

PROGRESS REPORT

PROJECT NO: BJK-085

TITLE: Placement of Fall Applied P for Early Season Onion Growth

Table 2. Onion growth and nutrient uptake at bulb initiation, June 25.

Vapam	P Added	Placement	Mycorhyzae	Bulb diameter	Leaf number	Dry weight	Nutrient Uptake					
Gal/A	lb P ₂ O ₅ /A		Vesicles per plant	inches		tons/A	P	K	S	Ca	Mg	Na
							----- (lb/A) -----					
0	0	--	15.9	0.59	5.7	0.21	1.38	16.2	2.0	5.19	1.94	0.7
0	58	Broadcast	--	0.64	6.1	0.24	1.85	16.9	2.1	5.50	2.15	2.0
0	58	Banded	--	0.66	6.1	0.25	1.73	17.5	2.4	5.61	2.19	1.8
35	0	--	1.7	0.42	4.7	0.09	0.57	6.2	1.0	1.82	0.80	0.6
35	58	Broadcast	--	0.69	6.0	0.25	1.72	18.0	2.4	5.81	2.35	1.1
35	58	Banded	--	0.64	5.6	0.18	1.73	13.5	1.9	4.46	1.82	0.7
LSD _{.10}			6.4	0.10	0.4	0.07	0.54	6.2	0.8	2.10	0.73	0.9

Table 3. Onion growth and nutrient uptake when tops were falling, August 20

Vapam	P Added	Placement	Pink Root ¹	Bulb diameter	Dry weight	Tops Down	Nutrient Uptake					
Gal/A	lb P ₂ O ₅ /A			inches	tons/A	%	P	K	S	Ca	Mg	Na
							----- (lb/A) -----					
0	0	--	0.5	2.9	3.28	33.7	15.4	132.6	27.4	78.3	23.9	7.3
0	58	Broadcast	0.4	3.0	2.98	63.5	17.5	112.5	24.1	63.6	22.9	14.1
0	58	Banded	0.4	2.9	3.29	61.3	17.1	128.7	27.6	75.1	25.3	12.2
35	0	--	0.1	2.7	2.58	14.2	13.0	107.6	24.6	54.4	21.1	10.7
35	58	Broadcast	0.2	3.1	3.44	34.7	19.4	140.6	31.1	80.7	28.5	9.7
35	58	Banded	0.2	2.9	3.05	21.9	15.3	126.4	27.9	71.6	24.8	7.2
LSD _{.10}			0.2	0.2	0.47	19.6	2.0	22.6	6.1	16.6	4.0	5.5

1 Pink root ratings: 0=none 1=25% 2=50% 3=75%

Table 4. Onion yield and grade as affected by Vapam, phosphorus and placement. Parma, 1998.

Treatments			Total	Marketable all>3"	> 4"	3-4"	2-3"
Vapam	P added	Method					
Gal/A	P ₂ O ₅ /A		-----Yield (cwt/A)-----				
0	0	--	780	645	38	607	121
0	58	Brdcst	786	658	50	608	105
0	58	Banded	783	641	40	601	128
35	0	--	722	524	29	495	185
35	58	Brdcst	834	715	74	641	100
35	58	Banded	827	701	68	633	108
	LSD _{.10}		113	139	26	124	39
			-----Grade (% by weight)-----				
0	0	--	--	81.0	4.5	76.5	17.0
0	50	Brdcst	--	81.3	5.9	75.4	15.6
0	50	Banded	--	80.3	4.8	75.5	17.8
40	0	--	--	72.2	3.9	68.3	26.1
40	50	Brdcst	--	85.6	8.9	76.7	12.1
40	50	Banded	--	84.6	8.2	76.5	12.1
	LSD _{.10}		--	8.3	2.9	7.1	8.0

PROJECTIONS:

This report marks the first of a three year evaluation of P placement. The data confirmed earlier reports of appreciable Vapam stunting of onions in high lime and low P soils. All negative effects of Vapam, except later maturity, were overcome with applied P using moderate to low rates. The results from this initial year of study suggest that banding P will provide no advantage over broadcast applied P in alleviating Vapam effects. Onion stunting with Vapam was associated with greatly reduced beneficial mycorrhizal infection.