EXTENSION

PSS-3005

Sorghum Herbicide Rotation Restrictions to Soybeans in Oklahoma

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Effective weed management is crucial for optimizing crop yield and ensuring sustainable agricultural practices. In modern farming, herbicides play a pivotal role in controlling weed populations, enhancing crop productivity and minimizing manual labor. However, the indiscriminate use of herbicides can lead to the development of herbicide-resistant weeds and pose environmental risks, e.g., off-site drift.

One significant aspect of herbicide management is understanding rotational restrictions, especially when transitioning between different crops within a rotation cycle. Sorghum and soybeans are staple crops in many agricultural regions, each with its unique herbicide requirements and constraints. When rotating from sorghum to soybeans, producers must carefully consider herbicide residual effects to prevent potential crop injury and ensure effective weed control.

This publication aims to explore and inform producers of the rotational restrictions associated with herbicide usage when transitioning from sorghum to soybean systems. By examining key herbicides commonly used in sorghum production and their residual impacts on subsequent soybean crops, producers can make informed decisions to mitigate risks, optimize herbicide efficacy and promote sustainable crop production practices.

Understanding the dynamics of herbicide residual activity, soil characteristics, crop sensitivities and regulatory guidelines is essential for successful crop rotation management. Through proper planning and adherence to rotational restrictions, producers can maintain weed control effectively while safeguarding crop health and maximizing yields in sorghum-to-soybean rotation systems.

Soybeans with sulfonylurea tolerance traits (“STS”) are designed to assist soybean plants in managing previously applied sulfonylurea herbicides, typically by reducing the duration of rotational restrictions after application. The BOLT soybean trait offers enhanced tolerance to sulfonylurea herbicides. However, despite the provided tolerance to sulfonylurea herbicides through these traits, adherence to rotational restrictions is essential to minimize the risk of potential crop damage.

The tables provided below offer a concise overview of frequently utilized herbicides in sorghum production in Oklahoma, along with their corresponding rotation restrictions for soybeans. This compilation serves to streamline the accessibility of rotational restrictions. For any inquiries or precise details regarding particular chemical compositions, it is advisable to refer to the respective product labels.

Table 1. List of common pre-plant herbicides used on grain sorghum and their rotation restrictions with soybean.

Herbicide	Component Herbicides	MOA	Soybean Rotational Restrictions	Notes
2,4-D	2,4-D	Growth Regulator	7 Days = at 1 pt (0.5 lb ae)/acre 15 Days = at 2.1 pts (1 lb ae)/acre	Do not use on sandy soil, or unacceptable crop injury can occur. Seed furrow must be completely closed.
Expert	Atrazine, Metolachlor, Glyphosate	PS II Inhibitor, Amino Acid Synthesis Inhibitor, Shoot Growth Inhibitor	10-18 Months	May be planted the following cropping season, but injury may occur if calcerous soil surface layers are present. If applied after June 10, rotation with crops other than corn or sorghum the following spring may result in crop injury.
Glyphosate	Glyphosate	Amino Acid Synthesis Inhibitor	0 Months	When utilizing Round-up Ready® soybeans
Gramoxone	Paraquat	PS I Inhibitor	0 Months	Rotational crops may be planted immediately after the last application.

Table 2. List of common pre-emergence herbicides used on grain sorghum and their rotation restrictions with soybean.

Herbicide	Component Herbicides	MOA	Soybean Rotational Restrictions	Notes
Atrazine	Atrazine	PS II Inhibitor	10-18 Months	If planted the following year, risk remains possible for crop injury when broadcast rate was more than 4 pts/acre.
Bicep II Magnum	Atrazine, Metolachlor	PS II Inhibitor, Shoot Growth Inhibitor	10-18 Months	May be planted the following spring after application if average rainfall has occurred. Fields with a calcerous surface layer, or those with Bicep II Magnum applied after June 10, may experience crop injury if soybeans are planted the following year.
Dual II Magnum	Metolachlor	Shoot Growth Inhibitor	0 Months	
Guardsman Max	Dimethenamid-P, Atrazine	Shoot Growth Inhibitor, PS II Inhibitor	10 Months	May be planted the following cropping season, but injury may occur on soils with calcareous surface layer.
Linex	Linuron	PS II Inhibitor	4 Months	See label for specific crop restrictions
Outlook	Dimethenamid	Shoot Growth Inhibitor	0 Months	
Paramount	Quinclorac	Growth Regulator	10 Months	
Prowl	Pendimethalin	Rooth Growth Inhibitor	0 Months	
Sequence	Glyphosate, S-metolachlor	Amino Acid Synthesis Inhibitor, Shoot Growth Inhibitor	0 Months	

Table 3. List of common post-emergence herbicides used on grain sorghum and their rotation restrictions with soybean.

Herbicide	Component Herbicides	MOA	Soybean Rotational Restrictions	Notes
2,4-D	2,4-D	Growth Regulator	1 Month	30 day preharvest interval for sorghum
Aim EC	Carfentrazone	PPO Inhibitor	0 Months	
Ally + 2,4-D	Metsulfuron Methyl, 2,4-D	ALS Inhibitor, Growth Regulator	12 Months for non-STS or BOLT technology soybeans	pH 7.9 or less with average rainfall
Banvel, Clarity	Dicamba	Growth Regulator	Banvel = after harvest of treated crop Clarity = 4 Months	
Basagran	Bentazon	PS II Inhibitor	0 Days	
Buctril	Bromoxynil	PS II Inhibitor	1 Month	
Marksman	Dicamba, Atrazine	Growth Regulator, PS II Inhibitor	12 Months	If applied after June 10, rotation with crops other than corn or sorghum the following spring may result in crop injury. Injury may be expected on calcareous soils.
Peak	Prosulfuron	ALS Inhibitor	22 months	
Permit	Thifensulfuron, Halosulfuron	Amino Acid Synthesis Inhibitor	0-9 Months	STS soybean is 0 months. All other soybeans are 9 months unless the pH is less than 7.5, then interval is 5 months.
Prowl	Pendimethalin	Root Growth Inhibitor	0 Months	
Weedmaster	Dicamba, 2,4-D	Growth Regulator	4 Months	
Treflan HFP	Trifluralin	Root Growth Inhibitor	5 Months	

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