

Project Title: Effects of Plant Growth Regulators (PGRs) on Spring Wheat Stem Solidness and Agronomic Performance

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Objective: To evaluate PGRs effects on spring wheat stem solidness

Results:

Five PGRs (Cerone, Palisade, Apogee, Cycocel, and Trimmit), and two fungicides (Tilt and Headline), were evaluated for their effects on spring wheat stem solidness and agronomic performance. Scholar spring wheat was planted on April 28, 2006 at a seeding rate of 75 lb/ac, in 7" rows to a depth of 1.5 inches. All compounds were applied on June 20, during the boot stage, using a backpack sprayer with Teejet XR11002 nozzles in 20 GPA.

Treatment effects on stem solidness were significant. All of the compounds evaluated, except for Headline and Cerone, increased stem solidness when compared to the nontreated check. The relative treatment rankings for stem solidness were as follows: Palisade>Apogee>Cycocel>Trimmit=Tilt.

All PGRs reduced plant height and delayed heading, with Palisade resulting in the greatest effect. However, Palisade treatments also reduced yields. All other treatments produced yields similar to the untreated check. None of the treatments affected spike length, grain moisture, test weight or 1000 kernel weight (TKW).

Summary:

Several compounds could be used to successfully increase stem solidness in spring wheat. However, additional research should be done with Palisade in an effort to minimize yield reductions.

Table 1. Effects of PGRs and fungicides on spring wheat stem solidness in 2006 season.

Trt No.	Treatment	Rate lb ai/ac	Stem solidness					Total
			Internodes					
			1 1-5	2 1-5	3 1-5	4 1-5	5 1-5	
1	Cerone	0.375	2.6	1.8	1.9	1.8	1.6	9.6
2	Palisade	0.375	3.2	2.6	2.6	2.5	3.5	14.4
3	Apogee	0.137	3.0	2.4	2.5	2.2	2.6	12.8
4	Cycocel	0.500	2.7	2.0	2.3	2.1	2.4	11.4
5	Trimmit	0.250	2.7	2.1	2.4	1.9	1.6	10.6
6	Tilt	0.112	3.1	1.9	2.4	2.2	1.2	10.9
7	Headline	0.100	2.5	1.7	2.0	1.9	1.5	9.5
8	Untreated		2.0	1.5	2.1	1.6	1.2	8.5
	LSD (P=.05)		0.72	0.36	0.49	0.56	0.59	2.01
	CV		15.11	10.2	12.3	15.89	17.29	10.45
	Treatment F		2.72	9.37	2.78	2.51	17.36	8.42
	Treatment Prob(F)		0.053	0.0002	0.0492	0.0678	0.0001	0.0004

Table 2. Effects of PGRs and fungicides on spring wheat yield and agronomic performance in 2006 season.

Trt No.	Treatment	Rate lb ai/ac	Plant height	Lodging	Heading	Spike length	Yield	Grain moisture	Test weight	TKW
			cm	%	Julian	mm	bu/ac	%	lb/bu	g
1	Cerone	0.375	94.3	0	180.3	91.7	65.1	14.5	60.0	35.1
2	Palisade	0.375	69.0	0	182.3	93.4	48.0	16.0	58.6	33.3
3	Apogee	0.137	88.0	0	181.0	94.1	64.0	15.8	59.4	36.7
4	Cycocel	0.500	88.3	0	180.7	88.3	60.5	14.4	59.1	35.5
5	Trimmit	0.250	98.3	0	180.0	97.2	63.8	14.9	59.4	35.0
6	Tilt	0.112	105.0	0	179.0	89.0	64.3	14.9	59.3	35.9
7	Headline	0.100	106.0	0	179.0	91.2	63.9	14.8	59.0	35.9
8	Untreated		108.3	0	179.3	92.7	63.3	15.1	59.6	37.4
	LSD (P=.05)		7.52	0	1	5.83	7.19	1.25	1.54	2.91
	CV		4.54	0	0.32	3.61	6.67	4.76	1.49	4.67
	Treatment F		27.41	0	11.91	2.21	5.67	1.84	0.64	1.59
	Treatment Prob(F)		0.0001	1	0.0001	0.0978	0.0029	0.158	0.7187	0.2167