

SITE-SPECIFIC NITROGEN AND IRRIGATION MANAGEMENT ACROSS NEBRASKA AGRO-ECOLOGICAL ZONES

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Nitrogen leaching below furrow irrigated ground has caused nitrate contamination in Nebraska's groundwater. Alternate row irrigation and alternate row nitrogen fertilization is proposed as a method to decrease water use and decrease nitrogen leaching. Nitrogen was applied at a uniform and variable rates based on spring grid sampling for nitrate and soil organic matter. The experiment was conducted at three sites in Nebraska that represent a range of growing conditions. At these sites the average growing degree days range from 2550 to 3350 (average degrees F - 50), mean annual precipitation (MAP) ranges from <350 to 775 mm and mean annual water balance ranges from -275 to 25 mm. Irrigation method did not influence yields at the two sites with MAP greater than 500 mm. Alternate row irrigation decreased yields at the lowest rainfall site. Both uniform and variable N rate application yielded the same. The no nitrogen controls yielded 78 % of the applied N treatments. There were no interactions between irrigation method and N response.

Effect of alternate row irrigation and uniform or variable nitrogen rates on corn grain yield.

	Clay Center		North Platte		Panhandle	Mean
	1997	1998	1997	1998	1998	
	Mg /ha					
Alternate row	10.92	11.02	11.66	11.58	7.55	10.5
Every row	10.84	10.83	11.80	11.55	9.20	10.8
Irrigation (Prob>F)	0.7714	0.2645	0.5015	0.8485	0.0478	
Control	8.82	8.32	10.10	10.60	7.40	9.0
Uniform	11.91	12.21	12.50	11.99	8.83	11.5
Variable	11.91	12.26	12.59	12.07	8.89	11.5
N rate (Prob>F)	0.0001	0.001	0.0001	0.0001	0.0033	
I X N (Prob>F)	0.3236	0.2238	0.7225	0.713	0.4703	

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