yields and protein content or can avoid unnecessary costs associated with excessive fertilizer applications.

Yellowberry in Durums

When growing durum wheats, control of "Yellowberry" can be nearly as important as the quantity of wheat grown. Timing and amounts of nitrogen fertilizer and water can substantially influence the occurance of Yellowberry.

Nitrogen Deficiencies between heading and flowering cause a higher incidence of Yellowberry. Monitoring with tissue testing and split nitrogen fertilizers applications can help prevent nitrogen deficiencies at this crucial time.

Heavy Irrigations between heading and flowering can also increase Yellowberry content. Wet, nearly saturated soils reduce the ability of the wheat to use available nitrogen. Heavy watering at this time is more likely to be a problem on fine textured soils that stay wet for several days after irrigation. To prevent the problem, avoid heavy single irrigations during the heading to flowering stage.

Yield Responses of Wheat to Nitrogen and Phosphorus in the Upper Gila Valley

B.R. Gardner, J.H. Park and D.A. Pennington

Summary

Grain yield was increased with 50 lbs of N per acre with no further increases with higher rates of N applied. Applied P had no significant effect on grain yields. N applications decreased the percentage of yellowberry in the grain. Nitrate levels in wheat stems were inversely related to the percent of yellowberry.

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Super X wheat was planted on the Safford Experiment Station and irrigated up on December 18, 1980. Six nitrogen treatments and two phosphorus treatments were replicated 6 times in a split-plot design. Phosphorus was the whole plot treatment and nitrogen the subplot treatment. Treble super phosphate was used as the P source and urea was used for N. The dates and rates of application are shown in Table 1.

TABLE 1. Grain yield, bushel weight and yellowberry response to nitrogen and phosphorus treatments.

Treatment				
Preplant 12-17-80	Topdress 2-25-81	Grain Yield	Bushel Weight	Percent Yellowberry
lb N/acre		lb/acre	lb	%
0	0	3670a	59.9	53.3 b
50	0	4390 b	60.0	16.6a
100	0	4270 b	59.3	8.8a
200	0	4080a	58.7	1.9a
50	50	4610 b	59.4	10.3a
100	100	4140ab	58.3	2.5a
	LSD	517	N.S.	13.5
lb P_2O_5/acre				
0	0	4110	58.8a	13.8a
100	0	4280	59.7 b	17.3 b
	LSD	N.S.	0.8	3.4

Stem tissue samples were taken 3 times during the season and analyzed for NO_3-N and PO_4-P. The plots were harvested on June 19, 1981. Subsamples of the grain were taken to measure bushel weight and to determine yellowberry percentage.

Grain yield was increased by an application of 50 lbs N per acre with no further increases in yield with higher rates of N applied (Table 1). Two hundred pounds of N applied either at preplant or 100 lbs preplant plus 100 lbs sidedress tended to decrease grain yield. There was no significant increase in grain yield due to applied phosphorus.

Bushel weight (Table 1) was increased slightly by P addition but N applications had little effect upon bushel weight. The percent of grain kernels that were yellowberries was decreased with N applications and there was a slight increase in the incidence of yellowberry due to applied P. The phenomenon was observed primarily at the lower rates of N.

Nitrate and phosphate levels in wheat stems at various dates are shown in Table 2. The levels in wheat stems were responsive to the amount of N applied to the wheat. Higher rates of N applied resulted in higher levels of NO_3-N in the stems. Nitrate levels in the stems were not significantly affected by P treatment. Phosphate levels in the stems were increased significantly by P application. As has been previously reported, the PO_4-P levels are relatively high early in the season but soon fall to very low levels that are not suitable for diagnostic purposes.

The nitrate levels were inversely related to the percent yellowberry. Lower NO_3-N levels resulted in a high incidence of yellowberry in the grain. It has been previously reported that N-deficiencies that occur during seed formation result in a high incidence of yellowberry.

The yields levels obtained were disappointing; however, the data indicate that N and P were not the limiting factors.

TABLE 2. Nitrate and phosphate levels in wheat stems.

Treatment		Stem NO_3-N			Stem PO_4-P		
Preplant 12-17-80	Topdress 2-15-81	3-16	4-9	4-24	3-16	4-9	4-24
lb N/acre		ppm					
0	0	200a	150a	83a	3265d	510	180
50	0	800b	225a	0a	3260d	550	210
100	0	2130d	710b	80a	3020c	480	160
200	0	2650e	3810d	1370b	2730b	500	225
50	50	1790c	920b	185a	2240a	520	175
100	100	2690e	2950c	1490b	2670b	625	245
	LSD	338	400	292	151	N.S.	N.S.
lb P_2O_5/acre							
0	0	1770	1530	400	2480a	420a	115a
100	0	1650	1390	670	3250b	640b	280b
	LSD	N.S.	N.S.	N.S.	431	111	110

Fertilizing Alfalfa in Arizona

Dean Pennington, Extension Soils Specialist

Summary

Alfalfa often responds to applied phosphorus. The need for phosphorus fertilizers can be determined by soil testing before planting or tissue analysis of stems at one tenth bloom.

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Nitrogen

Nitrogen fertilizers are generally not needed for alfalfa. Responses to applied nitrogen usually indicate that the alfalfa plant is not effectively nodulated due to lack of proper seed inoculation or an old stand.