



## PRE-EMERGENT HERBICIDES FOR CARBON PLANTING

The practice of carbon seeding was developed decades ago around the herbicide diuron (Karmex) to provide grass seed fields with a good start towards the objective of clean seed. After years of use, resistance to diuron is common among the key grass weed species the practice was designed to control. In recent years, several new herbicides have been registered for this use. Fierce EZ quickly became the primary herbicide used in carbon seeding. Fierce EZ is a premix of pyroxasulfone (the active ingredient in Zidua) and flumioxazin (the active ingredient in Chateau).

During 2024 two new products, Zidua SC and Anthem Flex, both also containing the active ingredient pyroxasulfone received registration for use in Oregon grass seed production. Since we now have three products that share a common active ingredient, deciding which to use may be a bit confusing. A detailed comparison is provided below (Table). Crop safety is adequate with all three products under most conditions however over the past several years of trial work Zidua SC consistently resulted in the highest crop safety compared to Anthem Flex and Fierce EZ. Grass weed control is likely to last longest with Anthem Flex because it's use rate delivers approximately two times as much pyroxasulfone as Zidua SC or Fierce EZ. Fierce EZ is likely to provide greater weed control than Zidua SC because Fierce EZ contains

flumioxazin which does have some soil activity and grass activity, but this is also why the crop safety is lower. Fierce EZ also provides significantly greater broadleaf weed control. Which herbicide is better? It depends on your situation, tolerance for risk, and weed control goals.

Pyroxasulfone is a group 15 herbicide that is taken up by the roots as germinated seedlings emerge. It needs overhead water, either from rain or irrigation, to move into the root zone and control susceptible weed species. When pyroxasulfone is applied to soil with moisture adequate to germinate weeds and is not followed by overhead water, weed control will be significantly reduced.

Whichever product is used, it is still important to have good seed bed preparation. Fields that are cloddy, loose, or have crop residue on the surface are at greater risk for crop injury. The rate and placement of the carbon band is also very important. The seed row needs good carbon coverage to avoid injury. Late plantings can also be at higher risk. When these risk factors are managed correctly, Zidua SC, Fierce EZ, or Anthem Flex have the greatest potential for high-yield, clean grass seed production.

	Zidua SC	Fierce EZ	Anthem Flex
Pyroxasulfone lb/gal	4.17 lb/gal	1.70 lb/gal	3.733 lb/gal
Carbon seeding use rate	1.5 fl oz/a	3.0 fl oz/a	2.75-3.0 fl oz/a*
Pyroxasulfone lb ai/a at max carbon rate	0.0489 lb ai/a	0.0398 lb ai/a	0.0875 lb ai/a
Fall application on spring planted	3.0 fl oz/a (min 8 tillers)	3.0-6.0 fl oz/a	2.75-3.65 fl oz/a (min 8 tillers)
Established crop use rate	3.0 fl oz/a	3.0-6.0 fl oz/a	2.75-3.65 fl oz/a
Pre-mix partner	None	Flumioxazin	Carfentrazone
Pre-mix partner lb/gal	N/A	1.34 lb/gal	0.267 lb/gal
Pre-mix partner mode of action	N/A	PPO inhibitor	PPO inhibitor
Pre-mix partner grass activity	N/A	Yes	No
Pre-mix partner broadleaf activity	N/A	Yes	Yes, emerged only
Pre-mix partner soil activity	N/A	Yes	No

\*A table on the Anthem Flex label indicates 3.65 fl oz/a in carbon planting. This is a mistake. The lower rate (3.0 fl oz/a) used in the text is correct. The manufacturer has been made aware of the error and will be correct at the next iteration of the label.