

Brassica

oleracea L.

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- - *
- - **

/ 2004-2003

Typic-Torrifluent
(RCBD)

Spilt - plots

(D) (1⁻ 4 3 2 1 0)
والسطحي (F) وبثلاثة مكررات (3 × 2 × 5)

1⁻ 4
(1⁻ 18.23 16.96)

3 (1⁻ 37.0 28.1) 1⁻

1⁻ 3 (1⁻ 5.69 4.81)

(1⁻ 3) (1⁻ 73.3 68.73)

(1988 1987)

Olsen Attoe)

(1966

تاريخ استلام البحث 2011 / 12 / 12
تاريخ قبول النشر 2011 / 4 / 4
*

(1981)
 Macleon Gupta)
 . (2002 1984
 1994
 , (1977 Darasmun)

B1 A

() K C () B2
 . (1988)
) (35.86) 1995 (361)
 : (2001

- 1- تأثير مستوى إضافة الكبريت في جاهزية و امتصاص الفسفور وبعض صفات نبات القرنابيط .
- 2 – تأثير نظامي الري السطحي والتنقيط في المؤشرات أعلاه .

2004-2003

Typic-) 30
 (torrifluent
)
 (0.05) (2000
 SAS)
 : (2001،
 (0.95) (4 3 2 1 0)
 S4 S3 S2 S1 S0
 30 F D

(0.3-0) 1 (3 × 3) (3 × 2 × 5)
 (1) ()

* جدول 1.

	8.24	pH
1 ⁻	1.78	EC
1-	19.1	
1-	8.7	
1-	263.3	
1-	3.61	
	3.05	
	3.3	
	4.6	
	0.31	
	Null	
1-	51	
	7.8	
	215	
	218	
3 ⁻	1.37	
	2.48	
%	29.11	
	14.30 14.81	
1-	160	
	250	
	590	

(1982) Page *

23 (Snow ball)
 (1.5 × 3) (- -)
 0.4 0.10 13
 .(1984) 0.75

14 29 0.10
 . (1966)Codwel Paulina
 1⁻ . 300 (N %46 : (1984) 28
 68
 14 1⁻ . 120 (P % 21 .(1984)
 % 42) 1⁻ . 120 (K .(1984)
 %50
 1⁻ . 2.3
 14.5) : .(1⁻ .3
 ×
 (1)... × ----- =
 100 .(1988)
) %50
 ()
 (2)..... -----=
 0.85
 (8)
 (4)
 8.5 (0.5m NaHCO3)
 Page Sommers Olsen pH=
 .(1982)
 :

:

$$(3) \dots\dots\dots 100 \times \frac{0.2}{0.5} = \dots\dots\dots \%$$

. (1969 Olsen Watanabe) 882

$$(4) \dots\dots\dots \frac{(\% \times (1 - \dots\dots\dots))}{100} = \dots\dots\dots (1 - \dots\dots\dots)$$

(2)

1- . 4
(%56)

.(1981) (1981) Hilal

. (%11)

.(2001 Qual)

(1- . 18.2)
(1- . 10.97)

S₄D
. S₀F

جدول 2.

(¹⁻ .)

	4	3	2	1	0	
16.20	18.20	17.59	17.48	16.21	11.52	
14.66	16.96	15.22	15.20	14.94	10.97	
	17.58	16.41	16.34	15.57	11.24	

×			0.05
2.37	1.06	1.28	

(3)

¹⁻ .

3
(%135)

Hendrix

(HPO₄⁻)

(H₂PO₄⁻)

7.2

(HPO₄⁻)

(1967)

(¹⁻ .

3)

(1990

)

(1995)

(%33)

S₃D (1⁻ . 37.0)
 . S₀F (1⁻ . 12,2)

جدول 3. تأثير مستوى إضافة الكبريت ونظام الري في الكمية الممتصة من الفسفور (كغم.هكتار⁻¹).

	4	3	2	1	0	
28.9	34.3	37.0	30.9	26.6	15.5	
21.7	24.3	28.1	23.6	20.2	12.2	
	29.3	32.5	27.2	23.4	13.8	

×			0.05
1.93	0.94	1.40	

(1)

(% 63)

1⁻ . 3

1⁻

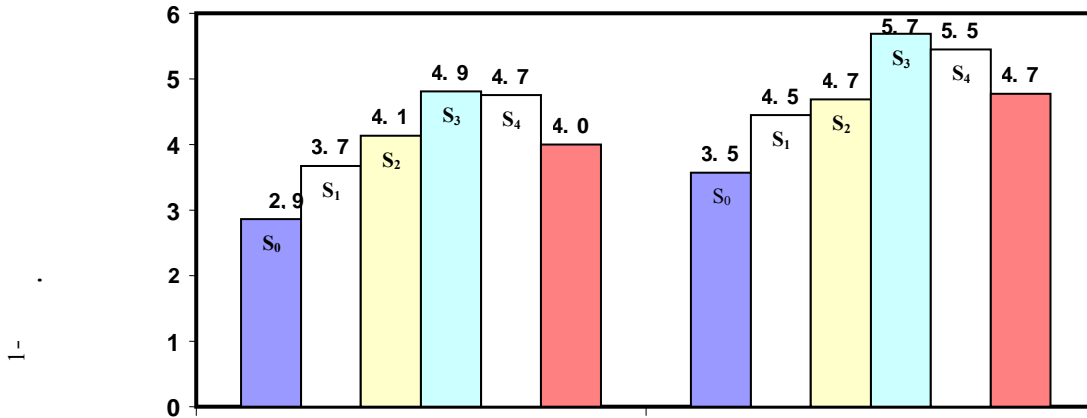
4

. (1984,)

(2002)

. (%35)

S_3D (1⁻ 5,69)
 S_0F (1⁻ 2,89)



*			
73.9	30.7	44.6	0.05

شكل 1. تأثير مستوى إضافة الكبريت ونظام الري في إنتاج المادة الجافة (ميكافرام.هكتار⁻¹).

(2)

3

(%53)

1⁻

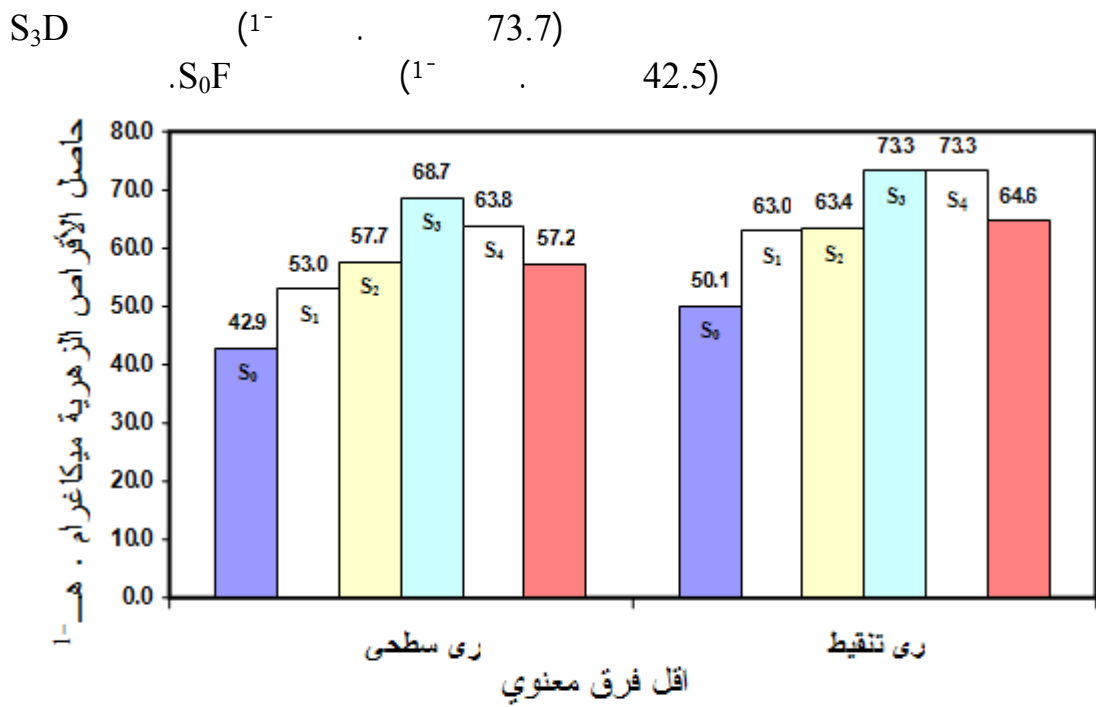
()

(1998).

1⁻

4

(%13)



مستوى المعنوية	مستوى الكبريت	نظام الري	مستوى الكبريت * نظام الري
0.05	6.4	4.1	8.9

شكل 2. تأثير مستوى إضافة الكبريت ونظام الري في حاصل الأفراس الزهرية (ميكأغرام.هكتار⁻¹).

.1988 .

.1990 .

.1981 .

(3)

.1988 .

. 1998 .

. 80-73 : (1) (8)

- .2000 .
- .1981 .
- .2001 .
- . 6 . (2) : 136-132 .
.1988 .
- .1984 .
- .1987 .
- .1995 .
- . (26) . (1) : 40-30 .
.2002 .
- 56-49 : 3 . 33 .
- Attoe , O.J. and R.A. Olsen . 1966. Factors affecting rate of oxidation in soils of elemental sulfur and that added in rock phosphate sulfur fusion. *Soil Sci.* Vol. 101 (4) : 317-325.
- Darasmun, A.H. Khan , L. R. Stone , W.E. Sburgeon and S.R. Lann. 1997. Water dlus below , the roots zone vs. irrigation amount in drip irrigated corn. *Agron. J.* (89) : 375-379.
- Gupta , U.C. and J.A. Macleon . 1984. Effect of various sources of sulfur on yield and sulfur concentration of cereals and forages. *Can. J. Soil Sci.* (64) : 403-409.
- Hendrix , J.E. 1967. The effect of pH on the uptake and accumulation of phosphorus and sulphate ions by Beans plants . *Am. J. Botany* . Vol. 54 : 560-564.
- Hilal , M.A. R. AL-Badrawy, Al-Khafaji , and A. Abood. 1981. Effect of sulfur application on barley and clover yield as related to phosphate fertilizer and green manuring of a calcareous soils. *Soil Res. Cont. of Agric. Iraq.* Baghdad.
- Page , A.I. 1982. Methods of soil analysis . Part 2. Chemical and Microbiological Properties . Amer. Soc. Agron. Midison Wisconsin . USA.
- Paulina , L. I. and A.C. Codwel . 1966. The oxidation of elemental sulfur in soil . *Soil Sci. Amer.* (30) : 370-372.

- Qual , J.E. 2001. Phosphorus losses in furrow irrigation . *Vau of Journal of Environment Quality* . Vol. 30 (3) : 1009-1015.
- SAS. 2001. SAS ISTAT, User's guide for personal computers. Release 6.12. SAS Institute Inc., Cary, NC. USA.
- Watanabe , F.S. and S.R. Olsen . 1969. Test of an ascorbic acid method for determining phosphorus in water , Plant and NaHCO₃ extracts from soil . *Soil Sci. Am. Proc.* 29 : 677.

EFFECT OF AGRICULTURE SULFUR UNDER FLOOD AND DRIP IRRIGATION SYSTEM ON A VAILABILITY AND UPTAKE OF PHOSPHOURS ELEMENT AND GROWTH OF CAULIFLOWER (*Brassica olerarcea* L.).

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ABSTRACT

A field experiment was conducted at the agriculture season 2003-2004 in Amiria Region at Al-Anbar governorate in a silty loam soil which classified series Typic – Torrifluent with silty loam texture. Randomly Complete Block Design (RCBD) was used for split unit experiment to study the effect of sulfur levels additions in some soil and plant characteristics under flood and drip irrigation system. contained five levels of sulfur (S₀ , S₁ , S₂ , S₃ , S₄) and two irrigation system (Drip , flood) in three replicate (3 x 2 x 5) .

The results showed that :

A significant effect of sulfur levels addition and irrigation system in :

- * Increasing phosphorous availability in soil and the level(4 mecagram sulfur. hectar⁻¹) achieved highest quantity of available phosphorus (16.96 , 18.20 mg.kg⁻¹ soil) for flood and drip irrigation system respectively .
- * Increasing Phosphorous uptake in plant curds and the level (3 mecagram sulfur. hectar⁻¹) achieved highest quantity of phosphorous uptake (28.1 , 37.0 kg.hectar⁻¹) to flood and drip irrigation system respectively.
- * Increasing dry matter product , and the level (3 mecagram sulfur. hectar⁻¹) achieved highest dry matter yield (4.81 , 5.69 megagram.hectar⁻¹) to flood and drip irrigation system respectively).
- * Increasing wet yield , and the level (3 mecagram sulfur. hectar⁻¹) achieved highest wet yield (68.7 , 73.3 mecagram . hectar⁻¹) to flood and drip irrigation system respectively.