

(Solanum tuberosum.L)

(3) (2) (1)

.2009/2008 2008/2007

² / 3.75

(² / 22.3 (² / 14 398)
² / 581 ² / 4.55

(Mg Ca K P N)

:

The Effect of Green Manure and Biofertilizer on Some Soil Properties and Productivity and Quality of Potato (*Solanum tuberosum*.L)

J. Othman⁽¹⁾; R. Zidan and N. Khalil

ABASRACT

The effect of green manure and biofertilizer by using (*Lupinus albus* and *Lupinus albus* + *Rhizobium*) on some soil properties and potato growth and production during two successive seasons of 2007/2008 and 2008/2009 was studied. The results showed that green manure provided the soil with 3.75 kg/m² green organic matter including (398 g dry matter and 14 g nitrogen), while *lupinus albus* + *Rhizobium* provided the soil with 4.55 kg/m² green organic matter including (581 g dry matter and 22.3 g nitrogen) and improved soil chemical properties. The results showed as well that biofertilizer significant improved potato growth parameters: plant and tuber dry matter, foliage surface, foliage index, plant length, plant elements content (N,P,K,Ca and Mg), tuber number and their content of nitrate and protein .The results showed as well that biofertilizer significant improved marketing potato yield

Key Words: Green manure, *Lupinus albus*, *Rhizobium*, Potato, Growth, Quality, Yield.

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."Clean Agriculture"

(NH₃) (N₂)
(NH₄⁺) (1999) Porter .(Marshner, 1995)

/ 50
(2001) Usmanov Astanakulov .(Honeycutt,1998)

(2006) Santra
%20-15
(2004)

(2008) Ulhye

Khalid (1997)

(2004) Wu

NPK

:

-1

.

-2

:

(Vincent,1970) (YMB) (YMA)

/ 10^9
(Khalequzaman and Hossain, 2008)

:

:

Lupinus albus L.

-1

$^{2} /$ 30
 $^{2} / K_2O$ 7

3-2

15

$^{2} /N$ 4

$^{2} /P_2O_5$ 7

2008/11/1 2007/11/1

(1997)

:*Solanum tuberosum*.L

-2

Draga

)

-50 .(1998
30 70 8 80
. 2 40

. 2009/3/4 2008/3/4

:

.(1)³ / 1.36

:

(120) 30
T- TEST MSTAT-c Gen STAT
LSD : .%5
-1
-2
-3
:
-1
-2
-3
CEC (/ 1)

(Walkley, 1947)

(Drouineua,1942)

EC

pH-Meter

pH

EC-meter

20-0

-4

² /²

(Watson ,1958)

/²

-5

)

MERCK RQFLEX

(1999

-6

.5.7

² /

/

-7

.(Gataolina and Abdikof 2005)

20

(1)

/				%	%	%	%	CEC /	EC ds/m 1: 5	pH (1:2.5) ³ /	%			
Mg	Ca	K	P											
590	5173	732	100	0.145	2.43	10.7	49.4	32.4	0.154	7.23	1.36	42	14	44

(2)

(Kalequzaman & Hossain, 2008)

(Reeves and Wood,1994)

(Fowler *et al.*, 2004)

(2)

()

² / %	² / %	² / %	² / %	² / %	² / %	² /		
0.36	3.51	3.533	0.97	1.70	10.61	3.75	65	
1.43	13.97	14.1	3.86	776.	398			
0.38	5.44	3.833	1.28	2.01	12.77	4.55	86	
2.27	31.61	22.3	7.44	11.68	581			
0.0082	1.58	0.245	0.26	0.25	1.73	0.45	16.87	LSD5%
0.6	14.65	6.95	3.28	4.12	47.7			

: -1

(3)

(EC)

(pH)

...

: -2
(3)

(pH)

(EC)

) (3)

.(20-0

/			P	N	OM			CEC	EC	pH		
Mg	Ca	K	/	%	%	%	%	100/	ds/m	H2O	3	/
									1: 5	1:2.5		
059	5173	732	100	450.1	2.43	10.7	49.4	32.4	0.154	7.23	1.36	
640	5533	821	107	480.1	2.48	11.0	49.1	35.1	0.174	7.28	1.22	
686	5893	880	113	560.1	92.6	11.7	49.0	35.9	0.223	7.35	1.14	
244	874	92	4	0.005	0.14	1.88	2.5	4.35	0.008	0.05	0.19	LSD5%

(3)

(EC)

1.36 1.14

.(Porter *et al.*,1999)

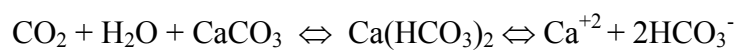
(EC)

(pH)

(Ca,Mg,K)

(CO₂)

:



.()

:

² / (3)

² / : (2)
25.1 581 592.8) :
(31.6 33.7 2.18 2.96 22.3

%40-20

.(Marschner, 1995)

.(Marschner, 1995)

Askegaard *et al.*, 2005, Markwitz & Richter)

.(2000, Hisinger 1998

.(Olivera *et al.*, 1999)

Pointon *et*)

(*al.*, 1997

(² /K 5.8 ² /P 3.1 ² /N 4)

.(Thiessen *et al.*, 2005)

.(Roder *et al.*,1993)

(Neumann *et al.*, 2000)

.(Thien & Cavigelli , 2004)

-3

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(3)

(ATP ADP)

.(Rosen, 1991 ; 1992)

(4)

(3)

Usmanov and Astanakulov, Avdienco 2001; Rosen,1991;)

(& Groshevo, 2003

.(Goenadi, 1998)

(4)

(Mg, P, K, N)

(N,P,Mg)

(4)

()

%	/	%	/	%	/	/			/	
							²	²		
1.09	4.67	0.21	8.49	2.45	38.44	2.63	5512	.018		
200.	0.84	0.04	351.	0.44						
1.79	3.77	0.28	8.37	4.07	53.25	4.30	9023	28.7		
0.51	1.08	0.08	402.	1.17						
1.89	3.17	0.34	9.22	4.23	57.42	5.22	10962	41.1		
80.7	1.30	0.14	3.79	1.74						
0.899	0.21	0.012	0.47	0.16	2.48	0.265	557.9	2.99	LSD	
0.04	0.16	0.006	0.24	0.12						5%

()

(4)

(N,P,K,Ca,Mg)

(.3)

:

-4

(5)

Raigon *et al.*, Berg *et al.*,1999; Moliavko, 2001) (/ 250)
. (2003;

.(3)

(5)

(5)

(Santra *et al.*, 2006;

.Millard & Marshall,1986)

(5)

.(Avdienco & Groshevo, 2003)

(5)

(5)

.()

%	² /	/	/	% /	% /	% /	/	
585.	3.27	90.86	7.56	2.1	15.35	19.78	17.9	
				14.2	105.3	135.8		
293.	4.14	101.20	8.59	2.4	15.37	19.43	60.8	
				20.8	133.7	168.9		
694.	4.24	89.02	10.00	2.8	15.50	20.16	88.8	
				25.0	138.0	179.5		
0.87	0.188	8.83	0.69	290.	0.831	0.313	4.8	LSD 5%
				3.7	13.5	11.74		

(4)

2005)

.(Dahlingburg *et al.*, 1989

.1

.2

.3

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 .(2004) .
 .224-215 2 5 - -
 .(1999) .
 - .(83)
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Received	2010/01/17	
Accepted for Publ.	2010/09/26	