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ID #18-17

UW – Madison Weed Science Renz Lab

Kudos Fungicide Insecticide Rate Corn Alfalfa Interseeding

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Objective:

Evaluate one-pass applications of Kudos (prohexadione-calcium) rates ± fungicide and insecticide in interseeded corn and alfalfa.

Summary:

We evaluated 5 rates of Kudos applied in a single-pass applications on interseeded alfalfa with or without 4 ounces per acre (oz/A) Priaxor + 1 oz/A Warrior. Applications were made on June 13, 2018. Averaged across pesticide treatments, fall alfalfa stand density responded linearly to Kudos application, the response of variety 55H94 was greater than variety 3420 (Fig. 2). Based on regression analysis, approximately 10 and 26 ounces per acre of Kudos in turn produced marginal and optimal stands of 55H94, while 26 ounces per acre of Kudos produced only marginal stands of 3420. Pesticide applications increased alfalfa stand density by a modest 1.5 plants per square foot, averaged across Kudos rates and alfalfa varieties. In this study, Priaxor and Warrior were applied approximately two weeks before the onset of observed disease and leafhopper pressure and this likely accounted for the poor effectiveness of these pesticides for promoting alfalfa survival.

Although single-pass systems reduce application costs, the overall effectiveness of agrichemical treatments might be greatly enhanced if Kudos was applied first to limit alfalfa etiolation followed by a very late application of pesticides to better suppress disease and leafhopper pressure. Farmers often make very late applications of fungicide anyway on corn to improve silage yield and quality so this approach would improve the cost-effectiveness of the two-pass system. Therefore, we would recommend that Kudos rates and pesticide treatments be modified in 2019 to evaluate this two-pass system.

Research Plot Information:

Plot Dimensions: 5 feet by 20 feet

Design: Randomized Complete Block, 4 blocks

Soil Type: 100% Plano silt loam, 2 – 6 percent slopes

Notes:

- June 13th, 2018: All plots from both studies received an additional 75 pounds/acre of nitrogen (lb N/a) sidedressed. 200 lb N/a was broadcast just before planting, but by early June interseeding corn looked N deficient in part from heavy rain and unusually vigorous alfalfa growth.
- June 18th, 2018: Aphid populations >100 per sweep throughout alfalfa in field on 18 June 2018 but no insecticide applied to one pass treatments; waiting for leafhoppers to reach threshold.

- General agronomic practices and observations:

Following fertilization with 200 lb per acre N and ample P and K, corn at 37,000 seed per acre and alfalfa at 16 lb per acre were planted on May 8, 2018. Two alfalfa varieties were sown in 5 ft wide by 20 ft long subplots. An additional 50 lb per acre N was side dressed at the V5 stage to alleviate visual signs of N deficiency in corn. Factorial combinations of Kudos and pesticides were applied to whole plots as described below for each experiment. Due to cool spring temperatures and ample precipitation, initial alfalfa growth was unusually vigorous while corn development was slower than usual. Final dry matter yields of corn silage harvested on 14 September were, however, close to normal for this location (10.4 tons per acre). Alfalfa defoliation was evaluated on 2 August and stand density was evaluated on 17 October. Due to high corn plant density and excessive precipitation, stress on alfalfa seedlings during the second half of the growing season was among the most severe we've observed in over 10 years of interseeding work. As a result, stand density of interseeded alfalfa averaged only 0.8 plants per square foot in untreated controls following corn harvest.

Treatments:

Trt. No.	Alfalfa Variety	Treatment	Rate	Timing
1	55H94	UTC	-	-
2	55H94	Kudos Priaxor Warrior II	0 ounces of dry weight/acre (oz wt/A) 4 oz/A 1 oz/A	A B B
3	55H94	Kudos Priaxor Warrior II	6.5 oz wt/A 0 oz/A 0 oz/A	A B B
4	55H94	Kudos Priaxor Warrior II	6.5 oz wt/A 4 oz/A 1 oz/A	A B B
5	55H94	Kudos Priaxor Warrior II	9 oz wt/A 0 oz/A 0 oz/A	A B B
6	55H94	Kudos Priaxor Warrior II	9 oz wt/A 4 oz/A 1 oz/A	A B B
7	55H94	Kudos Priaxor Warrior II	13 oz wt/A 0 oz/A 0 oz/A	A B B
8	55H94	Kudos Priaxor Warrior II	13 oz wt/A 4 oz/A 1 oz/A	A B B
9	55H94	Kudos Priaxor Warrior II	26 oz wt/A 0 oz/A 0 ozA	A B B
10	55H94	Kudos Priaxor Warrior II	26 oz wt/A 4 oz/A 1 oz/A	A B B
11	3420	UTC	-	-
12	3420	Kudos Priaxor Warrior II	0 oz wt/A 4 oz/A 1 oz/A	A B B
13	3420	Kudos Priaxor Warrior II	6.5 oz wt/A 0 oz/A 0 oz/A	A B B

14	3420	Kudos Priaxor Warrior II	6.5 oz wt/A 4 oz/A 1 oz/A	A B B
15	3420	Kudos Priaxor Warrior II	9 oz wt/A 0 oz/A 0 oz/A	A B B
16	3420	Kudos Priaxor Warrior II	9 oz wt/A 4 oz/A 1 oz/A	A B B
17	3420	Kudos Priaxor Warrior II	13 oz wt/A 0 oz/A 0 oz/A	A B B
18	3420	Kudos Priaxor Warrior II	13 oz wt/A 4 oz/A 1 oz/A	A B B
19	3420	Kudos Priaxor Warrior II	26 oz wt/A 0 oz/A 0 oz/A	A B B
20	3420	Kudos Priaxor Warrior II	26 oz wt/A 4 oz/A 1 oz/A	A B B

Application:

Date: June 13th, 2018

Application was made with drop nozzles to minimize the coverage to corn while targeting alfalfa in the inter-row.

Weather Data:

Weather Station	KWIARLIN2
Temperature	70.8°F
Wind Speed and Direction	6 mph NNW
Relative Humidity	77%
Previous Rain Event Within 48 Hours	-
When ≥ 0.25 inches of precipitation occurred after treatment	06.15.18 – 1.1 inches

Results:

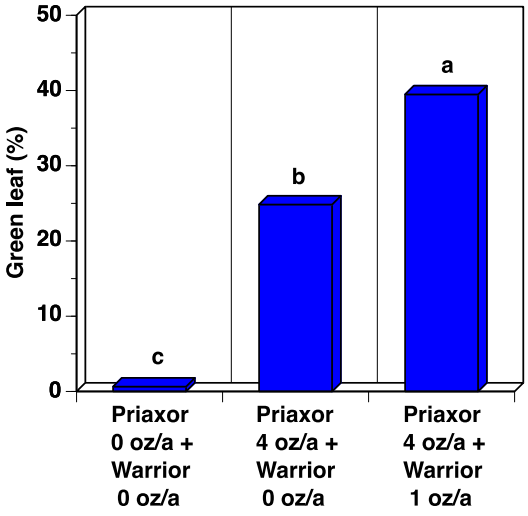

Fig. 1. Retention of green leaves in early August on alfalfa interseeded into silage corn in response to Priaxor fungicide and Warrior insecticide treatments. Data are averaged across alfalfa varieties and Kudos prohexadione-calcium treatments. Treatments with unlike letters differ at *P* = 0.05.

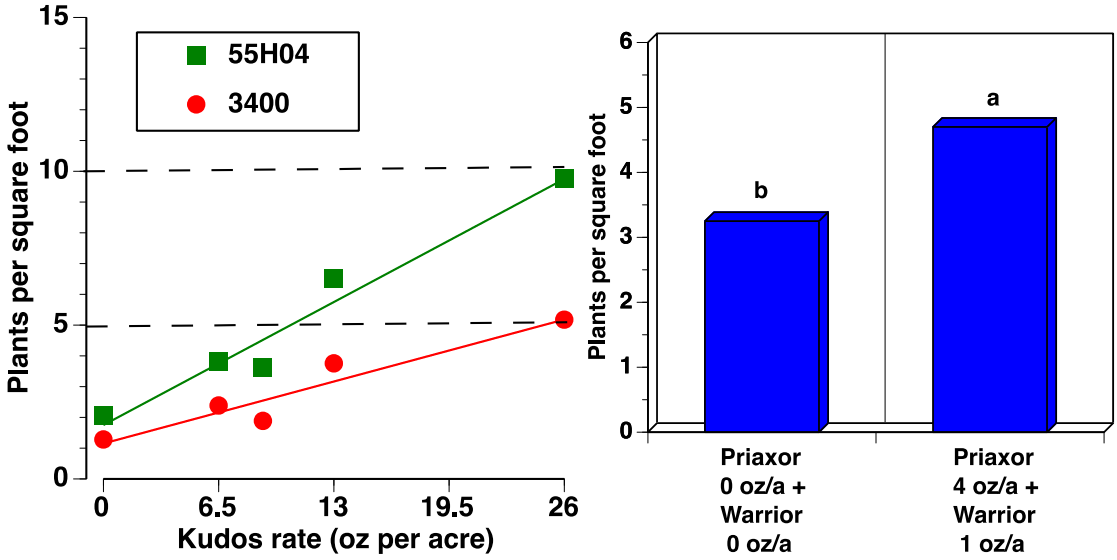

Fig. 2. Fall stand density of alfalfa interseeded into silage corn in response to Kudos alone or Kudos plus pesticides (4 oz/a Priaxor fungicide and 1 oz/a Warrior insecticide) applied at an intermediate timing to 1.2 ft tall alfalfa growing in 1.9 ft tall corn. Left: response of two alfalfa varieties to Kudos application, averaged across pesticide treatments. Dashed lines at 5 and 10 plants per square foot in turn indicate marginal and optimal stand densities for subsequent alfalfa forage production. Right: response of alfalfa to Priaxor plus Warrior averaged across Kudos rates and alfalfa varieties. Treatments with unlike letters differ at *P* = 0.05.