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Malheur Experiment Station  
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Agricultural Experiment Station  
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## MALHEUR COUNTY CROP SURVEY OF NITROGEN AND WATER USE PRACTICES

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In 1989, northeastern Malheur County was declared a groundwater management area because of nitrate contamination in shallow aquifers. Subsequently, meetings were held a citizens committee to recommend ways of cleaning up the aquifer. They realized that there is a lack of knowledge concerning actual grower practices for nitrogen rates and application timing. It was felt that the best way to obtain this information was to conduct a comprehensive survey that encompassed enough growers to make the survey reliable. Because of the logistics of obtaining this kind of survey, the help of local fertilizer fieldmen was enlisted. There was good cooperation between the fieldmen and the growers; resulting in a high percentage of the survey forms returned. A total of 51 surveys were completed and returned resulting in a high percent of the county's row crop acreage covered.

The results of the survey will enable us to pinpoint current grower practices that are beneficial to protecting groundwater as well as those practices which need more research and education (Tables 1 to 10). Items which need to be addressed include soil testing in certain crops, fall applied nitrogen, total nitrogen use, and Dacthal application.

The survey indicates that 38 percent of onion growers, 64.9 percent of sweet corn growers, 71.9 percent of dry bean growers, and 96 percent of wheat growers do not soil sample. Soil testing for these crops would give a more accurate indication of how much nitrogen must be applied for maximum yields. Wheat is a deep rooted crop that could be utilized in recovering excess nitrogen applied to a previous crop, but soil sampling is necessary.

Fall applied nitrogen is applied in significant amounts to onions and sugar beets and to a lesser extent to sweet corn and potatoes. The potential for leaching this fertilizer during the winter months or during the first irrigation is high. During dry years, fertilizer salts are available to add to the salt injury experienced by area growers. The addition of a starter fertilizer could eliminate the need for fall applied nitrogen on these crops.

Table 3 shows Dacthal use on onions. Dacthal use on onions. Dacthal is a pre-emergence herbicide that has shown up in Malheur County groundwater in the di-acid metabolite form. Almost half of onion growers are still broadcasting Dacthal. Banding would cut the application rate by 2/3 and thus the potential for leaching into the groundwater. It is interesting to note that 27 percent of the growers do not use

Dacthal. The fact that part of the growers do not use Dacthal indicates the possibility of eventually eliminating the use of Dacthal.

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Table 1.

## 1990 MALHEUR COUNTY CROP SURVEY

CROPS	SURVEY ACREAGE	NUMBER OF SURVEY RESPONSE	MALHEUR COUNTY CROP ACREAGE	% SURVEYED
Onions	4,075	45	9,620	42
Sweet Corn	1,475	23	4,125	36
Dry Beans	2,829	17	7,200	39
Wheat	6,755	50	32,800	21
Sugar beets	5,727	37	13,000	44
Potatoes	2,466	31	7,300	34
Mint	1,970	4	2,350	84
Alfalfa Seed	889	9	7,300	12
Field Corn	730	7	6,400	11
Sweet Corn Seed	150	3	?	
Alfalfa Hay	140	2	53,000	.3
Carrot Seed	50	1	?	

Table 2.

## ONION SURVEY - 4075 ACRES

			<u>Average</u>	<u>High</u>	<u>Low</u>
Years Grown			25.8	58	2
Yield (cwt)			621.1	1200	450
Acres Grown			92.6	200	11
Soil Test	Yes	28			
	No	17			
Tissue Test	Yes	15			
	No	30			
Nitrogen Use:					
Fall			98.1	160	15
Preplant Spring			1.6	50	0
Starter			3.5	100	0
Number of Sidedress Applications			1.6	2	1
Pounds of N Sidedressed			168.8	300	100
Water Run N			10.9	60	0
Other			1.2	50	0
			<hr/>		
Total Nitrogen Applied			284.0	400	170
Number Insecticide Sprays (thrips)			3.6	5	2
Number Fungicide Applications			3.6	5	1
Pounds Dacthal	6.7		12	0	
Number of Irrigations			18.9		
Water Set - Hours			19.9		
Water Use - Acre feet			3.7		

Table 3.

DACTHAL USE ON ONIONS

METHOD OF APPLICATION	NUMBER OF GROWERS		ACRES	
		%		%
BAND DACTHAL	12	27.3	1327	32.6
BROADCAST DACTHAL	20	45.4	2020	49.5
DO NOT USE DACTHAL	12	27.3	728	17.9
	44		4075	

Table 4.

POTATO SURVEY - 2466 ACRES

			<u>Average</u>	<u>High</u>	<u>Low</u>
Yield (cwt)			405.06	450	300
Soil Test	Yes	25			
	No	6			
Tissue Test	Yes	26			
	No	5			
Nitrogen Use					
	Fall		47.10	150	0
	Spring		34.90	150	0
	Starter		11.35	150	0
	Number of Sidedress Applications		0.81	2	0
	Pounds of N Sidedressed		92.90	190	0
	Water Run	27.00	140		
	Other		2.00		
			<hr/>		
Total Nitrogen Applied			215.13	300	116
Number of Irrigations			16.35		
Water Set - Hours			15.78		
Water Use - Acre Feet			3.64		

Table 5.

MINT SURVEY - 1970 ACRES

			<u>Average</u>	<u>High</u>	<u>Low</u>
Yield (lbs.)			86.25	120	70
Soil Test	Yes	3			
	No	1			
Tissue Test	Yes	1			
	No	3			
Nitrogen Use:					
	Fall		38.75	80	0
	Spring		50.00	200	0
	Starter		50.00	100	0
	Number of Sidedress Applications		0.50	2	0
	Pounds of N Sidedressed		50.00	200	0
	Water Run N		26.25	40	0
	Other		37.50	150	0
			<hr/>		
Total Nitrogen Applied			252.50	310	140
Number of Irrigations			14.00		
Water Set - Hours			21.00		
Water Use - Acre Feet			4.25		

Table 6.

## SWEET CORN SURVEY - 1475 ACRES

			<u>Average</u>	<u>High</u>	<u>Low</u>
Average Yield (tons)			8.02	9.0	6.5
Soil Test	Yes	8			
	No	14			
Tissue Test	Yes	1			
	No	21			
Nitrogen Use:					
	Fall		20.41	165	0
	Preplant Spring		46.36		
	Starter		27.05		
	Number of Sidedress Applications		0.64	1	0
	Pounds of N Sidedressed		107.73	200	0
	Water Run		2.73		
	Other		0.00		
			—		
Total Nitrogen Applied			204.27	285	165
Number Irrigations			11.45		
Water Set - Hours			20.73		
Water Use - Acre Feet			2.97		

Table 7.

## DRY BEAN SURVEY - 2829 ACRES

			<u>Average</u>	<u>High</u>	<u>Low</u>
Yield (cwt)			25.35	30	20
Soil Test	Yes	5			
	No	12			
Tissue Test	Yes	2			
	No	15			
Nitrogen use:					
	Fall		0		
	Spring		62.06	150	0
	Starter		7.35		
	Number of Sidedress Applications		0.06		
	Pounds of N Sidedressed		4.71		
	Water Run	0.00			
	Other		0.00		
			<hr/>		
Total Nitrogen Applied			74.12	150	45
Number Irrigations			11.53		
Water Set - Hours			17.65		
Water Use - Acre Feet			2.69		

Table 8.

## WHEAT SURVEY - 6755 ACRES

			<u>Average</u>	<u>High</u>	<u>Low</u>
Yield (bu.)			111.06	150	75
Soil Test	Yes	2			
	No	48			
Tissue Test	Yes	1			
	No	49			
Nitrogen Use:					
	Fall		89.38	160	0
	Starter		2.00		
	Spring (top dress)	36.92	105	0	
	Water Run	1.20			
	Other		6.80		
			—		
Total Nitrogen Applied			136.30	240	80
Number Irrigations			8.22		
Water Set - Hours			19.63		
Water Use - Acre Feet			2.40		

Table 9.

SUGAR BEET SURVEY - 5727 ACRES

			<u>Average</u>	<u>High</u>	<u>Low</u>
Yield (tons)			31.28	36	22
Soil Test	Yes	28			
	No	9			
Tissue Test	Yes	29			
	No	8			
Nitrogen use:					
	Fall		80.03	215	0
	Spring		18.38	240	0
	Starter		2.35	75	0
	Number of Sidedress Applications		0.97	2	0
	Pounds of N Sidedressed		97.97	225	0
	Water Run	5.14	40	0	
	Other		1.08		
			<hr/>		
Total Nitrogen Applied			204.95	276	100
Number of Irrigations			17.00		
Water Set - Hours			19.33		
Water Use - Acre Feet			3.63		

Table 10.

FIELD CORN - 730 ACRES

			<u>Average</u>	<u>High</u>	<u>Low</u>
Yield (bu)			133.14	144	120
Soil Test	Yes	1			
	No	6			
Tissue Test	Yes	1			
	No	6			
Nitrogen use:					
	Fall		25.71	100	0
	Spring		42.86	100	0
	Starter		2.86	20	0
	Number of Sidedress Applications		1.00	1	1
	Pounds of N Sidedressed		117.14	150	100
	Water run		0.00	0	0
	Other		0.00	0	0
			<hr/>		
	Total Nitrogen Applied		188.57	220	150
Number of Irrigations			17.83		
Water Set - Hours			14.00		
Water Use - Acre Feet			2.50		