US EPA ARCHIVE DOCUMENT

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In the absence of signatures, this document is considered to be a draft with deliberative material for internal use only.

This DER was originally prepared under contract by Dynamac Corporation (1910 Sedwick Rd., Building 100, Suite B; Durham, NC 27713; submitted 2/21/2005). The DER has been reviewed by the HED and revised to reflect current OPP policies.

STUDY REPORT:

44107105 Crook, S.; French, D. (1996) Acetochlor and Dichlormid: Magnitude of Residues in Sweet Corn Following Pre-emergence and Preplant Incorporated Applications (USA 1995): Lab Project Number: ACET-95-MR-01: RJ2078B: 57-NY-95-681. Unpublished study prepared by Zeneca Agrochemicals. 115 p.

EXECUTIVE SUMMARY:

In 14 field trials conducted throughout the U.S. during 1995, acetochlor was applied to sweet corn as either a preplant incorporated (PPI) or preemergence (PRE) application at 3.0 lb ai/A at all test sites. Ten of the field sites used only the 6.4 lb/gal EC formulation of acetochlor applied as either a PPI or PRE application (3 sites each), or as side-by-side tests comparing the PPI and PRE applications (4 sites). The remaining four sites had side-by-side tests comparing the use of the 6.4 lb/gal EC, 3.2 lb/gal Mcap, and 20% G formulations applied as either a PPI application (2 sites) or a PRE application (2 sites). All the test formulations contained the herbicide safener dichlormid at a ratio acetochlor:dichlormid of 6:1. All applications were made using ground equipment. In each test, a single control and single or duplicate treated samples of corn forage and ears (K+CWHR) were harvested at 58-113 days after treatment (DAT) and stover was harvested at 99-169 DAT. In two tests, single treated samples of forage were also sampled repeatedly at 7-day intervals from 60-88 DAT or 41-69 DAT, to examine residue decline. Samples were stored frozen from collection to analysis for up to 6 months prior to analysis, an interval supported by available stability data.

Residue data were generated using a GS/MSD method; RAM 280/01 which detects residues of EMA- and HEMA-type degrades (including acetochlor converted to EMA) and reports the results as total acetochlor equivalents. This method has been adequately validated as a data collection method.

Residues of EMA and HEMA were each <0.02 ppm (<LOQ) in/on all samples of sweet corn K+CWHR from all tests, for combined residues of <0.04 ppm. For forage samples from all tests, EMA residues were <0.02-0.77 ppm and HEMA residues were <0.02-0.40 ppm, for combined residues of <0.04-0.97 ppm. For stover samples from all tests, EMA residues were <0.02-0.70 ppm and HEMA residues were <0.02-0.25 ppm, for combined residues of <0.04-0.91 ppm.

Based on a limited number of side-by-side field trials, residues in/on sweet corn K+CWHR, forage and stover resulting from application of the microencapsulated and granular formulas do not appear to be significantly different from residues resulting from application of the EC formulation. However, HED typically requires a full set of data to support use of microencapsulated and granular formulations due to their unique release patterns and consequently their potential for different residue profiles. HED does not consider the limited number of field trials contained in this study to be sufficient to demonstrate that residues from application of the MCap or G formulations would not exceed tolerances based on residue data on the EC formulation.

In four of the field trials, side-by-side tests were conducted comparing the preplant incorporated application to the preemergence broadcast application. Analysis of the data indicates that in one field trial there was significantly higher combined residue in forage and stover as a result of preplant incorporated application technique. In addition, in two additional field trials, residues in forage were slightly higher in the PPI tests and residues in stover in one additional field trial were slightly higher in the PPI test (Tables C.3.2 and C.3.3). Examining the residue data from all the EC formulation tests, combined residues in/on forage were 0.04-0.97 ppm for the PPI application and <0.04-0.29 ppm for the PRE application. Average combined residues in/on forage were 0.33 and 0.10 ppm for the PPI and PRE applications, respectively (Table C.4). Combined residues in/on stover were <0.04-0.91 ppm for the PPI application and <0.04-0.42 ppm for the PRE application. Average combined residues in/on stover were 0.13 and 0.12 ppm for the PPI and PRE applications, respectively.

In the two residue decline tests, combined residues in/on forage remained relatively steady over time.

STUDY/WAIVER ACCEPTABILITY/DEFICIENCIES/CLARIFICATIONS:

Under the conditions and parameters used in the study, the corn field trial residue data are classified as scientifically acceptable, although soil information should be provided for applications made to the soil. 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#6F4791) proposing the use of acetochlor (EC) on sweet corn and requesting tolerances on sweet corn commodities and tolerances for inadvertent residues in rotated non-grass animal feeds.

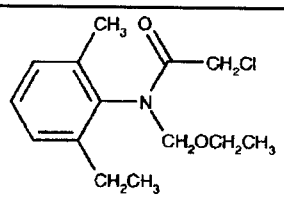
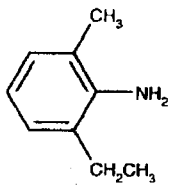
TABLE A.1. Acetochlor Nomenclature	
Chemical structure	
Common name	Acetochlor
Molecular Formula	$C_{14}H_{20}ClNO_2$
Molecular Weight	269.8
IUPAC name	2-chloro-N-ethoxymethyl-6'-ethylacet-o-toluidide
CAS name	2-chloro-N-(ethoxymethyl)-N-(2-ethyl-6-methylphenyl)acetamide
CAS #	34256-82-1
PC Code	121601
End-use Product	6.4 lb/gal EC
Chemical structure	
Common name	EMA
Molecular Weight	337.4
CAS name	2-ethyl-6-methylaniline

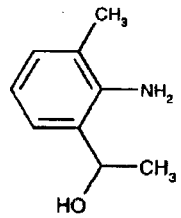
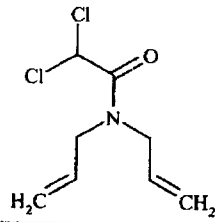
TABLE A.1. Acetochlor Nomenclature	
Chemical structure	
Common name	HEMA
Molecular weight	303.3
CAS name	2-(1-hydroxyethyl)-6-methylaniline
Chemical structure	
Common name	Dichlormid, R-25788 (herbicide safener)
Molecular weight	208.1
CAS name	2,2-dichloro-*N,N*-di-2-propenylacetamide
CAS #	37764-25-3

TABLE A.2.1. 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)	Acetochlor HED Chapter of the TRED, 3/1/06
pH	4.41, 1% solution in acetone:water (1:1, v:v)	
Density at 20 °C	1.123 g/mL	
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	

B. EXPERIMENTAL DESIGN

B.1. Study Site Information

Sweet corn field trials were conducted at 14 sites throughout the U.S. during 1995. Acetochlor was applied to sweet corn as either a PRE or PPI application at 3.0 lb ai/A at all test sites (Table B.1.1). Ten of the field sites used only the 6.4 lb/gal EC formulation of acetochlor applied as either a PRE or PRE application (3 sites each), or as side-by-side tests comparing the PPI and PRE applications (4 sites). Two of the test sites had side-by-side tests comparing the use of the EC, Mcap, and G formulations applied as a PPI application, and the final two sites had side-by-side tests comparing the use of the EC, Mcap, and G formulations applied as a PRE application. All the test formulations contained the herbicide safener dichlormid at a ratio of 6:1 (acetochlor:dichlormid).

Detailed soil characteristics and meteorological data were not provided, but maintenance pesticides and detailed plot history were provided. In addition, the study authors noted that weather patterns at all trial sites were typical of the growing regions, although the season was wetter than normal in Region 5. Rainfall was supplemented with irrigation as needed.

TABLE B.1.1. Study Use Pattern on Sweet Corn.

Location (City, State), Year Trial ID	Application Information					
	End-use Product	Method [1]; Timing	Volume (gal/A)	Single Rate (lb a.i./A)	No. of Appl.	Additive [2]
North Rose, NY, 1995 57-NY-96-681	6.4 lb/gal EC	Broadcast soil; PPI	22	3	1	dichlormid
	3.2 lb/gal Mcap					
	20% GR		NA			
Boone, IA, 1995 63-IA-95-682	6.4 lb/gal EC	Broadcast soil; PPI	15	3	1	dichlormid
	3.2 lb/gal Mcap					
	20% GR		NA			
Whitakers, NC, 1995 01-NC-95-683	6.4 lb/gal EC	Broadcast soil: PRE	15	3	1	dichlormid
	3.2 lb/gal Mcap					
	20% GR		NA			
Champaign, IL, 1995 60-IL-95-684	6.4 lb/gal EC	Broadcast soil: PRE	20	3	1	dichlormid
	3.2 lb/gal Mcap					
	20% G		NA			
Hamburg, PA, 1995 94-PA-95-685	6.4 lb/gal EC	Broadcast soil: PRE	20	3	1	dichlormid
Northwood, ND, 1995 94-ND-95-686	6.4 lb/gal EC	Broadcast soil; PPI	20	3	1	dichlormid
Janesville, WI, 1995 94-WI-95-687	6.4 lb/gal EC	Broadcast soil; PPI	22.66	3	1	dichlormid
Visalia, CA, 1995 02-CA-96-688	6.4 lb/gal EC	Broadcast soil; PPI	25.79	3	1	dichlormid
		Broadcast soil: PRE				
Ephrata, WA, 1995 94-WA-95-689	6.4 lb/gal EC	Broadcast soil; PPI	23.1	3	1	dichlormid
		Broadcast soil: PRE				
Hebron, MD, 1995 94-MD-95-690	6.4 lb/gal EC	Broadcast soil; PPI	15	3	1	dichlormid
Loxley, AL, 1995 94-AL-95-691	6.4 lb/gal EC	Broadcast soil: PRE	10	3	1	dichlormid
Oviedo, FL, 1995 42-FL-95-692	6.4 lb/gal EC	Broadcast soil; PPI	30	3	1	dichlormid
		Broadcast soil: PRE				
Monmouth, IL, 1995 94-IL-95-693	6.4 lb/gal EC	Broadcast soil: PRE	18.1	3	1	dichlormid
Mt. Vernon, WA, 1995 15-WA-95-694	6.4 lb/gal EC	Broadcast soil; PPI	16.94	3	1	dichlormid
		Broadcast soil: PRE				

[1] All applications were made using ground equipment as either a preplant incorporated (PPI) or preemergence (PRE) application.

[2] Each of the formulation used contained the herbicide safener, dichlormid, at ratio of acetochlor:dichlormid of 6:1.

NA = not applicable.

TABLE B.1.2. Trial Numbers and Geographical Locations.

NAFTA Growing Region [1]	Submitted Sweet Corn tests [2]			Requested Sweet Corn	
	EC	Map	G	Canada	US
1	2	1	1	NA	2
2	2	1	1	NA	1
3	2	--	--	NA	1
4	--	--	--	NA	--
5	5	2	2	NA	5
6	--	--	--	NA	--
7	--	--	--	NA	--
8	--	--	--	NA	--
9	--	--	--	NA	--
10	1	--	--	NA	1
11	1	--	--	NA	1
12	1	--	--	NA	1
Total	14	4	4	NA	12

[1] Regions 13-21 and 1A, 5A, 5B, and 7A were not included as the proposed use is for the US only.
[2] Tests are split out by the types of formulations used.
NA = not applicable.

B.2. Sample Handling and Preparation

Samples of corn forage and ears (K+CWHR) were harvested 58-113 DAT from all tests. In two tests in AL and IL, forage was sampled repeatedly at 7-day intervals from either 60-88 DAT or 41-69 DAT in order to examine residue decline. Samples of stover were also collected from each test at commercial maturity, 99-169 DAT. For each commodity, a single control and single or duplicate treated samples (≈2 lb each) were collected from each test and placed in frozen storage at the test facility. Samples were then shipped frozen by ACDS freezer truck to Zeneca Ag Products Western Research Center (WRC), where samples were stored at -18°C. From WRC, the samples were shipped frozen by overnight courier to the analytical laboratory, Jealott's Hill Research Station (Berkshire, UK) and stored frozen (≈ -18° C) until analysis. Samples were stored frozen for up to 6 months prior to EMA/HEMA analysis.

B.3. Analytical Methodology

A GC/nitrogen-phosphorus detection (GC/NPD) method (RAM 244/02) was used to determine residues of acetochlor *per se*. The registrant has not demonstrated that this method can extract field weathered residues; therefore data on residues of acetochlor *per se* are not considered supported by adequate validation data and are; therefore, not appropriate for use in risk assessment or for tolerance setting purposes (D. Davis, MRID 44107102). Further, since the data generated from analytical method RAM 244/02 are not of utility for regulatory purposes, they are not included in this document.

Residue data were also generated using a GS/MSD method; RAM 280/01 which detects residues of EMA- and HEMA-type degrades (including acetochlor converted to EMA) and reports the

results as total acetochlor equivalents. This method has been adequately validated as a data collection method (D.Davis, MRID 44107103).

For Method RAM280/01, residues are extracted with acetonitrile:water (80:20, v/v), concentrated, and base hydrolyzed by refluxing with saturated potassium hydroxide and methanol to yield EMA and HEMA. The resulting hydrolysate is diluted with water and saturated sodium chloride, and residues of EMA and HEMA are partitioned into toluene. Residues are acylated with heptafluorobutryic acid anhydride, and partitioned against a sodium bicarbonate solution to remove the derivatizing agent. Residues are then analyzed by GC/MSD operating in the selective ion monitoring (SIM) mode, and using the 162 and 314 ions for quantifying EMA and HEMA, respectively. Residues are quantified by comparison to external standards. The LOQ is 0.01 ppm for both EMA and HEMA, or 0.02 ppm each when expressed as acetochlor equivalents. The LOD was not reported. This method has been adequately validated for data collection purposes.

C. RESULTS AND DISCUSSION

Samples were stored frozen for up to 6 months prior to analysis of EMA and HEMA residues (Table C.2). Storage stability data are available indicating that acetochlor and acetochlor metabolites are stable in frozen corn commodities for at least 48 months (Acetochlor TRED, 3/1/06). These data will support the current corn field trails.

As noted above, EMA and HEMA-type metabolites were analyzed using GC/MSD method RAM 280/01 and the results were reported as acetochlor equivalents. This method employs an extraction scheme virtually identical to the current enforcement method and has been adequately validated as a data collection method.

Adequate samples calculations were provided along with example chromatograms. Apparent residues of all analytes were <LOQ in control samples. The validated LOQ is 0.02 ppm each (expressed as acetochlor equivalents) for EMA and HEMA on corn commodities based on method validation data provided for method RAM 280 (D. Davis, MRID 44107103). The average concurrent fortifications were all within the acceptable range of 70% to 120% for both EMA and HEMA fortified samples spiked at 0.02 to 0.1 ppm acetochlor equivalents in various corn matrices. Individual sample results as well as fortification level averages are shown in the table below

TABLE C.1.1. Summary of Concurrent Recoveries of EMA and HEMA Type Metabolites from Sweet Corn Matrices Using GC/MSD Method RAM 280/01.

Crop	Matrix	Analyte [1]	Spike level (mg/kg) [2]	Sample size (n)	Recoveries (%) [3]	Mean Recovery ± SD
Corn	K+CWHR	EMA	0.02	3	71, 74, 82	76 ± 5.7
			0.05	3	86, 87, 79	84 ± 4.3
			0.10	3	84, 51, 84	73 ± 20
		HEMA	0.02	3	86, 71, 90	82 ± 10
			0.05	3	118, 80, 99	99 ± 19
			0.10	3	120, 80, 96	99 ± 20
	Forage	EMA	0.02	4	102, 91, 72, 104	92 ± 15
			0.05	4	76, 95, 93, 104	92 ± 12
			0.10	4	82, 94, 93, 108	94 ± 11
		HEMA	0.02	4	73, 72, 63, 81	72 ± 7.3
			0.05	4	76, 78, 77, 87	80 ± 5.1
			0.10	4	81, 46, 96, 96	80 ± 24
	Stover	EMA	0.02	2	104, 74	n/a
			0.05	5	83, 84, 77, 78, 114	87 ±15
			0.10	4	90, 62, 84, 90	82 ± 13
		HEMA	0.02	3	78, 103, 86	89 ± 13
			0.05	5	76, 106, 94, 88, 94	92 ± 11
			0.10	4	85, 80, 78, 101	86 ± 10

[1] Samples were fortified with either EMA and HEMA producing metabolites. [2] Levels were reported in total parent equivalents.
[3] Residues were corrected for any control interference prior to calculation of recoveries.

TABLE C.2. Summary of Freezer Storage Conditions for Grain, Forage and Stover

Analyte	Storage Temp. (°C)	Actual Storage Duration (months)	Limit of Demonstrated Storage Stability (months) [1]
EMA/HEMA	< -18	6	24

[1] The stability data for acetochlor and acetochlor metabolites in/on corn indicate adequate stability for at least 48 months (Acetochlor TRED, 3/1/06).

Residues of EMA and HEMA were each <0.02 ppm (<LOQ) in/on all samples of sweet corn K+CWHR from all tests, for combined residues of <0.04 ppm (Table C.3). For forage samples from all tests, EMA residues were <0.02-0.77 ppm and HEMA residues were <0.02-0.40 ppm, for combined residues of <0.04-0.97 ppm (Table C.3). For stover samples from all tests, EMA residues were <0.02-0.70 ppm and HEMA residues were <0.02-0.25 ppm, for combined residues of <0.04-0.91 ppm (Table C.3).

Based on a limited number of side-by-side field trials, residues in/on sweet corn K+CWHR, forage and stover resulting from application of the microencapsulated and granular formulas do not appear to be significantly different from residues resulting from application of the EC formulation. However, HED typically requires a full set of data to support use of microencapsulated and granular formulations due to their unique release patterns and consequently their potential for different residue profiles. HED does not consider the limited number of field trials contained in this study to be sufficient to demonstrate that residues from

application of the MCap or G formulations would not exceed tolerances based on residue data on the EC formulation.

In four of the field trials, side-by-side tests were conducted comparing the preplant incorporated application to the preemergence broadcast application. Analysis of the data indicates that in one field trial there was significantly higher combined residue in forage and stover as a result of preplant incorporated application technique. In addition, in two additional tests, residues in forage were slightly higher in the PPI test and residues in stover in one additional test were slightly higher in the PPI test (Tables C.3.2 and C.3.3). Examining the residue data from all the EC formulation tests, combined residues in/on forage were 0.04-0.97 ppm for the PPI application and <0.04-0.29 ppm for the PRE application. Average combined residues in/on forage were 0.33 and 0.10 ppm for the PPI and PRE applications, respectively (Table C.4). Combined residues in/on stover were <0.04-0.91 ppm for the PPI application and <0.04-0.42 ppm for the PRE application. Average combined residues in/on stover were 0.13 and 0.12 ppm for the PPI and PRE applications, respectively.

In the two tests examining the decline of EMA and HEMA residues in forage, combined residues in forage remained relatively steady over time. In one test, combined forage residues were <0.05-0.10 ppm from 60-88 DAT, and in the other test, combined forage residues were <0.04-0.08 ppm from 41-69 DAT.

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.3.1. Residue Data from Sweet Corn (K+CWHR) from Sweet Corn Field Trials with Acetochlor at 3 lb ai/A.

Trial ID (City, State, Year)	EPA Region	Variety	Formulation/ Application Timing	PHI (days)	Residues (ppm) [1]		
					EMA	HEMA	Combined Residues [2]
North Rose, NY, 1995 57-NY-96-681	1	Crusader 4399 LF	6.4 lb/gal EC - PPI	88	<0.02	<0.02	<0.04
			3.2 Mcap – PPI		<0.02	<0.02	<0.04
			20% G – PPI		<0.02	<0.02	<0.04
Boone, IA, 1995 63-IA-95-682	5	Illini Xtra Sweet	6.4 lb/gal EC - PPI	76	<0.02	<0.02	<0.04
			3.2 Mcap – PPI		<0.02	<0.02	<0.04
			20% G – PPI		<0.02	<0.02	<0.04
Whitakers, NC, 1995 01-NC-95-683	2	Silver Queen	6.4 lb/gal EC - PRE	80	<0.02	<0.02	<0.04
			3.2 Mcap - PRE		<0.02	<0.02	<0.04
			20% G - PRE		<0.02	<0.02	<0.04
Champaign, IL, 1995 60-IL-95-684	5	Early Choice	6.4 lb/gal EC - PRE	58	<0.02	<0.02	<0.04
			3.2 Mcap - PRE		<0.02	<0.02	<0.04
			20% G - PRE		<0.02	<0.02	<0.04
Hamburg, PA, 1995 94-PA-95-685	1	Stars-N-Stripes	6.4 lb/gal EC - PRE	72	<0.02, <0.02	<0.02, <0.02	<0.04, <0.04
Northwood, ND, 1995 94-ND-95-686	5	Golden Bantax	6.4 lb/gal EC - PPI	103	<0.02, <0.02	<0.02, <0.02	<0.04, <0.04
Janesville, WI, 1995 94-WI-95-687	5	More	6.4 lb/gal EC - PPI	87	<0.02, <0.02	<0.02, <0.02	<0.04, <0.04
Visalia, CA, 1995 02-CA-96-688	10	Supersweet	6.4 lb/gal EC - PRE	83	<0.02	<0.02	<0.04
			6.4 lb/gal EC - PPI		<0.02	<0.02	<0.04
Ephrata, WA, 1995 94-WA-95-689	11	Jubilee	6.4 lb/gal EC - PRE	91	<0.02	<0.02	<0.04
			6.4 lb/gal EC - PPI		<0.02	<0.02	<0.04
Hebron, MD, 1995 94-MD-95-690	2	Snow Belle	6.4 lb/gal EC - PPI	81	<0.02, <0.02	<0.02, <0.02	<0.04, <0.04
Loxley, AL, 1995 94-AL-95-691	3	Silver Queen	6.4 lb/gal EC - PRE	81 [3]	<0.02, <0.02	<0.02, <0.02	<0.04, <0.04
Oviedo, FL, 1995 42-FL-95-692	3	Florida Stay Sweet	6.4 lb/gal EC - PPI	65 [3]	<0.02	<0.02	<0.04
			6.4 lb/gal EC - PRE		<0.02	<0.02	<0.04
Monmouth, IL, 1995 94-IL-95-693	5	Pioneer 3395 IR	6.4 lb/gal EC - PRE	63	<0.02, <0.02	<0.02, <0.02	<0.04, <0.04
Mt. Vernon, WA, 1995 15-WA-95-694	12	Jubilee	6.4 lb/gal EC - PRE	113	<0.02	<0.02	<0.04
			6.4 lb/gal EC - PPI		<0.02	<0.02	<0.04

1 All residues are expressed in acetochlor equivalents. The LOQ 0.02 ppm for EMA and HEMA; the LODs were not reported.

2 As acetochlor is converted to EMA by the GC/MSD method, the combined total residues are the sum of EMA and HEMA residues, expressed in acetochlor equivalents.

3 Prepared as kernels only.

TABLE C.3.2. Residue Data from Forage from Sweet Corn Field Trials with Acetochlor at 3 lb ai/A.

Trial ID (City, State, Year)	EPA Region	Variety	Formulation/ Application Timing	PHI (days)	Residues (ppm) [1]		
					EMA	HEMA	Combined Residues [2]
North Rose, NY, 1995 57-NY-96-681	1	Crusader 4399 LF	6.4 lb/gal EC - PRE	88	0.30	0.14	0.44
			3.2 Mcap - PRE		0.25	0.13	0.38
			20% G - PRE		0.22	0.12	0.34
Boone, IA, 1995 63-IA-95-682	5	Illini Xtra Sweet	6.4 lb/gal EC - PRE	76	0.14	0.08	0.22
			3.2 Mcap - PRE		0.11	0.08	0.19
			20% G - PRE		0.04	0.05	0.09
Whitakers, NC, 1995 01-NC-95-683	2	Silver Queen	6.4 lb/gal EC - PRE	80	0.17	0.12	0.29
			3.2 Mcap - PRE		0.18	0.09	0.27
			20% G - PRE		0.29	0.19	0.48
Champaign, IL, 1995 60-IL-95-684	5	Early Choice	6.4 lb/gal EC - PRE	58	<0.02	<0.02	<0.04
			3.2 Mcap - PRE		<0.02	<0.02	<0.04
			20% G - PRE		<0.02	<0.02	<0.04
Hamburg, PA, 1995 94-PA-95-685	1	Stars-N-Stripes	6.4 lb/gal EC - PRE	72	0.10, 0.11	0.03, 0.03	0.013, 0.014
Northwood, ND, 1995 94-ND-95-686	5	Golden Bantax	6.4 lb/gal EC - PPI	103	0.04, 0.09	<0.02, 0.03	<0.06, 0.12
Janesville, WI, 1995 94-WI-95-687	5	More	6.4 lb/gal EC - PPI	87	0.04, 0.03	0.15, <0.02	0.19, <0.05
Visalia, CA, 1995 02-CA-96-688	10	Super sweet	6.4 lb/gal EC - PRE	83	<0.02	<0.02	<0.04
			6.4 lb/gal EC - PPI		0.77	0.20	0.97
Ephrata, WA, 1995 94-WA-95-689	11	Jubilee	6.4 lb/gal EC - PRE	91	0.02	<0.02	<0.04
			6.4 lb/gal EC - PPI		0.04	<0.02	<0.06
Hebron, MD, 1995 94-MD-95-690	2	Snow Belle	6.4 lb/gal EC - PPI	81 [3]	0.43, 0.32	0.40, 0.39	0.83, 0.71
Loxley, AL, 1995 94-AL-95-691	3	Silver Queen	6.4 lb/gal EC - PRE	60	0.04	0.02	0.06
				67	0.08	0.02	0.10
				74	0.05	0.02	0.07
				81	0.05, 0.04	0.02, <0.02	0.07, <0.06
				88	0.03	<0.02	<0.05
Oviedo, FL, 1995 42-FL-95-692	3	Florida Stay Sweet	6.4 lb/gal EC - PPI	65	0.19	0.05	0.24
			6.4 lb/gal EC - PRE		0.15	0.04	0.19
Monmouth, IL, 1995 94-IL-95-693	5	Pioneer 3395 IR	6.4 lb/gal EC - PRE	41	0.03	0.02	0.05
				48	0.05	<0.02	<0.07
				55	<0.02	<0.02	<0.04
				61	0.04, 0.05	0.02, 0.03	0.06, 0.08
				69	<0.02	<0.02	<0.04
Mt. Vernon, WA, 1995 15-WA-95-694	12	Jubilee	6.4 lb/gal EC - PRE	113	0.06	<0.02	<0.08
			6.4 lb/gal EC - PPI		0.06	<0.02	<0.08

1 All residues are expressed in acetochlor equivalents. The LOQ 0.02 ppm for both EMA and HEMA; the LODs were not reported.

2 As acetochlor is converted to EMA by the GC/MSD method, the combined total residues are the sum of EMA and HEMA residues, expressed in acetochlor equivalents.

3 Harvest was leaves only.

TABLE C.3.3. Residue Data from Stover from Sweet Corn Field Trials with Acetochlor at 3 lb ai/A.

Trial ID (City, State, Year)	EPA Region	Variety	Formulation/ Application Timing	PHI (days)	Residues (ppm) [1]		
					EMA	HEMA	Combined Residues [2]
North Rose, NY, 1995 57-NY-96-681	1	Crusader 4399 LF	6.4 lb/gal EC - PRE	130	0.06	0.03	0.09
			3.2 Mcap - PRE		0.07	0.04	0.11
			20% G - PRE		0.08	0.05	0.13
Boone, IA, 1995 63-IA-95-682	5	Illini Xtra Sweet	6.4 lb/gal EC - PRE	111	0.05	0.03	0.08
			3.2 Mcap - PRE		0.04	0.03	0.07
			20% G - PRE		0.06	0.04	0.10
Whitakers, NC, 1995 01-NC-95-683	2	Silver Queen	6.4 lb/gal EC - PRE	121	0.17	0.25	0.42
			3.2 Mcap - PRE		0.12	0.17	0.29
			20% G - PRE		0.15	0.25	0.40
Champaign, IL, 1995 60-IL-95-684	5	Early Choice	6.4 lb/gal EC - PRE	99	0.02	<0.02	<0.04
			3.2 Mcap - PRE		0.02	<0.02	<0.04
			20% G - PRE		0.02	<0.02	<0.04
Hamburg, PA, 1995 94-PA-95-685	1	Stars-N-Stripes	6.4 lb/gal EC - PRE	111	0.04, 0.08	0.03, 0.05	0.07, 0.13
Northwood, ND, 1995 94-ND-95-686	5	Golden Bantax	6.4 lb/gal EC - PPI	143	<0.02, <0.02	<0.02, <0.02	<0.04, <0.04
Janesville, WI, 1995 94-WI-95-687	5	More	6.4 lb/gal EC - PPI	135	<0.02, <0.02	<0.02, <0.02	<0.04, <0.04
Visalia, CA, 1995 02-CA-96-688	10	Super sweet	6.4 lb/gal EC - PRE	133	0.25	0.12	0.37
			6.4 lb/gal EC - PPI		0.70	0.21	0.91
Ephrata, WA, 1995 94-WA-95-689	11	Jubilee	6.4 lb/gal EC - PRE	126	0.11	0.02	0.13
			6.4 lb/gal EC - PPI		0.10	0.02	0.12
Hebron, MD, 1995 94-MD-95-690	2	Snow Belle	6.4 lb/gal EC - PPI	123	0.02, 0.03	0.02, 0.02	0.04, 0.05
Loxley, AL, 1995 94-AL-95-691	3	Silver Queen	6.4 lb/gal EC - PRE	128	0.03, 0.03	<0.02, <0.02	<0.05, <0.05
Oviedo, FL, 1995 42-FL-95-692	3	Florida Stay Sweet	6.4 lb/gal EC - PPI	101	0.10	0.03	0.13
			6.4 lb/gal EC - PRE		0.03	<0.02	<0.05
Monmouth, IL, 1995 94-IL-95-693	5	Pioneer 3395 IR	6.4 lb/gal EC - PRE	112	0.03, 0.04	<0.02, <0.02	<0.05, <0.06
Mt. Vernon, WA, 1995 15-WA-95-694	12	Jubilee	6.4 lb/gal EC - PRE	169	<0.02	<0.02	<0.04
			6.4 lb/gal EC - PPI		<0.02	<0.02	<0.04

[1] All residues are expressed in acetochlor equivalents. The LOQ is 0.02 ppm for both EMA and HEMA; the LODs were not reported.

[2] As acetochlor is converted to EMA by the GC/MSD method, the combined total residues are the sum of EMA and HEMA residues, expressed in acetochlor equivalents.

TABLE C.4. Summary of Combined Residues (EMA+HEMA) Data from Sweet Corn Field Trials using EC, Mcap, and G Formulations of Acetochlor Applied at 3 lb ai/A.

Formulation	Application Method	PHI (days)	Combined Residues (ppm)[1]						
			n	Min.	Max.	HAFT[2]	Median (STMdR[3])	Mean (STMR[4])	Std. Dev.
Corn Forage									
6.4 lb/gal EC	PPI	65-113	12	0.04	0.97	0.97	0.21	0.33	0.33
	PRE	58-113	12	<0.04	0.29	0.29	0.07	0.10	0.08
	Both	58-113	24	<0.04	0.97	0.97	0.10	0.21	0.26
3.2 lb/gal Mcap	PPI	76-88	2	0.19	0.38	0.38	0.29	0.29	0.13
	PRE	58-80	2	<0.04	0.27	0.27	0.15	0.15	0.18
	Both	58-88	4	<0.04	0.38	0.38	0.23	0.22	0.15
20% G	PPI	76-88	2	0.09	0.34	0.34	0.22	0.22	0.18
	PRE	58-80	2	<0.04	0.48	0.48	0.25	0.25	0.33
	Both	58-88	4	<0.04	0.48	0.48	0.22	0.23	0.21
Corn Stover									
6.4 lb/gal EC	PPI	99-169	12	<0.04	0.91	0.91	0.05	0.13	0.25
	PRE	101-169	12	<0.04	0.42	0.42	0.05	0.12	0.14
	Both	99-169	24	<0.04	0.91	0.91	0.05	0.12	0.20
3.2 lb/gal Mcap	PPI	111-130	2	0.07	0.11	0.11	0.09	0.09	0.03
	PRE	99-121	2	<0.04	0.29	0.29	0.16	0.16	0.18
	Both	99-130	4	<0.04	0.29	0.29	0.09	0.13	0.11
20% G	PPI	111-130	2	0.10	0.13	0.13	0.12	0.12	0.02
	PRE	99-121	2	<0.04	0.40	0.40	0.22	0.22	0.26
	Both	99-130	4	<0.04	0.40	0.40	0.12	0.17	0.16

1 For both forage and stover, the LOQ is 0.02 ppm each for EMA and HEMA, for a combined LOQ of 0.04 ppm, expressed in acetochlor equivalents. An LOD was not reported.
2 HAFT = Highest Average Field Trial.
3 STMdR = Supervised Trial Median Residue.
4 STMR = Supervised Trial Mean Residue. Residues <LOQ were estimated to be ½ LOQ (0.01 ppm), for calculation of median, mean, and standard deviation.

D. CONCLUSION

The submitted sweet corn data are adequately supported by field documentation and storage stability data. The residue data were generated using a validated analytical method.

Following application of acetochlor to sweet corn as either a preplant incorporated or preeemergent application at 3 lbs ai/A, residues of EMA and HEMA were each <0.02 ppm (<LOQ) in/on all samples of sweet corn K+CWHR from all tests, for combined residues of <0.04 ppm expressed as acetochlor equivalents. For forage samples from all tests, EMA residues were <0.02-0.77 ppm and HEMA residues were <0.02-0.40 ppm, for combined residues of <0.04-0.97 ppm. For stover samples from all tests, EMA residues were <0.02-0.70 ppm and HEMA residues were <0.02-0.25 ppm, for combined residues of <0.04-0.91 ppm.

E. REFERENCES

DP Barcode:	D292336
Subject:	**ACETOCHLOR**. Revised HED Chapter of the Tolerance Reassessment Eligibility Decision (TRED) Document.
From:	Alberto Protzel,
To:	Felicia Fort
Dated:	3/1/06
MRID(s):	None

F. DOCUMENT TRACKING

RDI: D. Davis (3/16/06), T. Goodlow (3/20/06)
Petition Number(s): 6F4791
DP Barcode(s): D230310 and D275019
PC Code: 121601