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OFFICE OF  
PREVENTION, PESTICIDES, AND  
TOXIC SUBSTANCES

**MEMORANDUM**

**SUBJECT:** PP# 5F04555. Glyphosate in or on Corn Forage. **Evaluation of Residue Data and Analytical Methods.** MRID#s 437127-01 & -02. Chemical 103601. Barcodes D217539 & D217541. CBTS#s 15913 & 15914.

**FROM:** G.F. Kramer, Ph.D., Chemist *G.F. Kramer*  
Tolerance Petition Team I  
Chemistry Branch I, Tolerance Support  
Health Effects Division (7509C)

**THRU:** E. Zager, Acting Branch Chief *R.B. Bergelt*  
Chemistry Branch I, Tolerance Support  
Health Effects Division (7509C) *E. Zager*

**TO:** Robert Taylor, Product Manager  
Vickie Walters, Team 25 Reviewer  
Registration Division (7505C)

Monsanto has submitted a petition for tolerances for residues of the herbicide glyphosate (N-(phosphonomethyl)glycine) in/on corn forage. This tolerance is requested in conjunction with an application for registration of Roundup Herbicide for use on genetically engineered corn (Roundup-Ready Corn). Tolerances, expressed as the parent plus the metabolite AMPA (aminomethyl phosphonic acid), are currently established for numerous commodities under 40 CFR § 180.364(a) including grain crops at 0.1 ppm. The proposed tolerance is:

Corn Forage

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1.0 ppm

**BACKGROUND**

In conjunction with PP#8F03673, Monsanto has requested increases in the tolerances for glyphosate on corn grain to 1 ppm, corn fodder (stover) to 100 ppm, and the kidney and liver of cattle, goats,

hogs, horses, poultry, and sheep to 1 ppm, and the establishment of a permanent tolerance on aspirated grain fractions at 200 ppm (Memo, W. Cutchin, in preparation). Glyphosate tolerances for kidney and liver of cattle, goats, hogs, horses, poultry, and sheep are in the process of being raised to 4 ppm (PP#4F4312; Memo, M. Rodriguez 1/11/95). CBTS has concurred with the Draft Federal Register Notice on the Proposed Rule establishing these tolerances (PP#4F4312; Memo, M. Rodriguez 10/31/95).

Glyphosate controls weeds through inhibition of 5-enolpyruvyl-shikimate-3-phosphate synthase (EPSSPS), an enzyme in the aromatic amino acid biosynthetic pathway. Monsanto has genetically modified corn to express *agrobacterium* EPSSPS which is resistant to glyphosate. Corn expressing this gene can tolerate glyphosate at rates up to 0.75 lbs. ai/A per postemergent application.

#### Executive Summary of Chemistry Deficiencies

- Revised label adding PHIs and a minimum retreatment interval.
- Revised Section F clarifying commodity name.
- Revised label to limit adjuvant use or submit more residue data.
- Establishment of field corn grain, fodder and aspirated grain fraction tolerances in PP# 8F3673.
- Establishment of liver and kidney tolerances in PP# 4F4312.

#### CONCLUSIONS

1a. The following deficiencies in the label were noted: a) PHIs were not provided for forage and grain. b) A minimum retreatment interval for the postemergence applications is not specified.

1b. Based on the submitted residue data, the directions for use on Roundup-Ready corn should be revised by specifying PHIs of at least 50 days for forage and 7 days for grain and by specifying a retreatment interval of at least 14 days for the postemergence applications.

2a. The metabolism of glyphosate in the genetically-modified corn is the same as in normal plants: glyphosate *per se* and its metabolite AMPA are the only significant components of the residue.

2b. The HED Metabolism Committee has decided that only glyphosate *per se* is of regulatory concern and that AMPA is not of toxicological concern regardless of its level in food (Metabolism

Committee Decision Memo, R. Perfetti 3/17/94).

3. The RAC samples from the field residue studies were stored frozen for a maximum of 194 days. Glyphosate residues have been shown to be stable in a variety of crop matrices for up to 2.5 years of frozen storage at -18 °C (Memo, C. Eiden 11/17/94; D206278). Storage stability is thus not an issue for this petition.

4a. The registrant has submitted a total of 22 acceptable corn residue trials. The maximum glyphosate residue in corn forage was 0.82 ppm, in corn fodder was 41.2 ppm, and in corn grain was 0.36 ppm. These trials were located in Regions 1 (1 trial), 2 (1 trial), 5 (16 trials), 7 (2 trials) and 8 (2 trials). This distribution does not correspond with that suggested for field corn in *EPA Guidance on Number and Location of Domestic Crop Field Trials for Establishment of Pesticide Residue Tolerances*, 6/2/94: Regions 1 (1 trial), 2 (1 trial), 5 (17 trials) and 6 (1 trial). However, as the states in which these trials were performed represented >90% of U.S. corn acreage in 1992 (*Agricultural Statistics*, 1993) and three separate plots were included in each trial, CBTS concludes that the number of trials and the geographic representation are adequate to establish tolerances for glyphosate in corn forage.

4b. However, the field trial data do not reflect the proposed use on Roundup-Ready corn in that directions for the use of adjuvants (nonionic surfactants and ammonium sulfate) are contained on the Roundup label but the use of these compounds was not represented in the postemergence or preharvest application of any trial. The registrant must provide residue data for corn RACs from trials which include postemergent and preharvest applications utilizing nonionic surfactants and ammonium sulfate (as specified in *EPA Guidance on Number and Location of Domestic Crop Field Trials for Establishment of Pesticide Residue Tolerances*, 6/2/94) or change the labelling for corn to specify that the use of additives for the postemergence and preharvest applications is not permitted. The use of additives in the preemergence application is not likely to influence the potential for residues in corn RACs as the vast majority of the residues will result from the postemergence and preharvest applications. If the directions for use are modified as recommended above, then the submitted residue data will support the proposed tolerance for residues of glyphosate on corn forage of 1.0 ppm.

4c. The tolerance for aspirated grain fractions and the increased tolerances on field corn grain and fodder proposed in conjunction with PP#8F03673 are necessary to support this use on Roundup-Ready corn.

4d. The petitioner has proposed a tolerance for "corn forage." However, tolerances are established on "corn, field, forage." A

revised Section F is required.

5. Corn grain, forage, fodder, and aspirated grain fractions are animal feed items. Based on the proposed tolerances on aspirated grain fractions and corn fodder, the maximum dietary burden associated with the proposed use on corn is 78 ppm (PP#8F03673; Memo, W. Cutchin, in preparation). CBTS has recommended that glyphosate tolerances for kidney and liver of cattle, goats, hogs, horses, poultry, and sheep be raised to 4 ppm (PP#4F4312; Memo, M. Rodriguez 1/11/95). The dietary burden of 78 ppm glyphosate residues on corn commodities will be covered by these pending tolerances (PP#8F03673; Memo, W. Cutchin, in preparation). The secondary residues on cattle meat and milk are not expected to be a problem from the proposed use provided the 4 ppm kidney and liver tolerances are established.

6. There is neither a Codex proposal, nor Canadian or Mexican limits for residues of glyphosate in corn forage. Therefore, a compatibility issue is not relevant to the proposed tolerance. A copy of the IRLS sheet is attached to this memorandum.

#### RECOMMENDATIONS

CBTS recommends against the proposed tolerance for glyphosate on corn forage for reasons detailed in conclusions 1b, 4b, 4c and 4d.

#### DETAILED CONSIDERATIONS

##### Product Chemistry

No new studies were submitted with this petition. Any deficiencies in product chemistry will be addressed through reregistration.

##### Formulation

Glyphosate is formulated as Roundup Herbicide (EPA Reg. No. 524-445), a soluble concentrate containing 41% a.i. (3 lbs. ai/gal).

##### Proposed Use

The following uses are specified for Roundup Ready corn:

**Preplant/preemergent-** Roundup may be applied preemergence at a maximum use rate of 3.75 lbs. ai/A (5 qts./A). **Postemergence-** Roundup may be applied beginning at emergence continuing through the 12-leaf stage or until the corn height reaches 30 inches. The maximum use rate is 0.75 lbs. ai. A maximum of two applications may be performed. No retreatment interval is specified. **Preharvest-** The maximum application rate is 0.75 lbs. ai/A. The total seasonal maximal application rate is 6.0 lbs. ai/A (8 qt./A). The PHI is not specified.

The spray volume is 5-20 gal/acre by ground and 3-15 gal/acre by air. Non-ionic surfactants (0.5%) or ammonium sulfate (2%) may be added to the finished spray.

**The following deficiencies in the label were noted:**

- 1) PHIs were not provided for forage and grain.
- 2) A minimum retreatment interval for the postemergence applications is not specified.

Based on the submitted residue data, the directions for use on Roundup-Ready corn should be revised by specifying PHIs of at least 50 days for forage and 7 days for grain and by specifying a retreatment interval of at least 14 days for the postemergence applications.

#### **Nature of Residue- Plants**

The HED Metabolism Committee has decided that only glyphosate per se is of regulatory concern and that AMPA is not of toxicological concern regardless of its level in food (Memo, R. Perfetti 3/17/94).

Submitted with this petition:

Nature of the Residue in Corn Plants Which are Tolerant to Roundup Herbicide. MRID# 437127-01

<sup>14</sup>C-Glyphosate was applied to Roundup Ready corn plants at the 5-6 leaf stage and at the 10-12 leaf stage at rates of 0.83 and 0.75 g a.i./A, respectively. Forage and silage samples were taken 3 and 49 days after the final application, respectively. Grain and fodder samples were harvested at maturity (83-days PHI). The TRR in forage was 10.8 ppm; in silage, 9.6 ppm; in fodder, 19.1 ppm; and in grain, 1.0 ppm. In forage, 72% of the TRR was identified as glyphosate and 16% as AMPA; in silage, 67% of the TRR was identified as glyphosate and 13% as AMPA; in fodder, 75% of the TRR

was identified as glyphosate and 11% as AMPA; and in grain, 3% of the TRR was identified as glyphosate and 60% as AMPA. The metabolism of glyphosate in the genetically-modified corn is thus the same as in normal plants: glyphosate *per se* and its metabolite AMPA are the only significant components of the residue.

#### Nature of Residue- Animals

The HED Metabolism Committee has decided that only glyphosate *per se* is of regulatory concern in animal RACs (Memo, R. Perfetti 3/17/94).

#### Analytical Methodology- Plants

Adequate enforcement methods are available for analysis of residues of glyphosate in or on plant commodities. These methods include GLC (Method I in *Pesticides Analytical Manual (PAM) II*; the limit of detection is 0.05 ppm) and HPLC with fluorometric detection. Use of the GLC method is being discouraged due to lengthiness of the procedure. The HPLC method has undergone successful Agency validation and was recommended for inclusion in *PAM II*; the limit of detection is 0.0005 ppm. A GC/MS method for glyphosate in crops has also been validated by ACL (Memo, G. Kramer 3/21/95). This method has not yet been submitted for publication in *PAM-II*.

#### Storage Stability Studies

The RAC samples from the field residue were stored frozen for a maximum of 194 days. Glyphosate residues have been shown to be stable in a variety of crop matrices for up to 2.5 years of frozen storage at -18 °C (Memo, C. Eiden 11/17/94). Storage stability is thus not an issue for this petition.

#### Magnitude of Residue- Plants

Submitted with this petition:

Magnitude of Glyphosate Residues in Glyphosate-Tolerant Corn  
Raw Agricultural and Commodities. MRID# 437127-02

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A total of 22 field residue trials were conducted in 1994 in 16 different states, which together accounted for 92% of the U.S. grain corn acreage in 1992 (*Agricultural Statistics*, 1993). Three different treatment regimens were employed in separate plots at each site. Treatment 1 consisted of a preemergent application at a rate of 5.7 lbs. ai/A (1.5X) and an early postemergent application at a rate of 0.75 lbs. ai/A (2-6 leaf stage) (1X). Treatment 2 consisted of a preemergent application at a rate of 5.7 lbs. ai/A (1.5X), an early postemergent application at a rate of 0.75 lbs. ai/A (2-6 leaf stage) (1X), and a late postemergent application at layby at a rate of 0.75 lbs. ai/A (1X). Treatment 3 consisted of a preemergent application at a rate of 5.7 lbs. ai/A (1.5X), an early postemergent application at a rate of 0.75 lbs. ai/A (2-6 leaf stage) (1X), a late postemergent application at layby at a rate of 0.75 lbs. ai/A (1X) and a preharvest application at a rate of 0.75 lbs. ai/A (1X). The spray volume was 11-22 gal/A. The interval between the early and late postemergence applications ranged from 13-38 days. Forage samples were harvested from each treated plot 25-98 days after the final postemergence application. Fodder and grain samples were harvested from each treated plot 76-153 days after the final postemergence application or 6-8 days after the preharvest application. Samples were analyzed for glyphosate and AMPA using the HPLC-fluorometric method previously reviewed by CBTS (Memo, R. Cook 1/29/91). The method was validated in corn forage over a range of 0.05-30.0 ppm in corn fodder over a range of 0.05-50.0 ppm and in corn grain byproducts over a range of 0.05-25.0 ppm. The average recovery in corn forage was 83.4% for glyphosate and 82.2% for AMPA. The average recovery in corn fodder was 88.4% for glyphosate and 88.0% for AMPA. The average recovery in corn grain was 86.3% for glyphosate and 89.9% for AMPA. Analysis of the treated samples showed that the maximum glyphosate residue in corn forage was 0.82 ppm (Table 1), in corn fodder was 41.2 ppm (Table 2), and in corn grain was 0.36 ppm (Table 3).



Table 1- Glyphosate and AMPA residues in corn forage. See above discussion for details of each treatment.

Location	Treatment #	Spray Volume (gal/A)*	PHI (Days)	Maximum Residues (ppm)	
				Glyphosate	AMPA
CO	1	18	80	ND	ND
	2	17	55	0.11	0.16
	3	17	55	0.06	0.13
IA	1	19	77	ND	ND
	2	19	62	0.03	0.14
	3	19	62	0.05	0.13
IA	1	20	83	0.02	0.03
	2	20	70	0.08	0.21
	3	20	70	0.08	0.22
IA	1	20	96	ND	ND
	2	20	63	0.20	0.46
	3	20	63	0.16	0.32
IL	1	20	84	ND	0.02
	2	20	64	0.05	0.12
	3	20	64	0.03	0.14
IL	1	15	84	ND	ND
	2	12	54	0.28	0.46
	3	12	54	0.19	0.47
IL	1	18	97	0.01	0.03
	2	12	65	0.31	0.36
	3	12	65	0.08	0.37
IN	1	16	75	0.03	0.13
	2	10	61	0.20	0.88
	3	10	61	0.52	0.94
KS	1	19	76	ND	ND
	2	20	48	0.21	0.52
	3	20	48	0.22	0.45
KY	1	17	55	0.01	0.21
	2	17	25	0.61	2.33
	3	18	25	0.82	2.60
MI	1	17	93	0.02	0.05
	2	17	72	0.26	0.36
	3	17	72	0.24	0.57

\*Spray volume of final application

Table 1 (continued)- Glyphosate and AMPA residues in corn forage.

Location	Treatment #	Spray Volume (gal/A)*	PHI (Days)	Maximum Residues (ppm)	
				Glyphosate	AMPA
MN	1	20	98	0.04	0.05
	2	20	67	0.12	0.40
	3	20	67	0.14	0.46
MN	1	18	93	ND	0.04
	2	16	69	0.11	0.24
	3	16	69	0.11	0.19
MO	1	14	69	ND	0.10
	2	18	49	0.11	0.98
	3	18	49	0.11	1.10
NC	1	20	67	ND	0.11
	2	20	48	0.05	0.34
	3	20	48	0.05	0.32
NE	1	20	93	ND	0.04
	2	20	61	0.12	0.32
	3	20	61	0.13	0.27
NE	1	20	96	ND	ND
	2	20	63	0.12	0.45
	3	20	63	0.13	0.24
OH	1	19	88	ND	ND
	2	18	50	0.13	0.43
	3	18	50	0.27	0.54
PA	1	20	86	0.03	0.08
	2	22	71	0.23	0.75
	3	21	71	0.20	0.62
SD	1	18	93	ND	0.05
	2	15	63	0.20	0.49
	3	15	63	0.19	0.56
TX	1	15	84	ND	ND
	2	15	49	0.10	0.07
	3	15	49	0.06	0.05
WI	1	16	86	0.10	0.11
	2	16	71	0.19	0.42
	3	16	71	0.14	0.26

\*Spray volume of final application

Table 2- Glyphosate and AMPA residues in corn fodder. See above discussion for details of each treatment.

Location	Treatment #	Spray Volume (gal/A)*	PHI (Days)	Maximum Residues (ppm)	
				Glyphosate	AMPA
CO	1	18	124	ND	ND
	2	17	99	0.16	0.13
	3	18	6	8.74	0.18
IA	1	19	132	0.03	0.05
	2	19	117	0.09	0.06
	3	21	7	21.12	0.39
IA	1	20	143	0.02	0.04
	2	19	130	0.14	0.11
	3	20	7	8.12	0.17
IA	1	20	132	ND	ND
	2	20	99	0.14	0.32
	3	20	7	13.27	0.51
IL	1	20	124	ND	ND
	2	20	104	0.05	0.02
	3	15	7	8.20	0.13
IL	1	15	134	ND	ND
	2	12	104	0.39	0.35
	3	15	6	3.04	0.41
IL	1	18	153	ND	ND
	2	12	121	0.11	0.27
	3	11	7	12.30	0.49
IN	1	16	111	0.04	0.03
	2	10	97	0.42	0.20
	3	15	6	7.87	1.37
KS	1	19	119	ND	ND
	2	20	91	0.14	0.14
	3	20	8	2.89	0.22
KY	1	17	109	0.01	0.25
	2	17	79	1.35	3.04
	3	17	6	41.19	4.83
MI	1	17	135	0.02	0.03
	2	17	114	0.48	0.14
	3	17	6	12.74	0.47

\*Spray volume of final application

Table 2 (continued)- Glyphosate and AMPA residues in corn fodder.

Location	Treatment #	Spray Volume (gal/A)*	PHI (Days)	Maximum Residues (ppm)	
				Glyphosate	AMPA
MN	1	20	143	ND	ND
	2	20	112	0.30	0.30
	3	20	7	2.03	0.30
MN	1	18	142	ND	ND
	2	16	118	0.14	0.12
	3	16	6	33.81	0.29
MO	1	14	110	ND	0.04
	2	18	90	0.54	0.72
	3	19	6	14.29	0.50
NC	1	20	95	ND	0.27
	2	20	76	0.06	0.41
	3	20	7	6.02	0.97
NE	1	20	128	ND	ND
	2	20	96	0.07	0.09
	3	20	7	1.89	0.14
NE	1	20	129	ND	ND
	2	20	96	0.16	0.15
	3	20	8	1.96	0.22
OH	1	19	145	ND	ND
	2	18	107	0.10	0.32
	3	19	6	8.41	0.45
PA	1	20	114	ND	0.05
	2	22	99	0.40	0.44
	3	16	6	6.28	0.62
SD	1	18	142	ND	ND
	2	15	112	18.48	0.43
	3	16	6	20.99	0.47
TX	1	15	118	0.01	ND
	2	15	83	0.14	0.05
	3	15	7	20.05	ND
WI	1	16	118	ND	ND
	2	16	103	0.23	0.44
	3	20	6	7.08	0.21

\*Spray volume of final application

Table 3- Glyphosate and AMPA residues in corn grain. See above discussion for details of each treatment.

Location	Treatment #	Spray Volume (gal/A)*	PHI (Days)	Maximum Residues (ppm)	
				Glyphosate	AMPA
CO	1	18	124	ND	ND
	2	17	99	0.02	ND
	3	18	6	0.36	ND
IA	1	19	132	ND	0.04
	2	19	117	ND	0.08
	3	21	7	ND	0.11
IA	1	20	143	0.01	0.01
	2	19	130	0.01	0.11
	3	20	7	0.02	0.10
IA	1	20	132	ND	ND
	2	20	99	ND	0.13
	3	20	7	ND	0.23
IL	1	20	124	ND	0.02
	2	20	104	ND	0.14
	3	15	7	0.01	0.12
IL	1	15	134	ND	ND
	2	12	104	0.03	0.50
	3	15	6	0.03	0.31
IL	1	18	153	ND	0.01
	2	12	121	ND	0.42
	3	11	7	0.03	0.42
IN	1	16	111	ND	0.14
	2	10	97	0.02	0.89
	3	15	6	ND	0.62
KS	1	19	119	0.03	0.36
	2	20	91	0.03	0.51
	3	20	8	0.03	0.52
KY	1	17	109	ND	0.20
	2	17	79	0.01	1.53
	3	17	6	ND	1.41
MI	1	17	135	ND	ND
	2	17	114	ND	0.47
	3	17	6	0.01	0.37

\*Spray volume of final application

Table 3 (continued)- Glyphosate and AMPA residues in corn grain.

Location	Treatment #	Spray Volume (gal/A)*	PHI (Days)	Maximum Residues (ppm)	
				Glyphosate	AMPA
MN	1	20	143	ND	ND
	2	20	112	ND	0.29
	3	20	7	ND	0.29
MN	1	18	142	ND	ND
	2	16	118	ND	0.14
	3	16	6	0.06	0.22
MO	1	14	110	ND	0.13
	2	18	90	ND	1.35
	3	19	6	ND	1.00
NC	1	20	95	ND	ND
	2	20	76	0.01	ND
	3	20	7	0.02	ND
NE	1	20	128	0.05	ND
	2	20	96	ND	0.26
	3	20	7	ND	0.32
NE	1	20	129	ND	ND
	2	20	96	ND	0.21
	3	20	8	ND	0.30
OH	1	19	145	ND	ND
	2	18	107	ND	0.37
	3	19	6	ND	0.23
PA	1	20	114	ND	0.04
	2	22	99	0.02	0.29
	3	16	6	0.02	0.32
SD	1	18	142	0.14	ND
	2	15	112	ND	0.34
	3	16	6	0.02	0.32
TX	1	15	118	ND	ND
	2	15	83	ND	0.16
	3	15	7	ND	0.11
WI	1	16	118	ND	ND
	2	16	103	ND	0.20
	3	20	6	ND	0.14

\*Spray volume of final application

**Conclusions:** The registrant has submitted a total of 22 acceptable corn residue trials. These trials were located in Regions 1 (1 trial), 2 (1 trial), 5 (16 trials), 7 (2 trials) and 8 (2 trials). This distribution does not correspond with that suggested for field corn in *EPA Guidance on Number and Location of Domestic Crop Field Trials for Establishment of Pesticide Residue Tolerances, 6/2/94*: Regions 1 (1 trial), 2 (1 trial), 5 (17 trials) and 6 (1 trial). However, as the states in which these trials were performed represented >90% of U.S. corn acreage in 1992 (*Agricultural Statistics, 1993*) and three separate plots were included in each trial, CBTS concludes that the number of trials and the geographic representation are adequate to establish tolerances for glyphosate in corn forage. The preemergence application rate was 1.5X so that the seasonal application rate appears to exceed 1X. However, as the vast majority of residues are expected to result from postemergent and preharvest applications, for the purposes of setting tolerances, CBTS considers these trials to have been performed at 1X.

However, the field trial data do not reflect the proposed use on Roundup-Ready corn in that directions for the use of adjuvants (nonionic surfactants and ammonium sulfate) are contained on the Roundup label but the use of these compounds was not represented in the postemergence or preharvest application of any trial. The registrant must provide residue data for corn RACs from trials which include postemergent and preharvest applications utilizing nonionic surfactants and ammonium sulfate (as specified in *EPA Guidance on Number and Location of Domestic Crop Field Trials for Establishment of Pesticide Residue Tolerances, 6/2/94*) or change the labelling for corn to specify that the use of additives for the postemergence and preharvest applications is not permitted. The use of additives in the preemergence application is not likely to influence the potential for residues in corn RACs as the vast majority of the residues will result from the postemergence and preharvest applications. If the directions for use are modified as recommended above, then the submitted residue data will support the proposed tolerance for residues of glyphosate on corn forage of 1.0 ppm.

The tolerance for aspirated grain fractions and the increased tolerances on field corn grain and fodder proposed in conjunction with PP#8F03673 are necessary to support this use on Roundup-Ready corn.

The petitioner has proposed a tolerance for "corn forage." However, tolerances are established on "corn, field, forage." A revised Section F is required.

**Magnitude of the Residue- Processed Fractions**

Residues of glyphosate have been found to not concentrate in corn processed commodities (PP#8F03673; Memo, W. Cutchin, in preparation).

**Magnitude of the Residue- Animals**

Corn grain, forage, fodder, and aspirated grain fractions are animal feed items. Based on the proposed tolerances on aspirated grain fractions and corn fodder, the maximum dietary burden associated with this use on corn is 78 ppm (PP#8F03673; Memo, W. Cutchin, in preparation). CBTS has recommended that glyphosate tolerances for kidney and liver of cattle, goats, hogs, horses, poultry, and sheep be raised to 4 ppm (PP#4F4312; Memo, M. Rodriguez 1/11/95). The pending tolerances are associated with a preharvest use of glyphosate on alfalfa. The dietary burden of 78 ppm glyphosate residues on corn commodities will be covered by these pending tolerances (PP#8F03673; Memo, W. Cutchin, in preparation). The secondary residues on cattle meat and milk are not expected to be a problem provided the 4 ppm kidney and liver tolerances are established.

Attachment 1- IRLS Sheet

cc: PP#5F04555, Kramer, R.F., Circ.  
RDI: TPT1 (2/29/96), R. Perfetti for E. Zager (3/13/96), R.A. Loranger (3/12/96)  
G.F. Kramer:804V:CM#2:(703)305-5079:7509C



*L. Kress* 2/26/96

Attachment:

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INTERNATIONAL RESIDUE LIMIT STATUS

CHEMICAL glyphosate\*

CODEX NO. 158

CODEX STATUS:

No Codex Proposal  
Step 6 or Above \*

Residue (if Step 8): \_\_\_\_\_

Glyphosate

PROPOSED U.S. TOLERANCES:

Petition No. 5F04555

CBTS Reviewer G.F. Kramer

Residue: glyphosate

<u>Crop(s)</u>	<u>Limit</u> <u>(mg/KG)</u>
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<u>Crop(s)</u>	<u>Limit</u> <u>(mg/KG)</u>
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Corn Forage	1.0
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CANADIAN LIMITS:

No Canadian Limits (on corn forage)

Residue: glyphosate +

aminomethyl-phosphonic acid

MEXICAN LIMITS:

No Mexican Limits (on corn forage) \*\*

Residue: glyphosate ?

<u>Crop(s)</u>	<u>Limit</u> <u>(mg/KG)</u>
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<u>Crop(s)</u>	<u>Limit</u> <u>(mg/KG)</u>
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NOTES

\*N-(phosphonomethyl)glycine

\* Nearest Codex limit is 100 ppm straw & fodder (dry) of cereal grains and 0.1 ppm on corn

\*\* There is a 0.1 ppm Mexican limit on corn.