UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

11/15/96

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: PP #: None; Replacement of Metolachlor Technical (Racemic Metolachlor) with Alpha-Metolachlor (Formerly called Chiral Metolachlor) Technical; Review of Bridging Data, D226780. CBTS No. 17250. PRIORITY 10. MRID 439289-01, 439289-02, 439289-03, 439289-39, 439289-40, 439289-41, 439289-42; ID #: 000100-IRL CGA-77102; 108800; PRAT CASE #: 046823

FROM: Linda L. Kutney, Chemist
Chemistry Branch, Tolerance Petition Team II
Health Effects Division (7509C)

THRU: Elizabeth Haeberer, Acting Branch Chief
Chemistry Branch-Tolerance Support
Health Effects Division (7509C)

TO: Rich Griffin
Registration Section
Risk Characterization and Analysis Branch
Health Effects Division (7509C)

Ciba-Geigy has proposed registration of the herbicide, alpha-metolachlor technical, previously called chiral metolachlor, having the chemical name S-2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-methylethyl)-acetamide, (CGA 77102, chemical number 108800) with the intent of replacing racemic Metolachlor technical (CGA-24705, chemical 108801) in the manufacturing of all its current end-use products. Alpha-metolachlor is being developed for the selective control of a large number of grassy weeds in corn, cotton, pod crops, potatoes, safflowers, grain or forage sorghum, soybeans, woody ornamentals, stone fruits, and tree nuts. Alpha-metolachlor, having the Ciba nomenclature CGA-77102, was previously called chiral metolachlor, and has the following CAS chemical name,

{Acetamide, 2-chloro-*N*-(2-ethyl-6-methylphenyl)-*N*-(2-methoxy-1-methylethyl)-, (*S*)-}. The proposed common name alpha-metolachlor was requested by Ciba in a letter to Mr. Kerry Leifer, 8/28/96.

The chemical expression for racemic metolachlor in 40 CFR 180.368 is "combined residues (free and bound) of 2-chloro-N-(2-Ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl)acetamide and metabolites, determined as the derivatives, CGA-37913, (2-[(2-ethyl-6-methylphenyl)amino]-1-propanol) and CGA-49751, (4-(2-ethyl-6-methylphenyl)-2-hydroxy-5-methyl-3-morpholinone), each expressed as metolachlor [40 CFR §180.368 (a), (b), and (c)]." Tolerances to support registered racemic metolachlor uses are established for numerous plant and animal commodities [40 CFR 180.368].

Alpha-metolachlor is the active part of racemic metolachlor and comprises 50% of racemic metolachlor. Alpha-metolachlor consists of the two diastereomers exhibiting the S-enantiomer of racemic metolachlor, which are more biologically effective in weed control than the two out of four diastereomers exhibiting the R-configuration of racemic metolachlor. Due to its increased herbicidal activity, the proposed use rate of alpha-metolachlor is approximately 62.5% the rate used for racemic metolachlor.

This submission contains proposed labels; product chemistry data; a method validation for field corn; residue data for sweet and field corn, and soybeans; and confidential statements of formula in support of the proposed registration of alpha-metolachlor in place of racemic metolachlor in/on the RACs on which racemic metolachlor is currently used.

Racemic metolachlor is a list A chemical. The product chemistry and residue chemistry chapters for the racemic metolachlor RED have been completed by CBRS *(Metolachlor RED (racemic) addendum, S. Hummel, 10/4/94)*.

CONCLUSIONS

1a. All product chemistry data requirements for alpha metolachlor have been adequately met, except for storage stability requirements (GLN § 63-17).

1b. The manufacturing processes for alpha-metolachlor have been adequately described. The impurities are not likely to produce a residue problem.

1c. Data gaps in the product chemistry of racemic metolachlor (GLN § 62-3) are being addressed through reregistration.

2a. Significant changes to the proposed labels include replacing the old names with alpha-metolachlor (CGA-77102) and decreasing the maximum proposed alpha-metolachlor use rate to about 62.5% of that currently registered for use for racemic metolachlor. These changes are adequate.

2b. Details concerning the labeled directions for racemic metolachlor end-use products are summarized in Table 1 of the (racemic) metolachlor RED.

3a. The nature of the residue in plants is adequately understood. The residues of concern are alpha-metolachlor, racemic metolachlor and its metabolites, expressed in metolachlor equivalents. These are identical to residues in plants observed following racemic metolachlor use.

3b. The residues of concern for racemic metolachlor have been previously described as "metolachlor and its metabolites determined as the derivatives, 2-[(2-ethyl-6-methylphenyl)amino]-1-propanol and 4-(2-ethyl-6-methylphenyl)-2-hydroxy-5-methyl-3-morpholinone, each expressed as the parent compound." Alpha-metolachlor will have the same residues of concern as racemic metolachlor.

4a. The qualitative nature of the residue in animals is adequately understood. The residues of concern for chiral metolachlor are expected to be identical to those described previously for racemic metolachlor, namely "metolachlor and its metabolites determined as the derivatives, 2-[(2-ethyl-6-methylphenyl)amino]-1-propanol and 4-(2-ethyl-6-methylphenyl)-2-hydroxy-5-methyl-3-morpholinone, each expressed as the parent compound."

4b. TLC evidence supports the conclusion that the metabolites for alpha-metolachlor and racemic metolachlor appear to be identical.

5a. Adequate enforcement methods are available for plant and animal commodities. Methods for determining the combined residues of metolachlor and its metabolites, as the derivatives CGA-37913 and CGA-49751, are described in PAM, Vol. II, as Method I (plants; GC-NPD) and Method II (animals; GC-MS).

5b. The analytical enforcement method, and the method used for analysis for plant commodities (with slight modifications) is

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Ciba-Geigy Method AG-612, an updated version of method AG-338. AG-338 has previously undergone successful method validation and is published as Method I in *Pesticides Analytical Manual (PAM) II*, Sec. 180.368.

5c. The current submission demonstrates that adequate recoveries for alpha-metolachlor may be expected when Ciba-Geigy's method AG-612 is used, as modified.

5d. CBTS considers the method AG-612 to be acceptable, for data collection, for the analysis of alpha-metolachlor. Radiovalidation of the method proved acceptable for chiral metolachlor, using field corn.

5e. Analytical reference standards for metolachlor are available for racemic metolachlor but not for the two metabolites, 2-[(2-ethyl-6-methylphenyl) amino]-1-propanol and 4-(2-ethyl-6-methylphenyl)-2-hydroxy-5-methyl-3-morpholinone. The petitioner should ensure that the analytical reference standards for the two metabolites are available.

5f. PAM Vol. II Method II is listed for determination of residues of metolachlor and its metabolites, as the derivatives CGA-37913 and CGA-49751, in animal commodities.

6a. Storage stability data for chiral metolachlor provided in this submission for plants adequately support the field trial data.

7a. Residue field trials submitted as bridging data in support of the proposed registration of alpha-metolachlor are adequate.

7b. CBTS considers that an adequate geographical representation of the country was sampled for the field trials conducted.

7c. Residues from the proposed use of alpha-metolachlor, expressed as the combined residues of metolachlor and its regulated metabolites (expressed as metolachlor), are not expected to exceed existing tolerances for residues of racemic metolachlor, when the proposed use rate of alpha-metolachlor is 62.5% of the rate used for racemic metolachlor.

7d. If alpha-metolachlor completely replaces the racemic metolachlor in end use products, additional residue data for alpha-metolachlor will be needed for crops having racemic metolachlor tolerances significantly above the level of quantification (LOQ), to determine the appropriate tolerance

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levels for alpha-metolachlor.

8. Processing data submitted for alpha-metolachlor are adequate to support the proposed use of alpha-metolachlor. There is no reasonable expectation that residues of alpha-metolachlor in processed commodities will exceed the current tolerance levels for racemic metolachlor in processed commodities.

9a. Significant animal feed items are involved in the proposed uses of alpha-metolachlor on several agricultural crops, but residues of alpha-metolachlor in plant commodities and animal feed items are expected to be lower than current racemic metolachlor residues. Secondary residues in animal commodities resulting from the proposed use of alpha-metolachlor are <u>not</u> expected to exceed current tolerances for racemic metolachlor in animals.

9b. Storage stability data required in the Metolachlor (racemic) RED to support processing studies and analyses for livestock commodities, poultry tissues and eggs, are also required for alpha-metolachlor.

10. There is no request for a change of tolerance expression, or tolerance levels at this time. Harmonization between U.S., CODEX and Canadian tolerances for metolachlor will be handled by the reregistration process.

<u>RECOMMENDATIONS</u>

CBTS has no objection to the conditional registration of alpha-metolachlor on crops registered currently for metolachlor, provided alpha-metolachlor is used at approximately 62.5% of the rate currently used for racemic metolachlor, and all other factors for application are made in the same way as for racemic metolachlor. Additional provisions include adequate completion of storage stability of the technical material (GLN § 63-17) and submission of reference standards for the two metabolites of alpha-metolachlor. Existing tolerances for alpha-metolachlor will be adequate to support the proposed uses of alpha-metolachlor. The label should restrict the use of both pesticides concurrently on the same crop.

An additional DRES run is not necessary, at this time. At such time when racemic metolachlor products are no longer available

and only alpha-metolachlor end use products are used, CBTS recommends that the Registrant petition for lower tolerances. Additional residue data for alpha-metolachlor will be needed for crops having racemic metolachlor tolerances significantly above the level of quantification (LOQ), to determine the appropriate tolerance levels for alpha-metolachlor.

DETAILED CONSIDERATIONS

PRODUCT CHEMISTRY (MRID #439289-01, 439289-02, 439289-03)

The manufacturing process for technical grade alpha-metolachlor has been adequately described, and all data requirements have been met. There are no impurities present in the technical grade alpha-metolachlor products which are expected to cause residue concerns. All of the inerts have been cleared for use. A review of product chemistry is included in the attached Tables 1-2 and confidential appendix. All product chemistry data requirements for alpha metolachlor have been adequately met, except for storage stability requirements (GLN § 63-17).

Alpha-metolachlor is formulated as the following emulsifiable concentrates: Dual II® Magnum, containing 7.64 lbs. ai/gal; Dual Magnum®, containing 8 lbs. ai/gal; and Bicep Magnum®, containing 2.4 lbs. ai/gal and 3.1 lbs. ai atrazine and related compounds/gal.

PROPOSED USE

Ciba-Geigy proposes use of alpha-metolachlor on all plant commodities for which racemic metolachlor is registered. [See 40 CFR 180.368 (a), (b) and (c), 180.460]. Numerous agricultural crops have registered uses for racemic metolachlor, including corn, soybeans, peanuts, sorghum, potatoes, cotton, safflower, and legume vegetables, as well as minor use crops, turf and ornamentals, etc.

Proposed alpha-metolachlor labels reflect maximum application rates which are approximately 62.5% of those for racemic metolachlor. Identical application methods are to be used for alpha-metolachlor and racemic metolachlor, i.e., ground or aerial, type of application equipment used, etc. The proposed uses for alpha-metolachlor formulations for life-stage of application vary

widely with the crop treated, as is the case for racemic metolachlor, e.g., lb. product used per acre, number of applications, application interval, preharvest interval and seasonal maximum.

Significant changes to the proposed labels include replacing the old names with alpha-metolachlor (CGA-77102) and decreasing the maximum proposed alpha-metolachlor use rate to about 62.5% of that currently registered for use for racemic metolachlor. Details concerning the labeled directions for racemic metolachlor end-use products are summarized in Table 1 of the racemic metolachlor RED *(S. Hummel, 10/4/94)*.

Nature of Residue- Plants

The qualitative nature of the residue in plants is considered to be adequately understood. *(PP# 3F04251, Kramer, 9/2/94)*. Residues of concern for alpha-metolachlor are expected to be identical to those for racemic metolachlor, as stated in 40 CFR 180.368.

Thin layer chromatography, TLC, analyses of ^{14}C-CGA-77102 (alpha-metolachlor) and ^{14}C-CGA-24705 (racemic metolachlor) residues in field corn demonstrate very similar patterns, when dichloromethane:acetone (9:1) and hexane:ethyl acetate (4:1) solvents were used. This TLC evidence supports the conclusion that the metabolites for alpha-metolachlor and racemic metolachlor appear to be identical. [For more details on how the field corn was treated with radiolabeled material, refer to the section, "Method Validation of Method AG-612: Radiolabeled Field Corn.]

Nature of Residue- Animals

No new studies were submitted with this petition.

The qualitative nature of the residue in animals is adequately understood. The residues of concern for alpha-metolachlor are expected to be identical to those described previously for racemic metolachlor, namely metolachlor and its metabolites determined as the derivatives, 2-[(2-ethyl-6-methylphenyl)amino]-1-propanol and 4-(2-ethyl-6-methylphenyl)-2-hydroxy-5-methyl-3-morpholinone, each expressed as the parent compound *(PP# 3F04251, Kramer, 9/2/94)*.

The (racemic) Metolachlor Registration Standard of 3/80 concluded that the qualitative nature of the residue in animals is adequately understood. Racemic metolachlor is rapidly metabolized and almost totally eliminated in the urine and feces of ruminants (goats), non-ruminants (rats), and poultry. Racemic metolachlor *per se* was not detected in any of the excreta or tissues. (S. Hummel, Metolachlor Addendum to RED, 10/4/94)

Analytical Methodology- Plants and Animals

Adequate enforcement methods are available for plant and animal commodities. Methods for determining the combined residues of racemic metolachlor and its metabolites, as the derivatives CGA-37913 and CGA-49751, are described in PAM, Vol. II, as Method I (plants; GC-NPD) and Method II (animals; GC-MS) *(Metolachlor (racemic) RED addendum, S. Hummel, 10/4/94)*.

The analytical enforcement method, and the method used for analysis for plant commodities (with slight modifications) is Ciba-Geigy Method AG-612, an updated version of method AG-338. AG-338 is entitled *Analytical Method for Residues of Metolachlor (racemic) Plant Metabolites Determined as CGA-37913 and CGA-49751 After Acid Hydrolysis* and is in turn a variant of Ciba-Geigy Method #AG-286, which has undergone successful method validation and is published as Method I in *Pesticides Analytical Manual (PAM) II*, Sec. 180.368.

Method AG-338 converts racemic metolachlor and its free and bound metabolites to CGA-37913 and CGA-49751 by refluxing with HCl. One aliquot of the hydrolysate is cleaned-up and analyzed for CGA-37913 using GC with N/P detection in the N mode. Another aliquot of the hydrolysate is cleaned-up and analyzed for CGA-49751 also

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using GC with N/P detection. The LOQ for CGA-37913 is 0.03 ppm; and, for CGA-49751 is 0.05 ppm *(PP# 3F04251, Kramer, 9/2/94)*.

The current submission demonstrates that adequate recoveries for alpha-metolachlor may be expected when Ciba-Geigy's method AG-338 is used, as modified.

Analytical reference standards for racemic metolachlor are available from the Pesticides and Industrial Chemicals Repository, RTP, NC. *(D. Davis, 6/18/93, 93TX0023)*. Analytical reference standards for racemic metolachlor (#4620) are available from Ultra Scientific, RI, and other commercial sources. The two metabolites, 2-[(2-ethyl-6-methylphenyl) amino]-1-propanol and 4-(2-ethyl-6-methylphenyl)-2-hydroxy-5-methyl-3-morpholinone are not available from the Pesticide and Industrial Chemicals Repository, RTP, NC, or Ultra Scientific, RI. The Registrant should provide analytical reference standards for the two metabolites to the Pesticide and Industrial Chemicals Repository, RTP, NC. (New Guideline 860-1650) The availability of these metabolites from commercial sources is unknown. *(J. Stokes, 4/15/94, 94WI0005)*.

PAM Vol. II Method II is listed for determination of residues of racemic metolachlor and its metabolites, as the derivatives CGA-37913 and CGA-49751, in animal commodities. *(S. Hummel, 9/29/94, Metolachlor (racemic) Addendum to RED)*.

<u>Method Validation of Method AG-612: Radiolabeled Field Corn</u> (MRID 439289-39)

Validation of analytical method was performed using AG-612 on field corn samples grown in North Carolina, using racemic metolachlor and alpha-metolachlor. Trials were conducted using potted plants under greenhouse conditions, using ^{14}C-racemic-metolachlor and ^{14}C-racemic- metolachlor, at 4 and 6 lb ai/A for ^{14}C-racemic-metolachlor and 4 lb ai/A for ^{14}C-alpha-metolachlor, using 8E formulations. Plants were treated 2 days after planting, preemergence, using soil drench application, and then treated using soil drench application, postemergence, 36 days after planting. Fodder (dried plant material) and grain was harvested at plant maturity. The aerial parts of the plants were harvested 7 and 30 days after the second soil drench application and at mature harvest. Samples were stored at - 20 C. Total radioactive residues were determined by combustion. Thin layer chromatography (TLC) was used to demonstrate that racemic metolachlor and alpha-metolachlor have similar distributions of metabolites. Alpha-

metolachlor residues were consistently lower than racemic metolachlor residues.

Seven day forage residues ranged from 1.2 ppm to 1.7 ppm and 30 day forage resides ranged from 0.87 ppm to 1.6 ppm. Fodder residues (the highest fraction) ranged from 1.3 to 2.2 ppm. Residues were not detected in corn grain. Based on total radioactive residues (TRR's), the Registrant reported that residues from the 2 + 2 lb ai/A application rate of alpha-metolachlor were reduced 30-50% from the 3 + 3 lb ai/A rate currently used for racemic metolachlor (the application rates refer to the rate used for PPI and the PE at layby for alpha-metolachlor and racemic metolachlor). The 2 + 2 lb ai/A application rate of alpha-metolachlor used in the field trials is the proposed 1X rate for alpha-metolachlor and the 3 + 3 lb ai/A rate used in the field trials is the currently used 1X rate for racemic metolachlor.

The ability of Method AG-612 to extract total radioactivity was determined using radiolabeled samples from the greenhouse study. Extractabilities of the total radioactive residues (TRR) were 71-93% for forage, 72-80% for fodder, and 57-87% for grain.

Analytical method AG-612, with modifications, was employed for the analysis of total residues of alpha-metolachlor and racemic metolachlor, for all field samples and for the method validation. AG-612 is an updated version of the enforcement method (AG-338). Racemic metolachlor residues, and alpha-metolachlor residues, are extracted and acidified with concentrated hydrochloric acid. Filter extracts were analyzed for CGA-37913 and CGA-49751 and a gas chromatograph with a NPD detector (Nitrogen specific) was used for analysis. The limit of quantification (LOQ) for AG-612 is 0.08 ppm (0.03 ppm for CGA-37913 and 0.05 ppm for CGA-49751). The limits of detection are 0.06 ng for CGA-37913 and 0.10 ng for CGA-49751. CBTS considers the method AG-612 to be acceptable for the analysis of alpha-metolachlor.

Controls, and samples of corn forage, fodder, and grain fortified with non-radiolabeled material, were analyzed in the radiolabeled validation study with field corn. Recoveries of CGA-37913 ranged from 74% to 93%, with an average recovery of 80% and a standard deviation of 9.9% (n = 4 samples).

Field corn recoveries of CGA-49751 ranged from 90% to 113%, with an average recovery of 97% and a standard deviation of 12.4% (n = 4 samples) (MRID Nos. 439289-40, 439289-42). CGA-37913 recoveries averaged 80% and CGA-49751 averaged 97%. Field corn

recoveries (n=25) for CGA-37913 fortified at 0.02-3.00 ppm, averaged 92% (SD=12%). Field corn recoveries (n=25) for CGA-49751 fortified at 0.01-3.00 ppm, averaged 89% (SD=10%). Soybean recoveries (n=15) for CGA-37913 fortified at 0.02-5.0 ppm averaged 94% (SD=10%). Soybean recoveries (n=14) for CGA-49751 fortified at 0.0-5.0 ppm averaged 88% (SD=12%). Sweet corn recoveries (n=14) for CGA-37913 fortified at 0.02-6.0 ppm averaged 85% (SD=12%). Sweet corn recoveries (n=15) for CGA-49751 fortified at 0.05-6.0 ppm averaged 82% (SD=9). CBTS considers the method AG-612 to be acceptable for the analysis of alpha-metolachlor.

Fortified control samples were used to demonstrate method accuracy. Triplicate analyses of extracts were performed to demonstrate precision. Repeatability of these triplicates are acceptable and also served to validate the method.

Storage Stability Studies

Previous storage stability studies have been conducted on the racemic (and chiral) metolachlor metabolite hydrolysates CGA-37913 and CGA-49751, i.e., those compounds produced by acid reflux during the metolachlor enforcement method. CGA-37913 was *stable* during storage at -10 to -20 C for *2 years* in corn grain and forage, peanuts, potatoes, milk, and eggs; 1 year in beef liver; and for the 5 months tested in bell peppers; 102 days in corn oil (corn oil samples stored 98 days); and 2 months in beef muscle (<10% remaining at 109 days). CGA-49751 was *stable* for *2 years* in corn grain, oil, forage; peanuts; potatoes; beef muscle and liver; milk; and eggs. No storage stability studies were conducted for stone fruits. Although metolachlor metabolite hydrolysates were not stable in corn oil, CBRS has previously concluded that there should be little concern because metolachlor residues are unlikely to concentrate in oils. *(Registrant's response to residue chemistry requirements-METOLACHLOR (racemic) RED, CBRS No. 10305, 4/15/93).*

In addition, residues in pod and seed vegetables, vines, and hay are not expected to be adversely affected by freezer storage for up to 27 months. *(D. Miller, METOLACHLOR (racemic), Addendum to RED, CBRS No. 14160; 9/16/94).*

Samples in the magnitude of the residue studies of the raw agricultural commodities (RACs) for the current petition were stored for a maximum harvest to analysis time of 4-10 months for field corn samples; 13 months for soybean samples; and 4 months for

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sweet corn samples. Storage stability data for alpha-metolachlor provided in this submission adequately support the field trial data.

The efficiency of the method recoveries was determined using fortified control samples and fortified radioactive samples. CGA-37913 recoveries averaged 80% and CGA-49751 averaged 97%. CBTS considers the method AG-612 to be acceptable for the analysis of alpha-metolachlor. CBTS also concludes that the available storage stability data are adequate.

CBRS has previously concluded that storage information is needed (interpreted as including racemic metolachlor and alpha-metolachlor) for all new studies, including new studies required to replace Craven data. CBRS has also previously concluded that additional stability data are needed for peanut or soybean processed commodities and potato processed commodities. Residue levels in muscle will be corrected for the 80% loss of CGA-37913 in frozen storage. *(Registrant's response to residue chemistry requirements-METOLACHLOR (racemic) RED, CBRS No. 10305, 4/15/93).* The requirement for new storage stability data will be handled during reregistration.

The available data on storage stability in animal commodities (S. Funk, CBRS No. 9261, 8/6/92) indicate that CGA-49751 is stable in beef muscle, beef liver, milk and eggs stored at -15 C for up to 25 months, and that CGA-37913 is stable at -15 C in milk and eggs for up to 25 months, in beef muscle for up to 2 months, and in beef liver for up to 12 months.

In the current study, alpha-metolachlor and racemic metolachlor samples were stored frozen at < -15 C. Radiolabeled method validation studies were stored at approximately the same temperature, -20 C, but only for 2 days. Non-radiolabled samples of the following crops were stored frozen for the following (approximate) times, and then analyzed: field corn, 4 - 10 months (depending on the trial); soybeans, 13 months; and sweet corn 4 months. Adequate storage stability data have been provided for alpha-metolachlor to support residue field studies, for the purposes of this bridging petition. Details of these results are included in the crop field trial summary tables.

Racemic Metolachlor RED requirements for processing and storage stability studies are also required for alpha-metolachlor. This requirement can be addressed in reregistration for alpha-metolachlor.

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CROP FIELD TRIALS (MRID Nos. 439289-39, 439289-40, 439289-41, and -439289-42)

These field data were submitted as bridging data to compare residues for racemic metolachlor with alpha-metolachlor. The Registrant proposed that tolerances already established for racemic metolachlor could suffice for alpha-metolachlor, when use application rates for products containing alpha-metolachlor were decreased to 62.5% of rates previously established for products containing the racemic metolachlor.

Field data were completed in January, 1996, for side-by-side trials using alpha-metolachlor (CGA-77102 8E) and racemic metolachlor (DUAL 8E) in corn, field corn, soybeans, and field and sweet corn. Locations used for the field trials, and the rates of application varied widely, depending on the crop tested. Details for the four crop field trials are included in the Appendix of this review. The results are summarized in the following section and, where possible, the maximum data points for each sample type, rate, compound tested, etc, were highlighted.

The following tables summarize residue data reported for alpha-metolachlor and racemic metolachlor, expressed as residues of CGA-49751 and CGA-37913, in terms of alpha-metolachlor or racemic metolachlor equivalents. Residues of alpha-metolachlor and racemic metolachlor were usually similar for comparable application rates; however, the proposed rates of application for alpha-metolachlor are about 62.5% of application rates currently used for racemic metolachlor, due to the increased biological control for alpha-metolachlor.

FIELD TRIALS: FIELD CORN (MRID Nos. 439289-40, 439289-42)

Field trials on field corn were conducted at the (2 + 2) lb ai/A pre-plant incorporated (PPI) + post-emergent at layby (PE) application rate and at (3 + 3) lb ai/A pre-plant incorporated (PPI) + post-emergent at layby (PE). These application rates represent the 1X rates for alpha-metolachlor and racemic metolachlor, respectively. While both rates were used with alpha-metolachlor, only the (3 + 3) lb ai/A PPI + PE at layby application rate for racemic metolachlor was used on field corn. Formulations used included CGA-77102 8E (alpha-metolachlor) and Dual 8E (racemic metolachlor). Total field corn treatment was equivalent to a

seasonal total of 4.0 lbs ai/A and 6.0 lbs ai/A alpha-metolachlor and 6.0 lbs ai/A racemic metolachlor. The Registrant's contention was that the seasonal total of 4.0 lbs ai/A alpha-metolachlor is biologically equivalent, or as effective as, 6.0 lbs ai/A of racemic metolachlor.

One trial was conducted in each of the following States: Illinois, New York, Minnesota, Indiana, North Carolina, and California, six trials total. Additional trials were conducted separately in Illinois and Iowa. Samples were tested, using samples grown to maturity under typical agricultural practices. Field corn trials conducted in the six States of Illinois, New York, Minnesota, Indiana, North Carolina, and California represent 37% of field corn grown in the United States. *(Agricultural Statistics 1991, USDA)*. These data will serve as bridging data between racemic metolachlor and alpha-metolachlor. CBTS considers this to be an adequate geographical representation for the purposes of this petition.

The following field corn summary tables for trials conducted in Illinois, New York, Minnesota, Indiana, North Carolina, and California, show that the (2 + 2) lb ai/A treatment using alpha-metolachlor resulted in residues which were uniformly less that resulting from the (3 + 3) lb ai/A treatment using racemic metolachlor, in almost all cases. The only exception was for field corn grain, when residues were equivalent to controls. In addition, residues for alpha-metolachlor treated field corn at the (3 + 3) lb ai/A treatment level were approximately equal to or, in some cases, less than the residues found at the (2 + 2) lb ai/A alpha-metolachlor treatment rate. PHI's for studies conducted in the above six states ranged, for forage: 29-32 days; for silage: 58-84 days; for fodder: 94-127 days; and for grain: 94-127 days. Samples were described as 30-day and 60-day silage, as well as harvest fodder and harvest grain.

The range of days between harvest to extract for field corn trials conducted in Illinois, New York, Minnesota, Indiana, North Carolina, and California, were for forage: 239 -306 days; for silage: 210-276 days; for fodder: 167-246 days; and for grain: 175-240 days. The maximum number of days for these samples to spend between extract to analysis were all approximately the same, 13-20 days.

Field trials in Illinois and Iowa show that the 2 + 2 lb ai/A rate of treatment for alpha-metolachlor resulted in residues which were less than the 3 + 3 lb ai/A treatment used for racemic

metolachlor, except for forage highlighted in the field corn data summary for Illinois and Iowa. Few forage samples of alpha-metolachlor displayed high residue values, but the average residue value for alpha-metolachlor forage was higher than expected. However, in general, residues in crops treated with alpha-metolachlor were less than those treated with racemic metolachlor, at the same treatment rates.

PHI's for field corn studies in Illinois and Iowa ranged, for forage: 30-31 days; for fodder: 96-101 days; and for grain: 96-101 days. The range of days between harvest to extract for field corn trials conducted in Illinois and Iowa were for forage: 112-128 days; for fodder: 38-57 days; and for grain: 39-61 days. The maximum number of days for these samples to spend between extract to analysis were all approximately the same, 2-6 days.

RESIDUES: FIELD CORN (SUMMARY), TRIALS CONDUCTED: IL,NY,MN,IN,NC, CA							
METOLACHLOR (racemic) (DUAL 8E)				ALPHA-METOLACHLOR (CGA-77102 8E)			
RATES LB AI/A PPI+PE	MAXIMUM PPM	NO OF SAMPLES	AVERAGE (STD DEV) PPM	RATES LB AI/A PPI+PE	MAXIMUM PPM	NO OF SAMPLES	AVERAGE (STD DEV) PPM
FORAGE							
CONTROL	<0.08	6	<0.08 (0.00)	CONTROL			
2 + 2				2 + 2	0.70	12	0.35 (0.19)
3 + 3	2.75	10	0.89 (0.81)	3 + 3	0.73	4	0.36 (0.26)
SILAGE							
CONTROL	<0.08	6	<0.08 (0.01)	CONTROL			
2 + 2				2 + 2	0.49	12	0.22 (0.14)
3 + 3	1.41	10	0.40 (0.40)	3 + 3	0.47	4	0.29 (0.12)
FODDER							
CONTROL	0.14	8	0.07 (0.04)	CONTROL			
2 + 2				2 + 2	1.12	14	0.31 (0.31)
3 + 3	2.81	12	0.86 (0.91)	3 + 3	0.40	4	0.26 (0.16)
GRAIN							
CONTROL	<0.08	6	<0.08 (0.00)	CONTROL			
2 + 2				2 + 2	<0.08	12	<0.08 (0.00)
3 + 3	<0.08	10	<0.08 (0.00)	3 + 3	<0.08	4	<0.08 (0.00)

CGA-37913 & CGA-49751 RESIDUES REPORTED AS METOLACHLOR/CGA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14. TRIALS CONDUCTED IN IL, NY, MN, IN, NC, AND CA FROM "2L" FILE, (FR 2L A:\FCORN.SUM)

FIELD RESIDUES: FIELD CORN (SUMMARY, CONTINUED) TRIALS CONDUCTED IN IL,NY, MN, IN, NC, AND CA PHI RANGE, DAYS FROM HARVEST TO EXTRACT, DAYS FROM EXTRACT TO ANALYSIS FOR RACEMIC METOLACHLOR AND ALPHA-METOLACHLOR		
PHI RANGE (DAYS)	RANGE HARVEST TO EXTRACT (DAYS)	RANGE EXTRACT TO ANALYSIS (DAYS)
FORAGE		
29- 32	239-306	5-20
SILAGE		
58- 84	210-276	3-13
FODDER		
94-127	167-246	4-15
GRAIN		
94-127	175-240	3-13

NOTE: DATA FROM "2L" FILE, (FR 2L A:\FCORN.SUM)
CGA-37913 & CGA-49751 RESIDUES ARE REPORTED AS METOLACHLOR/CGA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14
TRIALS CONDUCTED IN IL, NY, MN, IN, NC, AND CA

FIELD RESIDUES: FIELD CORN (SUMMARY), TRIALS CONDUCTED IN ILLINOIS AND IOWA							
METOLACHLOR (RACEMIC) (DUAL 8E)				ALPHA-METOLACHLOR (CGA-77102 8E)			
RATES LB AI/A PPI+PE	MAXIMUM PPM	NO OF SAMPLES	AVERAGE (STD DEV) PPM	RATES LB AI/A PPI+PE	MAXIMUM PPM	NO OF SAMPLES	AVERAGE (STD DEV) PPM
FORAGE							
CONTROL	0.08	2	0.06 (0.04)	CONTROL			
2 + 2				2 + 2	2.23	4	0.90 (1.02)
3 + 3	1.04	4	0.48 (0.37)	3 + 3			
FODDER							
CONTROL	<0.08	2	<0.08 (0.00)	CONTROL			
2 + 2				2 + 2	0.22	3	0.19 (0.03)
3 + 3	0.74	4	0.37 (0.28)	3 + 3			
GRAIN							
CONTROL	<0.08	2.	<0.08 (0.00)	CONTROL			
2 + 2				2 + 2	<0.08	4	<0.08 (0.00)
3 + 3	<0.08	4	<0.08 (0.00)	3 + 3			

NOTE: DATA FROM "4L" FILE, (FR 2L A:\FCORN_2.SUM)
CGA-37913 & CGA-49751 RESIDUES ARE REPORTED AS METOLACHLOR/CGA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14. TRIALS CONDUCTED IN ILLINOIS AND IOWA

FIELD RESIDUES: FIELD CORN (SUMMARY, CONTINUED) TRIALS CONDUCTED IN ILLINOIS AND IOWA PHI RANGE, DAYS FROM HARVEST TO EXTRACT, DAYS FROM EXTRACT TO ANALYSIS FOR RACEMIC METOLACHLOR AND ALPHA-METOLACHLOR		
PHI RANGE (DAYS)	RANGE HARVEST TO EXTRACT (DAYS)	RANGE EXTRACT TO ANALYSIS (DAYS)
FORAGE		
30 - 31	112 - 128	4 - 5
FODDER		
96 - 101	38 - 57	3 - 5
GRAIN		
33		
96 - 101	39 - 61	2 - 6

CGA-37913 & CGA-49751 RESIDUES ARE REPORTED AS METOLACHLOR/CGA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14

TRIALS CONDUCTED IN ILLINOIS AND IOWA

METOLACHLOR/77102 EQUIVALENTS ARE CALCULATED FROM THE ADDITION OF THE RESIDUE VALUES FOR THE TWO METABOLITES, CGA-49751 AND CGA-37913.

DATA FROM "A:\FCORN_2.SUM" 4L FILE

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FIELD TRIALS: SOYBEANS (MRID Nos. 439289-41)

Field trials on soybeans were conducted at the 2.67 lb ai/A PPI and 4.0 lb ai/A PPI (pre-plant incorporated) application rate for alpha-metolachlor. Only the 4.0 lb ai/A PPI application rate for racemic metolachlor on soybeans was used. Formulations used included CGA-77102 8E (alpha-metolachlor) and Dual 8E (racemic metolachlor). The Registrant's contention was that the seasonal total of 2.67 lbs ai/A alpha-metolachlor is biologically equivalent to, or as effective as, 4.0 lbs ai/A of racemic metolachlor.

Trials were conducted from March to October, 1994, in Mississippi, Illinois, Iowa and Ohio. Samples were tested, using samples grown to maturity under typical agricultural practices. Soybean trials conducted in Iowa, Illinois, Ohio, and Mississippi represent 39% of soybeans grown in the United States. *(Agricultural Statistics 1991, USDA)*. CBTS considers this to be an adequate geographical representation for the purposes of bridging data.

The following soybean summary tables show that the equivalent metolachlor residues for alpha-metolachlor treatment on soybeans at the 2.67 lb ai/A treatment rate were usually less than, or only slightly higher than, residues resulting from the higher 4.0 lb ai/A treatment using racemic metolachlor. Equivalent metolachlor residues for alpha-metolachlor treated soybeans at the higher 4.0 lb ai/A treatment level were approximately twice the residues found at the 2.67 lb ai/A alpha-metolachlor treatment rate.

The following table summarizes the maximum forage, hay, and dry bean residues of racemic metolachlor and alpha-metolachlor (CGA-77102), determined as CGA-37913 and CGA-49751, resulting from application of racemic metolachlor and alpha-metolachlor (CGA-77102) to soybeans. Average residues are listed in "( )."

	Racemic Metolachlor 4.0 lb ai/A Max/(Avg) ppm	alpha-Metolachlor 2.67 lb ai/A Max/(Avg) ppm	alpha-Metolachlor 4.0 lb ai/A Max/(Avg) ppm
FORAGE	1.6 (0.87)	1.2 (0.64)	1.6 (1.1)
HAY	5.6 (2.8)	5.8 (2.8)	7.5 (5.1)
DRY BEANS	0.24 (0.10)	0.13 (0.08)	0.27 (0.18)

PHI's for studies conducted in the above four states ranged, for forage: 30-31 days; for hay: 30-31 days; and for dry beans: 127-169 days. The range of days between harvest to extract for these soybean trials were for forage: 360-380 days; for hay: 365-382 days; and for dry beans: 47-297 days. The maximum number of days for these samples to spend between extract to analysis were all approximately the same, 4-9 days.

FIELD RESIDUES: SOYBEAN (SUMMARY), TRIALS CONDUCTED IN MISS, IL, IA, AND OH (Part of Registrant's TABLEII).

RACEMIC METOLACHLOR (DUAL 8E)				ALPHA-METOLACHLOR (CGA-77102 8E)			
RATES LB AI/A PPI	MAXIMUM PPM	NO OF SAMPLES	AVERAGE (STD DEV) PPM	RATES LB AI/A PPI	MAXIMUM PPM	NO OF SAMPLES	AVERAGE (STD DEV) PPM
FORAGE							
CONTROL	0.66	5	0.39 (0.30)	CONTROL			
				2.67	1.23	8	0.64 (0.39)
4.0	2.51	10	1.15 (0.75)	4.0	1.55	6	1.11 (0.35)
HAY							
CONTROL	2.78	4	1.23 (1.28)	CONTROL			
				2.67	5.83	10	2.29 (1.94)
4.0	5.64	10	2.25 (1.77)	4.0	7.49	4	5.07 (1.97)
DRY BEANS							
CONTROL	<0.08	6	0.06 (0.02)	CONTROL			
				2.67	0.13	10	0.08 (0.03)
4.0	0.24	10	0.13 (0.10)	4.0	0.27	5	0.16 (0.11)

TRIALS CONDUCTED IN MISS, IL, IA AND OH
CGA-37913 & CGA-49751 RESIDUES REPORTED AS METOLACHLOR/CGA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14
DATA FROM "3L" FILE

FIELD RESIDUES: SOYBEAN (SUMMARY, CONTINUED) TRIALS CONDUCTED IN MISS, IL, IA AND OH PHI RANGE, DAYS FROM HARVEST TO EXTRACT, DAYS FROM EXTRACT TO ANALYSIS FOR RACEMIC METOLACHLOR AND ALPHA-METOLACHLOR		
PHI RANGE (DAYS)	RANGE HARVEST TO EXTRACT (DAYS)	RANGE EXTRACT TO ANALYSIS (DAYS)
FORAGE		
30 - 31	360 - 380	4 - 9
HAY		
30 - 31	365 - 382	5 - 7
DRY BEANS		
127 - 169	247 -297	4 - 9

TRIALS CONDUCTED IN MISS, IL, IA AND OH

CGA-37913 & CGA-49751 RESIDUES ARE REPORTED AS METOLACHLOR/CGA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14

METOLACHLOR/77102 EQUIVALENTS ARE CALCULATED FROM THE ADDITION OF THE RESIDUE VALUES FOR THE TWO METABOLITES, CGA-49751 AND CGA-37913.

NOTE: DATA FROM "A:\FCORN_2.SUM" 4L FILE

FIELD TRIALS: SWEET CORN (MRID No. 439289-42)

Field trials on sweet corn were conducted at the (2 + 2) lb ai/A application rate for alpha-metolachlor and at the (3 + 3) lb ai/A application rate for racemic metolachlor. Application was made pre-plant incorporated (PPI) + post-emergent at layby (PE). Formulations used included CGA-77102 8E (alpha-metolachlor) and Dual 8E (racemic metolachlor). Samples were grown to maturity under typical agricultural practices. Total sweet corn treatment was equivalent to a seasonal total of 4.0 lbs ai/A alpha-metolachlor and 6.0 lbs ai/A racemic metolachlor. The Registrant's contention was that the seasonal total of 4.0 lbs ai/A alpha-metolachlor is biologically equivalent to, or as effective as, 6.0 lbs ai/A of racemic metolachlor.

Trials were conducted from March to November, 1995, in Florida, New York, Michigan and California. Samples were tested, using samples grown to maturity under typical agricultural practices. Sweet corn trials conducted in the four States of Florida, New York, Michigan, and California represent 58% of sweet corn grown in the United States *(Agricultural Statistics 1991, USDA)*. CBTS considers this to be an adequate geographical representation for the purposes of this petition.

The following table summarizes data for all racemic metolachlor and alpha-metolachlor residues detected in/on field and sweet corn samples, including the number of samples with maximum residues reported. All maximum and mean concentrations of alpha-metolachlor, at the 1X application rate, were less than the concentration of racemic metolachlor at the 1X application rate.

FIELD RESIDUES: SWEET CORN (SUMMARY)**FIELD TESTS IN CA, FL, NY AND MI**							
RACEMIC METOLACHLOR				ALPHA-METOLACHLOR CGA-77102			
RATES LB AI/A PPI + PE	MAXIMUM	NO OF SAMPLES	AVERAGE (STD DEV)	RATES LB AI/A PPI + PE	MAXIMUM	NO OF SAMPLES	AVERAGE (STD DEV)
FORAGE							
CONTROL	<0.08	4	<0.08 (0)				
3 + 3	5.75	10	1.59 (1.82)	2 + 2	4.44	10	1.15 (1.33)
EAR							
CONTROL	<0.08	4	<0.08 (0)				
3 + 3	<0.08	8	<0.08 (0)	2 + 2	<0.08	8	<0.08 (0)
FODDER							
CONTROL	<0.08	4	<0.08 (0)				
3 + 3	5.54	8	2.18 (2.06)	2 + 2	2.29	8	1.63 (0.70)

- FIELD TESTS IN CA, FL, NY AND MI
- RESIDUES FROM RACEMIC METOLACHLOR (DUAL 8E) OR ALPHA-METOLACHLOR (CGA-77102 8E) APPLICATION PPI + PE AT LAYBY
- CGA-37913 AND CGA-49751 RESIDUES ARE REPORTED AS METOLACHLOR/CGA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14
- DATA FROM " 4L " FILE A:\SW_FCORN.SUM L "FIELD RESIDUES: (SUMMARY)

FIELD RESIDUES: SWEET CORN (SUMMARY, CONTINUED) TRIALS CONDUCTED IN FL, NY, MI AND CA PHI RANGE, DAYS FROM HARVEST TO EXTRACT, DAYS FROM EXTRACT TO ANALYSIS FOR RACEMIC METOLACHLOR AND ALPHA METOLACHLOR		
PHI RANGE (DAYS)	RANGE HARVEST TO EXTRACT (DAYS)	RANGE EXTRACT TO ANALYSIS (DAYS)
FORAGE		
29 - 33	68 - 117	8 - 11
EAR		
29 - 33	68 - 117	6 - 13
FODDER		
33 - 64	42 - 94	6 - 15

CGA-37913 & CGA-49751 RESIDUES ARE REPORTED AS METOLACHLOR/CGA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1:14

TRIALS CONDUCTED IN: FL, NY, MI AND CA

NOTE: DATA FROM "4L" FILE

PROCESSING DATA

Processing study data were not submitted for alpha-metolachlor, however, there is no reasonable expectation that alpha-metolachlor should concentrate differently than racemic metolachlor during processing. CBTS feels that there is no reasonable concern that residues of alpha-metolachlor in processed commodities will exceed the current tolerance levels for racemic metolachlor.

SECONDARY RESIDUES IN MEAT AND MILK

There are significant animal feed items which would be involved following the proposed use of alpha-metolachlor on several crops, but residues of alpha-metolachlor in plant commodities and animal feed items are expected to be lower than current racemic metolachlor residues. Therefore, there is no reasonable expectation that secondary residues of alpha-metolachlor in livestock or poultry, meat byproducts, fat, milkfat, whole milk, or eggs will exceed the current tolerance levels already established for racemic metolachlor.

CODEX

There is no request for a change of tolerance expression, or tolerance levels at this time. Harmonization between U.S., CODEX and Canadian tolerances for metolachlor will be handled by the reregistration process.

cc: RF, Metolachlor (RACEMIC) SF, Metolachlor-ALPHA SF, Metolachlor (RACEMIC) Reg Std File, L. Kutney, E. Haeberer, Eugene Wilson, RD; Joanne Miller, RD
cc without Confidential Appendix: Circu
CM2:305-5351:RM804D:7509C:LLKutney:llk-date: 10/25/96
RDI: TPT2: date; Loranger: 10/29/96; E. Haeberer: 11/12/96;

PRODUCT CHEMISTRY APPENDICES
NOT CONFIDENTIAL

"REVIEW OF PRODUCT CHEMISTRY (SUBDIVISION D), GLN'S 61 TO 63"

Product Chemistry Table 1: Manufacturing and Impurity Data for Chiral Metolachlor 1
REG. NUMBER: 100-, (TEST SUBSTANCE/PRODUCT: PAI/TGAI [1].

GLN	MRID	Status[2]	Deficiency[3]
61-1: Product Identity & Disclosure of Ingredients	43928901	A	
61-2: Starting Materials & Manufacturing Process	43928901	A	
61-3: Discussion of Impurities	43928901	A	
62-1: Preliminary Analysis	43928902	A	
62-2: Certification of Limits	43928902	A	
62-3: Analytical Methods	43928902	A	

[1] For example, test substance might be PAI and product might be 95% technical MP.
[2] A = Acceptable. N = Unacceptable (see Deficiency).
[3] Refer to CBI Appendix A for details.

Product Chemistry Table 2: Physical and Chemical Properties for (NAME), (REGISTRATION NUMBER)			
GLN	MRID	Status[1]	Result[2] or Deficiency
63-2: Color	43928903	A	Pale Yellow to Light Brown PAI/TGAI
63-3: Physical State	43928903	A	Clear Liquid PAI/TGAI
63-4: Odor	43928903	A	Weak Odor PAI/TGAI
63-6: Boiling Point	43928903	A	Decomposition starts at 290 C, Boils at 334 C for PAI
63-7: Density, Bulk Density, or Specific Gravity	43928903	A	1.117 g/cm^3 for TGAI typical at 20 C
63-8: Solubility	43928903	A	Water 0.480 g PAI/l at 25 C TGAI is Completely miscible in at 25 C, in: n-hexane, Methanol, Acetone, Toluene, n-Octanol
63-9: Vapor Pressure	43928903	A	2.8 x 10^{-5} mmHg @ 25 C for PAI
63-10: Dissociation Constant	43928903	A	PAI had no dissociation constant in pH 2-12 range, using OECD Method 112.
63-11: Octanol/Water Partition Coefficient	43928903	A	log Pow = 3.05 @ 25 C
63-12: pH	43928903	A	TGAI has pH of 7.8 @ 25 C (1% aqueous dispersion-ASTM E 70-77)
63-13: Stability	43928903	A	% Decomposition in Sunlight (tested with xenon arc lamp) = <5% in one Day. @ Room Temp for over 3 days, TGAI showed no decomposition, when contacting zinc, aluminum or copper, or iron. It also showed no decomposition when exposed to the same metals at 38 C, EXCEPT for exposure to iron, which caused 3% decomposition. TGAI Stable to glass, carbon and stainless steel, aluminum and tin at 37 C and RT for 1 month, showing NO decomposition. There was NO decomposition in 3-6 months at -18 C, RT, and 38 C for TGAI stored in stainless steel containers.
63-14: Oxidizing or Reducing Action	43928903	A	No oxidizing or reducing properties reported, using Method OECD No. 113, ASTM G 31-72.
63-15: Flammability	43928903	A	Flash Point 190 C (method EEC A.9) TGAI Auto Ign Temp 430 C (method A.15) TGAI
63-16: Explodability	43928903	A	Not explosive, based on test results using TGAI (method EEC A.14) for thermal sensitivity and mechanical sensitivity.
63-17: Storage Stability	43928903	N	In Progress-Work with commercial packaging
63-18: Viscosity	43928903	A	TGAI tested using OECD #114. At 20 C: 113.8 $\pm$ 3.7 mPa • S at shear rate D= 0.255<D<0.870 S^{-1} At 40 C: 33.5 $\pm$ 0.85 mPa • S at shear rate D= 0.639<D<2.97 S^{-1}
63-19: Miscibility	43928903	N/A	Not Reported
63-20: Corrosion Characteristics	43928903	A	TGAI & tin plate, iron steel, stainless steel and polyethylene unchanged after 1 month storage.

[1] A = Acceptable; N = Unacceptable (see Deficiency); N/A = Not applicable.
[2] For example, "brown" for 63-1; "155° C" for 63-4.

(Ciba Lists 63-21 Dielectric Breakdown Voltage as N/A)

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CHEMICAL STRUCTURE--APPENDICES
NOT CONFIDENTIAL

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DETAILED DATA--APPENDICES
NOT CONFIDENTIAL

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CONFIDENTIAL APPENDIX
PRODUCT CHEMISTRY

APPENDICES

RESIDUES IN FIELD CORN
"2L.WP5" DATA FROM 40\95122-I.DOC, TABLE IV
38538

TABLE II. FIELD TESTS - METOLACHLOR AND CGA-77102 APPLIED TO FIELD AND SWEET CORN

"f:\...meto\new\4L-res.WP5" 42\95124-1.doc

LOCATION/NUMBER	VARIETY	FORM	SOIL TYPE	METOLACHLOR CGA-24705 LB AI/A	CGA-77102 LB AI/A	SPRAY VOL (GPA)	TIMING
SWEET CORN							
California 02-HR-002-95	Sweetie 82	8E	Sandy Loam	3.0 3.0	2.0 2.0	20 20	Preplant Incorporated Post Directed at Lay-By
New York 05-HR-001-95	Sprite Bicolor	8E	Loam	3.0 3.0	2.0 2.0	20 20	Preplant Incorporated Post Directed by Lay-By
Florida 07-HR-002-95	Golden Queen	8E	Sand	3.0 3.0	2.0 2.0	20 20	Preplant Incorporated Post Directed by Lay-By
Michigan NE-HR-707-95	Bodacious	8E	Loam	3.0 3.0	2.0 2.0	20 20	Preplant Incorporated Post Directed at Lay-By
FIELD CORN							
Illinois 04-HR-002-95	4393/Ciba	8E	Silty Clay Loam	3.0 3.0	2.0 2.0	20 20	Preplant Incorporated Post Directed at Lay-By
Iowa MW-HR-150-95	4273/Ciba	8E	Clay Loam	3.0 3.0	2.0 2.0	20 20	Preplant Incorporated Post Directed at Lay-By

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RESIDUES IN FIELD CORN FOLLOWING APPLICATION OF METOLACHLOR (Dual 8E) OR CHIRAL METOLACHLOR (CGA-77102 8E) "2L" f:\meto\new\"2l.wp5" 40\95122-L.DOC (This was part of TABLE IV.) 38538+ 9/10/96 **FIELD TRIALS ON FIELD CORN, CONDUCTED IN IN, IL, NY, MN, IN, NC, AND CA**

CGA-37913 and CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.

ID	ANALYTE	RATES LB AI/A PPI+ PE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
FORAGE-ILLINOIS								
1-3-A	control	--	306	5	--	<0.05	<0.03	<0.08
3-3-A,B	CGA-77102	2 + 2	306	5	32	0.25 0.24	0.18 0.15	0.43 0.39
4-3-A,B	CGA-77102	3 + 3	306	5	32	0.52 0.20	0.21 0.14	0.73 0.35
SILAGE-ILLINOIS								
1-4-A	control	--	276	3	--	<0.05	0.06	0.06
3-4-A,B	CGA-77102	2 + 2	276	3	60	0.25 0.10	0.13 0.14	0.38 0.24
4-4-A,B	CGA-77102	3 + 3	276	3	60	0.08 0.11	0.14 0.14	0.21 0.26
FODDER-ILLINOIS								
1-5-A	control	--	246	4	--	<0.05	0.042	0.04
3-5-A,B	CGA-77102	2 + 2	246	4	100	0.06 0.12	0.10 0.14	0.16 0.25
4-5-A,B	CGA-77102	3 + 3	246	4	100	0.14 0.19	0.27 0.19	0.40 0.39

RESIDUES IN FIELD CORN FOLLOWING APPLICATION OF METOLACHLOR (Dual 8E) OR CHIRAL METOLACHLOR (CGA-77102 8E) "2L" f:\meto\new\"2l.wp5" 40\95122-L.DOC (This was part of TABLE IV.) 38538+ 9/10/96 **FIELD TRIALS ON FIELD CORN, CONDUCTED IN IN, IL, NY, MN, IN, NC, AND CA**

CGA-37913 and CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.

ID	ANALYTE	RATES LB AI/APPI+PE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
GRAIN-ILLINOIS								
1-6-A	control	--	240	3	--	<0.05	<0.03	<0.08
3-6A,B	CGA-77102	2 + 2	240	3	104	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08
4-6-A,B	CGA-77102	3 + 3	240	3	104	0.05 <0.05	<0.03 <0.03	<0.08 <0.08
FORAGE-NEW YORK								
1-3-A	control	--	264	20	--	<0.05	<0.03	<0.08
2-3-A,B	metolachlor	3 + 3	264	20	30	0.10 0.15	0.14 0.23	0.24 0.38
3-3-A,B	CGA-77102	2 + 2	264	20	30	0.08 0.10	0.11 0.23	0.19 0.33
4-3-A,B	CGA-77102	3 + 3	264	20	30	0.08 0.07	0.12 0.08	0.20 0.14
SILAGE-NEW YORK								
1-4-A	control	--	247	9	--	<0.05	<0.03	<0.08
2-4-A,B	metolachlor	3 + 3	247	9	58	0.25 0.28	0.22 0.41	0.47 0.68

RESIDUES IN FIELD CORN FOLLOWING APPLICATION OF METOLACHLOR (Dual 8E) OR CHIRAL METOLACHLOR (CGA-77102 8E) "2L" f:\meto\new\"2l.wp5" 40\95122-L.DOC (This was part of TABLE IV.) 38538+ 9/10/96 **FIELD TRIALS ON FIELD CORN, CONDUCTED IN IN, IL, NY, MN, IN, NC, AND CA**

CGA-37913 and CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.

ID	ANALYTE	RATES LB AI/APPI+PE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
3-4-A,B	CGA-77102	2 + 2	247	9	58	0.13 0.10	0.20 0.16	0.33 0.27
4-4-A,B	CGA-77102	3 + 3	247	9	58	0.13 0.15	0.10 0.32	0.23 0.47
FODDER-NEW YORK								
1-5-A	control	--	214	7	--	<0.05	0.037	0.04
2-5-A,B	metolachlor	3 + 3	214	7	100	0.25 0.28	0.38 0.38	0.64 0.66
3-5-A,B	CGA-77102	2 + 2	214	7	100	0.14 0.15	0.21 0.24	0.36 0.39
4-5-A,B	CGA-77102	3 + 3	214	7	100	<0.05 0.09	<0.03 0.10	<0.08 0.19
GRAIN-NEW YORK								
1-6-A	control	--	218	4	--	<0.05	<0.03	<0.08
2-6-A,B	metolachlor	3 + 3	218	4	100	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08
3-6-A,B	CGA-77102	2 + 2	218	4	100	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08
4-6-A,B	CGA-77102	3 + 3	218	4	100	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08

RESIDUES IN FIELD CORN FOLLOWING APPLICATION OF METOLACHLOR (Dual 8E) OR CHIRAL METOLACHLOR (CGA-77102 8E) "2L" f:\meto\new\"2l.wp5" 40\95122-L.DOC (This was part of TABLE IV.) 38538+ 9/10/96 **FIELD TRIALS ON FIELD CORN, CONDUCTED IN IN, IL, NY, MN, IN, NC, AND CA**

CGA-37913 and CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.

ID	ANALYTE	RATES LB AI/A PPI+ PE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
FORAGE-MINNESOTA								
1-3-A	control	--	286	15	--	<0.05	<0.03	<0.08
2-3-A,B	metolachlor	3 + 3	286	15	30	2.23 0.76	0.52 0.20	2.75 0.96
3-3-A,B	CGA-77102	2 + 2	286	15	30	0.30 0.56	0.07 0.14	0.37 0.70
SILAGE-MINNESOTA								
1-4-A	control	--	236	9	--	<0.05	<0.03	<0.08
2-4-A,B	metolachlor	3 + 3	236	9	84	0.09 0.13	0.06 0.12	0.15 0.25
3-4-A,B	CGA-77102	2 + 2	236	9	84	0.06 0.05	0.06 0.05	0.11 0.10
FODDER-MINNESOTA								
1-5-A	control	--	201	8	--	<0.05	<0.03	<0.08
2-5-A,B	metolachlor	3 + 3	201	8	127	0.19 0.20	0.13 0.14	0.32 0.33
3-5-A,B	CGA-77102	2 + 2	201	8	127	0.08 0.11	0.07 0.04	0.16 0.15
GRAIN-MINNESOTA								

RESIDUES IN FIELD CORN FOLLOWING APPLICATION OF METOLACHLOR (Dual 8E) OR CHIRAL METOLACHLOR (CGA-77102 8E) "2L" f:\meto\new\"2l.wp5" 40\95122-L.DOC (This was part of TABLE IV.) 38538+ 9/10/96 **FIELD TRIALS ON FIELD CORN, CONDUCTED IN IN, IL, NY, MN, IN, NC, AND CA**

CGA-37913 and CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.

ID	ANALYTE	RATES LB AI/A PPI+ PE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
1-6-A	control	Control	207	7	--	<0.05	<0.03	<0.08
2-6-A,B	metolachlor	3 + 3	207	7	127	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08
3-6-A,B	CGA-77102	2 + 2	207	7	127	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08
FORAGE-INDIANA								
1-3-A	control	Control	243	6	--	<0.05	<0.03	<0.08
2-3-A,B	metolachlor	3 + 3	243	6	30	1.23 0.43	0.36 0.16	1.58 0.59
3-3-A,B	CGA-77102	2 + 2	243	6	30	0.26 0.36	0.05 0.10	0.31 0.47
SILAGE-INDIANA								
1-4-A	control	Control	187	8	--	<0.05	<0.03	<0.08

RESIDUES IN FIELD CORN FOLLOWING APPLICATION OF METOLACHLOR (Dual 8E) OR CHIRAL METOLACHLOR (CGA-77102 8E) "2L" f:\meto\new\"2l.wp5" 40\95122-L.DOC (This was part of TABLE IV.) 38538+ 9/10/96 **FIELD TRIALS ON FIELD CORN, CONDUCTED IN IN, IL, NY, MN, IN, NC, AND CA**

CGA-37913 and CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.

ID	ANALYTE	RATES LB AI/A PPI+ PE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
2-4-A,B	metolachlor	3 + 3	187	8	87	0.22 0.15	0.06 0.08	0.28 0.23
3-4-A,B	CGA-77102	2 + 2	187	8	87	<0.05 0.09	<0.03 0.04	<0.08 0.13
FODDER-INDIANA								
1-5-A	control	Control	167	10	--	<0.05	<0.03	<0.08
2-5-A,B	metolachlor	3 + 3	167	10	107	2.26 0.27	0.54 0.11	2.81 0.38
3-5-A,B	CGA-77102	2 + 2	167	10	107	0.23 0.17	0.09 0.06	0.32 0.24
FODDER-INDIANA								
1-5-A	control	Control	178	13	--	<0.05	0.032	0.03
2-5-A,B	metolachlor	3 + 3	178	13	107	1.72 0.27	0.67 0.20	2.40 0.47
GRAIN-INDIANA								
1-6-A	control	Control	175	13	--	<0.05	<0.03	<0.08
2-6-A,B	metolachlor	3 + 3	175	13	107	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08

RESIDUES IN FIELD CORN FOLLOWING APPLICATION OF METOLACHLOR (Dual 8E) OR CHIRAL METOLACHLOR (CGA-77102 8E) "2L" f:\meto\new\"2l.wp5" 40\95122-L.DOC (This was part of TABLE IV.) 38538+ 9/10/96 **FIELD TRIALS ON FIELD CORN, CONDUCTED IN IN, IL, NY, MN, IN, NC, AND CA**

CGA-37913 and CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.

ID	ANALYTE	RATES LB AI/A PPI+ PE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
3-6-A,B	CGA-77102	2 + 2	175	13	107	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08
FORAGE-NORTH CAROLINA								
1-3-A	control	Control	270	7	--	<0.05	<0.03	<0.08
2-3-A,B	metolachlor	3 + 3	270	7	29	0.39 0.42	0.55 0.52	0.94 0.95
3-3-A,B	CGA-77102	2 + 2	270	7	29	0.17 0.16	0.38 0.19	0.56 0.35
SILAGE-NORTH CAROLINA								
1-4-A	control	Control	243	13	--	<0.05	<0.03	<0.08
2-4-A	metolachlor	3 + 3	243	13	58	0.24 0.61	0.10 0.80	0.34 1.41
3-4-A,B	CGA-77102	2 + 2	243	13	58	0.10 0.13	0.25 0.36	0.36 0.49
FODDER-NORTH CAROLINA								
1-5-A	control	Control	212	15	--	0.07	0.07	0.14
2-5-A,B	metolachlor	3 + 3	212	15	95	0.19 0.56	0.37 1.00	0.56 1.57

RESIDUES IN FIELD CORN FOLLOWING APPLICATION OF METOLACHLOR (Dual 8E) OR CHIRAL METOLACHLOR (CGA-77102 8E) "2L" f:\meto\new\"2l.wp5" 40\95122-L.DOC (This was part of TABLE IV.) 38538+ 9/10/96 **FIELD TRIALS ON FIELD CORN, CONDUCTED IN IN, IL, NY, MN, IN, NC, AND CA**

CGA-37913 and CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.

ID	ANALYTE	RATES LB AI/A PPI+ PE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
3-5-A	CGA-77102	2 + 2	212	15	95	0.37 0.22	0.75 0.54	1.12 0.76
GRAIN-NORTH CAROLINA								
1-6-A	control	Control	228	13	--	<0.05	<0.03	<0.08
2-6-A,B	metolachlor	3 + 3	228	13	95	<0.05 <0.05	<0.03 0.03	<0.08 <0.08
3-6-A,B	CGA-77102	2 + 2	228	13	95	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08
FORAGE-CALIFORNIA								
1-3-A	control	Control	239	10	--	<0.05	0.031	<0.08
2-3-A	metolachlor	3 + 3	239	10	32	0.07 0.08	0.05 0.06	0.12 0.15
3-3-A,B	CGA-77102	2 + 2	239	10	32	<0.05 <0.05	0.04 0.05	0.04 0.05
SILAGE-CALIFORNIA								
1-4-A	control	--	210	12	63	<0.05	<0.03	<0.08
2-4-A	metolachlor	3 + 3	210	12	63	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08

RESIDUES IN FIELD CORN FOLLOWING APPLICATION OF METOLACHLOR (Dual 8E) OR CHIRAL METOLACHLOR (CGA-77102 8E) "2L" f:\meto\new\"2l.wp5" 40\95122-L.DOC (This was part of TABLE IV.) 38538+ 9/10/96 **FIELD TRIALS ON FIELD CORN, CONDUCTED IN IN, IL, NY, MN, IN, NC, AND CA**
CGA-37913 and CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.

ID	ANALYTE	RATES LB AI/A PPI+ PE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
3-4-A,B	CGA-77102	2 + 2	210	12	63	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08
FODDER-CALIFORNIA								
1-5-A	control	--	195	7	--	<0.05	<0.03	<0.08
2-5-A,B	metolachlor	3 + 3	195	7	94	<0.05 0.08	0.05 0.04	0.05 0.11
3-5-A,B	CGA-77102	2 + 2	195	7	94	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08
GRAIN-CALIFORNIA								
1-6-A	control	--	204	8	--	<0.05	<0.03	<0.08
2-6-A,B	metolachlor	3 + 3	204	8	94	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08
3-6-A,B	CGA-77102	2 + 2	204	8	94	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08

FIELD TRIALS ON FIELD CORN, CONDUCTED IN IN, IL, NY, MN, IN, NC, AND CA
NOTE: MAXIMUM RESIDUE VALUE IS HIGHLIGHTED FOR EACH RESIDUE CATEGORY
TRIALS CONDUCTED IN IL, NY, MN, IN, NC, AND CA
CGA-37913 & CGA-49751 RESIDUES ARE REPORTED AS METOLACLOR/CTA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14

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TABLE IIIB. FIELD TESTS, LAST TREATMENT DATE, AND SAMPLE TIME INTERVALS FOR FIELD CORN FIELD TRIALS FOR FIELD CORN IN ILLINOIS AND IOWA

ID	FIELD TEST	ANALYTE	LAST DAY TREATMENT	SAMPLING DATE	EXTRACTION DATE	ANALYSIS DATE	DAYS FROZEN
FIELD CORN-ILLINOIS							
04-HR-002-05	Forage	CGA-49751	7/10/95	8/09/95	12/01/95	12/05/95	114
"	Forage	CGA-37913	7/10/95	8/09/95	12/01/95	12/05/95	114
"	Fodder	CGA-49751	7/10/95	10/19/95	11/27/95	11/29/95	39
"	Fodder	CGA-37913	7/10/95	10/19/95	11/27/95	11/30/95	39
"	Grain	CGA-49751	7/10/95	10/19/95	11/28/95	12/01/95	40
"	Grain	CGA-37913	7/10/95	10/19/95	11/28/95	12/04/95	40
FIELD CORN-IOWA							
MW-HR-150-95	Forage	CGA-49751	7/06/95	8/06/95	12/14/95	12/19/95	130
"	Forage	CGA-37913	7/06/95	8/06/95	12/14/95	12/19/95	130
"	Fodder	CGA-49751	7/06/95	10/10/95	12/07/95	12/12/95	58
"	Fodder	CGA-37913	7/06/95	10/10/95	12/07/95	12/12/95	58
"	Grain	CGA-49751	7/06/95	10/10/95	12/11/95	12/13/95	62
"	Grain	CGA-37913	7/06/95	10/10/95	12/11/95	12/13/95	62

RESIDUES: FIELD CORN (SUMMARY), TRIALS CONDUCTED: IL,NY,MN,IN,NC,. CA							
METOLACHLOR (DUAL 8E)				CHIRAL METOLACHLOR (CGA-77102 8E)			
RATES LB AI/A PPI+PE	MAXIMUM PPM	NO OF SAMPLES	AVERAGE (STD DEV) PPM	RATES LB AI/A PPI+PE	MAXIMUM PPM	NO OF SAMPLES	AVERAGE (STD DEV) PPM
FORAGE							
CONTROL	<0.08	6	<0.08 (0.00)	CONTROL			
2 + 2				2 + 2	0.70	12	0.35 (0.19)
3 + 3	2.75	10	0.89 (0.81)	3 + 3	0.73	4	0.36 (0.26)
SILAGE							
CONTROL	<0.08	6	0.08 (0.01)	CONTROL			
2 + 2				2 + 2	0.49	12	0.22 (0.14)
3 + 3	1.41	10	0.40 (0.40)	3 + 3	0.47	4	0.29 (0.12)
FODDER							
CONTROL	0.14	8	0.07 (0.04)	CONTROL			
2 + 2				2 + 2	1.12	14	0.31 (0.31)
3 + 3	2.81	12	0.86 (0.91)	3 + 3	0.40	4	0.26 (0.16)
GRAIN							
CONTROL	<0.08	6	0.08 (0.00)	CONTROL			
2 + 2				2 + 2	<0.08	12	0.08 (0.00)
3 + 3	<0.08	10	0.08 (0.00)	3 + 3	<0.08	4	0.08 (0.00)

NOTE: DATA FROM "2L" FILE, (FR 2L A:\FCORN.SUM)
CGA-37913 & CGA-49751 RESIDUES ARE REPORTED AS METOLACLOR/CTA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14. TRIALS CONDUCTED IN IL, NY, MN, IN, NC, AND CA

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FIELD RESIDUES: FIELD CORN (SUMMARY, CONTINUED) TRIALS CONDUCTED IN IL,NY, MN, IN, NC, AND CA PHI RANGE, DAYS FROM HARVEST TO EXTRACT, DAYS FROM EXTRACT TO ANALYSIS FOR METOLCHLOR AND CHIRAL METOLACHLOR		
PHI RANGE (DAYS)	RANGE HARVEST TO EXTRACT (DAYS)	RANGE EXTRACT TO ANALYSIS (DAYS)
FORAGE		
29- 32	239-306	5-20
SILAGE		
58- 84	210-276	3-13
FODDER		
94-127	167-246	4-15
GRAIN		
94-127	175-240	3-13

NOTE: DATA FROM "2L" FILE, (FR 2L A:\FCORN.SUM)
CGA-37913 & CGA-49751 RESIDUES ARE REPORTED AS METOLACLOR/CTA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14
TRIALS CONDUCTED IN IL, NY, MN, IN, NC, AND CA

TABLE IV. RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO FIELD CORN (SWEET CORN IN ANOTHER TABLE) TRIALS CONDUCTED IN ILLINOIS AND IOWA a:\fcorn_2.sum "FCORN_2.SUM"

ID	(lbs a.i./A) PPI & PE	HARVEST Date	HARV-EST EXT-RACT (D)	EXT-RACT ANAL Y-SIS (D)	PHI	EXTRACT Date	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	Equivalent*
Field Test: 04-HR-002-95											
FORAGE-ILLINOIS											
1-3-A	Control	8/9/95	112	4	30	12/1/95	12/5/95	12/5/95	0.031	<0.05	0.031
2-3-A	3 + 3 (Metolachlor)	8/9/95	112	4	30	"	"	"	0.093	0.098	0.191
2-3-B	3 + 3 (Metolachlor)	8/9/95	112	4	30	"	"	"	0.109	0.093	0.202

TABLE IV. RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO FIELD CORN (SWEET CORN IN ANOTHER TABLE) TRIALS CONDUCTED IN ILLINOIS AND IOWA a:\fcorn_2.sum "FCORN_2.SUM"

ID	(lbs a.i./A) PPI & PE	HARVEST Date	HARV-EST EXT-RACT (D)	EXT-RACT ANAL Y-SIS (D)	PHI	EXTRACT Date	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	Equivalent*
3-3-A	2 + 2 (CGA-77102)	8/9/95	112	4	30	"	"	"	0.063	<0.05	0.063
3-3-B	2 + 2 (CGA-77102)	8/9/95	112	4	30	"	"	"	0.085	0.056	0.141

TABLE IV. RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO FIELD CORN (SWEET CORN IN ANOTHER TABLE) TRIALS CONDUCTED IN ILLINOIS AND IOWA a:\fcorn_2.sum "FCORN_2.SUM"

ID	(lbs a.i./A) PPI & PE	HARVEST Date	HARV-EST EXT-RACT (D)	EXT-RACT ANAL Y-SIS (D)	PHI	EXTRACT Date	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	Equivalent*
FODDER-ILLINOIS											
1-4-A	Control	10/19/95	38	3	101	11/27/95	11/30/95	11/29/95	<0.03	<0.05	<0.08
2-4-A	3 + 3 (Metolachlor)	10/19/95	38	3	101	"	"	"	0.053	0.08	0.133
2-4-B	3 + 3 (Metolachlor)	10/19/95	38	3	101	"	"	"	0.076	0.103	0.179
3-4-A	2 + 2 (CGA-77102)	10/19/95	38	3	101	"	"	"	0.089	0.09	0.179
3-4-B	2 + 2 (CGA-77102)	10/19/95	38	3	101	"	"	"	0.109	0.116	0.225
GRAIN-ILLINOIS											
1-5-A	Control	10/19/95	39	6	101	11/28/95	12/4/95	12/1/95	<0.03	<0.05	<0.08

TABLE IV. RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO FIELD CORN (SWEET CORN IN ANOTHER TABLE) TRIALS CONDUCTED IN ILLINOIS AND IOWA a:\fcorn_2.sum "FCORN_2.SUM"

ID	(lbs a.i./A) PPI & PE	HARVEST Date	HARV-EST EXT-RACT (D)	EXT-RACT ANAL Y-SIS (D)	PHI	EXTRACT Date	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	Equivalent*
2-5-A	3 + 3 (Metolachlor)	10/19/95	39	6	101	"	"	"	<0.03	<0.05	<0.08
2-5-B	3 + 3 (Metolachlor)	10/19/95	39	6	101	"	"	"	<0.03	<0.05	<0.08
3-5-A	2 + 2 (CGA-77102)	10/19/95	39	6	101	"	"	"	<0.03	<0.05	<0.08
3-5-B	2 + 2 (CGA-77102)	10/19/95	39	6	101	"	"	"	<0.03	<0.05	<0.08

TABLE IV. RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO FIELD CORN (SWEET CORN IN ANOTHER TABLE) TRIALS CONDUCTED IN ILLINOIS AND IOWA a:\fcorn_2.sum "FCORN_2.SUM"

ID	(lbs a.i./A) PPI & PE	HARVEST Date	HARV-EST EXT-RACT (D)	EXT-RACT ANAL Y-SIS (D)	PHI	EXTRACT Date	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	Equivalent*
FIELD CORN-IOWA											
Field Test: MW-HR-150-95											
FORAGE											
1-3-A	Control	8/6/95	128	5	31	12/14/95	12/19/95	12/19/95	<0.03	<0.05	<0.08
2-3-A	3 + 3 (Metolachlor)	8/6/95	128	5	31	"	"	"	0.145	0.894	1.039
2-3-B	3 + 3 (Metolachlor)	8/6/95	128	5	31	"	"	"	0.066	0.402	0.468
3-3-A	2 + 2 (CGA-77102)	8/6/95	128	5	31	"	"	"	0.226	0.967	1.193
3-3-B	2 + 2 (CGA-77102)	8/6/95	128	5	31	"	"	"	0.462	1.772	2.234

TABLE IV. RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO FIELD CORN (SWEET CORN IN ANOTHER TABLE) TRIALS CONDUCTED IN ILLINOIS AND IOWA a:\fcorn_2.sum "FCORN_2.SUM"

ID	(lbs a.i./A) PPI & PE	HARVEST Date	HARV-EST EXT-RACT (D)	EXT-RACT ANAL Y-SIS (D)	PHI	EXTRACT Date	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	Equivalent*
FODDER-IOWA											
1-4-A	Control	10/10/95	57	5	96	12/7/95	12/12/95	12/12/95	<0.03	<0.05	<0.08
2-4-A	3 + 3 (Metolachlor)	10/10/95	57	5	96	"	"	"	0.109	0.318	0.427
2-4-B	3 + 3 (Metolachlor)	10/10/95	57	5	96	"	"	"	0.146	0.592	0.738
3-4-A	2 + 2 (CGA-77102)	10/10/95	57	5	96	"	"	"	0.044	0.118	0.162
3-4-B	2 + 2 (CGA-77102)	10/10/95	57	5	96	"	"	"	DNR+	DNR+	DNR+

TABLE IV. RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO FIELD CORN (SWEET CORN IN ANOTHER TABLE) TRIALS CONDUCTED IN ILLINOIS AND IOWA a:\fcorn_2.sum "FCORN_2.SUM"

ID	(lbs a.i./A) PPI & PE	HARVEST Date	HARV-EST EXT-RACT (D)	EXT-RACT ANAL Y-SIS (D)	PHI	EXTRACT Date	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	Equivalent*
GRAIN-IOWA											
1-5-A	Control	10/10/95	61	2	96	12/11/95	12/13/95	12/13/95	<0.03	<0.05	<0.08
2-5-A	3 + 3 (Metolachlor)	10/10/95	61	2	96	"	"	"	<0.03	<0.05	<0.08
2-5-B	3 + 3 (Metolachlor)	10/10/95	61	2	96	"	"	"	<0.03	<0.05	<0.08
3-5-A	2 + 2 (CGA-77102)	10/10/95	61	2	96	"	"	"	<0.03	<0.05	<0.08
3-5-B	2 + 2 (CGA-77102)	10/10/95	61	2	96	"	"	"	<0.03	<0.05	<0.08

TRIALS CONDUCTED IN IL, AND IA

*Note: Metolachlor/77102 equivalents are calculated from the addition of the residue values for the two metabolites, CGA-49751 and CGA-37913.

+Note: Data Not Reported (DNR). Sample lost during analysis.

FIELD RESIDUES: FIELD CORN (SUMMARY), TRIALS CONDUCTED IN ILLINOIS AND IOWA

METOLACHLOR (DUAL 8E)				CHIRAL METOLACHLOR (CGA-77102 8E)			
RATES LB AI/A PPI+PE	MAXIMUM PPM	NO OF SAMPLES	AVERAGE (STD DEV) PPM	RATES LB AI/A PPI+PE	MAXIMUM PPM	NO OF SAMPLES	AVERAGE (STD DEV) PPM
FORAGE							
CONTROL	0.08	2	0.06 (0.04)	CONTROL			
2 + 2				2 + 2	2.23	4	0.90 (1.02)
3 + 3	1.04	4	0.48 (0.37)	3 + 3			
FODDER							
CONTROL	0.08	2	0.08 (0.00)	CONTROL			
2 + 2				2 + 2	0.22	3	0.19 (0.03)
3 + 3	0.74	4	0.37 (0.28)	3 + 3			
GRAIN							
CONTROL	0.08	2	0.08 (0.00)	CONTROL			
2 + 2				2 + 2	0.08	4	0.08 (0.00)
3 + 3	0.08	4	0.08 (0.00)	3 + 3			

NOTE: DATA FROM "4L" FILE, (FR 2L A:\FCORN_2.SUM)

CGA-37913 & CGA-49751 RESIDUES ARE REPORTED AS METOLACLOR/CTA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14.

TRIALS CONDUCTED IN ILLINOIS AND IOWA

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FIELD RESIDUES: FIELD CORN (SUMMARY, CONTINUED) TRIALS CONDUCTED IN ILINOIS AND IOWA PHI RANGE, DAYS FROM HARVEST TO EXTRACT, DAYS FROM EXTRACT TO ANALYSIS FOR METOLCHLOR AND CHIRAL METOLACHLOR		
PHI RANGE (DAYS)	RANGE HARVEST TO EXTRACT (DAYS)	RANGE EXTRACT TO ANALYSIS (DAYS)
FORAGE		
30 - 31	112 - 128	4 - 5
FODDER		
96 - 101	38 - 57	3 - 5
GRAIN		
96 - 101	39 - 61	2 - 6

NOTE: DATA FROM "A:\FCORN_2.SUM" 4L FILE
CGA-37913 & CGA-49751 RESIDUES ARE REPORTED AS METOLACLOR/CTA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14
TRIALS CONDUCTED IN ILLINOIS AND IOWA

***Note:** **Metolachlor/77102 equivalents are calculated from the addition of the residue values for the two metabolites, CGA-49751 and CGA-37913.**
+Note: **Data Not Reported (DNR). Sample lost during analysis.**

RESIDUES IN SOYBEANS
"3L.WP5" DATA FROM TABLE II

RESIDUES IN SOYBEAN FOLLOWING APPICATION OF METOLACHLOR (DUAL 8E) OF CHIRAL METOLACHLOR (CGA-77102 8E)
CGA-37913 AND CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.
SOYBEAN FIELD TRIAL DATA FOR MISS, IL, IOWA, OH. 3L a: & f:\...meto\new\3l.wp5 WAS TABLE II. TABLE IV.

ID	ANALYTE	RATES LB AI/A PPI+PE	PHI (D)	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
FORAGE-MISSISSIPPI								
1-2-A	control	Control	--	380	5	0.44	0.22	0.66
2-2-A,B	metolachlor	4.0	30	380	5	0.72 0.75	0.54 0.82	1.25 1.57
3-2-A,B	CGA-77102	2.67	30	380	5	0.68 0.66	0.55 0.45	1.23 1.12
4-2-A,B	CGA-77102	4.0	30	380	5	0.90 0.78	0.65 0.56	1.55 1.34
HAY-MISSISSIPPI								
1-3-A	control	Control	--	382	9	1.99	0.79	2.78
2-3-A,B	metolachlor	4.0	30	382	9	2.67 3.02	1.54 2.63	4.21 5.64
3-3-A	CGA-77102	2.67	30	382	9	3.48 2.49	2.35 2.27	5.83 4.76
4-3-A,B	CGA-77102	4.0	30	382	9	4.21 3.14	3.28 2.71	7.49 5.85
DRY BEANS-MISSISSIPPI								
1-4-A	control	Control	--	247	8	<0.05	<0.03	<0.08
2-4-A	metolachlor	4.0	169	247	8	<0.05 <0.05	0.03 0.04	0.03 0.04
3-4-A,B	CGA-77102	2.67	169	247	8	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08
4-4-A,B	CGA-77102	4.0	169	247	8	<0.05 <0.05	0.03 <0.03	0.03 <0.08

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RESIDUES IN SOYBEAN FOLLOWING APPICATION OF METOLACHLOR (DUAL 8E) OF CHIRAL METOLACHLOR (CGA-77102 8E)
CGA-37913 AND CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.
SOYBEAN FIELD TRIAL DATA FOR MISS, IL, IOWA, OH. 3L a: & f:\...meto\new\3l.wp5 WAS TABLE II. TABLE IV.

ID	ANALYTE	RATES LB AI/A PPI+PE	PHI (D)	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
FORAGE-ILLINOIS								
1-2-A	control	control	--	364	4	0.10	0.45	0.55
2-2-A,B	metolachlor	4.0	30	364	4	0.61 0.50	0.77 0.66	1.38 1.15
3-2-A,B	CGA-77102	2.67	30	364	4	0.26 0.27	0.53 0.50	0.79 0.76
4-2-A,B	CGA-77102	4.0	30	364	4	0.25 0.36	0.53 0.79	0.79 1.15
1-2-A	control	control	--	364	4	0.12	0.51	0.63
4-2-A,B	CGA-77102	4.0	30	364	4	0.32 0.48	0.30 0.72	0.62 1.20
HAY-ILLINOIS								
1-3-A	control	control	--	365	7	0.24	1.55	1.78
2-3-A,B	metolachlor	4.0	30	365	7	0.86 0.94	1.65 1.07	2.51 2.02
3-3-A,B	CGA-77102	2.67	30	365	7	1.09 1.24	1.88 2.05	2.96 3.28
4-3-A,B	CGA-77102	4.0	30	365	7	0.97 1.10	2.46 2.39	3.44 3.49

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RESIDUES IN SOYBEAN FOLLOWING APPICATION OF METOLACHLOR (DUAL 8E) OF CHIRAL METOLACHLOR (CGA-77102 8E)
CGA-37913 AND CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.
SOYBEAN FIELD TRIAL DATA FOR MISS, IL, IOWA, OH. 3L a: & f:\...meto\new\3l.wp5 WAS TABLE II. TABLE IV.

ID	ANALYTE	RATES LB AI/A PPI+PE	PHI (D)	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
DRY BEANS-ILLINOIS								
1-4-A	control	Control	--	297	5	<0.05	0.04 0.03	0.04 0.03
2-4-A,B	metolachlor	4.0	127	297	4	0.06 0.05	0.17 0.19	0.23 0.24
3-4-A,B	CGA-77102	2.67	127	297	4	<0.05 <0.05	0.08 0.12	0.08 0.13
4-4-A,B	CGA-77102	4.0	127	297	4	0.06	0.21	0.26
DRY BEANS-ILLINOIS								
1-4-A	control	Control	--	297	5	<0.05	<0.03	<0.08
2-4-A,B	metolachlor	4.0	127	297	4	0.06 0.06	0.17 0.19	0.24 0.24
3-4-A,B	CGA-77102	2.67	127	297	4	<0.05 <0.05	0.08 0.12	0.08 0.12
4-4-A,B	CGA-77102	4.0	127	297	4	0.06 <0.06	0.16 0.21	0.16 0.27
FORAGE-IOWA								
1-2-A	control	Control	--	375	6	<0.05	0.05	0.05
2-2-A,B	metolachlor	4.0	31	375	6	0.19 0.14	0.37 0.32	0.56 0.45
3-2-A,B	CGA-77102	2.67	31	375	6	0.12 0.09	0.24 0.27	0.36 0.36

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RESIDUES IN SOYBEAN FOLLOWING APPICATION OF METOLACHLOR (DUAL 8E) OF CHIRAL METOLACHLOR (CGA-77102 8E)
CGA-37913 AND CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.
SOYBEAN FIELD TRIAL DATA FOR MISS, IL, IOWA, OH. 3L a: & f:\...meto\new\3l.wp5 WAS TABLE II. TABLE IV.

ID	ANALYTE	RATES LB AI/A PPI+PE	PHI (D)	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
				HAY-IOWA				
1-3-A	control	Control	--	380	5	0.06	0.17	0.22
2-3-A,B	metolachlor	4.0	31	380	5	0.92 0.98	2.05 1.89	2.97 2.87
3-3-A	CGA-77102	2.67	31	380	5	0.74 0.64	1.46 1.33	2.20 1.98
				DRY BEANS-IOWA				
1-4-A	control	Control	--	276	5	<0.05	<0.03	<0.08
2-4-A,B	metolachlor	4.0	134	276	5	<0.05 <0.05	0.04 <0.03	0.05 <0.08
3-4-A	CGA-77102	2.67	134	276	5	<0.05 <0.05	0.04 0.04	0.04 0.05
				FORAGE-OHIO				
1-2-A	control	Control	--	360	9	<0.05	<0.03	<0.08
2-2-A,B	metolachlor	4.0	31	360	9	0.17 0.20	0.11 0.13	0.28 0.33
3-2-A,B	CGA-77102	2.67	31	360	9	0.16 0.12	0.12 0.11	0.28 0.23

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RESIDUES IN SOYBEAN FOLLOWING APPICATION OF METOLACHLOR (DUAL 8E) OF CHIRAL METOLACHLOR (CGA-77102 8E)
CGA-37913 AND CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.
SOYBEAN FIELD TRIAL DATA FOR MISS, IL, IOWA, OH. 3L a: & f:\...meto\new\3l.wp5 WAS TABLE II. TABLE IV.

ID	ANALYTE	RATES LB AI/A PPI+PE	PHI (D)	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	CGA-49751 PPM EQUIV	CGA-37913 PPM EQUIV	METOLACHLOR OR CGA-77102 PPM EQUIV
HAY-OHIO								
1-3-A	control	Control	–	366	7	0.09	0.044	0.14
2-3-A,B	metolachlor	4.0	31	366	7	0.56 0.50	0.37 0.39	0.93 0.89
3-3-A,B	CGA-77102	2.67	31	366	7	0.40 0.54	0.34 0.38	0.74 0.92
DRY BEANS-OHIO								
1-4-A	control	Control	–	251	9	<0.05	<0.03	<0.08
2-4-A,B	metolachlor	4.0	146	251	9	<0.05	0.03 <0.03	0.03 <0.08
3-4-A,B	CGA-77102	2.67	146	251	9	<0.05 <0.05	<0.03 <0.03	<0.08 <0.08

SOYBEAN FIELD TRIAL DATA FOR MISS, IL, IOWA, OH,
3L a: & f:\...meto\new\3l.wp5 WAS TABLE II.
CGA-37913 AND CGA-49751 residues are reported as metolachlor/CGA-77102 equivalents, using correction factors of 1.47 and 1.14.

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FIELD RESIDUES: SOYBEAN (SUMMARY), TRIALS CONDUCTED IN MISS, IL, IA, AND OH
3L a: & f:\...meto\new\3l.wp5 WAS TABLE II.FIELD TESTS - METOLACHLOR AND CGA-77102 APPLIED TO SOYBEANS TABLE IV.

METOLACHLOR (DUAL 8E)				CHIRAL METOLACHLOR (CGA-77102 8E)			
RATES LB AI/A PPI	MAXIMUM PPM	NO OF SAMPLES	AVERAGE (STD DEV) PPM	RATES LB AI/A PPI	MAXIMUM PPM	NO OF SAMPLES	AVERAGE (STD DEV) PPM
FORAGE							
CONTROL	0.66	5	0.39 (0.30)	CONTROL			
				2.67	1.23	8	0.64 (0.39)
4.0	2.51	10	1.15 (0.75)	4.0	1.55	6	1.11 (0.35)
HAY							
CONTROL	2.78	4	1.23 (1.28)	CONTROL			
				2.67	5.83	10	2.29 (1.94)
4.0	5.64	10	2.25 (1.77)	4.0	7.49	4	5.07 (1.97)
DRY BEANS							
CONTROL	<0.08	6	0.06 (0.02)	CONTROL			
				2.67	0.13	10	0.08 (0.03)
4.0	0.24	10	0.13 (0.10)	4.0	0.27	5	0.16 (0.11)

NOTE: DATA FROM "3L" FILE
CGA-37913 & CGA-49751 RESIDUES ARE REPORTED AS METOLACLOR/CTA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14
TRIALS CONDUCTED IN MISS, IL, IA AND OH

***Note:Metolachlor/77102 equivalents are calculated from the addition of the residue values for the two metabolites, CGA-49751 and CGA-37913.**
+Note:Data Not Reported (DNR). Sample lost during analysis.

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FIELD RESIDUES: SOYBEAN (SUMMARY, CONTINUED) TRIALS CONDUCTED IN MISS, IL, IA AND OH PHI RANGE, DAYS FROM HARVEST TO EXTRACT, DAYS FROM EXTRACT TO ANALYSIS FOR METOLCHLOR AND CHIRAL METOLACHLOR		
PHI RANGE (DAYS)	RANGE HARVEST TO EXTRACT (DAYS)	RANGE EXTRACT TO ANALYSIS (DAYS)
FORAGE		
30 - 31	360 - 380	4 - 9
HAY		
30 - 31	365 - 382	5 - 7
DRY BEANS		
127 - 169	247 -297	4 - 9

NOTE: DATA FROM "A:\FCORN_2.SUM" 4L FILE

CGA-37913 & CGA-49751 RESIDUES ARE REPORTED AS METOLACLOR/CTA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14

TRIALS CONDUCTED IN MISS, IL, IA AND OH

Note: Metolachlor/77102 equivalents are calculated from the addition of the residue values for the two metabolites, CGA-49751 and CGA-37913.

RESIDUES IN SWEET CORN
"4L-RES.WP5" DATA FROM 42\95124-L.DOC

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TABLE II. FIELD TESTS - METOLACHLOR AND CGA-77102 APPLIED TO SWEET (AND FIELD) CORN
"f:\...meto\new\4L-res.WP5" 42\95124-1.doc

LOCATION/NUMBER	VARIETY	FORM	SOIL TYPE	METOLACHLOR CGA-24705 LB AI/A	CGA-77102 LB AI/A	SPRAY VOL (GPA)	TIMING
SWEET CORN							
California 02-HR-002-95	Sweetie 82	8E	Sandy Loam	3.0 3.0	2.0 2.0	20 20	Preplant Incorporated Post Directed at Lay-By
New York 05-HR-001-95	Sprite Bicolor	8E	Loam	3.0 3.0	2.0 2.0	20 20	Preplant Incorporated Post Directed by Lay-By
Florida 07-HR-002-95	Golden Queen	8E	Sand	3.0 3.0	2.0 2.0	20 20	Preplant Incorporated Post Directed by Lay-By
Michigan NE-HR-707-95	Bodacious	8E	Loam	3.0 3.0	2.0 2.0	20 20	Preplant Incorporated Post Directed at Lay-By
FIELD CORN							
Illinois 04-HR-002-95	4393/Ciba	8E	Silty Clay Loam	3.0 3.0	2.0 2.0	20 20	Preplant Incorporated Post Directed at Lay-By
Iowa MW-HR-150-95	4273/Ciba	8E	Clay Loam	3.0 3.0	2.0 2.0	20 20	Preplant Incorporated Post Directed at Lay-By

TABLE IIIA. FIELD TESTS, LAST TREATMENT DATE, DAYS FROZEN, AND SAMPLE TIME INTERVALS FOR SWEET CORN FIELD TESTS IN CA, FL, NY AND MI

Field Test	Analyte	Last Application Date	Sampling Date	Extraction Date	Analysis Date	Days Frozen	ID
SWEET CORN-CALIFORNIA							
Forage	CGA-49751	7/29/95	8/31/95	11/8/95	11/16/95	69	02-HR-002-95
Forage	CGA-37913	7/29/95	8/31/95	11/8/95	11/10,13/95	69	"
Ears	CGA-49751	7/29/95	8/31/95	11/9/95	11/15/95	70	"
Ears	CGA-37913	7/29/95	8/31/95	11/9/95	11/14/95	70	"
Fodder	CGA-49751	7/29/95	8/31/95	11/14/95	11/21/95	75	"
Fodder	CGA-37913	7/29/95	8/31/95	11/14/95	11/20/95	75	"
SWEET CORN-FLORIDA							
Forage	CGA-49751	5/11/95	6/9/95	10/6/95	10/17/95	119	07-HR-002-95
Forage	CGA-37913	5/11/95	6/9/95	10/6/95	10/13/95	119	"
Ears.	CGA-49751	5/11/95	6/9/95	10/6/95	10/12/95	119	"
Ears	CGA-37913	5/11/95	6/9/95	10/6/95	10/11/95	119	"
Fodder	CGA-49751	5/11/95	7/7/95	10/11/95	10/16,17/95	96	"
Fodder	CGA-37913	5/11/95	7/7/95	10/11/95	10/16/95	96	"

TABLE IIIA. FIELD TESTS, LAST TREATMENT DATE, DAYS FROZEN, AND SAMPLE TIME INTERVALS FOR SWEET CORN FIELD TESTS IN CA, FL, NY AND MI

Field Test	Analyte	Last Application Date	Sampling Date	Extraction Date	Analysis Date	Days Frozen	ID
SWEET CORN-NEW YORK							
Forage	CGA-49751	7/12/95	8/11/95	10/24/95	10/31,11/1/95	74	05HR0015
Forage	CGA-37913	7/12/95	8/11/95	10/24/95	11/1,2/95	74	"
Ears	CGA-49751	7/12/95	8/11/95	10/26/95	11/3/95	76	"
Ears	CGA-37913	7/12/95	8/11/95	10/26/95	11/2/95	76	"
Fodder	CGA-49751	7/12/95	9/14/95	11/1/95	11/6,7/95	48	"
Fodder	CGA-37913	7/12/95	9/14/95	11/1/95	11/6/95	48	"
SWEET CORN-MICHIGAN							
Forage	CGA-49751	7/14/95	8/14/95	10/12/95	10/20/95	59	NE-HR-707-95
Forage	CGA-37913	7/14/95	8/14/95	10/12/95	10/24/95	59	"
Ears	CGA-49751	7/14/95	8/14/95	10/17/95	10/30/95	64	"
Ears	CGA-37913	7/14/95	8/14/95	10/17/95	10/26/95	64	"
Fodder	CGA-37913	7/14/95	9/7/95	10/19/95	10/25/95	42	"
Fodder	CGA-49751	7/14/95	9/7/95	10/19/95	10/25/95	42	"

FIELD TESTS IN CA, FL, NY AND MI

RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO SWEET CORN
TABLE IV. "SCORN_NEW"

FIELD TESTS IN CA, FL, NY, AND MI

ID	(LBS AI/A)	HARVEST DATE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI	EXTRACT DATE	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	EQUIVALENT*
SWEET CORN											
Field Test02-HR-002-95											
Forage											
1-4-A	Control	8/31/95	69	8	33	11/8/95	11/10,13/95	11/16/95	<0.03	<0.05	<0.08
2-4-A	3 + 3 (Metolachlor)	8/31/95	69	8	33	"	"	"	0.235	1.013	1.248
2-4-B	3 + 3 (Metolachlor)	8/31/95	69	8	33	"	"	"	0.219	0.683	0.902
3-4-A	2 + 2 (CGA-77102)	8/31/95	69	8	33	"	"	"	0.574	1.199	1.773
3-4-B	2 + 2 (CGA-77102)	8/31/95	69	8	33	"	"	"	0.457	0.866	1.323
Ears											
1-5-A	Control	8/31/95	70	6	33	11/9/95	11/14/95	11/15/95	<0.03	<0.05	<0.08
2-5-A	3 + 3 (Metolachlor)	8/31/95	70	6	33	"	"	"	<0.03	<0.05	<0.08
2-5-B	3 + 3 (Metolachlor)	8/31/95	70	6	33	"	"	"	<0.03	<0.05	<0.08

RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO SWEET CORN
TABLE IV. "SCORN_NEW"

FIELD TESTS IN CA, FL, NY, AND MI

ID	(LBS AI/A)	HARVEST DATE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI	EXTRACT DATE	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	EQUIVALENT*
3-5-A	2 + 2 (CGA-77102)	8/31/95	70	6	33	"	"	"	<0.03	<0.05	<0.08
3-5-B	2 + 2 (CGA-77102)	8/31/95	70	6	33	"	"	"	<0.03	<0.05	<0.08
FODDER											
1-6-A	Control	8/31/95	75	7	33	11/14/95	11/20/95	11/21/95	<0.03	<0.05	<0.08
2-6-A	3 + 3 (Metolachlor)	8/31/95	75	7	33	"	"	"	1.443	4.097	5.54
2-6-B	3 + 3 (Metolachlor)	8/31/95	75	7	33	"	"	"	1.252	3.437	4.689
3-6-A	2 + 2 (CGA-77102)	8/31/95	75	7	33	"	"	"	0.489	1.557	2.046
3-6-B	2 + 2 (CGA-77102)	8/31/95	75	7	33	"	"	"	0.699	1.501	2.29

RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO SWEET CORN
TABLE IV. "SCORN_NEW"

FIELD TESTS IN CA, FL, NY, AND MI

ID	(LBS AI/A)	HARVEST DATE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI	EXTRACT DATE	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	EQUIVALENT*
SWEET CORN											
Field Test: 07-HR-00295											
FORAGE											
1-4-A	Control	6/9/95	117	11	29	10/6/95	10/13/95	10/17/95	<0.03	<0.05	<0.08
2-4-A	3 + 3 (Metolachlor)	6/9/95	117	11	29	"	"	"	0.326	0.348	0.674
2-4-B	3 + 3 (Metolachlor)	6/9/95	117	11	29	"	"	"	0.379	0.466	0.845
3-4-A	2 + 2 (CGA-77102)	6/9/95	117	11	29	"	"	"	0.279	0.261	0.54
3-4-B	2 + 2 (CGA-77102)	6/9/95	117	11	29	"	"	"	0.235	0.251	0.486

RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO SWEET CORN
TABLE IV. "SCORN_NEW"

FIELD TESTS IN CA, FL, NY, AND MI

ID	(LBS AI/A)	HARVEST DATE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI	EXTRACT DATE	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	EQUIVALENT*
EARS											
1-5-A	Control	6/9/95	117	6	29	10/6/95	10/11/95	10/12/95	<0.03	<0.05	<0.08
2-5-A	3 + 3 (Metolachlor)	6/9/95	117	6	29	"	"	"	<0.03	<0.05	<0.08
2-5-B	3 + 3 (Metolachlor)	6/9/95	117	6	29	"	"	"	<0.03	<0.05	<0.08
3-5-A	2 + 2 (CGA-77102)	6/9/95	117	6	29	"	"	"	<0.03	<0.05	<0.08
3-5-B	2 + 2 (CGA-77102)	6/9/95	117	6	29	"	"	"	<0.03	<0.05	<0.08

RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO SWEET CORN
TABLE IV. "SCORN_NEW"

FIELD TESTS IN CA, FL, NY, AND MI

ID	(LBS AI/A)	HARVEST DATE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI	EXTRACT DATE	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	EQUIVALENT*
FODDER											
1-6-A	Control	7/7/95	94	15	57	10/11/95	10/16/95	10/16,17/95	<0.03	<0.05	<0.08
2-6-A	3 + 3 (Metolachlor)	7/7/95	94	15	57	"	"	"	0.458	0.307	0.765
2-6-B	3 + 3 (Metolachlor)	7/7/95	94	15	57	"	"	"	0.359	0.323	0.682
3-6-A	2 + 2 (CGA-77102)	7/7/95	94	15	57	"	"	"	1.115	0.704	1.819
3-6-B	2 + 2 (CGA-77102)	7/7/95	94	15	57	"	"	"	0.568	0.397	0.965

RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO SWEET CORN
TABLE IV. "SCORN_NEW"

FIELD TESTS IN CA, FL, NY, AND MI

ID	(LBS AI/A)	HARVEST DATE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI	EXTRACT DATE	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	EQUIVALENT*
SWEET CORN											
Field Test: 05-HR-00195											
FORAGE											
1-4-A	Control	8/11/95	73	8	30	10/24/95	11/1,2/95	10/31,11/1/95	<0.03	<0.05	<0.08
2-4-A	3 + 3 (Metolachlor)	8/11/95	73	8	30	"	"	"	0.381	0.533	0.914
2-4-B	3 + 3 (Metolachlor)	8/11/95	73	8	30	"	"	"	0.673	0.81	1.483
3-4-A	2 + 2 (CGA-77102)	8/11/95	73	8	30	"	"	"	0.27	0.207	0.477
3-4-B	2 + 2 (CGA-77102)	8/11/95	73	8	30	"	"	"	0.186	0.165	0.351

RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO SWEET CORN
TABLE IV. "SCORN_NEW"

FIELD TESTS IN CA, FL, NY, AND MI

ID	(LBS AI/A)	HARVEST DATE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI	EXTRACT DATE	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	EQUIVALENT*
EARS											
1-5-A	Control	8/11/95	75	7	30	10/26/95	11/2/95	11/3/95	<0.03	<0.05	<0.08
2-5-A	3 + 3 (Metolachlor)	8/11/95	75	7	30	"	"	"	<0.03	<0.05	<0.08
2-5-B	3 + 3 (Metolachlor)	8/11/95	75	7	30	"	"	"	<0.03	<0.05	<0.08
3-5-A	2 + 2 (CGA-77102)	8/11/95	75	7	30	"	"	"	<0.03	<0.05	<0.08
3-5-B	2 + 2 (CGA-77102)	8/11/95	75	7	30	"	"	"	<0.03	<0.05	<0.08

RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO SWEET CORN
TABLE IV. "SCORN_NEW"

FIELD TESTS IN CA, FL, NY, AND MI

ID	(LBS AI/A)	HARVEST DATE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI	EXTRACT DATE	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	EQUIVALENT*
FODDER											
1-6-A	Control	9/14/95	47	6	64	11/1/95	11/6/95	11/6,7/95	<0.03	<0.05	<0.08
2-6-A	3 + 3 (Metolachlor)	9/14/95	47	6	64	"	"	"	0.149	0.159	0.308
2-6-B	3 + 3 (Metolachlor)	9/14/95	47	6	64	"	"	"	0.102	0.136	0.238
3-6-A	2 + 2 (CGA-77102)	9/14/95	47	6	64	"	"	"	0.308	0.268	0.576
3-6-B	2 + 2 (CGA-77102)	9/14/95	47	6	64	"	"	"	0.375	0.517	0.892

RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO SWEET CORN
TABLE IV. "SCORN_NEW"

FIELD TESTS IN CA, FL, NY, AND MI

ID	(LBS AI/A)	HARVEST DATE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI	EXTRACT DATE	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	EQUIVALENT*
SWEET CORN											
Field Test: NE-HR70795											
FORAGE											
1-4-A	Control	7/14/95	88	8	31	10/12/95	10/24/95	10/20/95	<0.03	<0.05	<0.08
2-4-A	3 + 3 (Metolachlor)	7/14/95	88	8	31	"	"	"	0.706	3.199	3.905
2-4-B	3 + 3 (Metolachlor)	7/14/95	88	8	31	"	"	"	1.682	4.065	5.747
3-4-A	2 + 2 (CGA-77102)	7/14/95	88	8	31	"	"	"	0.363	1.545	1.908
3-4-B	2 + 2 (CGA-77102)	7/14/95	88	8	31	"	"	"	0.976	3.464	4.44

RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO SWEET CORN
TABLE IV. "SCORN_NEW"

FIELD TESTS IN CA, FL, NY, AND MI

ID	(LBS AI/A)	HARVEST DATE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI	EXTRACT DATE	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	EQUIVALENT*
EARS											
1-5-A	Control	7/14/95	93	13	31	10/17/95	10/26/95	10/30/95	<0.03	<0.05	<0.08
2-5-A	3 + 3 (Metolachlor)	7/14/95	93	13	31	"	"	"	<0.03	<0.05	<0.08
2-5-B	3 + 3 (Metolachlor)	7/14/95	93	13	31	"	"	"	<0.03	<0.05	<0.08
3-5-A	2 + 2 (CGA-77102)	7/14/95	93	13	31	"	"	"	<0.03	<0.05	<0.08
3-5-B	2 + 2 (CGA-77102)	7/14/95	93	13	31	"	"	"	<0.03	<0.05	<0.08

RESIDUES OF METOLACHLOR and CGA-77102 DETERMINED AS CGA-49751 AND CGA-37913 AFTER APPLICATION OF DUAL ® 8E AND CGA-77102 8E TO SWEET CORN
TABLE IV. "SCORN_NEW"

FIELD TESTS IN CA, FL, NY, AND MI

ID	(LBS AI/A)	HARVEST DATE	HARVEST TO EXTRACT (D)	EXTRACT TO ANALYSIS (D)	PHI	EXTRACT DATE	ANAL DATE	CGA-49751	CGA-37913	CGA-49751	EQUIVALENT*
FODDER											
1-6-A	Control	9/7/95	42	9	55	10/19/95	10/25/95	10/28/95	<0.03	<0.05	<0.08
2-6-A	3 + 3 (Metolachlor)	9/7/95	42	9	55	"	"	"	0.707	1.729	2.436
2-6-B	3 + 3 (Metolachlor)	9/7/95	42	9	55	"	"	"	0.825	1.973	2.798
3-6-A	2 + 2 (CGA-77102)	9/7/95	42	9	55	"	"	"	0.913	1.315	2.228
3-6-B	2 + 2 (CGA-77102)	9/7/95	42	9	55	"	"	"	1.047	1.243	2.29

Metolachlor/77102 equivalents are calculated from the addition of the residue values for the two metabolites, CGA-49751 and CGA-37913.

Data Not Reported (DNR). Sample lost during analysis.

FIELD RESIDUES: SWEET CORN (SUMMARY)**FIELD TESTS IN CA, FL, NY AND MI** A:\SW_CORN.SUM 4L "FIELD RESIDUES

METOLACHLOR				CGA-77102			
RATES LB AI/A PPI + PE	MAXIMUM	NO OF SAMPLES	AVERAGE (STD DEV)	RATES LB AI/A PPI + PE	MAXIMUM	NO OF SAMPLES	AVERAGE (STD DEV)
FORAGE							
CONTROL	<0.08	4	<0.08 (0)				
3 + 3	5.75	10	1.59 (1.82)	2 + 2	4.44	10	1.15 (1.33)
EAR							
CONTROL	<0.08	4	<0.08 (0)				
3 + 3	<0.08	8	<0.08 (0)	2 + 2	<0.08	8	<0.08 (0)
FODDER							
CONTROL	<0.08	4	<0.08 (0)				
3 + 3	5.54	8	2.18 (2.06)	2 + 2	2.29	8	1.63 (0.70)

NOTE:
- DATA FROM " 4L " FILE A:\SW_FCORN.SUM L "FIELD RESIDUES: (SUMMARY) **•FIELD TESTS IN CA, FL, NY AND MI**
- RESIDUES FROM METOLACHLOR (DUAL 8E) OR CHIRAL METOLACHLOR (CGA-77102 8E) APPLICATION PPI + PE AT LAYBY
- CGA-37913 AND CGA-49751 RESIDUES ARE REPORTED AS METOLACHLOR/CTA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14

FIELD RESIDUES: SWEET CORN (SUMMARY, CONTINUED)
TRIALS CONDUCTED IN FL, NY, MI AND CA
PHI RANGE, DAYS FROM HARVEST TO EXTRACT, DAYS FROM EXTRACT TO ANALYSIS FOR METOLCHLOR AND CHIRAL METOLACHLOR

PHI RANGE (DAYS)	RANGE HARVEST TO EXTRACT (DAYS)	RANGE EXTRACT TO ANALYSIS (DAYS)
FORAGE		
29 - 33	68 - 117	8 - 11
EAR		
29 - 33	68 - 117	6 - 13
FODDER		
33 - 64	42 - 94	6 - 15

NOTE: DATA FROM "4L" FILE

CGA-37913 & CGA-49751 RESIDUES ARE REPORTED AS METOLACLOR/CTA-77102 EQUIVALENTS, USING CORRECTION FACTORS OF 1.47 AND 1.14

TRIALS CONDUCTED IN: FL, NY, MI AND CA