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**A Sugar Beet Root Rot Analysis of the Irrigation Rotation Plots, U.S. Belle Fourche Field Station, Newell, South Dakota**

South Dakota Agricultural Experiment Station

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December, 1942

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A Sugar Beet Root Rot Analysis

of the

Irrigation Rotation Plots,  
U. S. Belle Fourche Field Station,  
Newell, South Dakota

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Progress Report, Project 126  
Agricultural Experiment Station  
South Dakota State College  
Brookings, South Dakota

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Sugar beet seedlings infected by Pythium ultimum, Rhizoctonia sp.,  
Aphanomyces cochlioides and P. butleri in greenhouse cultures in soil  
samples from continuous cropped plots at Newell, South Dakota.

Plot no.	Crop, treatment	Rotation: no.	Seedlings infected by:				
			Pythium ultimum	Rhizoctonia sp.	Aphanomyces cochlioides	Pythium butleri	
III 32	Corn	6	-	-	-	-	-
III 25	Oats	1	-	3	-	-	-
II 47	Barley	9	10	6	5	1	-
III 28	Wheat	3	12	6	-	-	-
III 9	Wheat	14	-	2	-	-	-
III 27	Fallow	14	6	5	-	-	-
III 31	Potatoes	4	-	7	-	4	-
III 24	Alfalfa	8	6	-	-	-	-
III 23	Alfalfa, manured	8b	-	-	-	-	-
III 30	Beets	2	-	9	-	-	10 15
III 26	Beets, phosphate odd years	2a	14	2	-	1	-
III 29	Beets, manured odd years	2c	7	9	-	-	7 12
I 45	Beets, manured every year	2b	18	19	-	-	-

Sugar beet seedlings infected by Pythium ultimum, Rhizoctonia sp.,  
Aphanomyces cochlioides and P. butleri in greenhouse cultures in soil  
samples from two-year rotation plots at Newell, South Dakota.

Plot no.	Crop, treatment	Rotation no.	Seedlings infected by:			
			<u>Pythium</u> <u>ultimum</u>	<u>Rhizoctonia</u> <u>sp.</u>	<u>Aphanomyces</u> <u>cochlioides</u>	<u>Pythium</u> <u>butleri</u>
I 22	Oats	16	22	-	-	-
I 23	Corn		19	1	-	-
I 26	Beets	20	20	-	-	3
I 27	Potatoes		29	-	-	-
I 40	Beets, phosphate	20a	-	2	-	-
I 41	Potatoes		18	4	-	-
I 28	Beets, manured	21	21	-	-	-
I 29	Potatoes		30	-	-	-
I 30	Beets	22	18	-	-	-
I 31	Oats		39	-	4	-
I 24	Beets, phosphate	22a	25	-	-	-
I 25	Oats		29	-	-	-
I 32	Beets	23	10	-	-	-
I 33	Oats, manured		5	-	-	-
I 34	Oats	24	10	-	-	-
I 35	Potatoes		5	-	-	-
I 42	Oats	24a	7	-	-	-
I 43	Potatoes, phosphate		17	-	-	-
I 36	Oats, manured	25	-	-	-	-
I 37	Potatoes		17	-	-	-
I 38	Corn	26	-	-	-	-
I 39	Potatoes		27	-	-	-
I 44	Barley and sweet clover	19	43	-	29	-
I 46	Beets		4	2	107	-
I 47	Barley and sweet clover, sheared	29	3	1	58	-
I 48	Beets		2	15	57	-

Sugar beet seedlings infected by Pythium ultimum, Rhizoctonia sp.,  
Aphanomyces cochlioides and P. butleri in greenhouse cultures in soil  
samples from three-year rotation plots at Newell, South Dakota

Plot no.	Crop, treatment	Rotation no.	Seedlings infected by:			
			<u>Pythium</u> <u>ultimum</u>	<u>Rhizoctonia</u> <u>sp.</u>	<u>Aphanomyces</u> <u>cochlioides</u>	<u>Pythium</u> <u>butleri</u>
I 16	Beets		-	-	-	-
I 17	Potatoes	30	-	1	-	-
I 18	Oats		-	-	-	-
I 19	Beets		-	-	-	-
I 20	Potatoes	31	-	-	-	-
I 21	Oats, manured		4	-	-	-
III 10	Beets		12	-	-	-
III 11	Corn	32	5	-	-	-
III 12	Oats		-	-	-	-
II 41	Beets		1	2	-	-
II 42	Oats	34	-	-	-	-
II 43	Potatoes		12	-	-	-
II 44	Beets		-	-	-	-
II 45	Oats, manured	35	7	-	-	-
II 46	Potatoes		8	-	-	-
II 37,38	Sweet clover pasture, corn		- -	53 7	- -	- -
II 39,40	Corn	37	20 6	- -	- -	- -
II 49,50	Barley and sweet clover		9 2	- -	- -	- -

Sugar beet seedlings infected by Pythium ultimum, Rhizoctonia sp.,  
Aphanomyces cochlioides and P. butleri in greenhouse cultures in soil  
samples from four-year rotation plots at Newell, South Dakota

Plot no.	Crop, Treatment	Rotation no.	Seedlings infected by:				
			<u>Pythium</u> <u>ultimum</u>	<u>Rhizoctonia</u> sp.	<u>Aphanomyces</u> <u>cochlioides</u>	<u>Pythium</u> <u>butleri</u>	
I 1	Beets		4	4	-	-	-
I 2	Alfalfa, spring seeded	40	1	3	-	-	-
I 3	Alfalfa		25	-	-	-	-
I 4	Potatoes		8	2	-	-	-
II 48	Beets, phosphate		5	1	-	-	-
II 51	Alfalfa, spring seeded	40a	11	1	-	-	-
II 52	Alfalfa		30	2	-	-	-
III 49	Potatoes		11	-	-	-	-
I 5	Beets			12	-	-	-
I 6	Alfalfa, spring seeded	42	11	1	-	-	-
I 7	Alfalfa		11	1	-	-	-
I 8	Oats		10	1	-	-	-
III 19	Oats and alfalfa		-	-	-	-	-
III 20	Alfalfa	44	8	-	-	-	-
III 21	Alfalfa		18	-	-	-	-
III 22	Potatoes		-	-	-	-	-
II 3	Oats and alfalfa		-	2	-	-	-
II 4	Alfalfa	46	1	-	7	-	-
II 5	Alfalfa		1	-	56	-	-
II 6	Beets		32	2	107	-	-
II 19	Oats and alfalfa		6	-	-	-	-
II 20	Alfalfa	48	-	-	-	-	-
II 21	Alfalfa		17	-	-	-	-
II 22	Wheat		-	-	-	-	-
III 39	Beets		3	12	0 1	135 50	- -
III 40	Barley & sweet clover		-	6	2 -	96 14	- -
III 41	Sweet clover pasture, cows	47	13	20	1 2	- -	- -
III 42	Corn, sheeped		16	14	- 4	- -	- -
I 49	Sweet clover, sheeped		2	2	55 -	1 -	- -
I 50	Beets	49	-	1	3 2	74 19	- -
I 51	Beets, manured		4	27	- 3	16 1	- -
I 52	Barley & sweet clover		5	5	2 2	- -	- 1

Sugar beet seedlings infected by Pythium ultimum, Rhizoctonia sp.,  
Aphanomyces cochlioides and P. butleri in greenhouse cultures in soil  
samples from six-year rotation plots at Newell, South Dakota

Plot no.	Crop, treatment	Rotation no.	Pythium ultimum	Seedlings infected by:		
				Rhizoctonia ap.	Aphanomyces cochlioides	Pythium butleri
I 9	Alfalfa		16	-	-	-
I 10	Potatoes		-	1	-	-
I 11	Oats		1	1	-	-
I 12	Beets	60	6	-	-	-
I 13	Alfalfa, spring seeded		-	8	-	-
I 14	Alfalfa		-	-	-	-
I 23	Alfalfa		29	-	-	-
I 24	Potatoes		15	1	-	-
I 25	Oats		-	4	-	-
I 26	Beets, phosphate	60a	21	-	-	-
I 27	Alfalfa, spring seeded		18	-	-	-
I 28	Alfalfa		19	1	-	-
II 13	Alfalfa		17	-	-	-
II 14	Potatoes		2	6	-	-
II 15	Oats, manure	61	1	-	-	-
II 16	Beets		4	-	-	-
II 17	Alfalfa, spring seeded		-	15	-	-
II 18	Alfalfa		8	1	-	-
II 7	Alfalfa		5	-	-	-
II 8	Corn		16	-	-	-
II 9	Oats		13	-	-	-
II 10	Beets	62	8	-	-	2
II 11	Alfalfa, spring seeded		4	-	-	-
II 12	Alfalfa		2	2	-	-
III 13	Alfalfa, hogged		33	2	-	-
III 14	Corn, hogged		6	1	-	1
III 15	Oats	63	8	3	-	-
III 16	Beets		24	-	-	10
III 17	Alfalfa, spring seeded		15	4	-	7
III 18	Alfalfa		23	-	-	8
III 43	Alfalfa		12	1	44	-
III 44	Potatoes		3	5	-	-
III 45	Beets	64	13	2	-	-
III 46	Oats and alfalfa		12	-	-	-
III 47	Alfalfa		6	-	-	-
III 48	Alfalfa		36	-	-	-
II 35	Alfalfa, sheeped		4 7	2 -	-	-
II 36	Corn, sheeped		- -	5 1	-	-
III 33	Beets	71	2 -	1 1	63	4
III 34	Oats and alfalfa		6 10	- -	-	2
III 35	Alfalfa		- 8	- -	5	4
III 36	Alfalfa		7 6	- -	102	38