

Nutrient Levels in Wheat Tissue from
Four Arizona Counties Surveyed During
1981

Dale Smith and A. K. Dobrenz
Department of Plant Sciences
University of Arizona

Summary

Wheat tissues were sampled at the beginning of inflorescence emergence during the spring of 1981 and the dried herbage were analyzed for elemental concentrations. The proportions of farmer's fields falling into various nutrient-concentration categories are presented.

* * * * *

Wheat fields in four counties were sampled during 1981 when the spring growth had reached the beginning of inflorescence emergence. The wheat head was just beginning to break through the top whorl of leaves. The tissue harvested consisted of the whole shoot above a 2- to 3-inch stubble. A few shoots from each of several areas throughout a field were composited to make a single sample from each farmer's wheat field. The forage was dried at 70°C, ground to 40-mesh size, bottled, and later analyzed for several minerals.

A total of 37 wheat fields were sampled from within four counties: Maricopa-14, Pinal-10, Pima-8, and Graham-5. All wheat sampled was durum, except for one sample from Pima County and 3 of the 5 samples from Graham County, which were red-milling wheat.

The average concentrations of nutrients in the herbage dry matter for all the wheat sampled are shown in Table 1. The proportion of fields falling into various nutrient-concentration categories for each nutrient analyzed are shown in Table 2.

All of the wheat appeared to contain sufficient levels of K, Ca, and Cu. A number of fields were low in concentration of P, nitrogen, and zinc. On the other hand, a high proportion of fields were low in magnesium ($\pm 84\%$), boron ($\pm 76\%$), and sulfur ($\pm 57\%$).

Table 1. Average concentration of nutrients in the herbage dry matter of wheat sampled from Maricopa, Pinal, Pima, and Graham counties.

Nutrients	%	Nutrients	ppm
N	2.15	Mn	52
P	0.23	Fe	57
K	2.69	Cu	12
Ca	0.28	Zn	23
Mg	0.12	B	5
S	0.19	Al	18
Na	0.12		

Table 2. Percentage of farms showing various nutrient concentrations in the topgrowth of wheat at boot stage.

Percent element in tissue	Farms	Percent element in tissue	Farms	Percent element in tissue	Farms
a) Phosphorus		d) Nitrogen		h) Copper	
above 0.30%	11%	above 2.70%	11%	Above 24 ppm	3%
.25-.29	30	2.35-2.69	21	18-23	19
.20-.24	27	2.00-2.34	27	12-17	24
.15-.19	32	1.65-1.99	30	6-11	46
.10-.14	0	1.30-1.64	11	0-5	8
b) Potassium		e) Sulfur		i) Zinc	
above 3.50%	8%	Above 0.25%	16%	Above 30 ppm	16%
2.80-3.49	33	.20-.24	27	24-29	27
2.50-2.79	16	.15-.19	22	18-23	24
2.00-2.49	35	.10-.14	32	12-17	27
1.50-1.99	8	.05-.09	3	6-11	6
c) Magnesium		f) Calcium		j) Boron	
above 0.20%	0%	above 0.50%	5%	Above 12 ppm	5%
.15-.19	16	.40-.49	6	9-11	5
.10-.14	78	.30-.39	27	6-8	14
.05-.09	6	.20-.29	46	3-5	73
.01-.04	0	.10-.19	16	0-2	3
		g) Sodium			
		Above 0.20%	8%		
		.15-.19	22		
		.10-.14	51		
		.05-.09	19		
		.01-.04	0		