

## Evaluation Report for Category B, Subcategory 3.12, 3.2 & 3.5 Application

**Application Number:** 2012-2407  
**Application:** Changes to Product Labels-New Site or Host, Application Timing, Rotational Crops/Plantback Interval  
**Product:** Pyroxasulfone 85 WG Herbicide  
**Registration Number:** 30572  
**Active ingredients (a.i.):** Pyroxasulfone [PXF]  
**PMRA Document Number:** 2337185

### Purpose of Application

Pyroxasulfone 85 WG currently has full registration for use on field corn. The purpose of this application was to amend the label to include the control of annual grasses and broadleaf weeds on soybean crops and to amend the rotational crop restriction.

### Chemistry Assessment

A new chemistry assessment was not required for this application as the product chemistry has not changed.

### Health Assessments

Pyroxasulfone 85 WG Herbicide is of low acute toxicity via the oral, dermal and inhalation routes of exposure. It is minimally irritating to the eyes and skin. It is a skin sensitizer.

Residue studies for pyroxasulfone in soybeans conducted in the US were submitted to support the use of this active on the labels of Pyroxasulfone 85 WG Herbicide and Fierce Herbicide. In addition, a processing study in treated soybeans was included in the field trial studies to determine the potential for concentration of residues of pyroxasulfone into soybean processed commodities.

### Maximum Residue Limit(s)

Based on the residue data in soybeans, a maximum residue limit (MRL) to cover residues of pyroxasulfone and the metabolite M-28 in dry soybeans will be established as shown in Table 1. Residues of pyroxasulfone and the metabolite M-28 in processed commodities not listed in Table 1 are covered under MRL for the raw agricultural commodities (RACs).

**Table 1 Summary of Field Trial and Processing Data Used to Establish Maximum Residue Limit(s) (MRLs)**

Commodity	Application Method/ Total Application Rate (g a.i./ha)	PHI (days)	Residues <sup>1</sup> (ppm)		Experimental Processing Factor	Currently Established MRL (ppm)	Recommended MRL (ppm)
			Min	Max			
Dry soybeans	Postemergent spraying/208	85-137	<0.018	0.036	Meal: 1.5× Hulls: 0.9× Refined oil: 0.8×	None	0.06

<sup>1</sup> Combined residues of pyroxasulfone and the metabolite M-28.

Following the review of the available data, an MRL for dry soybeans is recommended to cover residues of pyroxasulfone and the metabolite M-28 in the crop. Residues of pyroxasulfone and the metabolite M-28 in the soybean crop commodities at the established MRL will not pose an unacceptable risk to any segment of the population, including infants, children, adults and seniors.

The exposure from the use of Pyroxasulfone 85 WG Herbicide for weed control on soybeans is not expected to increase over the current registered use in field corn. No risks of concern were identified or are expected when workers follow the label directions and wear the personal protective equipment stated on the label.

### Environmental Assessment

The application rate for use on soybean is very similar to the currently registered rate on field corn. As such, the risk to non-target organisms in the environment is not expected to be a concern following the use of Pyroxasulfone 85WG Herbicide on soybean when the label directions are followed.

### Value Assessment

Information submitted under application number 2009-1305 and the subject application was considered in support of the use of Pyroxasulfone 85 WG Herbicide on soybean as a host crop. The tolerance of soybean to a single pre-emergent application of Pyroxasulfone 85 WG Herbicide applied alone at the labeled rate, i.e. 123 g a.i./ha on coarse textured soil, 166-208 g a.i./ha on medium to medium-fine textured soil, and 247 g a.i./ha on fine textured soil, was assessed in 16 field trials. In some of these trials, the tolerance of soybean to pre-emergence treatments of Pyroxasulfone 85 WG Herbicide applied alone at double the labeled rate and to a tank mixture of the labeled rate of Pyroxasulfone 85 WG Herbicide plus glyphosate herbicide was also evaluated. Injury to soybeans was either not observed or was slight. Yield data confirmed that soybean exhibited an adequate margin of crop safety to a single pre-emergent application of Pyroxasulfone 85 WG Herbicide alone or in tank mixture with glyphosate herbicide.

To support the labeled re-cropping interval of 18 months for all crops other than corn and soybean, information submitted under application number 2009-1305 and the present application was reviewed. In field studies submitted under application 2009-1305, injury to alfalfa, barley, flax, navy bean, pinto bean, sorghum, potato, and spring and winter wheat seeded as rotational crops with re-cropping intervals of less than 12 months was slight or was not observed for Pyroxasulfone 85 WG Herbicide applied at up 250, 332, or 418 g a.i./ha (i.e. 1, 1.3, or 1.7 x the maximum labeled rate). While some injury (8 to 15%) was observed to kidney bean planted one month after application, to tomato transplanted one month after application, and to both canola and sugar beet planted 12 months after application, these intervals are considerably less than the recommended minimum re-cropping interval of 18 months. Therefore, the injury observed was greater than that which would be expected had these crops been planted 18 or more months after application. A further consideration is that the effective minimum re-cropping interval is closer to 22 months since the latest application timing for Pyroxasulfone 85 WG Herbicide is early post-emergent to field corn, or about early June.

In two field studies submitted under the subject application, injury was not observed to soybean, alfalfa, potato, and winter wheat planted 120 days after application of Pyroxasulfone 85 WG Herbicide at 166 g a.i./ha on coarse soil (1.35 x the labeled rate) and at 300 g a.i./ha on fine soil (1.22 x the labeled rate).

An additional consideration in support of the labelled re-cropping interval is the fact that: the  $DT_{50}$  (time required for 50% of the herbicide to dissipate) of pyroxasulfone ranges from 4 days to 35 days; the  $DT_{90}$  ranges from 32 days to 116 days; and, the concentration of the major transformation products, M-1 and M-3, are below the limit of quantitation (LOQ) of 0.002 ppm one year after application as determined in field studies in locations that are relevant to Canada (*PRD 2012-20, Pyroxasulfone*). This information is consistent with the results of the field studies and further supports the recommended minimum 18 month re-cropping interval.

The removal of the recommendation to conduct a bioassay in the year following application of Pyroxasulfone 85 WG Herbicide for any crop other than corn or soybean will save the cost and time of conducting a bioassay and will offer growers increased flexibility with respect to choice of rotational crop in the second year following application.

## **Conclusion**

The PMRA has conducted a review of the available information and has determined that the label of Pyroxasulfone 85 WG Herbicide can be amended to include the control of annual grasses and broadleaf weeds on soybean crops as well as the rotational crop restriction.

## References

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