***Carthamus tinctorius* L.**

(2010 / 11/ 8 2010 / 5 /23)

10 , 5 , 0

(*Carthamus tinctorius* L.)

600 , 450 , 300 , 0

.

300

/

/

.

10

600

/

600

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Effect of Gibberellic Acid and Zinc on Yield and some Chemical and Mental Characters of *Carthamus tinctorius* L.

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ABSTRACT

The experiment aims to study the effect of splashing Gebberellin by levels 0 , 5 , 10 ppm on green groups of safflower plants *Carthamus cteriorus* L. which are growing in soil mixed with Zinc at levels 0 , 300 , 400 , 450 , 600 ppm the crop, seed's content of protein , carbohydrates and mineral synthesis of safflower.

The results appeared that the treatment of soil with zinc especially at concentration 300 ppm which led to increasing yield through increasing number of seeds / head and biological crops weight / plant , also the treatment led to moral increasing in content of safflower seeds of protein and carbohydrates incomparisin with other. In other hand the result appeared that splashing safflower by Gebberellin especially at concentration 10 ppm. led to increased the ione concentrations of calcium , magnesium , sodium , potassium for seeds , also there was inceasing of biological crop weight ; while high concentration 600 ppm led to decreasing number of heads and seeds / plant and in protein , carbohydrates and mineral synthesis. Splashing by increasing levels of Gebberellin on the green groups of growing plants under pollution conditions with Zinc , especially at 600 ppm led to improvement growth , crope chemical contents and protein production .

Because of deficiency studies about regulation mechanism between the effect of pollution by heavy minerals in inhibition and the effects of other compounds like Gebberellin in stimulation , so this study is interesting to evolution the effects of splashing by different levels of Gebberellin acid for green groups of safflower which are growing in pollutant soil by Zinc in growth, tolerance, crop, chemical structure , and the production of protein and carbohydrates.

Keywords: Zinc, Gebberellin, *Carthamus tinctorius* L., Protein, Mental elements.

(*Carthamus tinctorius* L .)

(Astraceae)

. 4000

.....

. %17 - 11 %25
. (2003) %19.8 %50 -46

(1992)

. (1999)

(2007) EL-Greadly EL-Tohamy

RNA DNA

. (Pazur *et al.* , 2006)

.

:

/) 2007 30 - 0

. 2 (

/ /

. (1)

: 1

14	%
61	%
23	%
1.37	%
2.46	/ (EC)
5.10	(pH)
16.6	100/ (CEC)
/	
0.048	Na ⁺
0.025	K ⁺
0.660	Mg ⁺²
0.013	Ca ⁺²

30 /

20 6 30

/ 40 /

600 450 300

3 / 10 2007/10/20

10

% 75 6

45

10 , 5 , 0

.....

() ()

72 ° 75

(Herbert *et al.*, 1971)

488

(Spectrophotometer Pyeuni / cam)

.(Lowry *et al.*, 1951)

()

0.5

-:

(Chapman and Pratt , 1961)

(Corningflamphotometer)

Na⁺K⁺

-

.(Richards, 1954)

.(Richards , 1954)

Mg⁺²Ca⁺²

-

:

(C.R.D)

(1979 1990)

Complete Randomized Design

(Duncan's New Multiple Range Test)

. %5

()

-1

10 , 5

(2)

% 40.79 % 63.93

% 24.63 %35.42

.

(1980) Salih Abdul (2003)

.

600 , 450 , (2)

300

%9.62 300
%30.85 % 18.41

(2007) EL-Greadly EL-Tohamy
()
(2000)

% 47.26 %44.62 600

Ouzounidou .
(1997)
.

$$\frac{450 + GA_3 \cdot 5}{300 + GA_3 \cdot 10}$$

GA₃ . %4.73 / 300 + 10

.(Alphones 1996)

.....

: 2

.*Carthamus tinctorius* L. (/)

%	10	%	5	%	0	GA3 PPM Zn PPM
(/)						
24.63	32.79h	35.42	35.63j	100	26.31e	0
1.86	26.80e	29.08	33.96i	9.62	28.84f	300
- 5.66	24.82d	11.59	29.36g	- 6.61	24.57d	450
- 41.39	15.42b	- 36.41	16.73c	- 44.62	14.57a	600
(/)						
40.79	5.66h	63.93	6.59j	100	4.02e	0
- 4.73	3.83d	19.15	4.79f	18.41	4.76f	300
59.95	6.43i	37.56	5.53h	30.85	5.26g	450
- 48.76	2.06a	- 44.28	2.24c	-47.26	2.12b	600

%5

-2

10 , 5 (3)

/

% 21.69 % 34.55 % 2.68 %24.33

(2003)

/

/

/ 450 , 300

%5.66 %12.89 % 10.87 % 32.44

(2)

(2006)

(2000)

/ 600

/

%40.37 %48.66

/

. (5 4)

(3)

/

/ 450 + GA₃ 10 , 5 300+GA₃ 10, 5

(2)

600 + GA₃ 10 , 5

/

(Alphones , 1996)

/

(/)

: 3

Carthamus tinctorius L.

%	10	%	5	%	0	GA ₃ ppm
/						Zn Ppm
2.68	12.66cde	24.33	15.33abc	100	12.33de	0
10.87	13.67bcde	13.54	14.00abcd	32.44	16.33ab	300
19.71	14.76abcd	36.01	16.77a	10.87	13.67cde	450
- 10.79	11.00e	- 32.44	8.33f	- 48.66	6.33f	600
/						
21.69	32.65g	34.55	36.10i	100	26.83d	0
- 30.54	35.00h	- 39.14	37.33k	12.89	30.29f	300
- 36.04	36.50j	- 44.09	38.66L	5.66	28.35e	450
- 12.04	23.60c	- 17.15	22.23b	- 40.37	16.00a	600

% 5

-3

10 , 5

(4)

%17.21 %37.19

(2003)

(Abd Al-Fattah , 1997)

.

/ 450 , 300

% 4.34 %19.93

(2007) EL-Greadly EL-Tohamy

.(Hacisalihoglu *et al.*, 2001)

%26.99

.

(3 2)

(1983) Mirsa Behera

.

(4)

450 + GA₃ 5 300 + GA₃ 5

%14.44 %25.26

450 + GA₃ 10 300 + GA₃ 10

(Alphones , 1996)

.

600 + GA₃ 10 600 + GA₃ 5

.

%24.69 %8.21

(Mesmar and Jaber, 1991)

(RNA)

.(Al-Bahrany , 1994)

(%) : 4

.*Carthamus tinctorius* L.

%	10	%	5	%	0	GA3 PPM
						Zn PPM
17.21	22.41bc	37.19	26.23a	100	19.12de	0
8.26	20.70cd	25.26	24.76a	19.93	22.93b	300
4.08	19.90d	14.44	21.88bc	4.34	19.95d	450
- 24.69	14.40f	- 8.21	17.55e	- 26.99	13.96f	600

%5

-4

10 , 5 (5)

GA₃

9.28 10

(Khafagi *et al.*, 1986)

(5)

%5.43

600 450

%44.92 % 13.84

Arora

(2004) Singh

.....

(5)

300 + GA₃ 10300 + GA₃ 5

% 13.77 % 7.99

(Alphones , 1996)

+ GA₃10600 + GA₃ 5450 + GA₃ 10450 + GA₃ 5

%27.84 ,% 32.28 ,% 44.92 ,% 9.66

600

(2005) Somashekar Ushamalini

(%)

: 5

.Carthamus tinctorius L.

%	10	%	5	%	0	GA3 PPM Zn PPM
9.28	82.67ab	5.06	79.48bc	100	75.65cd	0
13.77	86.07a	7.99	81.70ab	5.43	79.76bc	300
- 44.92	71.82e	- 9.66	68.34e	13.84	65.18f	450
- 27.84	54.59g	- 32.28	51.23g	- 44.92	41.67h	600

%5

60

-5

: -

10 , 5 (6)

%53.82 , %47.86

(Khattab *et al.*, 2000)

300 (6)

%18.50

Kupper (3)

(1999)

600 ,

450

300 + GA₃ 5 (6)

450 + GA₃ 10 450 + GA₃ 5 300 + GA₃ 10

% 12.84, %10.55 ,% 27.98 ,% 62.84

. Mg , Ca , K

600 + GA₃ 5

600 + GA₃ 10

: -

10 , (6)

5

%78.28 , %54.04

.....

(Khafagi et al., 1986)

.

300

(6)

%42.93

.

(2004 , Singh Arora)

.(2000)

450

%79.29

600

.

300 + GA₃ 10300 + GA₃ 5

% 40.40 ,% 82.83

.

(Alphones , 1996)

10 , 5

. (Vassilev, 2003) Lipidperoxidase , Peroxiase

: -

10 , 5

(6)

%30.66 ,% 15.68

(Khattab *et al.*, 2000)

600 , 450 , 300

% 63.41 % 47.04 , % 26.48

Ouariti

(1997)

(6)

450 + GA₃ 10 450 + GA₃ 5

% 54.70 , % 42.86

: -

10 , 5

(6)

%41.14 , %20.89

(1986) Khafagi

300

(6)

%46.52

%51.27 ,% 6.01

600 , 450

(1997) Cress Hare

.....

. (Sanches *et al.* , 1999)

(6)

300 + GA₃ 10300 + GA₃ 5

%57.91 ,% 30.01

450 + GA₃ 10

(Alphones , 1996)

.

.

GA₃

%25.95 ,%

600 + GA₃ 10

600 + 5

.

32.59

. (Pazur *et al.* , 2006)

Carthamus

: 6

tinctorius L.

%	10	%	5	%	0	GA ₃ Ppm
%						Zn Ppm
53.82	10.06b	47.86	9.67c	100	6.54g	0
27.98	8.37d	62.84	10.65a	18.50	7.75e	300
12.84	7.38f	10.55	7.23f	- 19.57	5.26l	450
- 8.10	6.01h	- 16.15	5.49i	- 35.22	4.22j	600
%						
78.28	3.53ab	54.04	3.05b	100	1.98c	0
40.40	2.78b	82.83	3.62a	42.93	2.83b	300
- 17.68	1.63e	9.59	2.17d	- 1.01	1.96c	450
- 53.03	0.93f	- 56.57	0.86f	- 79.29	0.41g	600
%						
- 30.66	1.99e	- 15.68	2.42c	100	2.87a	0
- 36.93	1.81f	- 4.18	2.75b	- 26.48	2.11d	300
- 8.01	2.64a	- 2.09	2.81a	- 47.04	1.52h	450
- 54.70	1.30i	- 42.86	1.64g	- 63.41	1.05j	600
%						
41.14	4.46c	20.89	3.82e	100	3.16fg	0
57.91	4.99a	30.01	4.11d	46.52	4.63b	300
1.58	3.21f	- 3.16	3.06gh	- 6.01	2.97h	450
- 25.95	2.34i	- 32.59	2.13j	- 51.27	1.54k	600

%5

.(2003)

.Carthamus linctoriusl

.(1979)

.(1990)

.(2008)

.(1999)

.(2000)

.(1992)

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