

HIGHEST WHEAT GRAIN YIELDS OBTAINED ON EAST-WEST BEDS

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Nitrogen (N) is the principal fertilizer element in the production of wheat (*Triticum aestivum* L.). More effective combinations of nitrogen fertilization and cultural practices may further increase the yield and quality of wheat grain. Wheat is sometimes grown on beds in the southwestern U.S. Experiments were conducted at Yuma, Arizona to study the effects of nitrogen fertilizer treatments in combination with methods of planting and row positions on beds, on the yield and quality of wheat grain. Six nitrogen fertilizer treatments (34, 17 + 17, 68, 34 + 34, 136, and 68 + 68 kg/ha), two methods of planting (on the flat and on beds), and four row positions on beds (north, south, east, and west) were evaluated.

Flat plantings resulted in higher wheat grain yields than did bed plantings; however, bed plantings produced higher grain volume-weights. Within planting methods, nitrogen fertilizer treatments did not significantly influence grain yields or grain volume-weights. Grain yield components (number of heads per unit area, number of seeds per head, and seed weight) were similar for both planting methods. When wheat was grown on beds with an east-west orientation, the higher rates of nitrogen fertilizer resulted in more heads per unit area, more seeds per head, and higher grain yields than did the lower nitrogen treatments (Table 1). The south row position on east-west beds produced more heads per unit area, more seeds per head, and higher grain yields than did the north row position (Table 1).

Wheat grown on beds with an east-west orientation produced more heads per unit area, more seeds per head, and higher grain yields than did wheat produced on beds oriented in a north-south direction. Wheat responded to nitrogen fertilization when grown on both flat and bed plantings during the winter months in Arizona.

TABLE 1

Average number of heads per unit area, number of seeds per head, seed weight, and grain yield for Maricopa wheat grown with six nitrogen fertilizers and two row positions (north and south) on east-west beds at Yuma, Arizona in 1968 and 1969 (two-year average).

Nitrogen fertilizers	Row Positions	Heads per m ²	Seeds per head	Weight of 1,000 seeds	Grain yield per m ²
		(no.)	(no.)	(g)	(g)
34	North	286 a [†]	37 a	39.0 a	405 a
	South	343 b	39 a	38.7 a	524 b
17 + 17	North	286 a	38 a	38.5 a	408 a
	South	351 b	40 a	38.0 a	508 b
68	North	292 a	37 a	38.5 a	416 a
	South	359 b	41 b	38.4 a	575 b
34 + 34	North	292 a	37 a	39.4 a	419 a
	South	346 b	42 b	39.2 a	559 b
136	North	297 a	37 a	36.8 a	408 a
	South	381 b	41 b	35.9 a	543 b
68 + 68	North	292 a	38 a	36.9 a	410 a
	South	362 b	42 b	37.0 a	540 b
C. V., %		12	6	4	15
Significance of differences:					
Between fertilizers		**	**	ns	**
Between row positions		**	**	ns	**

**Significant at 1%; ns = not significant at 5%.

[†]Means followed by the same letter, within fertilizers and between row positions, are not different at the 5% level of significance (Student-Newman-Keuls' Test).