

US EPA ARCHIVE DOCUMENT

PM
1-26-76

EEE BRANCH REVIEW

DATE: IN _____ OUT _____ IN _____ OUT _____ IN 8/8/75 OUT 1/26/76
FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. 524-308

PETITION OR EXP. PERMIT NO. _____

DATE DIV. RECEIVED 3/26/75

DATE OF SUBMISSION 3/20/75

DATE SUBMISSION ACCEPTED _____

TYPE PRODUCT(S): I, D, (H) F, N, R, S Herbicide

PRODUCT MGR. NO. _____

PRODUCT NAME(S) Roundup (GLYPHOSATE)

COMPANY NAME Monsanto Agriculture Products Co.

SUBMISSION PURPOSE Label Modification Non-Crop Sites

CHEMICAL & FORMULATION Isopropylamine Salt of N-phosphonomethyl glycine
Water Sol. Conc. 3 lb/gal. acid equivalent

200.0 Introduction

This review is concerned with the Monsanto request of March 20, 1975 to make certain changes in their presently approved Roundup label. Specifically these changes are:

1. Addition of a second sentence to the explanatory statement regarding the active ingredient, and
2. The highlighting of certain weeds in the currently approved list by describing rates and application details so that optimum efficacy may be achieved.

200.1 Proposed Changes

Addition of a second sentence to the explanatory statement (*) regarding the active ingredient as follows: "Equivalent to 359 grams per liter or 3 pounds per U. S. Gallon of the acid, glyphosate." See current and proposed labels, attachments 1 and 2.

The second change involves the addition of six short paragraphs to the Control of Perennial Weeds section of the label as detailed in Table 1 (USE SHEETS).

201.0 Data Summary

Results of efficacy studies at numerous locations as given by Registrant are contained in Attachments 3 - 7. Entries specifically covering the recommended usage rates indicated on the proposed label or rates that bracket these recommendations have been summarized in Table 1.

202.0 Conclusions

Requested label changes improve use section clarity and should result in more efficient use of the herbicide. Expansion of the weed control section to include paragraphs on selected species is justified by both the current efficacy data as well as that previously submitted by registrant to support the currently approved label.

Failure of the registrant to include efficacy data for the selected weed species on all currently registered sites does not constitute sufficient cause to disallow the proposed label changes.

The expanded label will provide the applicator with information necessary to control the selected weed species and accordingly should reduce or eliminate ineffective or excessive applications of the herbicide. From an efficacy viewpoint, the label changes discussed in this review are supported by data submissions and the request to amend the Roundup label should be granted.

202.1 Claims supported by the data submitted

Claims in the current label for Perennial Weed control of Bermuda grass, Canada thistle, Field bindweed, Johnsongrass, Quackgrass and other perennials are supported by data submitted.

202.2 Claims not supported by the data submitted

Only 6 of the 16 industrial and non-agricultural uses on approved label were tested by registrant. No data in support of requested label changes for the following uses were submitted: pipeline, highway, power and telephone rights of way, petroleum tank farms and pumping installations, storage areas, lumberyards, parking areas, schools, parks, and golf courses.

202.3 Data Not Appropriate

Data on weed control in sugarcane, corn, orange, cotton, grape, etc. is not appropriate to current petition.

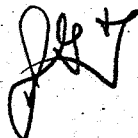
203.0 Recommendation

The proposed changes are acceptable since they coincide with labeling accepted December 23, 1975.

Bernard C. Smale
Herbicide Efficacy
EEE

1/27/76

WSW



JULIATCM: ISOPROPYLAMINE SALT OF N-(PHOSPHONOMETHYL)GLYCINE* 41%

ROUNDUP

5

USE	TOLERANCE P.P.M.	RATE		APPLICATION	LIMITATIONS AND REMARKS
		acid equiv. less/acre	FORMULATION 3 lb acid equiv. per gal.		
ROP AREAS S CONTROLLED ROL OF ANNUAL WEEDS		0.75 lb 1.125 lb	1 qt/A 1.5 qt/A	to actively growing grasses and broadleaf weeds less than 6 inches tall to grasses and weeds over 6 inches tall	Allow 3 days after treatment before tillage See "directions for use" for specific volumes of water
ROL OF PERENNIAL WEEDS					
Bermudagrass		3.75 lbs.	5 qts./A	Apply when actively growing and when seed heads first appear. See "directions for use" for specific volumes of water.	Do not treat until re-growth has reached recommended stages. Allow 7 days or more before tillage.
Canada Thistle		1.5 to 2.25 2.25 lbs.	2-3 qts /A	Spray when most thistles are at least 10 inches or more in height or are approaching early stages . Ref. 70 "Directions" for water volume.	Allow 3 days or more before tillage.
Field Bindweed		2.25 to 3.75 lbs.	3-5 qts /A	When Bindweed starts to bud or flower.	Same as for Canada thistle.

hosate **HERBICIDE**

GLYPHOSATE (cont)

USE	TOLERANCE P.P.M.	RATE		APPLICATION	LIMITATIONS AND REMARKS
		acid equiv. lbs/acre	formulation gts/A		
Johnsongrass		1.5 to 2.25 lbs	2-3 qts.	Spray when grass 12 inches or more in height. Delay application until approaches early head stage. Apply before Johnsongrass turns brown in fall.	Allow 7 days or more before tillage. Spray volumes in "Directions for use".
Quackgrass		1.5 to 2.25 lbs	2-3 qts	When most grass is at least 8 inches in height (3 to 4 leaf stage) and actively growing.	Allow 3 days or more before tillage.
Other perennials		2.5 to 3.75	3-5 qts	Apply when most have reached early head or early bud stage	Allow 7 days after application before tillage.

5

Attachment 1

MIXTURE EQUIVALENT
 1.15 LITERS PER 5 U.S. GALS.

PROUNIDUPE

POSTEMERGENCE HERBICIDE BY
Monsanto

Postemergence herbicide for industrial and non-crop uses to control or destroy many annual and perennial grasses and broadleaved weeds.

AVOID CONTACT WITH DESIRABLE PLANTS AND TREES SINCE SEVERE INJURY OR DESTRUCTION MAY RESULT.

CAUTION! Keep out of reach of children.

READ PRECAUTIONS ON BACK OF CAN.

Use only according to label instructions.

Read "LIMIT OF LIABILITY AND LIABILITY" before buying or using. If terms are not acceptable, return at once unopened.

ACTIVE INGREDIENT: "propoxyphane salt of Glyphosate 41.0%
OTHER INGREDIENTS: 59.0%
 100.0%
 *Contains 480 grams per liter or 4 pounds of the active ingredient propoxyphane salt of N (glyphosate) by weight per U.S. gallon.

In case of an emergency involving this product, call collect, day or night, (314) 694-1000.

EPA Reg. No. 524-308

MONSANTO COMPANY AGRICULTURAL DIVISION ST. LOUIS, MISSOURI 63166 U.S.A. EPA Est. 524-MD-1

NET 5 U.S. GAL.

"Label Text as Approved October 17, 1974"

NOTE: This is not a complete label. Only those sections being produced here changes are reproduced here.

WEEDS CONTROLLED

Roundup controls many annual and perennial grasses and broadleaved weeds. A partial list of ANNUAL WEEDS includes:

Annual Buzgrass
 Poa annua
 Common Lambsquarters
 Common Ragweed
 Arctostaphylos
 Crabgrass
 Digitaria spp.
 Downy mildew
 Bromus
 Panicum
 Pennum spp.
 Field Sandspur
 Conoclinium
 Eleusine
 Foxtail
 Setaria spp.
 Giant Ragweed
 Ambrosia trifida

Annual weeds generally will continue to germinate from seed throughout the growing season. In some cases, repeat treatments may be necessary to more completely control later germinating species. Best control is obtained if weed or grass growth is treated before seed heads emerge.

A partial list of PERENNIAL WEEDS includes:

Barnyardgrass
 Cyperus
 Kentucky Buzgrass
 Poa spp.
 Canada Thistle
 Cirsium arvense
 Common Nutsedge
 Curly Dock
 Rumex crispus
 Dallisgrass
 Paspalum dilatatum
 Fescue
 Fava bean
 Field Bindweed
 Convolvulus

Perennial weeds, particularly perennials and deep rooted species, such as barnyardgrass, Canada thistle, field bindweed, hemp dogbane and others, may require repeat treatments for best control. If possible, grow the species to approach early flowering stage late in the fall or early spring. This stage of maturity before flowering, generally, is the best time to apply herbicide. Repeat treatments are necessary to control weeds that have been treated or control areas where vegetation is severe.

DIRECTIONS FOR USE

Apply 2.0 to 3.0 lbs. of active ingredient per acre. Do not apply to the ground or to any other vegetation at the same time.

INDUSTRIAL AND NON-AGRICULTURAL USES

To control annual and perennial weeds on non-crop areas such as roadsides, parking lots, lawns, and other areas, apply 2.0 to 3.0 lbs. of active ingredient per acre. For control of weeds on industrial sites, apply 2.0 to 3.0 lbs. of active ingredient per acre. For control of weeds on agricultural sites, apply 2.0 to 3.0 lbs. of active ingredient per acre.

FOR CONTROL OF PERENNIAL GRASSES AND BROADLEAF WEEDS:

Use 2.0 to 3.0 lbs. of active ingredient per acre. For control of perennials, apply 2.0 to 3.0 lbs. of active ingredient per acre. For control of broadleaves, apply 2.0 to 3.0 lbs. of active ingredient per acre.

FOR CONTROL OF PERENNIAL GRASSES AND BROADLEAF WEEDS:

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FOR CONTROL OF PERENNIAL GRASSES AND BROADLEAF WEEDS:

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FOR CONTROL OF PERENNIAL GRASSES AND BROADLEAF WEEDS:

Use 2.0 to 3.0 lbs. of active ingredient per acre. For control of perennials, apply 2.0 to 3.0 lbs. of active ingredient per acre. For control of broadleaves, apply 2.0 to 3.0 lbs. of active ingredient per acre.

Attachment 2

NON-BURNING CROCODOL FINISH
Apply and Allow to Dry for 24 Hours
Apply a second coat after 24 hours.

NON-BURNING CROCODOL FINISH CONTINUED
Apply and Allow to Dry for 24 Hours
Apply a second coat after 24 hours.

ATTENTION

CAUTION!
Keep out of reach of children.
Do not use in confined spaces.
Do not use in areas where there is a possibility of fire.

GENERAL INFORMATION

Do not use in confined spaces.
Do not use in areas where there is a possibility of fire.
Do not use in areas where there is a possibility of explosion.

MAINTENANCE AND APPLICATION INSTRUCTIONS

Apply and Allow to Dry for 24 Hours
Apply a second coat after 24 hours.
Apply a third coat after 24 hours.

NEEDS CONTROLS

Apply and Allow to Dry for 24 Hours
Apply a second coat after 24 hours.
Apply a third coat after 24 hours.

CONTROL OF AIRBORN DUST

Apply and Allow to Dry for 24 Hours
Apply a second coat after 24 hours.
Apply a third coat after 24 hours.

CONTROL OF FIBRILS

Apply and Allow to Dry for 24 Hours
Apply a second coat after 24 hours.
Apply a third coat after 24 hours.

CONTROL OF FIBRILS CONTINUED

Apply and Allow to Dry for 24 Hours
Apply a second coat after 24 hours.
Apply a third coat after 24 hours.

DIRECTIONS FOR USE

Apply and Allow to Dry for 24 Hours
Apply a second coat after 24 hours.
Apply a third coat after 24 hours.

MAINTENANCE INSTRUCTIONS

Apply and Allow to Dry for 24 Hours
Apply a second coat after 24 hours.
Apply a third coat after 24 hours.

MAINTENANCE INSTRUCTIONS
Apply and Allow to Dry for 24 Hours



Posthergents herbicide for household and noncrop uses to control or destroy many annual and perennial grasses and broadleaved weeds.

READ PRECAUTIONS ON BACK OF CAN.

CAUTION! Keep out of reach of children.
Do not use in confined spaces.
Do not use in areas where there is a possibility of fire.

Proposed Label Text
changes, 3/30/75

NET 5 U.S. GALLONS
Monsanto Company, Agricultural Division, P.O. Box 1346, St. Louis, MO 63103

CONTROL OF BERMUDAGRASS WITH ROUNDUP

Location	Exp. No.	Page	Formulation	Rate lbs. Glypho- sate/Acre	Qts. Roundup/ Acre	Gal./Acre Spray Vol.	Rating Interval Days	% Weed Control Bermudagrass
California	2360	1-5	Roundup (MON 2139)	2.0	2-2/3	65	52	95
California	2353	6-10	Roundup (MON 2139)	3.0	4	65	52	100
California	2465	11-12	Roundup (MON 2139)	6	8	65	52	100
California	2492	13-15	Roundup (MON 2139)	2	2-2/3	50	91	35
California	2051	20-29	Roundup (MON 2139)	2.5	3-1/3	50	91	45
California	2052	30-31	Roundup (MON 2139)	3	4	50	91	70
California	2059	32-34	Roundup (MON 2139)	4	4	50	91	94
California	2223	35-43	Roundup (MON 2139)	6	8	50	91	40
Florida	893	16-19	Roundup (MON 2139)	1	1-1/3	-	70	40
Florida	2051	20-29	Roundup (MON 2139)	2	2-2/3	-	70	50
Florida	2052	30-31	Roundup (MON 2139)	4X	5-1/3	-	70	55
Florida	2059	32-34	Roundup (MON 2139)	3	4	100	62	100
Florida	2223	35-43	Roundup (MON 2139)	4	5-1/3	100	62	100
Florida	893	16-19	Roundup (MON 2139)	0.5	2/3	44	69	13
Florida	2051	20-29	Roundup (MON 2139)	1	1-1/3	44	69	72
Florida	2052	30-31	Roundup (MON 2139)	2	2-2/3	44	69	95
Florida	2059	32-34	Roundup (MON 2139)	4	5-1/3	44	69	100
Florida	2223	35-43	Roundup (MON 2139)	2	2-2/3	38	93	70
Florida	893	16-19	Roundup (MON 2139)	3	4	38	93	93
Florida	2051	20-29	Roundup (MON 2139)	4	5-1/3	38	93	93
Florida	2052	30-31	Roundup (MON 2139)	6	8	38	93	98
Florida	2059	32-34	Roundup (MON 2139)	3	4	20	58	100
Florida	2223	35-43	Roundup (MON 2139)	4	5-1/3	20	58	95
Florida	893	16-19	Roundup (MON 2139)	1	1-1/3	38	42	55
Florida	2051	20-29	Roundup (MON 2139)	2	2-2/3	38	42	66
Florida	2052	30-31	Roundup (MON 2139)	3	4	38	42	78
Florida	2059	32-34	Roundup (MON 2139)	4	5-1/3	38	42	82
Florida	2223	35-43	Roundup (MON 2139)	1	1-1/3	25	92	42
Florida	893	16-19	Roundup (MON 2139)	1.5	2	25	92	75
Florida	2051	20-29	Roundup (MON 2139)	2	2-2/3	25	92	88
Florida	2052	30-31	Roundup (MON 2139)	3	4	25	92	87
Florida	2059	32-34	Roundup (MON 2139)	4	5-1/3	25	92	87
Florida	2223	35-43	Roundup (MON 2139)	4	5-1/3	25	92	87

* INDICATES USUALLY FACTORY CONTROL AT PROPOSED LB PER ACRE RATES - MOST CASES
 Applied & noted in table.

[Handwritten mark]

CONTROL OF CANADA THISTLE WITH ROUNDUP

Location	Exp. No.	Page	Formulation	Rate		Gal./Acre Spray Vol.	Rating Interval Days	% Weed Control Canada Thistle
				Lbs. Glypho- sate/Acre	Qts. Roundup/ Acre			
Colorado (Helkes)	1504	6-7	Roundup (MON 2139)	2	2-2/3	40	90	90
				4	5-1/3	40	90	100
				0.8	1-1/4	20	45	51
				1	1-1/3	20	45	75
Illinois	1504	6-7	Roundup (MON 2139)	1.3	1-3/4	20	45	96
				1.5	2	20	45	98
				2	2-2/3	20	45	98
				2	2-2/3	20	45	98
Iowa	968	8-9	Roundup (MON 2139)	1	1-1/3	20	50	47
				1.5	2	20	50	87
				2	2-2/3	20	50	90
				2.5	3-1/3	20	50	97
Iowa	967	10-11	Roundup (MON 2139)	3	4	20	50	97
				1	1-1/3	20	55	0
				1.5	2	20	55	10
				2	2-2/3	20	55	22
Iowa	923	12-13	Roundup (MON 2139)	2.5	3-1/3	20	55	50
				3	4	20	55	47
				1	1-1/3	20	42	87
				1.5	2	20	42	92
Iowa	921	14-15	Roundup (MON 2139)	2.5	3-1/3	20	42	100
				3	4	20	42	100
				1	1-1/3	20	79	5
				1.5	2	20	79	17
Michigan (Sprinkle)	16-18	Roundup (MON 2139)	1	1-1/3	-	72	93	
			2	2-2/3	-	72	93	

(Thistle Bud Stage)

(Thistle 4-8 weeks tall) → *

(Thistle Full Bloom)

(Thistle 2-6 weeks tall) *

(Thistle 10-24 weeks tall)

CONTROL OF FIELD BINDWEED WITH ROUNDUP

Location	Exp. No.	Page	Formulation	Rate		Gal./Acre Spray Vol.	Rating Internal Days	% Weed Control Bindweed
				Ibs. Glypho- sate/Acre	Qts. Roundup/ Acre			
California California California	2498	1-2	Roundup (MON 2139)	3	4	100	47	100
	2497	3-4	Roundup (MON 2139)	3	4	100	45	100
	2487	5-6	Roundup (MON 2139)	3	4	100	89	100
Iowa	2160	7-9	Roundup (MON 2139)	6	8	100	89	100
				1	1-1/3	100	53	50
New York	2091	10-12	Roundup (MON 2139)	1.5	2	100	53	50
				2	2-2/3	100	53	70
New York	2092	13-14	Roundup (MON 2139)	1	1-1/3	19	78	95
				2	2-2/3	19	78	95
New York	2093	15-19	Roundup (MON 2139)	4	5-1/3	19	78	85
				1	1-1/3	19	78	65
New York	2094	20-24	Roundup (MON 2139)	2	2-2/3	19	78	70
				4	5-1/3	19	78	77
New York	2096	25-27	Roundup (MON 2139)	1	1-1/3	19	78	77
				2	2-2/3	19	78	95
New York	2097	28-30	Roundup (MON 2139)	4	5-1/3	19	78	97
				1	1-1/3	19	78	70
New York	2098	31-37	Roundup (MON 2139)	2	2-2/3	19	78	93
				4	5-1/3	19	78	96

10

CONTROL OF JOHNSONGRASS WITH ROUNDUP

Location	Exp. No.	Page	Formulation	Rate		Gal./Acre Spray Vol.	Rating Interval Days	% Weed Control Johnsongrass
				Ibs. Glypho- sate/Acre	Qts. Roundup/ Acre			
Alabama	311	1-3	Roundup (MON 2139)	1	1-1/3	38	27	97
				1.5	2	38	27	100
				2	2-2/3	38	27	100
				4	5-1/3	38	27	100
Alabama	219	4-8	Roundup (MON 2139)	1	1-1/3	38	87	100
				1.5	2	38	87	100
				2	2-2/3	38	87	100
				4	5-1/3	38	87	100
Arkansas	66	9-31	Roundup (MON 2139)	2	2-2/3	20	33	98
				4	5-1/3	20	33	99
				2	2-2/3	20	122	88
				1.5	2	50	36	95
Arkansas	67	32-33	Roundup (MON 2139)	0.5	2/3	30	207	90
				1	1-1/3	30	207	95
				1.5	2	30	207	98
				0.5	2/3	30	268	99
Illinois	1508	34-35	Roundup (MON 2139)	1	1-1/3	30	268	99
				1.5	2	30	268	99
				0.5	2/3	30	268	99
				1	1-1/3	30	268	99
Kansas	1163	36-39	Roundup (MON 2139)	1.5	2	30	268	99
				0.5	2/3	30	268	99
				1	1-1/3	30	268	99
				1.5	2	30	268	99
Kentucky	618	45-46	Roundup (MON 2139)	1	1-1/3	20	22	75
				1.5	2	20	22	90
				2	2-2/3	20	22	95
				2.5	3-1/3	20	22	98
Kentucky	616	47-48	Roundup (MON 2139)	1	1-1/3	20	16	92
				2	2-2/3	20	16	100
				3	4	20	16	100
				4	5-1/3	20	16	97

CONTROL OF QUACKGRASS WITH ROUNDUP

Location	Exp. No.	Page	Formulation	Rate lbs./Glypho- sate/Acre	Rate Qts. Roundup/ Acre	Gal./Acre Spray Vol.	Rating Interval Days	% Weed Control Quackgrass
IOWA	2149	1-4	Roundup (MON 2139)	1	1-1/3	20	283	99
				1.5	2	20	283	99
				2	2-2/3	20	283	99
IOWA	2150	5-8	Roundup (MON 2139)	1	1-1/3	20	279	99
				1.5	2	20	279	99
				2	2-2/3	20	279	99
IOWA	2153	9-11	Roundup (MON 2139)	1	1-1/3	20	173	92
				1.5	2	20	173	90
				2	2-2/3	20	173	93
IOWA	2155	12-14	Roundup (MON 2139)	1	1-1/3	20	313	96
				1.5	2	20	313	99
				2	2-2/3	20	313	99
IOWA	2156	15-17	Roundup (MON 2139)	1	1-1/3	20	313	99
				1.5	2	20	313	99
				2	2-2/3	20	313	99
Michigan	3001	18-25	Roundup (MON 2139)	1	1-1/3	20	383	78
				1.5	2	20	383	95
				2	2-2/3	20	383	91
Michigan	3002	26-33	Roundup (MON 2139)	1	1-1/3	20	174	86
				1.5	2	20	174	93
				2	2-2/3	20	174	97
Michigan	3003	34-41	Roundup (MON 2139)	1	1-1/3	19	360	97
				1.5	2	19	360	91
				2	2-2/3	19	360	98
Michigan	3004	42-47	Roundup (MON 2139)	0.5	2/3	20	156	73
				1	1-1/3	20	156	66
				1.5	2	20	156	86
				2	2-2/3	20	156	92

* = 0