

US Environmental Protection Agency Office of Pesticide Programs

Extension of the Protection Period for Mesotrione Exclusive Use Data (Part 3 of 4)

January 15, 2009

		Mesotrione HRAC Group F2 (WSSA Group 28)	C3 / (6)	(9) / (2)	0 /(4)	0 / (4)	
Flax	r	Callisto 3.0 fl. oz/A Plus Adjuvant*	Bentazon	Bromoxynil	MCPA	Clopyralid in premix** with MCPA	Count of Als controlling species. S, PC, Est., or Resistance not included.
Common Name	Scientific Name	<5"					
Weeds Controlled With Po	stemergence Application					V.	
Amaranth, palmer	Amaranthus palmeri	С			Est		0
Amaranth, Powell	Amaranthus powellii	С			Est		0
Amaranth, spiny	Amaranthus spinosus	C		С	Est		1 1
Atriplex Broadleaf signalgrass	Chenopodium orach	C -					0
Buckwheat, wild	Brachiaria platphylla Polygonum convolvulus	PC	С	С	1	С	3
Buffalobur	Solanum rostratium	C		C			1
Burcucumber	Sicyos angulatus	PC			1		o
Carpetweed	Mollugo verticillata	С					0
Carrot, wild	Daucus carota	C			SHALL STATES		0
Chickweed, common	Stellaria media	С					0
Cocklebur, common	Xanthium strumarium	C	С	С	C	С	4
Crabgrass, large	Digitaria sanguinalis	C'				7027	0
Dock, curly	Rumex crispus	PC				С	1
Galinsoga	Galinsoga parviflora	C	С				1
Hemp Horse nettle	Cannabis sativa Solanum carolinense	C					0
Horseweed/Marestail	Conyza canadensis	PC			1	С	1
Jimsonweed	Datura stramonium	C	С	С		C	3
Knotweed, prostrate	Polygonum aviculare	PC		C			1
Kochla	Kochia scoparia	PC'		С	C	C	1
Lambsquarters, common	Chenopodium album	C	o secondo de	С	C	С	3
Morningglory, entireleaf; ivyleaf	Ipomoea spp.	PC		С			1
Morningglory, pitted	Ipomoea lacunosa	PC	_	C			1
Mustard, wild Nightshade, black	Brassica kaber	 č	С	C	С	C	2
Nightshade, eastern black	Solanum nigrum Solanum ptycanthum	 č		C			2
Nightshade, eastern black	Solanum sarrachoides	l č		C		C	2
Nutsedge, yellow	Cyperus esculentus	PC	С				1 1
Pigweed, redroot	Amaranthus retroflexus	С	7	С	С	С	3
Pigweed, smooth	Amaranthus hybridus	С			Est		0
Pigweed, tumble	Amaranthus albus	C			Est		0
Pokeweed, common	Phytolacca americana	PC					0
Potatoes, volunteer	Solanum spp.	C C					0
Pusley, Florida	Richardia scabra	PC	•	•			0
Ragweed, common Ragweed, giant	Ambrosia artemisiifolia Ambrosia trifida	C	C	C	C Est	C C	3
Sesbania, hemp	Sesbania exaltata	C	C	C	ESI	-	2
Smartweed, ladysthumb	Polygonum persicaria	C	č	C		С	3
Smartweed, pale	Polygonum lapathifolium	С			Ţ.	-	Ö
Smartweed, Pennsylvania	Polygonum pensylvanicum	С	C	С	I.	С	3
Sunflower, common	Helianthus annuus	C	С	С	С	С	4
/elvetleaf	Abutilon theophrasti	С	С	С		С	3
Naterhemp, common	Amaranthus rudis	C			Est		0
Naterhemp, tall	Amaranthus tuberculatus			C	Est		1

Common Name Amaranthus p Brachlaria pla Brachlaria pla Buffalobur Amaranthus p Amaranthus p Brachlaria pla Bra	powellii spinosus styphylla ratum sillata sa smarium suinalis rviflora onium sria	Preemergence at 6.0 oz./A C C C C C C C C C					000000000000000000000000000000000000000
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Amaranth, spiny Amaranthus s Broadleaf signalgrass Buffalobur Buff	pinosus styphylla ratum illata a imarium ruinalis rviflora onium ria album	C C C C C C C C C C C C C C C C C C C					000000000000000000000000000000000000000
Brachiaria pla Buffalobur Solanum rostr Carpetweed Mollugo vertic Chickweed, common Stellaria medic Cocklebur, common Xanthium stru Crabgrass, large Digitaria sang Gallinsoga Gallinsoga par Imsonweed Datura stramo Cocklebur, common Chenopodium Arringglory, entireleaf; ivyleaf Ipomoea spp.	typhylla ratum iillata a marium iulnalis rviflora onium iria album	C1 C C C C C C C C C C C C C C C C C C					000000000000000000000000000000000000000
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Carpetweed Mollugo vertic Chickweed, common Stellaria medic Cocklebur, common Xanthium stru Crabgrass, large Digitaria sang Gallinsoga Gallinsoga par imsonweed Datura stramo Cochia Kochia scopai ambsquarters, common Chenopodium forningglory, entireleaf; ivyleaf Ipomoea spp.	illata ia marium vunalis rviflora onium ria i album	C C PC C PC					0 0 0 0 0
Carpetweed Mollugo vertic Chickweed, common Stellaria medic Cocklebur, common Xanthium stru Crabgrass, large Digitaria sang Gallinsoga Gallinsoga par imsonweed Datura stramo Cochia Kochia scopat ambsquarters, common Chenopodium Morningglory, entireleaf; ivyleaf Ipomoea spp.	illata ia marium vunalis rviflora onium ria i album	C PC C PC PC					0 0 0 0 0 0
Chickweed, common Stellaria media Cocklebur, common Xanthium stru Crabgrass, large Digitaria sang Gallinsoga Gallinsoga par imsonweed Datura stramo Cochia Kochia scopar ambsquarters, common Chenopodium forningglory, entireleaf; ivyleaf Ipomoea spp.	a marium viinalis rviflora onium ria a album	PC C C PC PC			Decision in		0 0 0
Cocklebur, common Xanthium stru Crabgrass, large Digitaria sang Gallinsoga Gallinsoga par imsonweed Datura stramo Cochia Kochia scopar ambsquarters, common Chenopodium forningglory, entireleaf; ivyleaf Ipomoea spp.	uinalis rviflora onium ria o album	C C PC C PC					0 0 0
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imsonweed Datura stramo (ochia Kochia scopai ambsquarters, common Chenopodium forningglory, entireleaf; ivyleaf Ipomoea spp.	onium ria n album	PC C PC			DES MAN		0
Acchia Kochia scopai ambsquarters, common Chenopodium forningglory, entireleaf; ivyleaf Ipomoea spp.	ria album	PC C PC			SHAME		A THE RESERVE THE PARTY OF THE
ambsquarters, common Chenopodium forningglory, entireleaf; ivyleaf Ipomoea spp.	album	C PC				AND SECURE OF THE PARTY AND	U
forningglory, entireleaf; ivyleaf /pomoea spp.			TO THE PARTY OF				0
							0
		PC					0
lightshade, eastern black Solanum ptyca	anthum	С					0
lightshade, hairy Solanum sarra		С	East of the				0
igweed, redroot Amaranthus re		С	THE ST				0
igweed, smooth Amaranthus h	ybridus	С	1000				0
igweed, tumble Amaranthus a	lbus	С	A				0
agweed, common Ambrosia artei	misiifolia	C	27.1				0
agweed, giant Ambrosia trifid	a	PC					0
martweed, ladysthumb Polygonum pe	rsicaria	C					0
martweed, pale Polygonum lap	athifolium	С					0
martweed, Pennsylvania Polygonum pe		Ç					0
unflower, common Helianthus ann		С					0
elvetleaf Abutilon theop		С					0
/aterhemp, common Amaranthus ru		С			1000		0
/aterhemp, tall Amaranthus tu	berculatus	С					0
ount of Species Controlled		58	13	23	6	17	
Criterion 1: Insufficient Efficacious Alternative	e to Mesotrione	- 50	Yes	Yes	Yes	Yes	-
pecies not controlled by any ternative Resistant bioty pink shaded controlled by any	ypes per chemical of cell indicates that we	class that controlled or peed has resistant biotypeed that produc	es and is t	ntrolled by r	mesotrione.	A "C" within a	
= Control PC = Partial Control S = Suppression)					i	

eristic Mesotrione Reduced Risk AI 19. No 100-1131 d Risk by EPA Yes Ignal Word Caution Oxicity Negative enicity Negative enicity Negative Ieurotoxicity Negative Ieurotoxicity Negative Ieurotoxicity Negative Ieurotoxicity Negative Ieurotoxicity Negative Ieurotoxicity Negative Iulian Not Likely Iulian Not Iulian	7969-45-51036 No Danger or Caution Negative	Bromoxynil 9779-346 No	٧c	L P!I
t by EPA Yes Yes Word Caution Word Negative I oxicity Negative Potential Not Likely oxicity Negative Introduction Negative I oxicity Negative	5-5-1036 4o or Caution lative	9779-346 No	WCF	Clopyra
Vord Caution Word Caution Negative Toxicity Negative Potential Not Likely oxicity Negative In Negative In Negative In Negative In Negative In Negative In Negative	4o or Caution native	No	42750-14	62719-86
Word Caution Negative Negative Toxicity Negative Potential Not Likely oxicity Negative Inonic Neurotoxicity Negative Negative Negative Negative Negative Negative Negative Negative Negative	or Caution lative		No	No
Negative Negative Toxicity Negative Not Likely oxicity Negative hronic Neurotoxicity Negative Negative Negative	ative	Warning	Danger	Caution
Toxicity Negative Toxicity Negative Potential Not Likely oxicity Negative hronic Neurotoxicity Negative 12	ative	Positive	Negative	Negative
Toxicity Negative Potential Not Likely oxicity Negative hronic Neurotoxicity Negative 12 NL		Positive	Negative	Negative
Potential Not Likely oxicity Negative hronic Neurotoxicity Negative 12 NL	Negative	Negative	Negative	Negative
oxicity Negative hronic Neurotoxicity Negative 12 NL	ш	O	Not likely	Not likely
hronic Neurotoxicity Negative 12 NL	Unlikely (ND)	Unlikely (ND)	Positive	NO
12 NL	Unlikely (ND)	Unlikely (ND)	Positive	Q
NL	48	24	48	12
	45	Z		72 for Curtail
**PPE*	0	3	3	2
od (Pre)	The state of the s	Z	2	Z
Pre lbs ai./A 0.188	Z	Z	Z	
Applic. Method (Post)	Post	Post	Post	Voe
Post lbs ai./A	0	0.25	0 12 0 23	200700
No. Applic. / year	2		7	4.03
0.188	0.	0.25	0.35	000
SO	NS .	ns	SI	SI
Surface Water Advisory, runoff	0	2	3	3
	Yes	Yes	Yes	Yes
Other registered active ingredients that are not considered as viable mesotrione alternatives: Glyphosate, clethodim, sethoxydim, and triffuralin. Analyses Across Crops That Are Not Considered Viable Alternatives To Mascritional	atives: Glyphosate, clethodered Viable	dim, sethoxydim, and triffur	1000	Refer to Attachment "Active Ingredients Within The
* REI = Restricted Entry Interval. PHI = Pre Harvest Interval. PPE = Personal Protective Equipment	Equipment			And the second s
: Kanking into 4 Classes: 0 = Better than mesotrione, 1 =	vorse than mesotrione, 3	= much worse than mesotri	one	STATE OF THE PARTY
NL = None listed or not mentioned, or application method is not labeled for a specific active ingredient	tive ingredient.			

Characteristic EPA. Reg. No. HRAC / WSSA Classification					
ssification	Mesotione Reduced Risk Al	Bentazon	Bromoxvnil	MCPA	Clopyralid
ssifi	100-1131	7969-45-50036	9779-346	42750-14	62719-86
	F 2 / (28)*	C3 / (6)	C3/(6)	0 / (4)	0/(4)
ss With	0	The state of the s	_	8	8
No. of biotypes Controlled or Partially Controlled by Mesotrione		0	0	2	2
Criterion III: Mesotrione will play role in managing Pest Resistance to this Active		No	N _O	Yes	Yes
Criterion III: Mesotrione will play a role in managing pest resistance in Flax	YES				
* Active Ingredient classification based on HRAC / WSSA. Mesotrione is WSSA 28 compared to the original classification of 27	d on HRAC / WSs	ed on HRAC / WSSA. Mesotrione is WSSA 28 compensed by FPA and currently on Syndontic EDA labels.	VSSA 28 compare	ed to the original o	lassification of 27

	1	ano	<u> </u>	
Active Ingredient	EPA Classified As Reduced Risk	Criterion I: Insufficient Efficacious Alternative To Mesotrione	Criterion II: Alternative Poses Greater Human Or Environmental Risk*	Criterion III: Mesotrione Will Play Role In Managing Pest Resistance To This Active
Mesotrione	Yes			
Bentazon	No	Yes	Yes	No
Bromoxynil	No	Yes	Yes	No
MCPA	No	Yes	Yes	Yes
Clopyralid	No	Yes	Yes	Yes

Oats

US oat production in 2005 was estimated by USDA/NASS to be 3,600,000 acres. Although this estimate exceeds the standard number of acres for a minor crop classification under FIFRA Section 2(II), Syngenta is requesting classification of mesotrione as a minor use in oats because, as provided by FIFRA Section 2(II)(2)(C) the use does not provide sufficient economic incentive to support the continuing registration of oats and mesotrione is needed for its weed spectrum and as an alternative mode of action to use in weed resistance management. Mesotrione was registered on oats March 17, 2008, which is within the first 7 years after the initial June 4, 2001 registration of mesotrione. On May 20, 2008, EPA granted mesotrione Reduced Risk status on oats. The primary broadleaf products used in oats provide non-residual postemergence control after oat and weed emergence. Mesotrione is labeled for preemergence or postemergence application, providing application flexibility. Preemergence application is not a common application in oats, but with the current use patterns of alternatives, the preemergence application of mesotrione's mode of action can provide control of weed biotypes, such as kochia, that have developed resistance to the more commonly use ALS herbicides. Also, the preemergence application would have to occur within a narrow window which will limit widespread geographical adoption. The use of mesotrione as an alone postemergence application is expected to be relative minor because of the risk of potential temporary oat injury in the form of leaf bleaching, leaf burn and in extreme conditions, stunting. Thus, mesotrione use will be limited when considering the entire oat crop.

Conclusion:

Mesotrione fulfils FIFRA Criteria I, II, and/or III compared to each registered alternative.

Criterion I: Mesotrione provides low rate (0.188 lbs. ai/A) preemergence or (0.094 lbs. ai/A) postemergence control of a large number of broadleaf weeds. Of the nine potential alternatives, none provide as broad a spectrum of weed control. As to the weeds included on mesotrione's label, some are not controlled by any other product; most are controlled by only 1 to 3 other products, and only a few by multiple products. No one product provides a broad spectrum of weed control comparable to mesotrione. Only one other product can be applied preemergence to oats.

Criterion II: Mesotrione is safer across the human safety, environmental impact and application criteria than any other alternative. As noted, some alternatives, carfentrazone (a reduced risk product in cereals), chlorsulfuron, or tribenuron, are better than mesotrione in one or more criteria, but not across all criteria.

Criterion III: No weeds have developed resistant biotypes to the mesotrione family of chemistry. Thus, mesotrione will manage resistance that has developed for most of the alternative families of chemistry. The exception is bromoxynil whose one resistant biotype is not controlled by mesotrione. Also, in the 2005 NASS report of herbicide use in oats, the major actives, (2,4-D, MCPA, dicamba, and clopyralid) treating 26% of the acres grown, all have the O / (4) mode of action. There are only two other modes of action that treat significant acreage, and each of these only treats 5% or the acres. One of these, B / (2) has resistant biotypes for many species, which mesotrione controls. Thus, there is a clear need for another mode of action for broadleaf weed control.

Oats: Mesotrione Meets FIFRA Section 3(c)(1)(F)(ii) Criteria I, II, and III.

Active Ingredient	EPA Classified As Reduced Risk	Criterion I: Insufficient Efficacious Alternative To Mesotrione	Criterion II: Alternative Poses Greater Human Or Environmental Risk*	Criterion III: Mesotrione Will Play Role In Managing Pest Resistance To This Active
Mesotrione	Yes			
2, 4 - D	No	Yes	Yes	Yes
Bromoxynil	No	Yes	Yes	No
Carfentrazone	Yes	Yes	Yes	Yes
Chlorsulfuron	No	Yes	Yes	Yes
Clopyralid	No	Yes	Yes	Yes
Dicamba	No	Yes	Yes	Yes
MCPA	No	Yes	Yes	Yes
Thifensulfuron	No	Yes	Yes	Yes
Tribenuron	No	Yes	Yes	Yes

^{*}Combined evaluation of human safety, application rate, and environmental impact.

		Mesotrione HRAC Group F2 / (WSSA Group 28)	0 / (4)	(9) / (5)	E / (14)	B / (2)	0 / (4)	0 / (4)	0 / (4)	B / (2)	B / (2)	
Oats		Mesotrione 3.0 fl. oz/A Plus Adjuvant*	2, 4-D	Bromoxynil	Carfentrazone	Chlorsulfuron	Clopyralid	Dicamba	MCPA	Thifensulfuron	Tribenuron	Count of Als Controlling species. S, PC, Est., or Resistance not included.
	200000000000000000000000000000000000000	Apply to weeds										
Common Name	Scientific Name	<5"				1						
Weeds Controlled	With Postemergence A	pplications				1	1					
Amaranth, palmer	Amaranthus palmeri	C	PC		Est	INCOME.		С	Est	COLUMN TABLE		1
Ameranth, Powell	Amaranthus powellii	C	PC		Est	26/11/2		С	Est			1
Ameranth, spiny	Amaranthus spinosus	С	PC	C	Est	1		C	Est			2
Atriplex	Chenopodium orach	С				1		1		1 (2)		0
Broadleaf signalgrass	Bracheirle platphylla	C,										0
Buckwheat, wild	Polygonum convolvulus	PC		C	1 0	PC	1 0	C	1	C		5
Buffalobur	Solanum rostratium	C	- 27.5	С			S	С				2
Burcucumber	Sicyos angulatus	PC	3					С			С	2
Carpetweed	Mollugo verticillata	C	С					С				2
Carrot, wild	Daucus carota	C	PC	-		C	1	C				1
Chickweed, common	Stellaria media	C	C			С		C		C		4
Cocklebur, common	Xanthium strumarium	C	С	C		100000	C	C	C	PC	MARKET !	5
Crabgrass, large	Digitaria sanguinalis	C'						100 PERO				0
Dock, curty	Rumex crispus	PC	PC	i		C	1 0	C		C		4
Galinsoga	Galinsoga parviflora	С	С				C					2
Hemp	Cannabis sativa	C	С		i –						_	1
Horse nettle	Solanum carolinense	С			20		1 30					0
Horseweed/Marestail	Conyza canadensis	PC		1	1	PEMPHON	C	C	1			2
Jimsonweed	Datura stramonium	С	С	C		1	C	C	-	1		4
Knotweed, prostrate	Polygonum aviculare	PC		C	(- E010	PC		C		C		3
Kochia	Kochia scoparia	PC'	MUSUS	C	C	PC		C	C	PC		2
Lambsquarters, common	Chenopodium album	С	C	C	C	C		C	C	C		5
Morningglory, entireleaf; ivyleaf		PC	C	C		The second		C		1		3
Morningglory, pitted	Ipomoee lacunosa	PC	Est	C				_	-			1
Mustard, wild	Brassica kaber	С	C	С	C	C		C	C	C		7
Nightshade, black	Solanum nigrum	С		С	C		С	C				4
Nightshade, eastern black	Solenum ptycanthum	C		С			C			OCCUPATION.		2
Nightshade, hairy	Solenum sarrachoides	С		С	С		C			1		3
Nutsedge, yellow	Cyperus esculentus	PC		1 3								0
Pigweed, redroot	Amaranthus retroflexus	C	PC !	С	C	C	- 1	C	С	C		4
Pigweed, smooth	Amarenthus hybridus	С	PC		Est	C		C	Est	THE REAL PROPERTY.		1
Pigweed, tumble	Amaranthus albus	С	PC		Est	-		С	Est	1		1
Pokeweed, common	Phytolacca americana	PC	C					C		-		2
Potatoes, volunteer	Solanum spp.	С	270 3					3037. (0)		. 1	29	ō
Pusley, Florida	Richardia scabra	C	1				1	C	1			1
Ragweed, common	Ambrosia artemisiifolia	PC	С	С			C	С	С		CA-SCHOOL	5
Ragweed, glant	Ambrosie trifide	С	C	С			C	С	Est			4
Sesbania, hemp	Sesbania exaltata	C		С				C		1		2
Smartweed, ladysthumb	Polygonum persicaria	С	PC	С		C	S	C		C		4
Smartweed, pale	Polygonum lapathifolium	C	PC					100 08		1 15 15		0
Smartweed, Pennsylvania	Polygonum pensylvanicum	С	PC	C		PC I	1	C	!	Ci	1	3
Sunflower, common	Helianthus annuus	С	C	С	2000	PC	С	C	С	PC	C	5
/elvetleaf	Abutilon theophrasti	C	C	С	С			C		1	1	4
Waterhemp, common	Amaranthus rudis	C	PC		Est	- Charles		С	Est		DESINE	1
Vaterhemp, tall	Amaranthus tuberculatus	C	PC	С	Est			C	Est			2

Common Name	Scientific Name	6.0 fl. oz./A		-	-	+	+	+	-	+	+	-	
Amaranth, palmer	Amaranthus palmeri	C		1		AMMIN	1	1		AGE TABLE			0
Amarath, Powell	Amaranthus powellii	С											0
Amaranth, spiny	Amaranthus apinosus	C				Name and Address							Ô
Broadleaf signalgrass	Brachlaria platyphylla	C.											n
Buffalobur	Solanum rostratum	C											0
Carpetweed	Mollugo verticillata	C	0 - 11										0
Chickweed, common	Stellaria medie	С	-										0
Cocklebur, common	Xanthium strumarium	PC	114.14			400/01/22				E-Same			n
Crabgrass, large	Digitaria sangulnalis	C'	1,0144			-							0
Galinsoga	Galinsoga parviflora	С	\$35.04 E										0
limsonweed	Detura stramonium	C	1000										0
Cochia	Kochia scoparia	PC	SHOP IN			Marin					MARKS NO.		0
ambsquarters, common	Chenopodium album	С							STATISTICS.				0
Morningglory, entireleaf; ivyleaf	Ipomoea hederacea	PC				der constitution of							0
Morningglory, pitted	Ipomoea lacunosa	PC	100										0
Nightshade, eastern black	Solanum ptycanthum	C				MANAGE				(OCCIONE)	TO SERVICE STREET		0
Nightshade, hairy	Solanum sarracholdes	C				-	OW			Service of	Charles Services		ň
Pigweed, redroot	Amaranthus retroflexus	С				THE REAL PROPERTY.	1197				DOMESTIC OF		0
Pigweed, smooth	Amaranthus hybridus	С	100				100						ň
Pigweed, tumble	Amaranthus albus	С	10.30			-							ň
Ragweed, common	Ambrosia artemisiifolia	C				SHIP				mistrose			ň
Ragweed, glant	Ambrosia trifida	PC											ň
Smartweed, ladysthumb	Polygonum persicaria	С	-			Section 1				ALC: UNK	AHERON		ń
Smartweed, pale	Polygonum lapathifolium	C	100									100	ć
Smartweed, Pennsylvania	Polygonum pensylvanicum	c	100										ć
unflower, common	Hellanthus annuus	C	-			at more				distances.		1	,
/elvetleaf	Abutilon theophrasti	C	-			STORY OF						8	,
Vaterhemp, common	Amaranthus rudis	C				Mary State							1
Vaterhemp, tall	Amaranthus tuberculatus	č	-			No 7 h							1
Count of Species Controlled in O		58	14 1	23	1 8	5	12	31	6	7	1 1		,
ritoria 1: Insufficient Efficacio			Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
pecies not controlled by any	Resistant biotypes per chemica mesotrione. A "C" within a pink biotypes and is therefore n	shaded cell indica	ted that wee	ed has r	esistant				100	100	700		

Section											
No N	Characteristic	Mesotrione Reduced Risk Al	Q-4-D	Bromoxynil	Reduced Risk Al	Chlorsulfuron	Clopyralid	Dicamba	Aq⊃M	Thifensulfuron	Tribenuron in srepack with Thifensulturon*
Danger Caution Negative Negative Negative Negative Negative Negative Not likely No Evidence Positive ND 48 4 4 7 feeding 3 0 NL NL NL NL NL NL NL 1.38 0.019 US US 3 0 7 ves Yes Yes Yes	EPA Reg. No.	100-1131	5905-529	9779-346	279-3241	352-653	34704-885	7969-137	42750-14	352-633	352-611
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48 4 No grazing / feeding 3 0 NL N	Subchronic/Chronic Neurotoxicity	Negative	Positive	Unlikely (ND)		Negative	Q	Positive	Positive	S	Negative
7 feeding 3 0 NL N	REI in Hours*	12	12	24		4	12	24	48	4	12
3 0 0 1	PHI in Days*	30 / 50	z	45	7	ž	7	40 / 70	7	No grazing /	45
NL NL NL NL NL Post Post 0.23-0.46 0.014-0.187 1.38 0.019 US US 3 0 ves	**PPE*	Chem resist gloves	3	3	0	0	2	2	3	2	2
N.C. N.C. N.C. N.C. N.C. N.C. N.C. N.C.	Applic. Method (Pre)	Pre	Z	Z	Z	Pre	S.	Z	Z	2	- 2
Post Post 0.23-0.46 0.014-0.187 1.38 0.019 US US Ves Yes Yes Mesotrione".	Pre lbs ai./A	0.188	¥	ź	Z	0.015-0.023	į	Įz	įz	! 2	į
0.23-0.46 0.014-0.187 1 1.38 0.019 US US 3 0 yes Yes Prosulfuron, and Pyrasulfotol	Applic. Method (Post)	Post	Post	Post	Post	Post	Yes	Post	Post	Poet	Poet
1.38 0.019 US US 3 0 ves yes ves Mesotrione".	Post lbs ai./A	0.094	0.22-0.96	0.25-0.5	0.008031	0.008-0.016	0.094-0.123	0.063-0.125	0.23-0.46	0.014-0.187	0005.000
Max. Al Ibs./yr 0.188 0.95 0.65 0.031 0.023 0.123 0.1 1.38 0.019 0.009 US or Regional label US US	No. Applic. / year	_		N.	2		The state of the state of the state of	-	1	1	1
US or Regional label US Surface Water Advisory, **Environmental Hazard Criterion II: Alternative Poses Greater Human or Environmental Risk Environmental Risk Tribenuron not available as an alone product in oats is included because use information indicates relative common use. Other registered active ingredients that are not considered as viable mesotrione alternatives: Glyphosate, Pelargonic acid, Diuron, Fluroxypyr, Prosulfuron, and Pyrasulfotole. Refer *REI = Restricted Entry Interval. PRI = Per Bersonal Protective Equipment *** Equipment Ranch Mesotrione Resolutione, 1 = similar to mesotrione, 2 = worse than mesotrione. 3 = much worse than mesotrione.	Max. Al lbs./yr	0.188	0.95	0.5	0.031	0.023	0.123	0.1	138	0.019	0.00
Surface Water Advisory, Criterion II: Alternative Poses Greater Human or Environmental Hazard Criterion II: Alternative Poses Greater Human or Environmental Risk Environmental Risk Environmental Risk Tribenuron not available as an alone product in oats is included because use information indicates relative common use. Other registered active ingredients that are not considered as viable mesotrione alternatives: Glyphosate, Pelargonic acid, Diuron, Fluroxypyr, Prosulfuron, and Pyrasulfotole. Refer Attachment "Active Ingredients Within The Analyses Across Crops That Are Not Considered Viable Alternatives To Mesotrione." *REI = Restricted Entry Interval. PPI = Personal Protective Equipment ** E Panking into 4 Classes: 0 = Better than mesotrione, 1 = similar to mesotrione, 2 = worse than mesotrione, 3 = much worse than mesotrione.	US or Regional label	Sn	Sn	Sn	Sn	ns	Sn	Sn	SI	SII	SIL
Criterion II: Alternative Poses Greater Human or Environmental Risk Environmental Risk Environmental Risk Environmental Risk Tribenuron not available as an alone product in oats is included because use information indicates relative common use. Other registered active ingredients that are not considered as viable mesotrione alternatives: Glyphosate, Pelargonic acid, Diuron, Fluroxypyr, Prosulfuron, and Pyrasulfotole. Refer Attachment "Active Ingredients Within The Analyses Across Crops That Are Not Considered Viable Atternatives To Mesotrione." *REI = Restricted Entry Interval. PHI = Pre Harvest Interval. PPE = Personal Protective Equipment ** Examing into 4 Classes: 0 = Better than mesotrione, 1 = similar to mesotrione, 2 = worse than mesotrione, 3 = much worse than mesotrione.	**Environmental Hazard	Surface Water Advisory, runoff	n	2	A STATE OF THE STA	0	-	2	٠		} <
Tribenuron not available as an alone product in oats is included because use information indicates relative common use. Other registered active ingredients that are not considered as viable mesotrione alternatives: Glyphosate, Pelargonic acid, Diuron, Fluroxypyr, Prosulfuron, and Pyrasulfotole. Refer Attachment "Active Ingredients Within The Analyses Across Crops That Are Not Considered Viable Atternatives To Mesotrione". *REI = Restricted Entry Interval. PHI = Pre Harvest Interval. PPE = Personal Protective Equipment ** = Ranking into 4 Classes: 0 = Better than mesotrione, 1 = similar to mesotrione, 2 = worse than mesotrione, 3 = much worse than mesotrione	Criterion II: Alternative Po	Ses Greater Human or									
Other registered active ingredients that are not considered as viable mesotrione alternatives: Glyphosate, Pelargonic acid, Diuron, Fluroxypyr, Prosulfuron, and Pyrasulfotole. Referable Restricted Entry Interval. PHI = Pre Harvest Interval. PPE = Personal Protective Equipment *REI = Restricted Entry Interval. PHI = Pre Harvest Interval. PPE = Personal Protective Equipment ** = Ranking into 4 Classes: 0 = Better than mesotrione, 1 = similar to mesotrione, 2 = worse than mesotrione.		IIIdi KISK	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other registered active ingredients that are not considered as viable mesotrione alternatives: Glyphosate, Petargonic acid, Diuron, Fluroxypyr, Prosulfuron, and Pyrasulfotole. Refer Attachment "Active Ingredients Within The Analyses Across Crops That Are Not Considered Viable Alternatives To Mesotrione." *REI = Restricted Entry Interval. PHI = Pre Harvest Interval. PPE = Personal Protective Equipment ** = Ranking into 4 Classes: 0 = Better than mesotrione, 1 = similar to mesotrione, 2 = worse than mesotrione.	I ribenuron not available as a	n alone product in oats is in	cluded becau	se use informa	tion indicates	relative commo	on use.			-	The state of the s
*REI = Restricted Entry Interval. PHI = Pre Harvest Interval. PPE = Personal Protective Equipment ** = Ranking into 4 Classes: 0 = Better than mesotrione, 1 = similar to mesotrione, 2 = worse than mesotrione. 3 = much worse than mesotrione	Other registered active ingre	edients that are not conside Attachment "Active Ingredie	red as viable	mesotrione alte	ernatives: Glyp	hosate, Pelarg	onic acid, Diu	ron, Fluroxypyr,	Prosulfuron,	and Pyrasulfoto	ile. Refer t
** = Ranking into 4 Classes: 0 = Better than mesotrione, 1 = similar to mesotrione, 2 = worse than mesotrione. 3 = much worse than mesotrione	*REI = Restricted Entry Interv	al. PHI = Pre Harvest Inter	val. PPE = P	ersonal Protect	tive Equipmen	1	מפוסה המוסה	- California i Cal	Mesonione		
	** = Ranking into 4 Classes: (= Better than mesotrione,	1 = similar to	mesotrione, 2:	= worse than n	nesotrione, 3 =	much worse	than mesotrione			

Characteristic	In Managing Pest Resistance In Oats		In Ma	In Managing F	Pest Resistance In Oats	istance	In Oats		The state of the s		
100-1131 5905-529 9779-346 279-3241 352-653 34704-885 7969-137 42750-14 352-633 33 F 2 / (28)* O / (4) C 3 / (6) E / (14) B / (2) O / (4) O / (4) D / (4) B / (2) 0 8 1 2 38 8 8 8 8 38 2 0 2 14 2 2 2 2 14 YES	Characteristic	Mesotrione Reduced Risk Al	G- 4 -2	linyxomonB	Reduced Risk	Chlorsulfuron	Clopyralid	Dicamba	∀d⊃M	norullusnəlidT	Tribenuron in prepack with Thifensulfuron
P E 2 / (28)* O / (4) C 3 / (6) E / (14) B / (2) O / (4) O / (4) O / (4) B / (2) 0 8 1 2 38 8 8 8 38 2 0 2 14 2 2 2 14 Yes No Yes Yes Yes Yes Yes Yes Yes Tes Yes Compared to the Original classification of 27 used by EPA currently on Syngenta's EPA labels.	EPA. Reg. No.	100-1131	5905-529	9779-346	279-3241	352-653	34704-885	7969-137	42750-14	352-633	5-6
0 8 1 2 38 8 8 38	HRAC / WSSA Classification of Active Ingredient Chemistry Class by Mode of Action	F 2 / (28)*	0 / (4)	C3/(6)	E / (14)	B/(2)	0/(4)	0 / (4)	0 / (4)	B/(2)	B/(2)
2 0 2 14 2 2 2 14 2 14 2 14 2 14 2 14 2 2 2 14 2 2 2 2 2 2 2 2 2	Total No. Biotpyes Resistant in US Per Class	0	8	_	2	38	8	8	8	38	38
Yes	Total No. Weed Species With Resistant Biotypes Per Chemistry Class in US		2	0	2	14	2	2	2	14	14
YES iffication based on H	Criterion III: Mesotrione will play role in managing Pest Resistance to this Active		Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
* Active Ingredient classification based on HRAC / WSSA. Mesotrione is WSSA 28 compared to the original classification of 27 used by EPA a currently on Syngenta's EPA labels.	Criterion III: Mesotrione will play a role in managing pest resistance in Oats	YES									
THE PROPERTY OF THE PROPERTY O	* Active Ingredient classif	ication based on	HRAC / W	SSA. Mesot currently or	rione is WS%	SA 28 comp EPA labels	ared to the o	riginal class	ification of 2	7 used by E	PA and

	T	ali	d III.	
Active Ingredient	EPA Classified As Reduced Risk	Criterion I: Insufficient Efficacious Alternative To Mesotrione	Criterion II: Alternative Poses Greater Human Or Environmental Risk*	Criterion III: Mesotrione Will Play Role In Managing Pest Resistance To This Active
Mesotrione	Yes			
2, 4 - D	No	Yes	Yes	Yes
Bromoxynil	No	Yes	Yes	No
Carfentrazone	Yes	Yes	Yes	Yes
Chlorsulfuron	No	Yes	Yes	Yes
Clopyralid	No	Yes	Yes	Yes
Dicamba	No	Yes	Yes	Yes
MCPA	No	Yes	Yes	Yes
Thifensulfuron	No	Yes	Yes	Yes
Tribenuron	No	Yes	Yes	Yes

Grain Sorghum

US grain sorghum production is estimated to be 7,470,000 acres in Doane AgroTrak in 2007 and 7,034,996 in 2008. Mesotrione was registered on grain sorghum on March 17, 2008, which is within the first 7 years after the initial June 4, 2001 registration of mesotrione. Lumax, a prepack product containing mesotrione, was granted a Section 18 Specific Exemption on May 12, 2006 in KS and again in KS and NE during 2007. The key reason was the control of Kochia and Amaranthus weed biotypes resistant to triazines, glyphosate, and / or ALS herbicides with Lumax. On July 15, 2008 EPA granted mesotrione Reduced Risk status on grain sorghum. While not a minor crop, mesotrione is needed for its weed control spectrum and as another mode of action to use in management of weed resistance to triazines, glyphosate, and ALS herbicides.

Grain sorghum is not a minor crop based on acres grown. Syngenta will demonstrate that the registration of mesotrione products will fit a minor use profile within the sorghum crop. The initial registration on grain sorghum is minor as a result of being limited to use in KS and NE on less than 3% of US acres in 2008. Texas, which is a major sorghum production state, will be added to the label in 2009. For broad-spectrum weed control, Syngenta expects mesotrione to be used in conjunction with the grass herbicide S-metolachlor. S-metolachlor can be used only if the sorghum seed has to been treated with the safener - Concep III. Thus, the upper limit of mesotrione use is the number of S-metolachlor acres. The acres treated with S-metolachlor has remained constant over several years at 22% of the US sorghum acres or approximately 1.5 million acres of the 3 state total. The highest percentage of Smetolachlor acres receiving mesotrione in 2008 was 10.9 % or 172,000 acres (from KS and NE). Projecting this percent to the 3 state total (KS, NE and TX) S-metolachlor acres would be applied on approximately 167,000 acres. In TX due to potential crop injury on coarse soils, mesotrione will only be labelled for use north of I-20 and west of route 277. The number of acres of sorghum grown in this specific area (TX CRD 48011, 48012, and 48021), as determined by dmrkynetec, is 830,000 acres which accounted for less than 33% of the 2.6 million acres of sorghum grown in TX during 2008. According to dmrkynetec, only 122,000 of these CRD acres (14.7%) received S-metolachlor. Further, mesotrione would be expected to be used only if there were mesotrione controlled weed biotypes resistant to triazines, ALS herbicides or other modes of action. Thus, the acres in these three CRDs can be conservatively reduced by ~75% to a reasonable potential of about 200,000 acres or 7% of the acres grown in TX. As a result, this would be considered a minor use in KS, NE and TX. Estimating the use in these three states would be approximately 300,000 acres. This analysis clearly demonstrates that mesotrione use will be very limited in comparison to the total number of sorghum acres grown.

From another perspective, a comparison can be made between what the actual sales of mesotrione in sorghum compared to the revenue from each of the other herbicide active ingredients used in sorghum. In 2008, approximately \$94 million were spent on sorghum herbicides (dmrkynetec). The mesotrione value is less that 2% of that figure, and this is after the Section 18's described above and Section 3 approval for 2008. These factors, and others, can be considered to show that while grain sorghum is not a minor crop, based on acreage, the mesotrione use is projected to be minor. The use patterns labeled on sorghum contain several limitations that despite being a critical tool in some areas, will further prevent it from becoming a major factor in the sorghum market.

Conclusion:

Mesotrione fulfils FIFRA Criteria I, II, and/or III compared to each registered alternative.

Criterion I: Mesotrione provides low rate (0.188-0.2 lbs. ai/A) preemergence and postemergence control of a large number of broadleaf weeds. Of the ten potential alternatives, none provide as broad a spectrum of weed control. As to the weeds included on mesotrione's label, some are not controlled by any other product; most are controlled by only 1 to 3 other products, and only a few by multiple products. No one product provides a broad spectrum of weed control comparable to mesotrione.

Criterion II: Mesotrione is safer across the human safety, environmental impact and application criteria than any other alternative. As noted, some alternatives, carfentrazone, halosulfuron, metsulfuron-methyl, and prosulfuron are better than mesotrione in one or more criteria, but not across all criteria.

Criterion III: No weeds have developed resistant biotypes to the mesotrione family of chemistry. Thus, mesotrione will continue to manage resistance as it did in the two years of Section 18 labels that has developed for most of the alternative families of chemistry. The exception is bromoxynil whose resistant biotype is not controlled by mesotrione.

Grain Sorghum: Mesotrione Meets FIFRA Section 3(c)(1)(F)(ii) Criteria I, II, and III.

Active Ingredient	EPA Classified As Reduced Risk	Criterion I: Insufficient Efficacious Alternative To Mesotrione	Criterion II: Alternative Poses Greater Human Or Environmental Risk*	Criterion III: Mesotrione Will Play Role In Managing Pest Resistance To This Active
Mesotrione	Yes			
2, 4 - D	No	Yes	Yes	Yes
Atrazine	No	Yes	Yes	Yes
Bromoxynil	No	Yes	Yes	No
Carfentrazone	Yes	Yes	Yes	Yes
Dicamba	No	Yes	Yes	Yes
Halosulfuron	No	Yes	Yes	Yes
Linuron	No	Yes	Yes	Yes
Metsulfuron-methyl	No	Yes	Yes	Yes
Prosulfuron	No	Yes	Yes	Yes
Quinclorac	No	Yes	Yes	Yes

^{*}Combined evaluation of human safety, application rate, and environmental impact.

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	nartweed, Pennsylvania		C	C	C	C	С			C		C	1	
Ivetleaf Abutition theophrasti C PC C C C C S 4 aterhemp, common Amaranthus rudis C C C C C PC Est C 1 aterhemp, tall Amaranthus tuberculatus C C C C C Est PC 4	inflower, common		C	C					1200	-	HERESKI		5	THE RESERVE OF THE PARTY OF THE
aterhemp, common Amaranthus rudis C C C C C PC Est C 1 aterhemp, tall Amaranthus tuberculatus C C C C C Est PC 4	elvetleaf				PC		C	C	-	PC	Fet			
aterhemp, tall Amaranthus tuberculatus C C C C C Est PC 4				C			- 12		-				3	
	aterhemo common			-			-			70			1	1
	aterhemp, common			C	C	_	C		ALC: UNKNOWN	-	F7-4	no		

Common Name	Scientific Name	6.0-6.4 fl. oz./A		100.00	+	+		+-		1	+	+	
Amaranth, palmer	Amaranthus palmeri	C	Maria de la	C				-		Taxable 1	C	. 1	0
Amarath, Powell	Amaranthus powellii	C	1	C					anessa.				0
Amaranth, spiny	Amaranthus spinosus	С	1	C	1	1	1	100	WEST STORY	NAMES OF	ALC: U	1 1	
Broadleaf signalgrass	Brachiaria platyphylla	C1	1-	+	-	+	-	-	-	+	+	С	
Buffalobur	Solanum rostratum	Č	-	-	+	-	-	-	-		C	C	1
Carpetweed	Mollugo verticillata	C	-	-	+-	-		-	C	-	C	-	1
Chickweed, common	Stellaria media	C	-	-	+	+	-	-	C	-		-	2
Cocklebur, common	Xanthium strumarium	PC	1	PC	4	1		Name of Street, or other Designation of the London of the	, 0	Total State of	PC		1
Crabgrass, large	Digitaria sanguinalis	C'	1	I PC		1	1	Page 1	5	MINIE	PU	Fi	0
Galinsoga	Galinsoga parviflora	č	-		1		_		C	-	-	С	2
Jimsonweed	Datura stramonium	č	1	C	1	1	1	1	C	Į.	1	1	1
Kochia	TARRAM TO THE PARTY OF THE PART	PC	arminin	C		1	Noncontain .	maximum.		Series		1000	0
ambsquarters, common	Kochia scoparia Chenopodium album	70	COLUMN TO SERVICE	C		-	CONTRACT			MEE	С	S	1
Momingglory, entireleaf; ivyleaf	Ipomoea hederacea	PC	-	C		-		2000	C		С	S	2
Morningglory, pitted	Ipomoea lacunosa	PC	_	C	-			-	PC	-	PC PC	Est	1
Nightshade, eastern black	Solanum ptycanthum	C		C		ł.	L.	No. of Concession,	PC	-	PC	Est	1
Nightshade, hairy	Solanum sarrachoides	C ·		G	1		ř.	ALC: N	PC	THE STATE OF		1	0
Pigweed, redroot	Amaranthus retroflexus	C		C	1	1	1	-	C	Account to the	C	1	1
Pigweed, smooth	Ameranthus hybridus	C	15.0	C					Est		C		0
Pigweed, tumble	Amerenthus elbus	C		C	1	1	(SERVICE STATES	LSt	1000	-	1 1	1
Ragweed, common	Ambrosia artemisiifolia	C		C	-	Serou D		NAME OF TAXABLE PARTY.	C	10000455	C	S	1
Ragweed, giant	Ambrosia trifida	PC	_	C	1	CONSTRUCTION OF THE PERSON OF	_	-			C	S	1
Smartweed, ladysthumb	Polygonum persicaria	C		C	ř.	1		400		OR STREET		0 1	n
Smartweed, pale	Polygonum lapathifolium	C		C	7	1 1		1	1	1	1	1 1	1
Smartweed, Pennsylvania	Polygonum pensylvanicum	С		C	-			1	C		C	1	2
Sunflower, common	Helianthus annuus	C		-				Anglish:	-		C	s	0
/elvetleaf	Abutilon theophrasti	C		PC				1000	PC		PC	S	0
Vaterhemp, common	Ameranthus rudis	С		C		ESTAI			PC		C	Ť	0
Vaterhemp, tell	Amaranthus tuberculatus	С		C	1						C	1	1
Count of Species Controlled		58	20	19	23	11	23	5	15	0	14	4	
Criteria 1: Insufficient Efficaci	ous Alternative to Mesotrione		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

2004 (10.00)			5	ומון וופמור	on comman nearth man mesonione on Grain Sorgnum	a louis		nnugaoc			and the control of
Characteristic	Mesotrione Reduced Risk AI	Z't-D	ənizsttA	linyxomorB	Carfentrazone Reduced Risk Al in Cereal Grains	Dicamba	Halosulfuron	uonui	Metsulfuron-methy	nosulfuson	Juinclorac
EPA Reg. No.	100-1131	71368-1	100-497	9779-346	279-3241	66330-276	10163-254	352-686	352-435	100-763	42750-131
Reduced Risk by EPA	Yes	2	8	N N	Yes	8	No.	2	No.	No	No.
Label Signal Word	Caution	Danger	Caution	Warning	Caution	Warning	Caution	Caution	Caution	Caution	Caution
Gene Toxicity	Negative	Negative	Negative	Positive	Negative	Positive	Negative	Negative	Negative	Negative	Negative
Teratogenicity	Negative	Negative	Negative	Positive	Negative	Negative	Negative	Negative	Negative	Negative	Negative
Reproductive Toxicity	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
Carcinogenic Potential	Not Likely	Danger	Not likely	ပ	Not Likely	٥	Not Likely	Ç	Not likely	Inadeditate data	1
Acute Neurotoxicity	Negative	Positive	Q	Unlikely (ND)	Positive	Positive	Negative	QN	N	Positive	S
Subchronic/Chronic Neuropoxicity	Necetive	Docition	Ç	(City) (Jerjan)							
REI in Hours*	19	AN AN	15	Ollinely (ND)	35	Positive	Negative	2	Q.	Negative	2
PHI in Davs*	30	2	71	† Z	21		12	24	4	12	12
**ppE*	Chem resist gloves	.3	2	3	o idal collars	3	30	90/75	2	30,40,60	z ·
Applic. Method (Pre)	Pre	Z	Pre	Z	2	7 2	- IV	7	2	_ 2	- 2
Pre lbs ai./A	0.188-0.2	z	2.0	Z	Z	Į	J. IN	0.25.1.0	2 2	P. 16	Pre 0 275
Applic. Method (Post)	Z	Post	Post	Post	Post	Post	Post	Post-Direct	Poet	Poet Poet	Doct Doct
Post lbs ai./A	JN.	0.48	2.0	0.25-0.38	0.008016	0.25	0.031-0.047	05-10	0.0019	0.027-0.036	0.25 0.275
No. Applic. / year		-	2	_	2	-	-		-	1	1
Max. Al Ibs./yr	0.2	0.48	2.5	0.38	0.016	0.3	0.047	1.0	0.0019	0.036	0 375
US or Regional label	굺		SN	SN	Sn	SN	- ns	ns	R	SI	200
**Environmental Hazard	Surface Water Advisory, runoff	2	2	2	-	2	-	-	0	2	6
Criterion II: Alternative	Criterion II: Alternative Poses Greater Human or Environmental Risk	Yes	Yes	Yes	Yes	Yes	Yes	Yes	X 9	, Nav	200
									3	201	1 63

Other registered active ingredients that are not considered as viable mesotrione alternatives: Alachlor, bentazon, dimethenamid, dimethenamid-P, diquat, diuron, glyphosate, metam-sodium, metolachlor, paraquat, pendimethalin, propachlor, S-metolachlor, and trifluralin Refer to Attachment "Active Ingredients Within The Analyses Across Crops That Are Not

*REI = Restricted Entry Interval. PHI = Pre Harvest Interval. PPE = Personal Protective Equipment

** = Ranking into 4 Classes: 0 = Better than Mesotrione, 1 = similar to mesotrione, 2 = worse than mesotrione, 3 = much worse than mesotrione.

NL = None listed or mentioned, or the application method is not labeled for a specific active ingredient.

	The state of the s								-		
Characteristic	Mesotrione Reduced Risk Al	Z'4-D	Atrazine	Bromoxynil	Carfentrazone Reduced Risk Al in Cereal Grains	BdmsoiO	Halosulfuron	nonnoi	Metsulfuron-methy	nonuiluson	Juinclorac
EPA. Reg. No.	100-1131	71368-1	100-497	9779-346	279-3241	66330-276	10163-254	352-686	352-435	100-763	42750-131
HRAC / WSSA Classification of Active Ingredient Chemistry Class by Mode of Action	F 2 / (28)*	0 / (4)	C1/(5)	C3/(6)	E / (14)	0/(4)	B/(2)	C2/(7)	B/(2)	8/(2)	B/(9)
Total No. Weed Species With Resistant Biotypes Per Chemistry Class In US	0	8	23	_	2	80	38	7	38	38	80
No. of Biotypes Controlled or Partially Controlled by Mesotrione		2	14	0	2	2	14	8	41	4	3 4
Criterion III: Mesotrione will play role in managing Pest Resistance to this Active	The second secon	Yes	Yes	°Z	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Criterion III: Mesotrione will play a role in managing pest resistance in Grain Sorghum	YES										
The state of the s	The second secon										

		II, and	111.	
Active Ingredient	EPA Classified As Reduced Risk	Criterion I: Insufficient Efficacious Alternative To Mesotrione	Criterion II: Alternative Poses Greater Human Or Environmental Risk*	Criterion III: Mesotrione Will Play Role In Managing Pest Resistance To This Active
Mesotrione	Yes			
2, 4 - D	No	Yes	Yes	Yes
Atrazine	No	Yes	Yes	Yes
Bromoxynil	No	Yes	Yes	No
Carfentrazone	Yes	Yes	Yes	Yes
Dicamba	No	Yes	Yes	Yes
Halosulfuron	No	Yes	Yes	Yes
Linuron	No	Yes	Yes	Yes
Metsulfuron-methyl	No	Yes	Yes	Yes
Prosulfuron	No	Yes	Yes	Yes
Quinclorac	No	Yes	Yes	Yes

Sweet Sorghum

US sweet sorghum production is estimated to be 50,000 acres by M. Bitzer at Univ. of KY, qualifying it as a minor crop. Mesotrione was registered on sweet sorghum on March 17, 2008, which is within the first 7 years after the initial June 4, 2001 registration of mesotrione. EPA did not grant reduced risk status to sweet sorghum, only because there is no other herbicide currently registered for this specific type of sorghum and therefore, EPA concluded that the risk could not be reduced. This is clear evidence that sweet sorghum meets the "insufficient efficacious alternative registered pesticides criterion (criterion I) of FIFRA Section 3(c)(1)(F)(ii).

Conclusion:

Mesotrione fulfils FIFRA Criterion I.

Criterion I: Mesotrione provides low rate (0.188-0.2 lbs ai/A) preemergence and postemergence control of a large number of broadleaf weeds. An NPIRS / PPLS search found no labels that specifically mention sweet sorghum, showing insufficient alternatives exist.

Sweet Sorghum: Mesotrione Meets FIFRA Section 3(c)(1)(F)(ii) Criteria I

Active Ingredient	EPA Classified As Reduced Risk	Criterion I: Insufficient Efficacious Alternative To Mesotrione
Mesotrione	No	
No Other Active Ingredients Currently Registered	No Other Active Ingredients Currently Registered	Yes. Since there are no alternatives registered, there are, by definition, insufficient efficacious alternatives.

^{*}combined evaluation of human safety, application rate, and environmental impact.

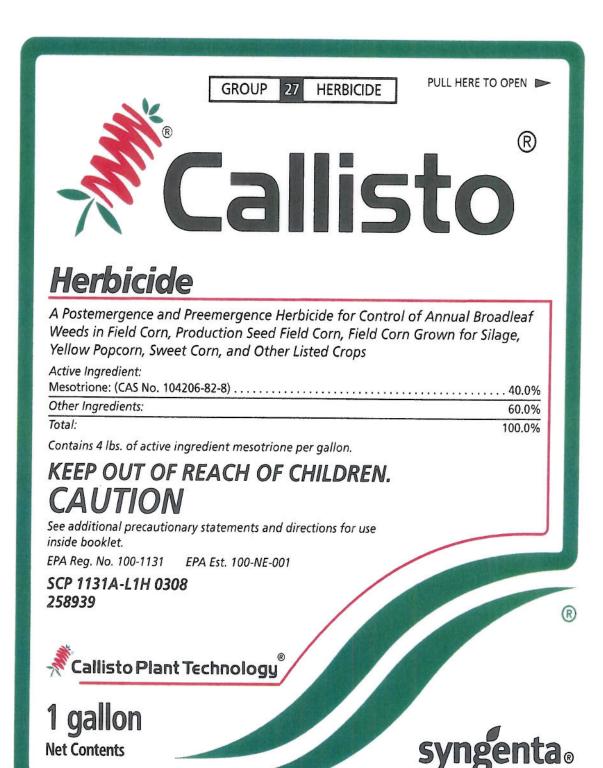
W-West-Class 201-1-1-1-1		Mesotrione HRAC		
		Group F2 / (WSSA	1	
		Group 28)		
		Callisto 3.0 fl. oz/A	Based On An NPIRS Search - No Herbicide	Count of Al Controlling species. S, PC, or Resistance not
Sweet Sauch			Labels in EPA's Pesticide Product Label	unt ntro
Sweet Sorghum	T	Plus Adjuvant*	System Specify Sweet Sorghum	3388
Common Name	Calantific Name	Apply to weeds		
Common Name	Scientific Name	<5"		5 J. 20 V. 12 V
	d With Postemergence			
Amaranth, palmer	Amaranthus palmeri	С		0
Amaranth, Powell	Amaranthus powellii	C		0
Amaranth, spiny Atriplex	Amaranthus spinosus	C		0
Broadleaf signalgrass	Chenopodium orach Brachiaria platphylla	C -		0
Buckwheat, wild	Polygonum convolvulus	PC		0
Buffalobur	Solanum rostratium	C		0
Burcucumber	Sicyos angulatus	PC		0
Carpetweed	Mollugo verticillata	C		0
Carrot, wild	Daucus carota	C		0
Chickweed, common	Stellaria media	C		0
Cocklebur, common	Xanthium strumarium	C		0
Crabgrass, large	Digitaria sanguinalis	C'		0
Dock, curly	Rumex crispus	PC		0
Galinsoga	Galinsoga parviflora	C		0
Hemp	Cannabis sativa	C		0
Horse nettle	Solanum carolinense	C		0
Horseweed/Marestail	Conyza canadensis	PC		0
Jimsonweed	Datura stramonium	С		0
Knotweed, prostrate Kochia	Polygonum aviculare	PC PC		0
ambsquarters, common	Kochia scoparia	C		0
Morningglory, entireleaf; ivyleaf	Chenopodium album Ipomoea hederacea	PC		0
Morningglory, pitted	Ipomoea lacunosa	PC		0
Mustard, wild	Brassica kaber	C		0
Nightshade, black	Solanum nigrum	C		0
Nightshade, eastern black	Solanum ptycanthum	C		0
Nightshade, hairy	Solanum sarrachoides	C		0
lutsedge, yellow	Cyperus esculentus	PC		0
Pigweed, redroot	Amaranthus retroflexus	С		O
rigweed, smooth	Amaranthus hybridus	С		0
rigweed, tumble	Amaranthus albus	С		ŏ
okeweed, common	Phytolacca americana	PC		0
otatoes, volunteer	Solanum spp.	С		0
Pusley, Florida	Richardia scabra	C.		0
Ragweed, common	Ambrosia artemisiifolia	PC		0
Ragweed, giant	Ambrosia trifida	C		0
Sesbania, hemp Smartweed, ladysthumb	Sesbania exaltata	C		0
martweed, jadystnumb	Polygonum persicarla			. 0
martweed, Pennsylvania	Polygonum lapathifolium Polygonum pensylvanicum	C		0
unflower, common	Helianthus annuus	C		0
elvetleaf	Abutilon theophrasti	- i		0
Vaterhemp, common	Amaranthus rudis	-		0
Vaterhemp, tall	Amaranthus tuberculatus	C		0
Adjuvant = COC or NIS plus UNA	The state of the s			U

Common Name	Scientific Name	6.0-6.4 fl. oz./A		
maranth, palmer	Amaranthus palmeri	C		
arath, Powell	Amaranthus powellii	C		
aranth, spiny	Amaranthus spinosus	C		
adleaf signalgrass	Brachlaria platyphylla	C.		
alobur	Solanum rostratum	C		
petweed	Mollugo verticillata	C C		
kweed, common	Stellaria media	C		
cklebur, common	Xanthium strumarium	PC		
ibgrass, large	Digitaria sanguinalis	C'		
insoga	Galinsoga parviflora	C		
sonweed	Datura stramonium	C		
hia	Kochia scoparia	PC		
mbsquarters, common	Chenopodium album	C		
rningglory, entireleaf; ivyleaf	Ipomoea hederacea	PC		
rningglory, pitted	Ipomoea lacunosa	PC		
htshade, eastern black	Solanum ptycanthum	C		
htshade, hairy	Solanum sarrachoides	C		
veed, redroot	Amaranthus retroflexus	C		
veed, smooth	Amaranthus hybridus	C		
veed, tumble	Amaranthus albus	C		
weed, common	Ambrosia artemisiifolia	C		
weed, glant	Ambrosia trifida	PC		
artweed, ladysthumb	Polygonum persicaria	C		
artweed, pale	Polygonum lapathifolium	C		
artweed, Pennsylvania	Polygonum pensylvanicum	Č		
flower, common	Helianthus annuus	C		
etleaf	Abutilon theophrasti	C		
terhemp, common	Amaranthus rudis	C		
terhemp, tall	Amaranthus tuberculatus	Č		
ant of Spp. Controlled		58	0	
	ent Efficacious Alternative to N		Yes	17.70
ecies not controlled by any imative	Resistant biotypes per chemica	I class that controlled or partia	lly controlled by mesotrione. A "C" within a pini prefore not counted as controlled by that produ	shaded

Mesotrione (Reduced Risk Al) 100-1131 Yes Caution Negative Negati	The state of the s		Based On An NPIRS Search - No Herbicide Labels in EPA's Pesticide
EPA Reg 100-1131 EPA Reg No. Zeduced Risk by EPA Yes Action of Signal Word Caution Zene Toxicity Negative Zene Toxicity Negative Zene Toxicity No Likely Zene In Hours* 12 Zene In Hours* 20 Zene In Hours* 20 Zene In Hours* 20 Applic. Method (Pre) Pre Applic. Method (Pre) Pre Applic. Method (Pre) NL	Characteristic	Mesotrione (Reduced Risk AI)	Product Label System Specify Sweet Sorghum
Sed Local Risk by EPA Yees Sed Local Risk by EPA Yees abel Signal Word Caution Apel Signal Word	EPA Reg. No.	100-1131	
abel Signal Word Caution abel Signal Word Caution Per Disciple Negative Per Disciple Negative Particle Neurotoxicity Negative Subcinopenic Potential Not Likely Albertion Return Resistation Potential Not Likely Albertion Return Resistation Return Resistation Return Resistation Return Resistation Return Resistation Return Resistation Return Return Resistation Return Retu	Reduced Risk by EPA	Yes	THE REPORT OF THE PARTY OF THE
Periodicity Negative Negative Seprendicity Se	Label Signal Word	Caution	AND THE PARTY OF T
Peratogenicity Negative Reproductive Toxicity Negative Rel in Hours* 12 12 12 12 12 12 12 1	Gene Toxicity	Negative	
Reproductive Toxicity Negative Sacrinogenic Potential Not Likely Subcinogenic Potential Not Likely Auch Neurotoxicity Not Elley Subcinoration/Chronic Neurotoxicity Nogative REI in Hours* 30 Per In Days* NL Per In Days* NL Post Ibs an IA NL Applic. Method (Prest) NL Post Ibs an IA NL Applic. Method (Post)	Teratogenicity	Negative	
Sarcinogenic Potential Not Likely Stack Neuroboxicity Negative Subchronic/Chronic Neurotoxicity Negative Actual Neuroscity Negative Actual In Days** 1 PPE Pre Phe Pre Phe Pre Phe Pre Phe Pre Phe Pre Phe Phe Phe Phe Oct Applic. Method (Post) NL NL NL Osa Ibs ai./A popilic. J year NL Abylic. Method Poses NL Sor Regional label US Size or Regional label US Streater Human or Environments Surface Water Advisory, runoff There are no registered alternatives. Data Extension is justified to extend protection on very minor crop. Other registered active ingredients that are not considered as viable mesotrione alternatives: There are no alternatives in NPIRS or the PPLS.	Reproductive Toxicity	Negative	
Acute Neurotoxicity Negative Subchronic/Chronic Neurotoxicity Negative Subchronic/Chronic Neurotoxicity Negative Stell in Hours* 12 Rell in Days* 30 Preper 30 Preper 40 Per Der 30 Preper 40 Applic. Method (Post) NL Mol. Applic. Jyear 10 J. Sor Regional label US Breater Human or Environments Area no registered alternatives. Data Extension is justified to extend protection on very minor crop. Other registered active ingredients that are not considere	Carcinogenic Potential	Not Likely	and the second s
Subchronic/Chronic Neurotoxicity Negative 12 3Ub Chronic/Chronic Neurotoxicity 12 3E in Hours* 12 3E in Hours* 30 3H in Days* 30 3PH in Days* Chem resist gloves 3PH in Days* Chem resist gloves 3PP E- Pre- 4Pplic. Method (Post) NL 4N In In In In In In In In Interval In Interval In Interval Interv	Acute Neurotoxicity	Negative	
SEI in Hours* 12 30 30 30 30 30 30 30 3	Subchronic/Chronic Neurotoxicity	Negative	And Assessed Street (1982) And Assessed And
Pre	REI in Hours*	12	
PPE *PPE* *PPE* Chem resist gloves *Image: Method (Pre) Pre Pre Pre Pre Pre Pre Pre	PHI in Days*	30	
Applic. Method (Pre) Pre ?re Ibs ai./A 0.188-0.2 Applic. Method (Post) NL Post Ibs ai./A NL Post Ibs ai./A 1 Ao. Applic. Jyear 1 Ao. Applic. Jyear 1 Ao. Applic. Jyear 0.2 JS or Regional label US Sor Regional label Surface Water Advisory, runoff Streater Human or Environments There are no registered alternatives. Data Extension is justified to extend protection on very minor crop. Other registered active ingredients that are not considered as viable mesotrione alternatives: There are no alternatives in NPIRS or the PPLS. REI = Restricted Entry Interval. PHI = Pre Harvest Interval	**PPE*	Chem resist gloves	To the second se
Verlos ai./A Verlos ai./A Verlos ai./A NL NL NL NL NL NL NL N	Applic. Method (Pre)	Pre	THE PARTY OF THE P
Applic. Method (Post) NL *Ost Ibs ai./A NL *Io. Applic. / year 1 *Ac. Al Ibs./yr 0.2 *Sor Regional label US *Environmental Hazard Surface Water Advisory, runoff *Titerion I: Alternative Poses There are no registered alternatives. Data Extension is justified to extend protection on very minor crop. *Steater Human or Environments There are no registered alternatives in NPIRS or the PPLS. *REI = Restricted Entry Interval. PHI = Pre Harvest Interval Interval PDE = December 1 Protection or Parameter Interval PDE = December 1 Protection Environmental PDE = December 1 Protection Entry Interval. PHI = Pre Harvest Interval PDE = December 1 Protection Entry Interval. PHI = Pre Harvest Interval PDE = December 1 Protection Entry Interval.	Pre lbs ai./A		
Vost Ibs ai./A 40. Applic. / year 5. Other registered active ingredients that are not considered as viable mesotrione alternatives: There are no alternatives in NPIRS or the PPLS. 5. Applic. / year 6. 2 5. There are no registered alternatives bate are not considered as viable mesotrione alternatives: There are no alternatives in NPIRS or the PPLS. 6. 2 7. There are no registered alternatives in NPIRS or the PPLS. 6. 2 7. There are no registered alternatives in NPIRS or the PPLS. 6. 2 7. There are no alternatives in NPIRS or the PPLS. 6. 2 7. There are no alternatives in NPIRS or the PPLS. 6. 2 7. There are no alternatives in NPIRS or the PPLS.	Applic. Method (Post)	N	
40. Applic. / year Max. Al lbs./yr JS or Regional label Surface Water Advisory, runoff Fenvironmental Hazard Surface Water Advisory, runoff State Human or Environments State Advisory, runoff State Human or Environments State Advisory, runoff There are no registered alternatives. Data Extension is justified to extend protection on very minor crop. Other registered active ingredients that are not considered as viable mesotrione alternatives: There are no alternatives in NPIRS or the PPLS. REI = Restricted Entry Interval. PHI = Pre Harvest Interval Data Extension is justified to extend protection on very minor crop.	Post lbs ai./A	Z	- Ali de communication de la company de la c
*Environmental Hazard Surface Water Advisory, runoff Streater Human or Environments Other registered active ingredients that are not considered as viable mesotrione alternatives: There are no alternatives in NPIRS or the PPLS. *Environmental Hazard Surface Water Advisory, runoff Streater Human or Environments There are no registered alternatives in NPIRS or the PPLS. Other registered active ingredients that are not considered as viable mesotrione alternatives: There are no alternatives in NPIRS or the PPLS. REI = Restricted Entry Interval PHI = Pre Harvest Interval PPE = December 1 December 1 December 1 December 2 December 1 December 3 December 4	No. Applic. / year	The state of the s	
*Environmental label *Environmental Hazard *Interion I: Alternative Poses *There are no registered alternatives. Data Extension is justified to extend protection on very minor crop. Other registered active ingredients that are not considered as viable mesotrione alternatives: There are no alternatives in NPIRS or the PPLS. REI = Restricted Entry Interval PHI = Pre Harvest Interval PDE = Description or Protection or PPLS.	Max. Al lbs./yr	0.2	SHE COLUMN TO THE PARTY OF THE
*Environmental Hazard Surface Water Advisory, runoff Staterion I: Alternative Poses Sreater Human or Environments Sisk Other registered active ingredients that are not considered as viable mesotrione alternatives: There are no alternatives in NPIRS or the PPLS. REI = Restricted Entry Interval PHI = Pre Harvest Interval PDE = Description Environments Surface Water Advisory, runoff There are no registered alternatives is justified to extend protection on very minor crop. Other registered active ingredients that are not considered as viable mesotrione alternatives: There are no alternatives in NPIRS or the PPLS.	US or Regional label	SN	
Streater Human or Environments Very minor crop. Other registered active ingredients that are not considered as viable mesotrione alternatives: There are no alternatives in NPIRS or the PPLS. REI = Restricted Entry Interval. PHI = Pre Harvest Interval. PDE = December 1 D	**Environmental Hazard	Surface Water Advisory, runoff	The control of the co
Other registered active ingredients that are not considered as viable mesotrione alternatives: There are no alternatives in NPIRS or the PPLS. REI = Restricted Entry Interval. PHI = Pre Harvest Interval. PDE = Deserval Englanding Equipment	Criterion I: Alternative Poses Greater Human or Environments Risk		There are no registered alternatives. Data Extension is justified to extend protection on this very minor crop
Other registered active ingredients that are not considered as viable mesotrione alternatives: There are no alternatives in NPIRS or the PPLS. REI = Restricted Entry Interval. PHI = Pre Harvest Interval. PDE = Deserval Department of the PPLS.		The state of the s	
	*REI = Restricted Entry Interval PHI	gredients that are not considered	as viable mesotrione alternatives. There are no alternatives in NPIRS or the PPLS.

	Mesotrione Reduced Risk	Based On An NPIRS Search - No Herbicide Labels in EPA's Pesticide
Characteristic	¥	Product Label System Specify Sweet Sorghum
EPA. Reg. No.	100-1131	
HRAC / WSSA Classification of Active Ingredient Chemistry Class by Mode of Action	F 2 / (28*)	
Total No. Weed Species With Resistant Biotypes Per Chemistry Class in US	0	
No. of Biotypes Controlled or Partially Controlled by Mesotrione		
Criterion III: Mesotrione will play role in managing Pest Resistance to this Active		There are no registered alternatives. Based on grain sorghum where there are ten alternatives, mesotrione plays a role in resistance management. The only scenario where mesotrione would not, would be if an active ingredient was registered and in a chemistry class that has no species controlled by mesotrione. Data Extension Protection is justified on this very minor crop.
Criterion III: Mesotrione will play a role in managing pest resistance in Sweet Sorghum	YES	
Statement of the statem		

Sweet Sorghum Tab	e 4: Mesotrione Meets FIFRA Secti	ion (3)(c)(1)(F)(ii) Criteria I
Active Ingredient	EPA Classified As Reduced Risk	Criterion I: Insufficient Efficacious Alternative to Mesotrione
Mesotrione	Yes	
No Active Ingredients Currently Registered	No Active Ingredients Currently Registered	Yes. Since there are no alternatives registered, there is, by definition, insufficient efficacious alternatives



	FIRST AID
If in eyes	 Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.
If on skin or clothing	 Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
If inhaled	 Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to mouth, if possible. Call a poison control center or doctor for further treatment advice.
If swallowed	 Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.
	uct container or label with you when calling a poison control center or g for treatment.
	HOTLINE NUMBER or 24-Hour Medical Emergency Assistance (Human or Animal), Chemical Emergency Assistance (Spill, Leak, Fire, or Accident) Call 1-800-888-8372

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION

Harmful if absorbed through skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with skin, eyes, or clothing.

continued...

PRECAUTIONARY STATEMENTS (continued)

Personal Protective Equipment (PPE)

Some materials that are chemical resistant to this product are listed below. If you want more options, follow the instructions for Category A on an EPA chemical resistance category selection chart.

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves Category A (e.g. barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride (PVC), or viton)

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

Engineering Control Statements

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Environmental Hazards

Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment wash water or rinsate.

Surface Water Advisory

This product may contaminate water through drift of spray in wind. This product has a high potential for runoff for several weeks after application. Poorly draining soils and soils with shallow water tables are more prone to produce runoff that contains this product. A level, well maintained vegetative buffer strip between areas to which this product is applied and surface water features such as ponds, streams, and springs will reduce the potential for contamination of water from runoff. Runoff of this product will be reduced by avoiding applications when rainfall is forecasted to occur within 48 hours. Sound erosion control practices will reduce this product's contribution to surface water contamination.

Physical and Chemical Hazards

Do not use or store near heat or open flame.

CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

NOTICE: Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of SYNGENTA CROP PROTECTION, Inc. or Seller. To the extent permitted by applicable law, Buyer and User agree to hold SYNGENTA and Seller harmless for any claims relating to such factors.

SYNGENTA warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. To the extent permitted by applicable law: (1) this warranty does not extend to the use of the product contrary to label instructions, or under conditions not reasonably foreseeable to or beyond the control of Seller or SYNGENTA, and, (2) Buyer and User assume the risk of any such use. TO THE EXTENT PERMITTED BY APPLICABLE LAW, SYNGENTA MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS WARRANTED BY THIS LABEL.

To the extent permitted by applicable law, in no event shall SYNGENTA be liable for any incidental, consequential or special damages resulting from the use or handling of this product. TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF SYNGENTA AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF SYNGENTA OR SELLER, THE REPLACEMENT OF THE PRODUCT.

SYNGENTA and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitation of Warranty and Liability, which may not be modified except by written agreement signed by a duly authorized representative of SYNGENTA.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Callisto should be used only in accordance with recommendations on this label or in separately published Syngenta supplemental labeling recommendations for this product.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours. Exception: If the product is soil-injected or soil-incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Shoes plus socks
- Chemical-resistant gloves Category A (e.g., barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, natural rubber, polyethylene, polyvinyl chloride (PVC), or viton)

GENERAL INFORMATION

Callisto is a systemic preemergence and postemergence herbicide for the selective contact and residual control of broadleaf weeds in field corn, production seed field corn, field corn grown for silage, yellow popcorn, sweet corn, and other listed crops. When used preemergence, weeds take up the product through the soil during emergence. Dry conditions following application may reduce the preemergence activity of Callisto. If an activating rain (0.25 inches) is not received within 7-10 days after a preemergence application, rotary hoeing is suggested to activate the herbicide. When used postemergence, susceptible weeds take up the herbicide through the treated foliage and cease growth soon after application. Complete death of the weeds may take up to 2 weeks. The product is absorbed through the soil and/or by the foliage of emerged weeds.

Callisto is not effective for the control of most grass weeds. Preemergence grass herbicides or postemergence grass herbicides can be tank mixed with Callisto to provide broad spectrum weed control in corn (see appropriate section of label for this information). Callisto can be applied postemergence following a preemergence grass herbicide application. Callisto can also be used in combination with a burndown herbicide, prior to planting, to provide added burndown and residual weed control in field corn, production seed field corn, field corn grown for silage, yellow popcorn, and sweet corn.

WEEDS CONTROLLED

Table 1. Weeds Controlled with Postemergence Applications of Callisto

		3.0 fl. oz./A + COC + UAN or AMS	3.0 fl. oz./A + 1/2 pt. (0.25 lb. a.i./A) Atrazine 4L/A or Equivalent + COC + UAN or AMS	3.0 fl. oz./A + 1/2 pt. (0.25 lb. a.i./A) Atrazine 4L/A or Equivalent + COC + UAN or AMS
Common Name	Scientific Name	Apply to Weeds <5 inches Tall		Apply to Weeds 5-10 inches Tall
Amaranth, palmer	Amaranthus palmeri	С	С	С
Amaranth, Powell	Amaranthus powellii	С	С	C
Amaranth, spiny	Amaranthus spinosus	С	С	С
Atriplex	Chenopodium orach	С	С	С
Broadleaf signalgrass	Bracharia platphylla	C1	C1	PC
Buckwheat, wild	Polygonum convolvulus	PC	PC	PC
Buffalobur	Solanum rostratium	С	С	С
Burcucumber	Sicyos angulatus	PC	С	С
Carpetweed	Mollugo verticillata	С	С	С
Carrot, wild	Daucus carota	С	С	С
Chickweed, common	Stellaria media	С	С	С
Cocklebur, common	Xanthium strumarium	С	С	С
Crabgrass, large	Digitaria sanguinalis	C1	C1	PC
Dandelion	Taraxacum officinale	NC	PC	PC
Dock, curly	Rumex crispus	PC	PC	PC