

Soybean Pre-Emergence Herbicide Demonstration

Cooperator: Jerry Pearson

Coordinator: Dr. Tommy Butts

Location: Lollie **GPS:** 35.0144 -92.5703

Treated: May 26, 2021

Rated: June 19, 2021 (24 DAT) & July 2, 2021 (37 DAT)

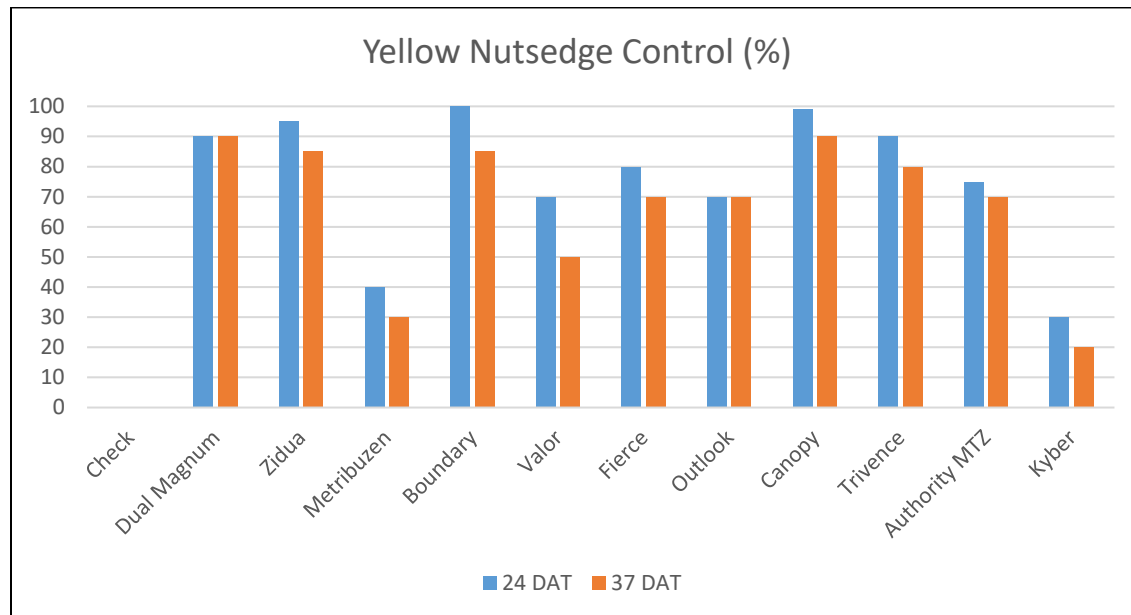


Summary: Soybean weed control is an important input for maximum yield potential. Any practice that promotes rapid soybean stand establishment, proper plant density and rapid canopy closure will increase the ability of soybeans to compete with weeds, thereby increasing the effectiveness of a given herbicide program. Weeds reduce income by lowering yields, reducing harvesting efficiency, causing foreign matter dockage and contaminating the soil for future crops. This demonstration was established to evaluate the effectiveness of pre-emergence herbicides on common weeds found in Faulkner County. The herbicides were evaluated for control of carpetweed, grasses (barnyardgrass and broadleaf signalgrass), yellow nutsedge and Palmer amaranth (pigweed). Eleven pre-emergence herbicides were chosen for this demonstration and are listed below. The herbicides were applied on May 26, 2021 one day after the field was planted. Plots were 10 feet by 40 feet long and the herbicide was applied with a backpack sprayer at 15 gallons per acre with a 10 foot boom and TeeJet AIXR nozzles. Each treatment had the addition of 1 quart/acre of glyphosate to control any emerged weeds at the time of treatment. The field received 0.75 inches of rain the night after the application for good activation of the herbicides.

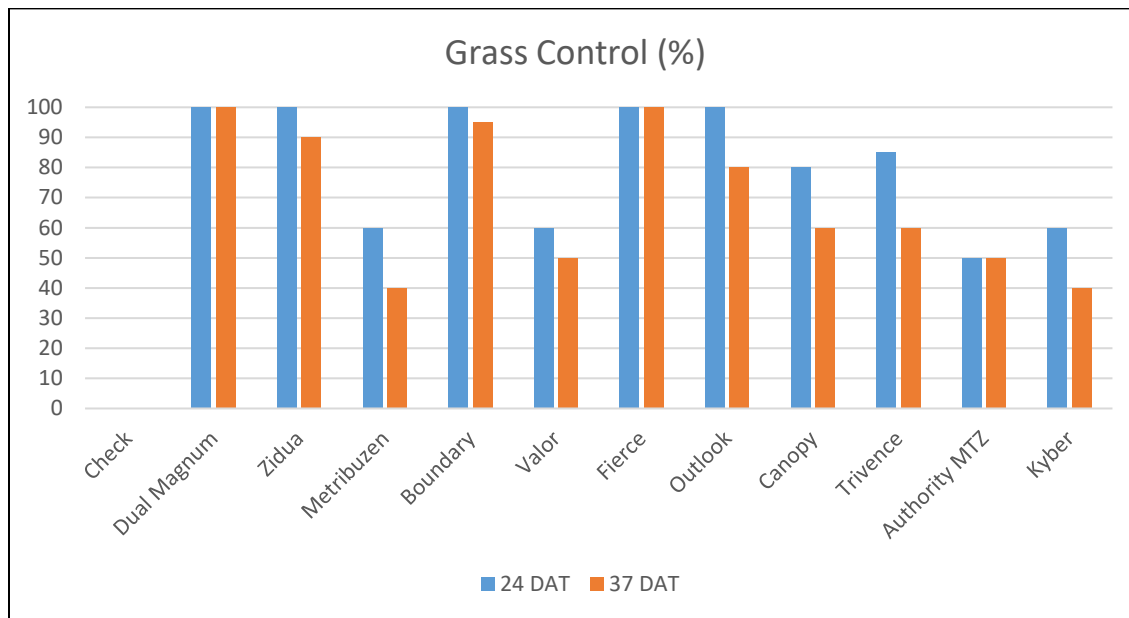
Plot Number	Treatment	Rate per acre	Active Ingredient
101	Untreated Check		
102	Dual Magnum	1.5 pints	S-metolachlor
103	Zidua WG	2.5 ounces	pyroxasulfone
104	Metribuzin	0.33 pounds	metribuzin
105	Boundary	2 pints	S-metolachlor + metribuzin
106	Valor	2 ounces	flumioxazin
107	Fierce	3 ounces	pyroxasulfone + flumioxazin
108	Outlook	16 fluid ounces	dimethenamid
109	Canopy	6 ounces	chlorimuron + metribuzin
110	Trivence	8 ounces	flumioxazin + chlorimuron + metribuzin
111	Authority MTZ	14 ounces	sulfentrazone + metribuzin
112	Kyber	1.25 pints	flumioxazin + metribuzin + pyroxasulfone

Results: Each plot was rated 24 days after treatment (DAT) with a follow up rating again at 37 DAT. The rest of the field continued to receive rain and postemergence (POST) applications of herbicides were difficult to apply. This allowed for a good comparison of the pre-emergence plots vs the rest of the field as weeds continued to grow. Each pre-emergence herbicide had strengths and weaknesses on the four weeds that were rated. Herbicides with multiple modes of action did the best and visually Boundary and Trivence gave the best overall control. The Kyber plot results were mixed but this is the first year to look at this product, and there may have been some formulation issues that led to mixing problems.

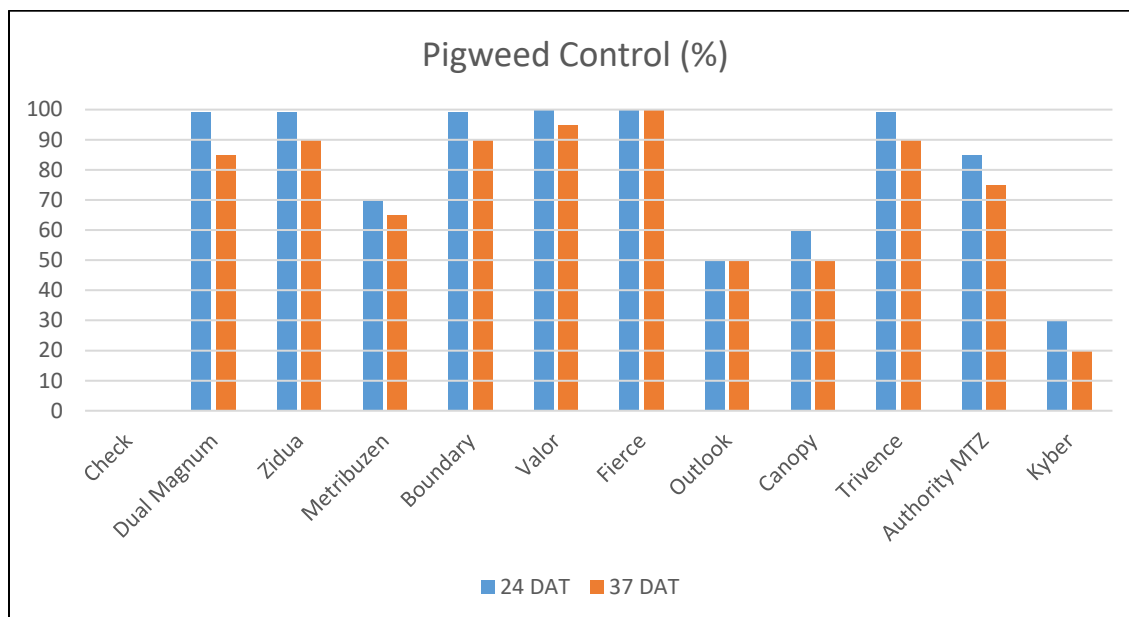
Yellow nutsedge is one of the biggest weed issues in Faulkner County soybeans. Using STS beans is common in the county and with the addition of Enlist soybeans the use of glyphosate and glufosinate has allowed for yellow nutsedge suppression. Use of pre-emergence herbicides will help with yellow nutsedge control and the best herbicides in this demonstration were Boundary, Canopy and Trivence. Zidua and Dual Magnum also gave great control and the addition of these herbicides after planting or added to POST applications will help with yellow nutsedge control.



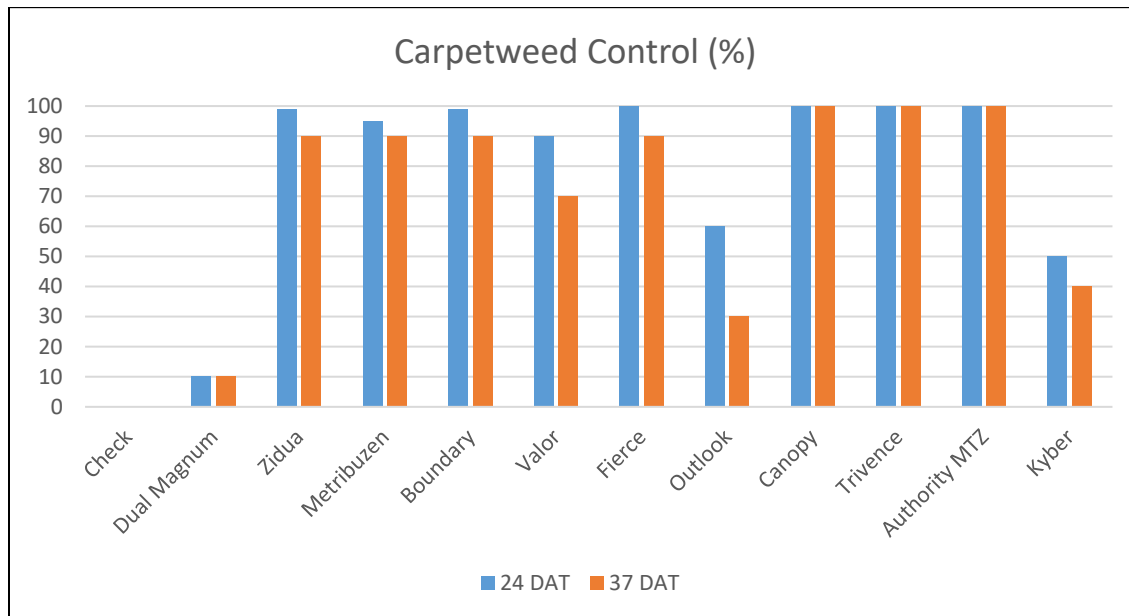
Grass control seems to be harder and harder in Faulkner County each year. Control from glyphosate can be mixed and not always 100 percent. The addition of pre-emergence herbicides can help keep grass under control and reduce selection pressure for herbicide resistance on POST herbicides. Dual Magnum, Zidua, Boundary, Fierce, and Outlook all gave excellent control of grass in the plots. Using herbicides like Boundary and Fierce at planting are excellent ways to use two modes of action to help with grass and broadleaf control. Adding Dual Magnum or Zidua with POST applications are also excellent ways to keep grass from competing with soybean yields, especially later in the growing season.



Pigweeds, like in most of the state, are a big problem. Producers do a good job with POST applications of Enlist One (2,4-D choline), glyphosate and glufosinate, but when rain keeps producers out of the field for early POST applications pigweeds can get large. Herbicide resistance starts with trying to kill large pigweeds so the addition of a pre-emergence herbicide at planting is good insurance when rains occur after planting. Several herbicides showed good pigweed control in the demonstration, and the addition of multiple modes of actions will help delay the evolution of resistance.



Carpetweed is a very minor weed that was prevalent in this demonstration. It does not get big and doesn't compete much with soybean yield. Most POST applications take care of carpetweed but there are also several pre-emergence herbicides that work well also.



In summary, several pre-emergence herbicide options are available for the effective control of multiple problematic weed species in Faulkner County soybean. Based on the results of this demonstration, Boundary, Fierce, Canopy, and Trivence would be some of the most highly recommended pre-emergence herbicides as each effectively controlled multiple weed species (yellow nutsedge, grasses, & pigweed), and each contains more than one mode-of-action to delay the evolution of resistance.