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

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

MEMORANDUM

SUBJECT: Review of Additional Information Submitted by the Registrant for Public Interest Documentation of Pyroxsulam (XDE-742) (DP # 344180).

FROM: Sunil Ratnayake, Biologist
Biological Analysis Branch
Biological and Economic Analysis Division (7503 P)

THRU: Arnet Jones, Chief
Biological Analysis Branch
Biological and Economic Analysis Division (7503 P)

TO: Joanne Miller, Product Manager
Herbicide Branch
Registration Division (7505 P)

PRODUCT REVIEW PANEL: Dec. 12, 2007

SUMMARY

The Registration Division (RD) requested BEAD to review the additional information submitted by Dow AgroSciences LLC as a follow-up for the public interest finding of pyroxsulam. Pyroxsulam (XDE-742) is a new post-emergence herbicide developed for selective control of economically important annual grass and broadleaf weeds in winter and spring wheat including durum. In the initial submission data from studies conducted in the United States were not included. In the follow-up submission, the registrant submitted comparative efficacy data from studies conducted in the United States. Several supporting letters from weed scientists working in wheat producing states also were included in the submission. However, the data obtained from completed studies to demonstrate the efficacy of pyroxsulam and its effects on wheat yield compared to the currently registered herbicides were not included in the supportive documents.

The registrant claims that the pyroxsulam provides a broad spectrum of grasses and broadleaf weeds in winter and spring wheat production. In addition, the registrant claims that pyroxsulam allows a nine-month rotational interval for most of the crops and it can be used as an important tool to manage the development of weed resistance in key grass weed species in wheat production. Based on the data submitted by the registrant from studies conducted in winter wheat production, the efficacy of pyroxsulam in controlling

downy brome (*Bromus tectorum*) and cheat (*Bromus secalinus*) was not significantly different from standard herbicides sulfosulfuron and propoxycarbazone applied as autumn treatments. Also, in winter wheat production, when herbicides were applied as spring treatments, the efficacy of pyrosxulam in controlling cheat was not significantly different from sulfosulfuron and propoxycarbazone. Furthermore, the efficacy of pyroxsulam in controlling downy brome was not significantly different from propoxycarbazone when applied as a spring treatment. Based on the submitted data, the efficacy of pyroxsulam in controlling annual rye grass (*Lolium multiflorum*), flixweed (*Descurainia Sophia*) , tansymustard (*Descurainia pinnata*), and field pennycress (*Thlaspi arvensis*), in winter wheat production was not significantly different from the three standard herbicides sulfosufuron, propoxycarbazone, and mesosulfuron, applied as spring treatments.

In spring wheat production, the efficacy of pyroxsulam was compared with five standard herbicides. Based on submitted data, the efficacy of pyroxsulam in controlling green foxtail (*Setaria viridis*), was not significantly different from three standard herbicides while the efficacy of pyroxsulam in controlling yellow foxtail (*Setaria lutescens*) was not significantly different from two standard herbicide treatments. Also, the efficacy of pyroxsulam in controlling wild mustard *(Sinapsis arvensis)* was not significantly different from all five standard herbicide treatments included in the studies. In addition, three standard herbicide treatments; mesosulfuron + bromoxynil, fenoxaprop + bromoxynil, and clodinaflop + thifensulfuron + tribenuron have performed better than the pyrosxulam alone treatment in controlling wild buckwheat (*Polygonum convolvulus*). Furthermore, of the six standard herbicide treatments included in broadleaf weed control, five standard treatments provided a significantly greater control of common lambsquarters (*Chenopodium album*) than the pyroxsulam. Compared with the standard herbicides, the efficacy of pyroxsulam in controlling kochia (*Kochia scoparia*) was poor and the control of redroot pigweed (*Amaranthus retroflexus*) by pyroxsulam was not significantly different from 5 standard herbicide treatments included in the studies.

Based on the information provided by the registrant, data included in the follow-up submission were from studies conducted in a single year. These studies need to be repeated for a proper assessment on the efficacy of pyroxsulam. Also, BEAD's analysis indicated that several alternative herbicides with similar crop rotational flexibilities and mode of action to pyroxsulam are available in the market. These herbicides can be rotated with group 1 herbicides in weed resistance management programs. Therefore, BEAD believes that the claims made by the registrant were not substantiated and the pyroxsulam does not satisfy the criteria that BEAD evaluated for granting the public interest finding status for a new pesticide.

Agency Public Interest Finding Policy

FIFRA section 3(c)(7)(C) authorizes the issuance of a conditional registration for a new pesticide with specific restrictions. This interim registration allows temporary use of a pesticide while full registration is being pursued. All three of the following conditions must be met for a conditional registration: 1) insufficient time has elapsed for the generation of data, since the requirement for that data was imposed; 2) use of the pesticide will not cause unreasonable adverse effects; and 3) use of the pesticide is in the public interest.

The registration of a new pesticide ingredient is presumed to be in the public interest if one or more of the following criteria are applicable: 1) it involves a replacement for another pesticide that is of continuing concern to the Agency; 2) it involves a use for which a section 18 emergency exemption has been granted, if the basis for the exemption was the lack of a suitable alternative; and 3) involves a use against a pest of public health significance.

Pesticides which do not meet any of the criteria listed above for the presumption of public interest, one of the following three criteria must be met: 1) there is a need for the new pesticide that is not being met by currently registered pesticides; 2) the new pesticide is less risky than currently registered pesticides; 3) the benefits from the new pesticide are greater than those from currently registered pesticides or non-chemical control measures. BEAD's review focuses on items 1 and 3.

Wheat Production in the United States

Wheat is a major cereal crop produced in the United States. Major wheat producing states and the value of wheat production in those states in 2006 is shown in Table 1.

Table 1. Major Wheat Producing States in the United States and the Value of Production in 2006

State Rank	State	Value of production (in thousand dollars)
1	Kansas	1,339,520
2	North Dakota	1,129,014
3	Montana	703,474
4	Washington	615,593
5	Oklahoma	395,760

Source: USDA/NASS Agricultural Data, 2006

Winter wheat represents 70-80% of the total U.S. wheat production. The winter wheat producing areas in the United States include the High Plains states extending south from South Dakota to Texas and the Pacific Northwest states. Winter wheat is also an important rotational crop in most Midwestern and Southeastern states. In 2006, the major winter wheat producing states were Kansas, Texas, and Oklahoma, whereas the spring wheat and durum wheat producing states were Idaho, Minnesota, Montana, North Dakota, South Dakota, and Washington (Table 2). In 2004, a total of 43.3 million acres of winter wheat was planted in the United States and value of the crop was $ 4.9 billion (2004 USDA/NASS Agricultural data). Also in 2004, 13.2 million acres of spring wheat was planted in the United States and the value of the crop was $2.3 billion. Winter wheat is planted in the fall and harvested in the following summer. Spring and durum wheat are planted in the spring and harvested in the late summer or fall in the same year.

Table 2. Winter, Spring, and Durum Wheat Production in the United States

State	Percent of Total Planted Acreage		
	Winter Wheat	Spring wheat	Durum
Kansas	23	--	--
Texas	15	--	--
Oklahoma	14	--	--
Colorado	5	<1	--
South Dakota	4	12	<1
Washington	4	4	--
Montana	4	22	22
Nebraska	4	--	--
Oregon	2	--	--
Ohio	2	--	--
Michigan	2	--	--
Missouri	2	--	--
Arkansas	2	--	--
Idaho	2	4	--
California	1	--	4.5
North Dakota	--	45	68
Minnesota	--	12	<1
Total Planted Acres (in 1,000)	43,350	13,174	2,560

Source: (USDA/NASS Agricultural Data, 2004)

Weed Management in Wheat Production

Wheat is produced in 57.2 million acres of land in the United States (USDA/NASS, 2004). This represents a highly diverse geographical area. Weed management is an essential part of wheat production in order to obtain a higher yield. Weeds compete with wheat for water, nutrients, space, and sunlight. They further reduce profits indirectly by hindering harvest operations, harboring diseases and pests, and reducing the crop quality. A healthy wheat crop competes well with weeds when a uniform stand is established (Ohio Agronomy Guide, 2006)). The most common grass and broadleaf weed species found in wheat and the level of infestation of these weeds are given in Tables 3 and 4, respectively.

Table 3. Most Common Grass Weeds in Wheat Production

Weed	% of infested farms	Acres treated (in thousands)	% Treated Acres (of the Total Wheat Acreage)
Wild oats	66.6	10,649	19.0
Green foxtail	42.8	6,914	12.0
Brome (all types)	17.8	4,674	8.0
Yellow foxtail	9.9	1,411	2.0
Annual ryegrass	3.9	685	1.2
Quackgrass	6.3	503	0.9

Source: Public Interest Document on the Registration of Pyroxsulam, Aug, 2006

Table 4. Most Common Broadleaf Weeds in Wheat Production

Weed	% of infested farms	Acres treated (in thousands)	% Treated Acres (of the Total Wheat Acreage)
Mustards (all types)	42.1	16,760	29
Kochia	41.2	16,105	28
Canada thistle	28.6	8,540	15
Wild buckwheat	27	8,513	15
Russian thistle	12.2	5,157	9
Pigweeds (all types)	16.1	4,482	8
Field bind weed	7.5	3,741	7
Lambsquarters	11.3	3,274	6

Source: Public Interest Document on the Registration of Pyroxsulam, Aug. 2006.

Cultural and Non-Chemical Weed Control Practices

Proper land preparation significantly reduces the weed infestations. Deep tillage breaks up soil compaction and minimizes the risk of herbicide carryover if wheat is planted immediately following another crop. Cleaning of planting and tillage equipment before entering new fields is helpful in avoiding introduction of new weeds (Kassim, 1995). Planting wheat seeds contaminated with weed seeds is the most common way introducing weeds into new wheat fields. Use of clean certified seeds for planting minimizes this problem. Proper sanitation practices such as mowing waste areas before the production of weed seeds and crop rotation are also helpful in reducing some weed populations. Wheat competes well with weeds when planted at proper spacing (Ohio Agronomy Guide, 2006). Scouting fields for weeds and taking appropriate control measures also reduce the yield losses and harvesting problems in the wheat production.

General Product Information of the New Chemical

The following information on pyroxsulam is taken directly from the application submitted by the registrant.

Pyroxsulam (XDE-742) is a new systemic post-emergence herbicide developed for the selective control of wild oat, winter annual brome species, annual ryegrass (Italian), and other economically important annual grass and broadleaf weeds in winter and spring wheat including durum. In addition, pyroxsulam suppresses green and yellow foxtail, two problematic grass weeds in spring wheat production. The registrant claims that pyroxsulam controls or suppresses a wide variety of grasses and broadleaf weeds. Pyroxsulam belongs to the family of triazolopyrimidine sulfonamide and it inhibits the enzyme acetolactate synthase (ALS). This enzyme is important for the production of branched-chain amino acids (isoleucine, leucine, and valine) in plants.

GF-1274 and GF-1674 are two herbicide formulations of the technical product pyroxsulam (XDE-742) and the safener cloquintocet-mexyl. Formulation GF-1274 is to be registered for the post-emergence control of annual grasses and broadleaf weeds in winter wheat production. It contains a 1:1 ratio of XDE-742 and cloquintocet-methyl.

The recommended application rate is 3.5 oz of the product per acre. GF-1274 inhibits growth of susceptible weeds, and typical symptoms of weed control may not be noticeable for 1 to 2 weeks after the application, depending upon growing conditions and weed susceptibility. Degree of control and duration of the activity of this product depend on the weed density, weed size, crop competition, growing conditions, and the spray coverage. GF-1274 can be tank mixed with other compatible herbicides to achieve a broader weed control. GF-1274 would be available in WDG (Water Dispersible Granules) formulation containing 0.075 lb of active ingredient per pound of product.

GF-1674 is to be registered for post-emergence control of annual grasses and broadleaf weeds in spring and winter wheat including durum. GF-1674 formulation contains 1:3 ratio of XDE-742: cloquintocet-methyl. The recommended application rate of this herbicide is 6.75 fl oz of product per acre. GF-1674 inhibits the growth of susceptible weeds and typical symptoms of suppressed weeds may not appear for 1-2 weeks after the application, depending upon growing conditions and weed susceptibility. Occasionally, a slight yellowing or height reduction may be observed in the treated crop. If a broader spectrum of weed control is needed GF-1674 may be tank mixed with labeled rates of other compatible herbicides. Best weed control is achieved when grass weeds are treated at 2-leaf to 2-tiller growth stage and broadleaf weeds before 2 inches tall. GF-1674 would be available in OD (oil dispersion) formulation containing 0.25 lb of active ingredient per pound of product. These products can be applied aerially and using ground spray equipment.

Revised Claims for Public Interest

Followings are the revised claims submitted by the registrant in response to the BEAD's initial review on public interest finding application on pyroxsulam.

1. Pyroxsulam provides a broad spectrum of grass and broadleaf weed control which will reduce the need for multiple herbicide applications and tank mixtures.
2. Pyroxsulam provides a 9-month crop rotation interval for most crops which allow growers the flexibility to choose the most profitable and agronomically sound rotational crops for their farming operation.
3. Pyroxsulam provides group 2 mode of action which can be rotated with ACCase enzyme inhibitor (Group 1) mode of action herbicides to manage weed resistance development of grass weeds such as wild oat, yellow foxtail, and annual ryegrass species.

ANALYSIS OF REGISTRANT'S CLAIMS

Claim 1. Pyroxsulam provides a broad spectrum of grass and broadleaf weed control which will reduce the need for multiple herbicide applications and tank mixtures.

To evaluate this claim, BEAD examined the most common herbicides applied for grass and broadleaf weed control in wheat production, and the comparative efficacy data submitted by the registrant.

A single herbicide which is effective on a broad spectrum of weeds reduces the need for multiple applications of other herbicides. However, due to vast geographical diversity in wheat production, no single herbicide would be effective in controlling all the weed spectrums found in different areas of wheat production. The selection of an herbicide or a tank-mixture (mixture of two or more herbicides) for weed control is site specific and it depends on the factors such as existing weed spectrum, adopted weed resistance management program, and crop rotation practices.

Grass Weed Control in Wheat Production

The major registered herbicides available for post-emergence control of grass weeds are listed in Tables 5. Some of these herbicides are tank- mixtures formulated to increase the efficacy on a broader spectrum of weed control. These premixed herbicides are marketed as single pass herbicide treatments to reduce the time and cost of weed control involved in wheat production. Wild oat (*Avena fatua*), brome (*Bromus* spp.), foxtail (*Setaria* spp.), and rye grass (*Lolium multiflorum*) species are the major troublesome grass weeds in wheat production (Table 3). Early wild oat control leads to a greater wheat yield due to less direct competition with the crop (Kassim, 1995). Generally, under heavy wild oat pressure (over 30 plants/square foot) an effective herbicide should be applied to prevent high yield losses (Durgan, 2006).

Downy brome (*Bromus tectorum*) is also a highly troublesome weed in winter wheat production. Heavy infestations of downy brome can reduce wheat yield 30 to 80% (Klein, 2002). It is known by several common names such as cheatgrass, military grass, and downy chess. Japanese brome (*Bromus japanicus*), ripgut brome (*Bromus rigidus*) are the other brome species found in wheat production. Furthermore, Italian ryegrass (*Lolium multiflorum*) is also one of the highly competitive cool season grass weeds prevalent in wheat production. Wheat and ryegrass have a similar maturity period and it has been reported that up to 85% yield loss can occur as a result of ryegrass competition. Also, it was estimated that one ryegrass plant per ft^2 can reduce wheat yields by four percent (Research Aids in Ryegrass Control in Wheat, 2006). Post emergence herbicides widely used for grass weed control are listed in Table 5.

Table 5. Herbicides and Herbicide Mixtures Available for Grass Weed Control in Wheat Production

Chemical (Trade name)	% Treated Area		Mode of Action	Appl. Rate (product)	Weeds Controlled
	Type of wheat	% (Year)			
Clodinafop-Propargyl (Discover)	spring Durum winter	21 (2006) 27 (2006) 6 (2006)	ACCase inhibitor	3.2 oz/A	Wild oat, green foxtail, yellow foxtail, barnyard grass, canarygrass, giant foxtail and Italian ryegrass. Applied in fall or spring.
Metribuzin (Sencor, Lexone)	Winter	12 (2006)	PS II (inhibits photo system II)	2-8 oz/A	Cheatgrass, downy brome, green foxtail, and wild oat. Post-emergence applications are made on wheat with 2 leaves to several tillers.
Sulfosulfuron (Maverick)	Winter	8 (2006)	ALS inhibitor	2/3 oz/a	Wild oat, downy brome, Japanese brome, ripgut brome, cheat, and bedstraw catchweed. Applied from 3 leaves to jointing of wheat.

Chemical (Trade name)	% Treated Area		Mode of Action	Appl. Rate (product)	Weeds Controlled
	Type of wheat	% (Year)			
Clodinafop-Propargyl (Discover)	spring Durum winter	21 (2006) 27 (2006) 6 (2006)	ACCase inhibitor	3.2 oz/A	Wild oat, green foxtail, yellow foxtail, barnyard grass, canarygrass, giant foxtail and Italian ryegrass. Applied in fall or spring.
Tralkoxydim (Achieve 40DG)	Winter Spring	15 (2000) 6 (2006)	ACCase inhibitor	0.4-0.6 lbs/a	Wild oat, green foxtail, yellow foxtail, and Italian ryegrass. Applied when ryegrass is at 1-4 leaf stage. Wild oat at 1-6 leaf stage and foxtails at 1 to 5 leaf stage.
Imazamox (Beyond)+ UAN (Urea Ammonium Nitrate) liquid fertilizer+ Surfactant	Winter	6 (2006)	ALS inhibitor	4-6 fl oz/a 1.25% UAN 0.25% Surfactant	Applied only to wheat varieties possessing the Clearfield trait. Controls wild oat, giant, green and yellow foxtails, Italian ryegrass, cheat, and brome species.
Propoxycarbazone + Mesosulfuron (Rimfire)	---	---	ACCase inhibitor	2.25 oz/A	Wild oat. Partially controls yellow foxtail, green foxtail, cheat, barnyardgrass, downy brome, and Japanese brome.
Chlorsulfuron + flucarbazone-sodium (Finesse) + metribuzin (Sencor DF)	---	---	ALS inhibitor + ALS inhibitor + PS II inhibitor	0.2-0.4 oz/a + 3 oz/a	Annual ryegrass, cheat, downy brome, Japanese brome, wild oat, green foxtail, and wild oat. Apply this combination when wheat has reached the 4-5 leaf stage of growth.

Source: Crop Profiles for Wheat in Oklahoma, 2005, Duran, 2006.

Broadleaf weed control in Wheat Production

Mustard species (*Brassica* spp.), kochia (*Kochia scoparia*), Canada thistle (*Cirsium arvense*), wild buck wheat (*Polygonum convolvulus*), Russian thistle (*Salsola tragus*), pigweeds (Amarantus spp.), field bind weed (*Convolvulus arvensis*), lambsquarters (*Chenopodium album*), common chickweed (*Stellaria media*), henbit (*Lamium amplexicaule*), shepherdspurse (*Capsella bursa-pastoris*), and common rag weed (*Ambrosia artemisiifolia*) are the broadleaf weeds found commonly in wheat production (Table 3; Crop Profile for Winter Wheat in Kentucky, 2002; Crop Profile for Wheat in Oklahoma, 2005). Many effective pre and post emergence herbicides are available for broadleaf weed control in wheat production. Currently registered herbicides used for broadleaf weed control are shown in Table 6.

Table 6. Major Herbicides and Herbicide-Mixtures Used for Broadleaf Weed Control in Wheat Production.

Active Ingredient (Trade name)	% Treated Area[1]		Mode of Action	Rate per Acre (product)	Time of Application	Weeds Controlled
	Type of Wheat	% (Year)				
Bromoxynil (Buctril, Moxy, Bronate)	Winter Spring Durum	11 (2004) 16 (2004) 3 (2004)	PSII site C inhibitor	1.5 to 2 pts	Emergence to boot stage	Wild buckwheat, common ragweed, lambsquarter, field pennycress, henbit, shepherdspurse, and wild mustard.

Active Ingredient (Trade name)	% Treated Area[1]		Mode of Action	Rate per Acre (product)	Time of Application	Weeds Controlled
	Type of Wheat	% (Year)				
2,4-D (Weedar, Weedone, Formula 40)	Winter Spring Durum	24 (2004) 25 (2004) 33 (2004)	Growth regulator	1 to 2 pts	Tillering to before jointing	Field pennycress, shepherdspurse, wild mustard, ragweeds, lambsquarter, horseweed (marestail), and prickly lettuce.
Dicamba (Banvel)	Winter Spring Durum	7 (2006) 10 (2006) 10 (2006)	Growth regulator	0.125 to 0.25 pt	Emergence to before jointing	Field pennycress, wild buckwheat, ragweeds, kochia, lambsquarter, horseweed (marestail), prickly lettuce, and shepherdspurse.
Thifensulfuron + tribenuron (Harmony Extra)	Winter Spring Durum	23(2006) 20 (2006) 10(2006)	ALS inhibitor	0.3 to 0.6 oz	After 2-leaf stage but before flag leaf becomes visible	Wild garlic, field pennycress, wild mustard, chickweed, henbit, prickly lettuce, shepherdspurse, wild buckwheat, wild mustard, and lambsquarter.
Carfentrazone (Aim)	--	--	Protopor phyrinog en oxidase inhibitor	0.33 to 0.66 oz	Before jointing	Catchweed bedstraw, velvetleaf, lambsquarter, field pennycress, tansy mustard, common mallow, and flixweed.
Chlorsulfuron (Glean)	Winter Spring Durum	9 (2006) 4 (2002) --	ALS inhibitor	0.33 oz/acre	Pre-emergence	Blue mustard, field pennycress, flixweed, henbit, May weed, redroot pigweed, shepherd's purse, smooth pigweed, tansymustard, wild mustard, butter cup, lady thumb, and false chamomile.
Chlorsulfuron + metsulfuron (Finesse)	--	--	ALS inhibitors	0.3-0.4 oz/acre	Pre and post emergence	Wild oat, annual ryegrass, cheat, Japanese brome, rescuegrass, mustard spp., buttercup, common chickweed, common groundsel, curly dock, cow cockle, flixweed, field pennycress, cutleaf evening primrose, hempnettle, mayweed, pineappleweed, redroot, tumble, smooth and prostrate pigweeds.
Fluroxypyr + brommoxynil (Starane + NxTcp)	--	--	Growth regulator + PSII site C inhibitor	21.3 fl oz/A	Post emergence	wild buckwheat, jimson weed, kochia, common lmbsquarters, blue mustard, field pennycress, nightshades, pepperweed spp., redroot pigweed, velvet leaf, Russian thistle, bedstaw, and common ragweed.
Propoxycrbazone (Olympus)	-- Spring	 13 (2006)	ALS inhibitor	0.9 oz/A	Post-emergence	Field pennycress, mustard spp. (wild, tumble, tansy blue and black), flixweed, wild turnip, pigweeds, mouseear chickweed, henbit and wild buckwheat are suppressed. Controls grasses and broadleaf weeds. Offers contact and residual weed control.
Clopyralid (Stinger)	Winter Spring	3 (2006) 15 (2006)	Growth regulator	4-5 fl oz/A	Post-emergence	Wild buckwheat, common burdock, false chamomile, dandelion, curly dock, horseweed, jimsonweed, nightshade, giant ragweed,

Active Ingredient (Trade name)	% Treated Area[1]		Mode of Action	Rate per Acre (product)	Time of Application	Weeds Controlled
	Type of Wheat	% (Year)				
						Canada thistle, and curly dock.
MCPA (Chiptox, Rhomene, Rhonox)	Winter Spring Durum	24 (2004) 39 (2004) 40 (2004)	Growth regulator	1to 4 pts	Tillering to before jointing	Field pennycress, shepherdspurse, wild mustard, common ragweeds, common burdock, Russian thistle, common lambsquarters, purselane, dandelion, horsetail, prickly lettuce, and wild buckwheat.

Source: Broadleaf Weed Control in Winter Wheat, 2000. Univ. of Missouri-Columbia; Crop Profile for Wheat in Oklahoma, 2005

Comparative Efficacy Data

In response to BEAD's initial review, the registrant submitted efficacy data of pyroxsulam from studies conducted in the United States. These studies were designed to compare the efficacy of pyroxsulam with three different standard grass herbicides used for weed control in winter wheat production (Table 7).

Table 7. Efficacy of Pyroxsulam on Grass Weed Control in Winter Wheat Production

Weed	Herbicide Treatment	Rate (g ai/ha)	Av. Weed Control (%) Autumn Applied	Av. Weed Control[2] (%) Spring Applied
Downy brome (*Bromus tectorum*)	Pyroxsulam + Agral 90[1] (0.5%)	18.7	90	74
	Maverick (sulfosulfuron)+ Agral 90 (0.5%)	35	85	60
	Olympus (propoxycarbazone)+ Agral 90 (0.5%)	44	83	70
	Osprey (mesosulfuron) (+ MSO (1%)	15	65	60
	LSD (0.05)[2]		**13**	**13**
Cheat (*Bromus secalinus*)	Pyroxsulam + Agral 90 (0.5%)	18.7	100	93
	Maverick (sulfosulfuron) + Agral 90 (0.5%)	35	99	81
	Olympus (propoxycarbazone) + Agral 90 (0.5%)	44	100	93
	Osprey (mesosulfuron) + MSO (1%)	15	50	57
	LSD (0.05)		**13**	**21**
Annual Ryegrass (*Lolium multiflorum*)	Pyroxsulam + Agral 90 (adjuvant 0.5%)	18.7	-	93
	Maverick (sulfosulfuron) + Agral 90 (0.5%)	35	-	87
	Olympus (propoxycarbazone)+ Agral 90 (0.5%)	44	-	72
	Osprey (mesosulfuron) + MSO (1%)	15	-	73
	LSD (0.05)			**24**

[1]Adjuvant
[2]Least Significant Difference
Source: Public Interest Finding Document on Registration of Pyroxsulam, Follow-up Information Submitted in Aug. 2007.

Based on submitted data, the efficacy of pyroxsulam was not significantly different from propoxycarbazone for the control of downy brome when applied as autumn and spring treatments in winter wheat production. The efficacy of sulfosulfuron is not significantly different from pyroxsulam in controlling downy brome when it is applied in autumn. Also, the efficacy of pyroxsulam is not significantly different from sulfosulfuron and propoxycarbazone in controlling cheat when applied as autumn and spring treatments. Furthermore, the efficacy of pyrosxulam in controlling annual ryegrass is not significantly different to the other three herbicides (sulfosulfuron, propoxycarbazone and mesosulfuron) when applied as spring treatments. Of the 4 herbicides included in this study, mesosulfuron gave the lowest downy brome and cheat control when the treatments were applied in the spring and autumn.

The Efficacy of Pyroxsulam on Broadleaf Weed Control in Winter Wheat Production

The registrant submitted the efficacy data of pyroxsulam in controlling broadleaf weeds compared with 3 different standard herbicides (sulfosulfuron, propoxycarbazone, and mesosulfuron (Table 8). Based on submitted data, efficacy of sulfosulfuron, propoxycarbazone, and mesosulfuron was not significantly different to the efficacy of pyroxsulam in controlling flixweed *(Descurainia Sophia)*, tamsymustard (*Descurainia pinnata*), and field pennycress (*Descurainia pinnata*). Among the herbicides included in these studies, a poor control of blue mustard (*Chorispora tenella*) and cleavers (*Gallium aparine*) were observed with sulfosulfuron and mesosulfuron, respectively. Furthermore, all of three standard herbicides including pyroxsulam demonstrated a poor efficacy in controlling henbit (*Lamium amplexicaule*). Only a greater control of tarweed was observed with pyroxsulam compared to the standard herbicide mesosulfuron. Information on the other two standard herbicides in controlling this weed was missing from the submission. The efficacy of pyroxsulam was not superior to standard herbicides in controlling the majority of weeds included in these studies. However, these experiments were single year studies that need to be repeated at least one more year for a proper comparison of efficacy.

Table 8. Comparative Efficacy Data of Pyroxsulam on Broadleaf Weed Control in Winter Wheat Production

Weed	Herbicide Treatments[2]	Rate (g ai/ha)	Av. Weed Control[3] (%)
Flixweed *(Descurainia Sophia)*	Pyroxsulam + Agral 90[1] (adjuvant 0.5%)	18.7	86
	Maverick (sulfosulfuron) + Agral 90 (0.5%)	35	86
	Olympus (propoxycarbazone) + Agral 90 (0.5%)	44	88
	Osprey (mesosulfuron) + MSO (1%)	15	77
	LSD (0.05)[4]		**14**
Tansy mustard (*Descurainia pinnata*)	Pyroxsulam + Agral 90 (adjuvant 0.5%)	18.7	80
	Maverick (sulfosulfuron) + Agral 90 (0.5%)	35	82
	Olympus (propoxycarbazone) + Agral 90 (0.5%)	44	81
	Osprey + MSO (1%)	15	90
	LSD (0.05)		**22**
Blue mustard (*Chorispora tenella*)	Pyroxsulam + Agral 90 (adjuvant 0.5%)	18.7	86
	Maverick (sulfosulfuron) + Agral 90 (0.5%)	35	45
	Olympus (propoxycarbazone) + Agral 90 (0.5%)	44	84
	Osprey (mesosulfuron) + MSO (1%)	15	78
	LSD (0.05)		**32**
Field pennycress (*Thlaspi arvense*)	Pyroxsulam + Agral 90 (adjuvant 0.5%)	18.7	79
	Maverick (sulfosulfuron) + Agral 90 (0.5%)	35	80
	Olympus (propoxycarbazone) + Agral 90 (0.5%)	44	67
	Osprey (mesosulfuron) + MSO (1%)	15	70
	LSD (0.05)		**21**
Henbit (Lamium amplexicaule)	Pyroxsulam + Agral 90 (adjuvant 0.5%)	18.7	70
	Maverick (sulfosulfuron) + Agral 90 (0.5%)	35	51
	Olympus (propoxycarbazone) + Agral 90 (0.5%)	44	57
	Osprey (mesosulfuron) + MSO (1%)	15	50
	LSD (0.05)		**14**
Tarweed (*Holocarpha spp.*)	Pyroxsulam + Agral 90 (adjuvant 0.5%)	18.7	90

Weed	Herbicide Treatments[2]	Rate (g ai/ha)	Av. Weed Control[3] (%)
	Maverick (sulfosulfuron) + Agral 90 (0.5%)	35	-
	Olympus (propoxycarbazone) + Agral 90 (0.5%)	44	0
	Osprey (mesosulfuron) + MSO (1%)	15	76
	LSD (0.05)		**12**
Cleavers (*Gallium aparine*)	Pyroxsulam + Agral 90 (adjuvant 0.5%)	18.7	95
	Maverick (sulfosulfuron) + Agral 90 (0.5%)	35	88
	Olympus (propoxycarbazone) + Agral 90 (0.5%)	44	70
	Osprey (mesosulfuron) + MSO (1%)	15	33
	LSD (0.05)		**27**

[1] Adjuvant,
[2]Treatments Applied in the Spring,
[3]Average of Several Studies
[4] Least Significant Difference
Source: Public Interest Finding Document on Registration of Pyroxsulam, follow-up Information Submitted in Aug. 2007.

Efficacy Data of Pyroxsulam on Grass Weed Control in Spring Wheat Production

Based on submitted data by the registrant, the efficacy of pyroxsulam in controlling wild oat (*Avena fatua*) is not significantly different from the following four standard herbicides or herbicide mixtures: 1) flucarbazone-sodium + 2,4-D LVE, 2) propoxycarbazone + mesosulfuron, 3) fenoxaprop-ethyl + bromoxynil, and 4) clodinaflop + thifensulfuron + tribenuron (Table 9). Furthermore, this data indicated that the efficacy of pyroxsulam in controlling green foxtail (*Setaria viridis*) is not significantly different to flucarbazone-sodium + 2,4-D LVE, fenoxaprop-ethyl + bromoxynil, and clodinaflop + thifensulfuron + tribenuron. Also, the efficacy of pyroxsulam in controlling yellow foxtail (*Setaria lutescens*) is equivalent to fenoxaprop-ethyl + bromoxynil and clodinaflop + thifensulfuron + tribenuron.

Table 9. Efficacy Data of Pyroxsulam on Grass Weed Control in Spring Wheat Production

Weed	Herbicide Treatment	Rate (g ai/ha)	Av. Weed Control[2] (%)
Wild oat (*Avena fatua*)	Pyroxsulam + Agral 90[1] (0.5%)	15	80
	Everest (flucarbazone-sodium) + 2,4-D LVE	20+420	82
	Silverado (mesosulfuron) + Bronate Advanvance (bromoxynil)	2.5 + 560	60
	Rimfire (propoxycarbazone+mesosulfuron)+ Agral 90 (0.25%) + (AMS 1.7 kg/ha)	12.5	76
	Puma IEC (fenoxaprop-ethyl) + Bronate Advanced (bromoxynil)	92 +560	81
	Discover (clodinaflop)+ Affinity (thifensulfuron + tribenuron)	56 + 21	89
	LSD (0.05)[3]		**11**
Green foxtail (*Setaria viridis*)	Pyroxsulam + Agral 90 (0.5%)	15	74
	Everest (flucarbazone-sodium) + 2,4-D LVE	20+420	81
	Silverado (mesosulfuron) + Bronate Advanvance (bromoxynil)	2.5 + 560	42
	Rimfire (propoxycarbazone+mesosulfuron)+ Agral 90 (0.25%) + (AMS 1.7 kg/ha)	12.5	46
	Puma IEC (fenoxaprop-ethyl) + Bronate Advanced (bromoxynil)	92 +560	85
	Discover (clodinaflop)+ Affinity (thifensulfuron + tribenuron)	56 + 21	81
	LSD (0.05)		**16**
Yellow foxtail (*Setaria lutescens*)	Pyroxsulam + Agral 90 (0.5%)	15	92
	Everest (flucarbazone-sodium) + 2,4-D LVE	20+420	71
	Silverado (mesosulfuron) + Bronate Advanvance (bromoxynil)	2.5 + 560	41
	Rimfire (propoxycarbazone+mesosulfuron)+ Agral 90 (0.25%) + (AMS 1.7 kg/ha)	12.5	66
	Puma IEC (fenoxaprop-ethyl) + Bronate Advanced (bromoxynil)	92 +560	81
	Discover (clodinaflop) + Affinity (thifensulfuron + tribenuron)	56 + 21	82
	LSD (0.05)		**13**

[1]Adjuvant

[2]Average of Several Studies
[3] Least Significant Difference
Source: Public Interest Finding Document on Registration of Pyroxsulam, Follow-up Information Submitted in Aug. 2007

Comparative Efficacy Data of Pyroxsulam on Broadleaf Weed Control in Spring Wheat Production

The Comparative efficacy data of pyroxsulam on broadleaf weed control in spring wheat production is given in Table 10. Data indicated that of the herbicides and herbicide combinations included in these studies, fenoxaprop-ethyl mixed with bromoxynil and clodinaflop combined with thifensulfuron + tribenuron provided a significantly greater control of kochia (*Kochia scoparia*) than the pyroxsulam treatment. In addition, data indicated that the efficacy of pyroxsulam on controlling wild mustard (*Synapsis arvensis*) is not significantly different from the following 4 standard herbicides or herbicide combinations: 1) mesosulfuron + bromoxynil, 2) flucarbazone-sodium + 2,4-D LVE, 3) fenoxaprop-ethyl + bromoxynil, and 4 clodinaflop +thifensulfuron + tribenuron included in these studies. Also, mesosulfuron + bromoxynil, fenoxaprop-ethyl + bromoxynil, and clodinaflop + thifensulfuron + tribenuron treatments provided a significantly greater control of wild buckwheat (*Polygonum convolvulus*) than the pyroxsulam treatment. Furthermore, a greater control of common bambsquarters (*Chenopodium album*) was observed with flucarbazone-sodium + 2,4-D LVE, mesosulfuron + bromoxynil, fenoxaprop-ethyl + bromoxynil, and clodinaflop combined with thifensulfuron + tribenuron than the pyroxsulam treatment. The efficacy of pyrosxulam in controlling redroot pigweed (*Amaranthus* retroflexus) also was not significantly different from all the other herbicide treatments except fenoxaprop-ethyl combined with bromoxynil. The herbicide treatment of pyroxsulam mixed with florasulam and fluroxypyr has given a greater control of kochia, wild buckwheat, and common lambsquarters compared to the pyroxsulam alone treatment. However, a florasulam and fluroxypyr treatments were not included in these studies to examine the additive effect of pyroxsulam in controlling these weeds. Also, florasulam herbicide is not a registered herbicide and it is still in the registration process. Data analysis indicated that the efficacy of standard herbicides or herbicide combinations included in these studies were not significantly different from the efficacy of pyroxsulam in controlling majority of the broadleaf weeds included in these studies.

Table 10. Comparative Efficacy data of Pyroxsulam on Broadleaf Weed Control in Spring Wheat Production

Weed	Herbicide Treatment	Rate (g ai/ha)	Av. Weed Control[2] (%)
Kochia (*Kochia scoparia*)	Pyroxsulam + Agral[1] (0.5%)	15	45
	Pyroxsulam +florasulam + fluroxypyr + Agral 90	15+2.5+100	95
	Everest (flucarbazone-sodium) + 2,4-D LVE	20 + 420	43
	Silverado (mesosulfuron) + Bronate Advanced	2.5 + 560	40
	Rimfire (propoxycarbazone + mesosulfuron)+ Agral 90 + AMS	12.5	43
	Puma 1EC (fenoxaprop-ethyl) + Bronate Advanced (bromoxynil)	92 + 560	97
	Discover(clodinaflop)+ + Affinity (thifensulfuron + tribenuron)	56 + 21	86
	LSD (0.05)[3]		**22**
Wild mustard (*Sinapsis*	Pyroxsulam + Agral 90 (0.5%)	15	92
	Pyroxsulam +florasulam + fluroxypyr + Agral 90	15+2.5+100	97
	Everest (flucarbazone-sodium) + 2,4-D LVE	20 + 420	98
	Silverado (mesosulfuron) + Bronate Advanced (bromoxynil)	2.5 + 560	100

Weed	Herbicide Treatment		Rate (g ai/ha)	Av. Weed Control[2] (%)
arvensis)	Rimfire (propoxycarbazone+mesosulfuron) + Agral 90 + AMS		12.5	97
	Puma 1EC (fenoxaprop-ethyl) + Bronate Advanced (bromoxynil)		92 + 560	89
	Discover (clodinaflop) + Affinity (thifensulfuron + tribenuron)		56 + 21	94
		LSD (0.05)		**6**
Wild buckwheat (*Polygonum convolvulus*)	Pyroxsulam + Agral 90 (0.5%)		15	70
	Pyroxsulam +florasulam + fluroxypyr + Agral 90		15+2.5+100	95
	Everest flucarbazone-sodium + 2,4-D LVE		20 + 420	74
	Silverado (mesosulfuron) + Bronate Advanced (bromoxynil)		2.5 + 560	96
	Rimfire (propoxycarbazone + mesosulfuron) + Agral 90 + AMS		12.5	21
	Puma 1EC (fenoxaprop-ethyl) + BronatedAdvanced (bromoxynil)		92 + 560	94
	Discover (clodinaflop) + Affinity (thifensulfuron + tribenuron)		56 + 21	82
		LSD (0.05)		**8**
Common Lambsquarters (*Chenopodium album*)	Pyroxsulam + Agral 90 (0.5%)		15	76
	Pyroxsulam +florasulam + fluroxypyr + Agral 90		15+2.5+100	86
	Everest (flucarbazone-sodium + 2,4-D LVE)		20 + 420	94
	Silverado (mesosulfuron) + Bronate Advanced		2.5 + 560	97
	Rimfire (propoxycarbazone + mesosulfuron)+ Agral 90 + AMS		12.5	68
	Puma 1EC (fenoxaprop-ethyl) + Bronate Advanced		92 + 560	88
	Discover (clodinaflop) + Affinity (thifensulfuron + tribenuron)		56 + 21	97
		LSD (0.05)		**9**
Redroot pigweed (*Amaranthus retroflexus*)	Pyroxsulam + Agral 90 (0.5%)		15	97
	Pyroxsulam +florasulam + fluroxypyr + Agral 90		15+2.5+100	95
	Everest (flucarbazone-sodium + 2,4-D LVE)		20 + 420	93
	Silverado (mesosulfuron) + Bronate Advanced		2.5 + 560	90
	Rimfire (propoxycarbazone + mesosulfuron)+ Agral 90 + AMS		12.5	92
	Puma 1EC (fenoxaprop-ethyl) + BronateAdvanced		92 + 560	84
	Discover (clodinaflop)+ Affinity (thifensulfuron + tribenuron)		56 + 21	97
		LSD (0.05)		**8**

[1] Adjuvant
[2]Average of Several Studies
[3] Least Significant Difference
Source: Public Interest Finding Document on Registration of Pyroxsulam, Follow-up Information Submitted in Aug. 2007

Claim 2. Pyroxsulam provides a 9-month crop rotation interval for most crops which allow growers the flexibility to choose the most profitable and agronomically sound rotational crops for their farming operation.

Based on the information submitted, the minimum number of months that must pass before planting other crops, after applications of pyroxsulam is compared with other competitive herbicides. BEAD's analysis indicated that other herbicides with rotational intervals, chemical and weed control characteristics comparable to pyroxsulam are currently available in the market (Table 11).

Table 11. Information on the Most Competitive Herbicides to Pyroxsulam

Chemical	Mode of Action	Weeds Controlled	Rotational Crop	Rotational Interval (months)
Pyroxsulam	ALS[1]	Wild oat, downy brome, annual ryegrass, green and yellow foxtail, wild mustard, wild buckwheat, common lambsquarters, redroot pigweeds, flixweed, field pennycress, henbit, tarweed, and catchweed bedstraw.	Wheat	1
			Barley, field corn, grasses, millet, oats, popcorn, seed corn, sweet corn, sorghum	9
			Alfalfa, canola, chickpea, soybean, dry bean, field pea, flax, lentil, mustard, safflower, potato, sugar beet, and sunflower	9
			Other crops	12
Imazamox	ALS	Wild oat, downy brome, cheat,	Clearfield wheat, sunflower	0

Chemical	Mode of Action	Weeds Controlled	Rotational Crop	Rotational Interval (months)
(Beyond)		Japanese brome, wild barley, barnyardgrass, canarygrass, crabgrass, wooly cupgrass, giant, green and yellow foxtail, goosegrass, wild proso millet, field sandbur, broadleaf signalgrass, fall and Texas panicum jointed goatgrass, kochia, common lambsquarters, chickweed, mustard spp., nightshade, redroot, spiny, smooth pigweeds, common purslane, prostrate spurge, Pennsylvania smartweed, and velvet leaf.	and canola	
			Dry beans, dry peas and soybeans	0
			Rye	4
			Corn (field, pop, seed, sweet)	8 and1/2
			Cotton, grain sorghum, millet, oat, onion, peanut, rice, tobacco, and sunflower	9
Mesosulfuron (Osprey)	ALS	Annual ryegrass, wild oat, windgrass, canarygrass, annual bluegrass, wild mustard, volunteer canola, wild radish, common chickweed, henbit, and redroot pigweed,	Wheat	1/4
			Barley, sunflower	1
			Soybean, cotton, rice, lentils, dry beans, peas, peanuts	3
			corn	12
			All other crops	12
Flucarbazone (Everest)	ALS	Wild oat, downy brome, cheat, Japanese brome, Italian ryegrass, green foxtail, Persian darnel, barnyardgrass, yellow foxtail, flixweed, windgrass, volunteer tame oat, redroot pigweed, wild mustard, black mustard, curly dock, field pennycress, ladythumb, Pennsylvania smartweed, shepherd's purse, tansy mustard, common waterhemp, and, wild buckwheat.	Spring and winter wheat	0
			Durum wheat	4
			Barley, canola, dry beans, flax, potatoes, safflower, soybean, sugar beets, and sunflower	9
Chlorsulfuron + flucarbazone (Finesse)	ALS	Wild oat, annual ryegrass, cheat, Japanese brome, rescuegrass, mustard spp., buttercup, common chickweed, common groundsel, curly dock, cow cockle, flixweed, field pennycress, cutleaf evening primrose, hempnettle, mayweed, pineappleweed, redroot, tumble, smooth, and prostrate pigweeds.	Wheat (in areas with a soil pH 7.9 or less)	4
			STS-soybeans	9
			barley (in areas with a soil pH 7.9 or loess)	10
Sulfosulfuron (Marverick)	ALS	Wild oat, Italian ryegrass, downy brome, Japanese brome, cheat, common chickweed, henbit, wild mustard, shepherd's purse, catchweed bedstraw, field pennycress, and flixweed.	STS-soybean (soil pH <6.5, cumulative precipitation 30"	3
			Soybean (soil pH <6.5, cumulative precipitation 30	5
			(States of CO, SD and WY in areas with pH <7.5, cumulative precipitation 18") millet, STS-soybean	3
			In areas with pH <7.5, cumulative precipitation 24") normal corn and soybean	22
Propoxycarbazone (Olympus)	ALS	Wild oats, Japanese brome, cheat, downy brome, rescue grass, windgrass, quackgrass, jointed goatgrass, field pennycress, mustard spp. (wild, tumble, tansy blue and black), flixweed, wild turnip., pigweeds, mouseear chickweed, henbit and wild buckwheat species are suppressed.	Wheat	0
			Proso millet, STS soybean (in areas with cumulative precipitation 10")	4-10*
			Cotton sorghum, sunflower, conventional soybean (in areas with cumulative precipitation 24")	12
			Conventional corn	18-24*

[1]ALS (Acetolactate Synthase) Inhibiter
*Depends on the Area and Cumulative Precipitation
Sources: Public Interest Document on Registration of Pyroxsulam, Follow-up Information Submitted in Aug. 2007
Product Labels (CDMS Agro-chemical database http://www.cdms.net/LabelsMsds/LMDefault.aspx?t=)

Claim 3. Pyroxsulam provides group 2 mode of action which can be rotated with ACCase enzyme inhibitor (Group 1) mode of action herbicides to manage weed resistance development of grass weeds such as wild oat, yellow foxtail and annual ryegrass species.

Information on the mode of action and weeds controlled by the most competitive herbicides to pyroxsulam were given in the Table 11. BEAD's analysis indicated that all of the listed herbicides in the Table 11 belong to the group 2 mode of action and some of these herbicides have a very similar weed control characteristics to pyroxsulam. These herbicides can be rotated with ACCase herbicides to manage the resistance development of grass weeds in the wheat production.

Economic Considerations

Generally, in a Public Interest Proposal, economic information includes expected market price, expected percent share of the market and an analysis of the primary competitive products. In the application, no such information was included to determine market share or market price to evaluate its impact on the market and economic benefits of pyroxsulam compared to the available registered herbicides.

CONCLUSIONS

In response to BEAD's review of public interest finding application on pyroxsulam submitted in August 2006, the registrant submitted additional information to support the application, including comparative efficacy data from studies conducted in the United States. The revised claims in the follow-up submission of August 2007 state that the pyroxsulam provides a broad spectrum of grasses and broadleaf weeds in winter and spring wheat production and nine-month rotational interval for most of the crops. Furthermore, the registrant claims that the pyrosxulam can be used as an important tool to manage the development of weed resistance in key grass weed species found in the wheat production. Several supporting letters from weed scientists working in wheat growing states also were included in the submission. However, the data to demonstrate the efficacy of pyroxsulam and its effects on wheat yield compared to the currently registered herbicides were not included in the supportive documents.

Based on data submitted by the registrant, the efficacy of pyroxsulam in controlling brome and cheat were not significantly different from 2 standard herbicides (sulfosulfuron and propoxycarbazone) applied as autumn treatments in the winter wheat production. Also, when sulfosulfuron and propoxycarbazone treatments were applied as spring treatments, the efficacy of pyrosxulam in controlling cheat was not significantly different from sulfosulfuron and propoxycarbazone. Furthermore, the efficacy of pyroxsulam in controlling downy brome was not significant difference from propoxycarbazone when applied as spring treatments. The efficacy of pyroxsulam in controlling annual rye grass was also not significantly different from 3 standard herbicides applied as spring treatments. In addition, the efficacy of pyroxsulam in controlling broadleaf weeds such as flixweed, tansymustard, and field pennycress, in winter wheat production was not significantly different from the 3 standard herbicide treatments (sulfosufuron, propoxycarbazone, and mesosulfuron) included in these studies.

In the spring wheat production, the efficacy of pyroxsulam in controlling wild oat was not significantly different from 4 herbicide or herbicide combinations included in the studies. The efficacy of pyroxsulam in controlling green foxtail was not significantly different from flucarbazone + 2, 4-D LVE, fenoxaprop + bromoxynil , and clodinaflop + thifensulfuron + tribenuron, three out of five herbicide treatments included in the studies. Also, the efficacy of pyroxsulam in controlling yellow foxtail was not significantly different from two standard herbicide treatments. In spring wheat production, the efficacy of pyroxsulam in controlling wild mustard was not significantly different from other 6 standard herbicides included in the studies. Also, three standard herbicide treatments: mesosulfuron +bromoxynil, fenoxaprop + bromoxynil, and clodinaflop + thifensulfuron + tribenuron performed better than pyrosxulam alone treatment in controlling wild buckwheat. The efficacy of pyroxsulam in controlling redroot pigweed was not significantly different from five different standard herbicides included in the studies. Furthermore, in the spring wheat production, pyroxsulam gave an unacceptable control level of kochia. Also, the efficacy of pyroxsulam alone treatment in controlling common lambsquarters was significantly lower than 4 out of 5 standard herbicide treatments included in these studies.

The data included in the follow-up submission were from studies conducted in a single year (2006). These studies need to be repeated at least for one more year for a proper assessment on efficacy of weed control among the herbicides included in these studies. Furthermore, BEAD's analysis indicated that several other alternative herbicides with similar crop rotational flexibilities and mode of action to pyroxsulam (group 2) are available in the market and they can be rotated with group 1 herbicides in weed resistant management programs in the wheat production. BEAD believes that the registrant's claims were not substantiated and pyroxsulam does not satisfy the criteria that BEAD evaluated for granting the public interest finding status for a new pesticide.

REFERENCES

1). Broadleaf Weed Control in Winter Wheat. 2000. Integrated Pest & Crop Management Newsletter University of Missouri-Columbia. http://ipm.missouri.edu/ipcm/archives/v10n1/ipmltr2.htm

2). Crop Profile for Winter Wheat in Kentucky. 2002. http://pestdata.ncsu.edu/cropprofiles/docs/KYwheat.html

3). Crop profile for wheat in Oklahoma. 2005. http://www.ipmcenters.org/cropprofiles/docs/okwheat.html

4). Durgan, B. R. 2006. Wild Oat Control. Minnesota Extension Service. http://www.smallgrains.org/Techfile/wildoat.htm

5). Kassim, A. K. 1995. Weed control in Wheat. Washington State University publication no. 1803. http://cru.cahe.wsu.edu/CEPublications/eb1803/eb1803.html

6). Klein, R. N. 2002. Downy Brome Control. NebGuide, Univ. of Nebraska, Lincoln Extension Institute. http://www.ianrpubs.unl.edu/epublic/pages/publicationD.jsp?publicationId=143.

7). Ohio Agronomy Guide, Bulletin 472-05. 2006. Ohio State University. http://ohioline.osu.edu/b472/0013.html

8). Public Interest Document Supporting the Registration of Pyroxsulam (XDE-742). Aug. 2006. Dow AgroScience L.L.C. Indianapolis, IN 46268.

9). Research Aids in Ryegrass Control in Wheat. 2006. Agricultural Communications News and Information, Univ. of Kentucky. http://www.ca.uky.edu/AGC/NEWS/2006/Aug/ryegrass.htm

10). USDA NAAS Agricultural Data, 2004. http://www.nass.usda.gov/Census_of_Agriculture/index.asp

11). USDA NAAS Agricultural Data, 2006. http://www.nass.usda.gov/Census_of_Agriculture/index.asp