	16

[1] Regions 13-21 and 1A, 5A, 5B, and 7A were not included as the use is restricted to the US.

B.2. Sample Handling and Preparation

Single control and duplicate treated samples of oat grain, forage, hay and straw (~5 lbs grain and ~2 lbs other RACs) were harvested at the appropriate stage of maturity. Forage was collected at 31-72 days after planting (DAP), hay was collected at 54-109 DAP, and grain and straw were collected at 83-129 DAP. Samples were placed in frozen storage at the field sites within 5 hours of collection, stored frozen for 1-114 days, and then shipped frozen by ACDS freezer truck to the analytical laboratory (Monsanto Co, St. Louis, MO) where samples were stored frozen (~ -18 °C) until analysis. Samples were stored frozen from collection to analysis for up to 92 days for grain, 151 days for forage, 136 days for hay, and 105 days for straw.

B.3. Analytical Methodology

Samples of oat grain, forage, straw and hay were analyzed for residues of metabolites containing the ethyl methyl aniline (EMA) and hydroxyethyl methyl aniline (HEMA) moieties using the current tolerance enforcement method, which is an HPLC/OCED Method (RES-074-93).

For this method, residues are extracted with acetonitrile:water (4:1 v:v), filtered, concentrated, and base hydrolyzed to yield EMA and HEMA. The resulting residues are steam-distilled into dilute acid, adjusted to a basic pH, and partitioned into methylene chloride. HEMA is methylated using acidic methanol and residues of EMA and methylated HEMA (MEMA) are separated and determined using HPLC/OCED. Residues of EMA and HEMA are expressed in acetochlor equivalents and the method LOQ for EMA and HEMA are 0.017 ppm and 0.018 ppm, respectively, for all oat commodities. The LOD for both EMA and HEMA is 0.005 ppm.

The HPLC-OCED method was validated prior to and concurrently with the analysis of field trial samples with oat grain forage, hay and straw samples fortified with EMA and HEMA producing metabolites at 0.01-1.0 ppm.

C. RESULTS AND DISCUSSION

Samples were stored frozen for a maximum of 151 days prior to analysis (Table C.1). Adequate storage stability data are available (Acetochlor HED Chapter of the TRED, 3/1/06) indicating that acetochlor metabolites are stable for up to 24 months in wheat grain, forage and straw. These data will support the frozen storage intervals in this trial.

The HPLC/OCED method used to determine residues of HEMA and EMA metabolites in oat grain, forage, hay and straw was adequately validated prior to and in conjunction with the field sample analyses (Table C.2). Method validation recoveries of EMA averaged 95 ± 3% in grain and 82 ± 11% in straw, and recoveries of HEMA averaged 93 ± 2% in grain and 78 ± 6% in straw. Concurrent recoveries of EMA averaged 105 ± 17% in grain, 108 ± 16% in forage, 106 ± 7% in hay and 105 ±8 in straw, and recoveries of HEMA averaged 95 ± 18% in grain, 92 ± 13% in forage, 90 ± 10% in hay and 82 ± 9% in straw. Apparent residues of EMA were <0.017 ppm and of HEMA were < 0.018 ppm in all the control samples. Adequate sample calculations and chromatograms were provided.

Residues of EMA for each test site were <LOQ-0.02 ppm in grain, <LOQ-0.06 ppm in forage, <LOQ-0.14 ppm in hay, and <LOQ-0.23 ppm in straw (Table C.3). Residues of HEMA for each test site were also <LOQ in oat grain, <LOQ-0.07 ppm in forage, <LOQ-0.06 ppm in hay, and <LOQ-0.06 ppm in straw. Combined residues for each site were all <LOQ in oat grain, <LOQ-0.13 ppm in forage, <LOQ-0.20 ppm in hay, and <LOQ-0.20 ppm in straw (Table C.3). The overall average combined residues across all test sites were <0.035 ppm in grain, 0.04 ppm in forage, 0.05 ppm in straw, and 0.04 ppm in hay (Table C.4).

Common cultural practices were used to maintain plants, and the weather conditions and the maintenance chemicals and fertilizer used in the study did not have a notable impact on the residue data.

TABLE C.1. Summary of Storage Conditions

Matrix	Storage Temp. (°C)	Actual Storage Duration (days)	Limit of Demonstrated Storage Stability (months) [1]
Oat grain	-18	92	24
Oat forage	-18	151	
Oat hay	-18	136	
Oat straw	-18	105	

[1] Acetochlor TRED, 3/1/06; storage stability data on wheat forage, grain and straw.

TABLE C.2. Summary of Method Recoveries of HEMA and EMA from Oat Commodities.

Matrix	Analyte	Spike level (mg/kg)	Sample size (n)	Recoveries (%)[1]	Mean ∀ std dev
Method Validation Recovery					
Grain	EMA	0.01-1.00	4	99, 93, 94, 92	95 ± 3
	HEMA		4	96, 92, 92, 93	93 ± 2
Straw	EMA	0.01-1.00	4	(65), 88, 88, 86	82 ± 11
	HEMA		4	(69), 80, 81, 80	78 ± 6
Concurrent Recovery					
Grain	EMA	0.01-0.20	17	69-140 (2)	105 ± 17
	HEMA		17	69-129 (2)	95 ± 18
Forage	EMA	0.01-0.10	17	73-136 (4)	108 ± 16
	HEMA		17	73-122 (1)	92 ± 13
Hay	EMA	0.04-1.00	16	97-116	106 ± 7
	HEMA		16	73-109	90 ± 10
Straw	EMA	0.01-1.00	17	93-120	105 ± 8
	HEMA		17	65-99 (2)	82 ± 9

[1] The number outside the acceptable 70-120% range are listed in parentheses.

TABLE C.3. Residues of Acetochlor in Rotational Oat Hay, Forage, Grain and Straw

Location (County, State, Year)	EPA Region	Variety	Total Rate (lb ai/A)	PBI[2] (days)	Harvest DALA[1]	RAC	Average Residues (ppm)[3]		
							EMA	HEMA	Combined Residues
Ault, CO 1995 95-27-R-4-CO	8	Don	3.00	351	456	Grain	ND, ND	ND, ND	<0.035, <0.035
					393	Forage	0.0467, 0.0387	0.0218, 0.0162	0.0685, 0.549
					405	Hay	0.035, 0.0307	0.0436, 0.039	0.0786, 0.0697
					456	Straw	0.0189, 0.0213	0.0229, 0.0244	0.0418, 0.0547
Bondville, IL1995 95-27-R-4-IL1	5	Prairie	3.00	310	415	Grain	ND, ND	ND, ND	<0.035, <0.035
					360	Forage	0.0356, 0.0323	0.0239, 0.0216	0.0595, 0.0539
					391	Hay	0.0176, 0.018	(0.0116), ND	0.0356, 0.0.036
					415	Straw	(0.01), (0.006)	ND, ND	<0.035, <0.035
Hamburg, PA 1995 95-27-R-4-PA	1	Hercules	3.09	325	439	Grain	ND, ND	(0.006), ND	<0.035, <0.035
					380	Forage	0.0582, 0.0629	0.0248, 0.0244	0.083, 0.0873
					410	Hay	0.0639, 0.0616	0.0281, 0.0279	0.092, 0.090
					439	Straw	0.0175, (0.0165)	(0.008), (0.008)	0.0355, <0.035
Hebron, MD 1995 95-27-R-4-MD	2	Southern States/Oagle	3.32	310	429	Grain	(0.006), (0.005)	(0.011), (0.010)	<0.035, <0.035
					367	Forage	(0.009), ND	(0.014), ND	<0.035, <0.035
					389	Hay	(0.007), (0.008)	(0.0127), (0.0129)	<0.035, <0.035
					429	Straw	(0.008), (0.005)	(0.008), (0.006)	<0.035, <0.035
Janesville, WI 1995 95-27-R-4-WI	5	Wisconsin Certified Prairie Oats	.3.00	341	439	Grain	ND, ND	ND, ND	<0.035, <0.035
					387	Forage	(0.01), (0.008)	ND, (0.007)	<0.035, <0.035
					401	Hay	(0.011), (0.009)	(0.007), (0.006)	<0.035, <0.035
					439	Straw	(0.008), (0.010)	(0.001), (0.005)	<0.035, <0.035
Jerseyville, IL 1995 95-27-R-4-IL3	5	Ogle	3.00	285	414	Grain	ND, ND	ND, ND	<0.035, <0.035
					351	Forage	0.0558, 0.0521	0.0606, 0.0741	0.1164, 0.1262
					414	Straw	0.025, (0.014)	(0.009), (0.002)	0.043, <0.035
Lockbourne, OH 1995 95-27-R-4-OH	5	Armour	3.00	312	416	Grain	(0.005), (0.005)	ND, ND	<0.035, <0.035
					360	Forage	(0.010), (0.009)	(0.012), ND	<0.035, <0.035
					401	Hay	0.1088, 0.039	0.0313, 0.0176	0.1401, 0.0566
					416	Straw	(0.0146), 0.0189	(0.006), (0.005)	<0.035, <0.035
Mankato, MN 1995 95-27-R-4-MN	5	Troy	2.85	360	463	Grain	(0.01), (0.006)	ND, ND	<0.035, <0.035
					410	Forage	0.0173, (0.010)	(0.011), (0.011)	0.0353, <0.035
					437	Hay	(0.003), (0.002)	(0.006), ND	<0.035, <0.035
					463	Straw	(0.009), ND	(0.005), (0.004)	<0.035, <0.035
Miller, SD 1995 95-27-R-4-SD2	5	Ogle	2.90	331	438	Grain	ND, ND	(0.007), ND	<0.035, <0.035
					373	Forage	0.0374, 0.034	0.0297, 0.0302	0.0671, 0.0642
					414	Hay	0.0292, 0.0227	0.0521, 0.0316	0.0813, 0.0543
					438	Straw	(0.006), (0.002)	(0.014), (0.015)	<0.035, <0.035
Monmouth, IL 1995 95-27-R-4-IL2	5	Ogle	3.07	299	425-426	Grain	ND, ND	ND, ND	<0.035, <0.035
					364	Forage	(0.008), (0.007)	(0.007), (0.005)	<0.035, <0.035
					390	Hay	(0.009), (0.008)	(0.007), (0.006)	<0.035, <0.035
					425	Straw	(0.015), (0.013)	(0.006), (0.005)	<0.035, <0.035
New Rockford, ND 1995 95-27-R-4-ND2	7	Jerry	2.86	388	471	Grain	0.0178, (0.0134)	(0.0123), (0.010)	0.0358, <0.035
					419	Forage	0.0389, 0.0358	(0.014), (0.014)	0.0569, 0.0538
					447	Hay	0.1376, 0.0807	0.058, 0.0335	0.7176, 0.1142
					471	Straw	0.2262, 0.1789	0.0563, 0.0479	0.2825, 0.2268
Northwood, ND 1995 95-27-R-4-ND1	5	Jerry	3.01	349	444	Grain	(0.006), (0.004)	(0.003), (0.002)	<0.035, <0.035
					388	Forage	0.0238, 0.0252	(0.012), (0.012)	0.0418, 0.0432
					420	Hay	0.0253, 0.0196	0.0195, 0.0173	0.0448, 0.0369
					444	Straw	0.0465, 0.0589	(0.014), (0.015)	0.0645, 0.0769

TABLE C.3. Residues of Acetochlor in Rotational Oat Hay, Forage, Grain and Straw

Location (County, State, Year)	EPA Region	Variety	Total Rate (lb ai/A)	PBI[2] (days)	Harvest DALA[1]	RAC	Average Residues (ppm)[3]		
							EMA	HEMA	Combined Residues
Spink, SD 1995 95-27-R-4-SD1	7	Troy	3.01	340	454	Grain	ND, ND	ND, ND	<0.035,<0.035
					381	Forage	0.0204, 0.019	(0.017), (0.013)	0.0384, 0.028
					430	Hay	0.0432, 0.0398	0.018, (0.015)	0.0612, 0.0578
					454	Straw	(0.014), (0.008)	(0.007), (0.004)	<0.035, <0.035
Uvalde TX 1995 95-27-R-4-TX	6	Coronado	2.99	292	417	Grain	ND, ND	ND, ND	<0.035, <0.035
					364	Forage	ND, ND	(0.001), ND	<0.035, <0.035
					401	Hay	ND, ND	(0.003), (0.002)	<0.035, <0.035
					417	Straw	ND, ND	(0.004), (0.002)	<0.035, <0.035
Waukee, IA 1995 95-27-R-4-IA	5	Starter	3.24	319	437	Grain	ND, ND	ND, ND	<0.035, <0.035
					378	Forage	(0.008), (0.006)	(0.008), (0.006)	<0.035, <0.035
					393	Hay	(0.005), (0.005)	(0.006), (0.006)	<0.035, <0.035
					437	Straw	(0.004), (0.010)	(0.006), (0.005)	<0.035, <0.035
West Lafayette, IN 1995 95-27-R-4-IN	5	Ogle	3.12	306	417	Grain	ND, ND	ND, ND	<0.035, <0.035
					364	Forage	0.0244, 0.0267	0.0218, 0.0216	0.0462, 0.0483
					388	Hay	0.0184, 0.0159	(0.009), (0.009)	0.0364, 0.0339
					417	Straw	(0.014), (0.008)	(0.006), ND	<0.035, <0.035
Whitakers, NC 1995 95-27-R-4-NC	2	Prairie	2.97	324	426	Grain	(0.002), ND	(0.003), (0.002)	<0.035, <0.035
					373	Forage	0.0185, (0.015)	0.0224, 0.0175	0.0409, 0.0345
					402	Hay	0.0282, 0.0152	0.0211, 0.0184	0.0493, 0.0336
					426	Straw	0.0251, 0.0254	0.019, 0.02	0.0441, 0.0454

[1] DALA= Days After Last Application

[2] PBI = Plant Back Interval.

[3] The residue values are the average of the duplicate treated samples from each site. The LOQ is 0.017 ppm for EMA and 0.018 ppm for HEMA on all commodities. The LOD is 0.005 ppm for both analytes. For values <LOQ, calculation for the combined residues used the LOQ

ND = not detected.

TABLE C.4. Summary of Residue Data in Rotational Oats.

Commodity	Total Rate (lb ai/A)	PBI (days)	Residue Levels (ppm) [1]						
			n [2]	Min.	Max.	HAFT[3]	Median (STMdR[4])	Mean (STMR[4])	Std. Dev.
EMA									
Grain	2.85-3.32	285-388	34	<0.017	0.02	0.01	0.01	0.01	0.00
Forage			34	<0.017	0.06	0.06	0.02	0.02	0.02
Hay			32	<0.017	0.14	0.11	0.02	0.03	0.03
Straw			34	<0.017	0.23	0.20	0.01	0.03	0.05
HEMA									
Grain	2.85-3.32	285-388	34	<0.018	<0.018	0.01	0.01	0.01	0.00
Forage			34	<0.018	0.07	0.07	0.01	0.02	0.01
Hay			32	<0.018	0.06	0.05	0.01	0.02	0.01
Straw			34	<0.018	0.06	0.05	0.01	0.01	0.01
Combined Residues									
Grain	2.85-3.32	285-388	34	<0.035	<0.035	<0.035	0.02	0.02	0.00
Forage			34	<0.035	0.13	0.12	0.03	0.04	0.03
Hay			32	<0.035	0.20	0.15	0.03	0.05	0.04
Straw			34	<0.035	0.28	0.25	0.02	0.04	0.06

[1] The LOQ is 0.017 ppm for EMA and 0.018 ppm for HEMA on all oat matrices. The LOD is 0.005 ppm for both analytes.

[2] Each value represents the separate analysis of duplicate treated samples.

[3] HAFT = Highest Average Field Trial.

[4] STMdR = Supervised Trial Median Residue; STMR = Supervised Trial Mean Residue. For calculation of the median, mean and standard deviation, ½ the LOQ (0.0085 or 0.009 ppm) was used for residues reported at <LOQ.

D. CONCLUSION

The submitted data are adequately supported by field documentation and storage stability data and were conducted using a validated analytical method.

Seventeen field rotational crop trials on oats were conducted at field sites throughout the U.S. Oats were planted approximately 7 – 12 months after acetochlor was applied to a primary crop of field or sweet corn as a preplant incorporated or preemergence broadcast application at 2.86-3.32 lb ai/A. Residues of EMA for each test site were <LOQ-0.02 ppm in grain, <LOQ-0.06 ppm in forage, <LOQ-0.14 ppm in hay, and <LOQ-0.23 ppm in straw. Residues of HEMA for each test site were also <LOQ in oat grain, <LOQ-0.07 ppm in forage, <LOQ-0.06 ppm in hay and straw. Combined residues for each site were all <LOQ in oat grain, <LOQ-0.13 ppm in forage, <LOQ-0.20 ppm in hay, and <LOQ-0.20 ppm in straw. The overall average combined residues across all test sites were <0.035 ppm in grain, 0.04 ppm in forage, 0.05 ppm in straw, and 0.04 ppm in hay.

E. REFERENCES

DP Barcode: D292336
Subject: **ACETOCHLOR.** Revised HED Chapter of the Tolerance Reassessment Eligibility Decision (TRED) Document.
From: A. Protzel
To: F. Fort
Dated: 31/06
MRID(s): None

F. DOCUMENT TRACKING

RDI: D. Davis (3/23/06); M. Doherty (4/17/06).
Petition Number(s): 1F6263
DP Barcode(s): D230310 and D275019
PC Code: 121601