

Crop Tolerance of Talinor with Slow Release Fertilizers in Winter Wheat and Mayweed Chamomile Control

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The objective of the study was to evaluate crop tolerance of Talinor with the addition of a slow release fertilizer on winter wheat. We also looked at mayweed chamomile (*Anthemis cotula* L.) control when using a slow release fertilizer compared to no fertilizer added and urea ammonium nitrate (UAN). Crop injury with Talinor applied with UAN has been observed, usually causing bleaching of the wheat flag leaf. UAN is also thought increase adsorption and speed up metabolic responses with in plants, for example, allowing Clearfield crops to metabolize the imazamox more rapidly to reduce crop injury. Alternative fertilizers options include slow release fertilizers to reduce crop injury. However, slow release fertilizers can be expensive as they are typically marketed for specialty horticultural crops.

The study was established at the Cook Agronomy Farm near Pullman, WA. Talinor was applied May 8, 2018 to winter wheat at stage Feekes 5. Fertilizer was either applied with Talinor or 7 days after Talinor application, detailed in Table 1 and Table 2. Mayweed chamomile was at 2 inches in diameter when Talinor was applied. The study was conducted in a randomized complete block with 4 replications. Plots were 10' by 30' long. Winter wheat, variety PNW Trooper Blend (Puma, SY107, Ovation), was planted on October 10, 2017. The trial site had been treated with 1.75 oz A⁻¹ of Zidua as a delayed preemergence (PRE) on October 12, 2017 for Italian ryegrass and mayweed chamomile control. Axial XL at a rate of 16.4 fl oz A⁻¹ was applied POST on April 19, 2018 for Italian ryegrass control.

Crop necrosis was visually assessed 13 days after the first application timing (DAAT). Crop bleaching injury was assessed 13 and 21 DAAT. Crop injury and mayweed chamomile control was visually assessed 35 DAAT. Plots were harvested by a 5 ft. header plot combine on August 2, 2018. All data was subjected to an analysis of variance using the statistical package built into the Agricultural Research Manager software system (ARM 8.5.0, Gylling Data Management).

Results

Overall, UAN (32-0-0) applied with Talinor had the greatest crop injury and lowest yields. At 13 days after application timing A (DAAT), UAN (32-0-0) and Coron (28-0-0) applied with Talinor were the only treatments to cause significant crop necrosis. UAN caused 14% necrosis and Coron caused 15% necrosis compared to the nontreated control. Plots treated with Coron grow out of the injury by 35 DAAT. UAN + Talinor applied at the same timing had significant crop injury throughout the growing season. Significant crop bleaching was present for UAN + Talinor treatment with 34% 12 DAAT and 28% 21 DAAT compared to all other treatments with less than 5% bleaching (Table 2).

Mayweed chamomile control 35 DAAT was less for all split treatments of fertilizer first and then Talinor 7 days later. There was no difference within timing of treatment. N-Sure (28-0-0) applied first and



Fig 1 (above). Flag leaf bleaching following applications of Talinor + CoAct with UAN in the same tank 13 days after treatment (DAT).



then Talinor 7 days later had the least weed control with 81% compared to Coron applied with fertilizer which had weed control of 98% 35 DAAT (Table 2).

Although crop injury occurred when UAN and Talinor were applied together, there was no significant difference in winter wheat yield were observed between any treatments (Table 2). However, UAN and Talinor applied together did result in the lowest yields (73 bu A⁻¹). The highest numerical yield (109 bu A⁻¹) was with N-Sure applied first followed by Talinor. No treatment yielded 95 bu A⁻¹.

Fig 2 (left). Crop injury following applications of Talinor + CoAct with UAN in the same tank 13 days after treatment (DAT).

Table 1. Treatment application details

Study Application	A	B
Date	May 8, 2018	May 15, 2018
Application volume (GPA)	15	15
Crop Stage	Feekes 5	Feekes 9
Air temperature (°F)	70	56
Soil temperature (°F)	61	62
Wind velocity (mph, direction)	2.5, E	0.4, E
Cloud Cover	40%	10%

Table 2. Percent crop necrosis, bleaching, mayweed chamomile control and winter wheat yield following application of Talinor with slow-release fertilizers. Pullman, WA, 2018. Means followed by the same letter are not statistically significantly different ($\alpha=0.05$).

Treatment	Application Code	Rate		Tank pH (A)	5/21/2018 (13 DAAT)		5/29/2018 (21 DAAT)		6/12/2018 (35 DAAT)		8/2/2018
		field rate	lb ai/A ^a		Crop Necrosis %	Crop Bleaching %	Crop Bleaching %	Crop Injury %	ANTCO Control %	Yield bu/A	
Nontreated				-	-	-	-	-	-	-	95
CoAct+	A	2.75 fl oz/A	0.057								
Talinor	A	13.7 fl oz/A	0.190	7.1	0 a	2 a	0 a	0 a	96 a		96
Induce (NIS)	A	0.25% v/v									
UAN (32-0-0)	A	25% v/v	31.40								
CoAct+	A	2.75 fl oz/A	0.057	7.2	14 b	34 b	28 b	21 a	97 a		73
Talinor	A	13.7 fl oz/A	0.190								
Induce (NIS)	A	0.25% v/v									
NDemand 30L	A	25% v/v	44.71								
CoAct+	A	2.75 fl oz/A	0.057	8.9	3 a	5 a	3 a	0 a	97 a		93
Talinor	A	13.7 fl oz/A	0.190								
Induce (NIS)	A	0.25% v/v									
N-Pact (26-0-0)	A	25% v/v	33.97								
CoAct+	A	2.75 fl oz/A	0.057	9.6	3 a	1 a	1 a	0 a	97 a		96
Talinor	A	13.7 fl oz/A	0.190								
Induce (NIS)	A	0.25% v/v									
Coron (28-0-0)	A	25% v/v	35.14								
CoAct+	A	2.75 fl oz/A	0.057	8.4	15 b	1 a	0 a	3 a	98 a		99
Talinor	A	13.7 fl oz/A	0.190								
Induce (NIS)	A	0.25% v/v									
N-Sure (28-0-0)	A	25% v/v	42.45								
CoAct+	A	2.75 fl oz/A	0.057	8.5	1 a	0 a	0 a	0 a	96 a		92
Talinor	A	13.7 fl oz/A	0.190								
Induce (NIS)	A	0.25% v/v									
UAN (32-0-0)	A	25% v/v	31.40								
CoAct+	B	2.75 fl oz/A	0.057	7.3*	4 a	3 a	0 a	0 a	88 ab		94
Talinor	B	13.7 fl oz/A	0.190								
Induce (NIS)	B	0.25% v/v									
NDemand 30L	A	25% v/v	44.71								
CoAct+	B	2.75 fl oz/A	0.057	9.4*	4 a	1 a	0 a	0 a	91 ab		96
Talinor	B	13.7 fl oz/A	0.190								
Induce (NIS)	B	0.25% v/v									
N-Pact (26-0-0)	A	25% v/v	33.97								
CoAct+	B	2.75 fl oz/A	0.057	9.7*	4 a	1 a	0 a	0 a	89 ab		99
Talinor	B	13.7 fl oz/A	0.190								
Induce (NIS)	B	0.25% v/v									
Coron (28-0-0)	A	25% v/v	35.14								
CoAct+	B	2.75 fl oz/A	0.057	8.7*	3 a	3 a	0 a	0 a	87 ab		80
Talinor	B	13.7 fl oz/A	0.190								
Induce (NIS)	B	0.25% v/v									
N-Sure (28-0-0)	A	25% v/v	42.45								
CoAct+	B	2.75 fl oz/A	0.057	8.7*	7 a	0 a	0 a	0 a	81 b		109
Talinor	B	13.7 fl oz/A	0.190								
Induce (NIS)	B	0.25% v/v									
<i>LSD</i>					5.75	8.26	2.71	4.86	8.59		<i>NS</i>

^a lb ai/A for nitrogen fertilizers is lb nitrogen/A

* Tank pH is for fertilizer mixture only (A application code); Talinor was not in tankmix