

Aliowayed@yahoo.com

yahya_sci22006@yahoo.com

(2012 / 5/ 27 2012/ 2 /13)

2011

2010

/ (8.13-2.63)

(1)

(4)

/ (17.2-1.93)

(1)

(2)

/ (1.59-0.40)

(1)

(3)

(2)

/ (1.25-0.21)

(1)

/ ((114-74)

(4)

:

.....

1989)

(2001
(1999)

(2007) (2000)

()



(2008)

:(1)

(5) (1)

:(2)

.(1)

(5)

-:

:(3)

.(2)

:(4)

.(3)

(8)

3

: _____
2.25

(APHA 1998) American public Health Association

Azide modification

Dissolved Oxygen (DO)

.1

method

: Biochemical Oxygen Demand (BOD₅)

.2

Phosphate

(BOD₅)

buffer solution

20

: Nitrate

.3

395

CECIL 7200

: Orthophosphate

.4

690

Gravimetric method with ignition of

:

.5

residue

:(DO)

-1

.(1)

/ (8.13-2.63)

(1)

/ (2.63)

.....

4 3 .(2003 1987)

(7.57 7.67) 3 2
(1980)

6.63) 4 3
(7.38-2.87)

3 (6.47 /
(1)

4 2

/ (6.78 6.81)
(2010)
(/ 7.6)

(/ 2.87)

1999)

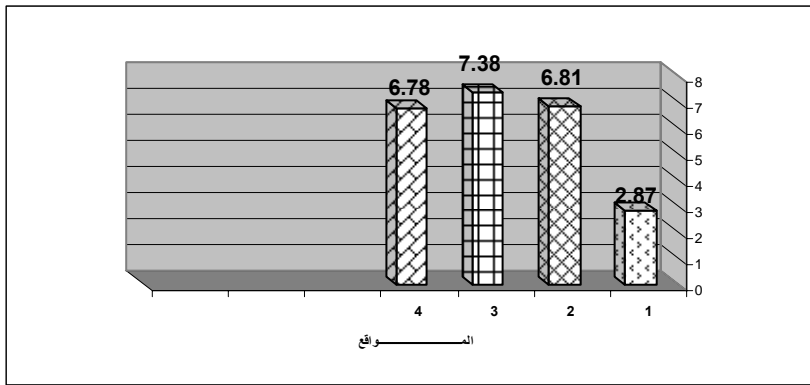
.(2009 2003

(/) : 1

					/
2.87 c	2.83 hg	2.83 hg	3.17 g	2.63 h	1
6.81 b	7.17 c	7.67 b	5.67 f	6.73 de	2
7.38 a	6.63 e	8.13 a	7.57 b	7.20 c	3
6.78 b	6.47 e	8.13 a	7.0 dc	5.50 f	4

hg dc de

f d c b a



: 1

:(BOD₅)

-2

(2)

.(Weiner, 2000)

(2)

. / (17.2-1.93)

(1)

(2)

(1)

(2010

)

(3)

/ (4.87)

(4)

.(/)

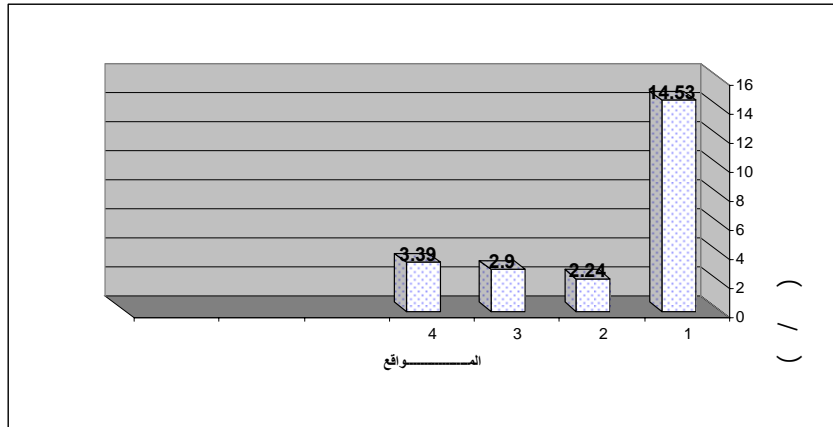
: 2

					/
14.53 a	12.7 b	17.2 a	12.0 b	16.2 a	1
2.24c	1.93 f	2.20 f	2.63 ef	2.20 f	2
2.90 b	2.13 f	4.87 c	2.06 f	2.53 ef	3
3.39 b	2.73 def	4.0 cd	3.60 cde	3.23 def	4

.....

ef def cde hg dc de

f c b a



: 2

(1974 Hynes)

BOD₅

2006

2005

2001

)

(2010

:(NO₃⁻)

-3

(3)

/ (1.59-0.40)

(1)

(4)

(3 2)

/ (1.12-0.46)

(3)

(4)

(0.36)

(2010)

/ (2.77)

/

.(2010

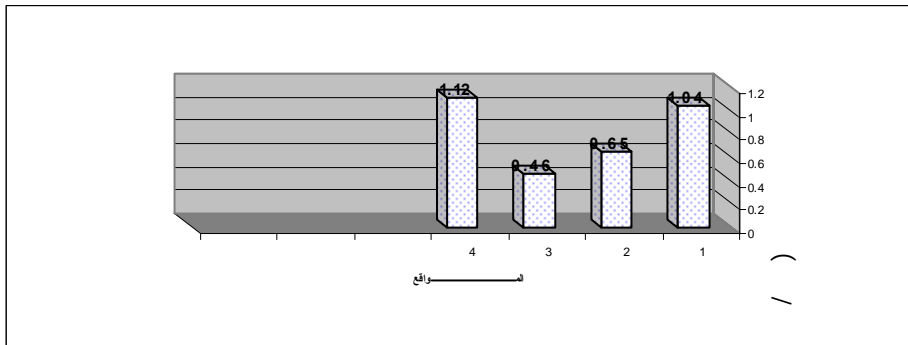
2005

)

.(/) : 3

					/
1.04 a	1.08 bc	1.59 a	0.72 cd	0.79 bcd	1
0.65 b	0.77 cd	0.76 cd	0.48 d	0.61 cd	2
0.46 b	0.40 d	0.59 cd	0.40 d	0.45 d	3
1.12 a	1.26 ab	1.27 ab	0.87 bcd	1.07 bc	4

cd bcd bc ab . f d b a



(/) : 3

:(PO₄⁻³)

-4

(2) / (1.26-0.21)

(1)

(1) / (0.88-0.32)

(2)

(2005 2009 2009 2006)

.(/) : 4

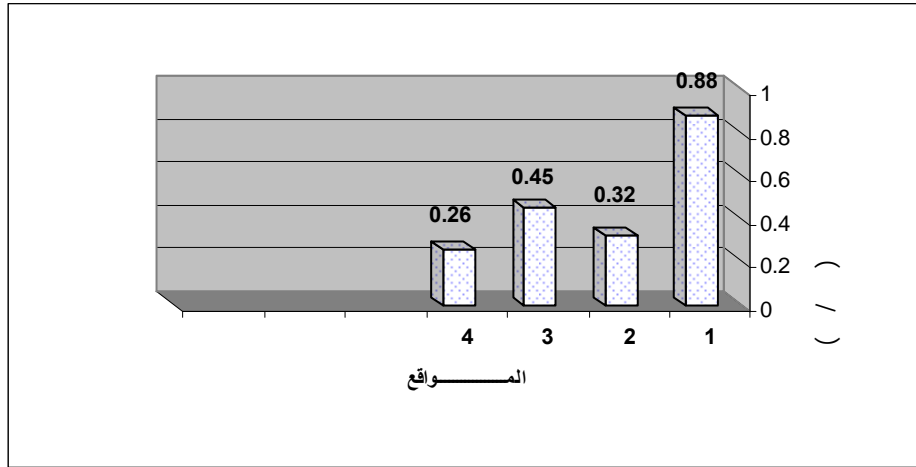
					/
0.88 a	0.96 b	1.26 a	0.25 cdef	0.74 cd	1
0.32 d	0.31 ghi	0.56 def	0.21 i	0.22 i	2
0.45 c	0.39 fghi	0.44 fgh	0.72 cde	0.27 hi	3
0.56 b	0.59 cdef	0.79 bc	0.50 efg	0.40 fghi	4

.....

fg h efg fgi hi hgi def cdef cd bc

i d c b a

fghi



(/)

: 4

:

/ (574-114)

(4)

(1)

(1)

(4)

.(2)

(4)

/ (503-194)

.(/)

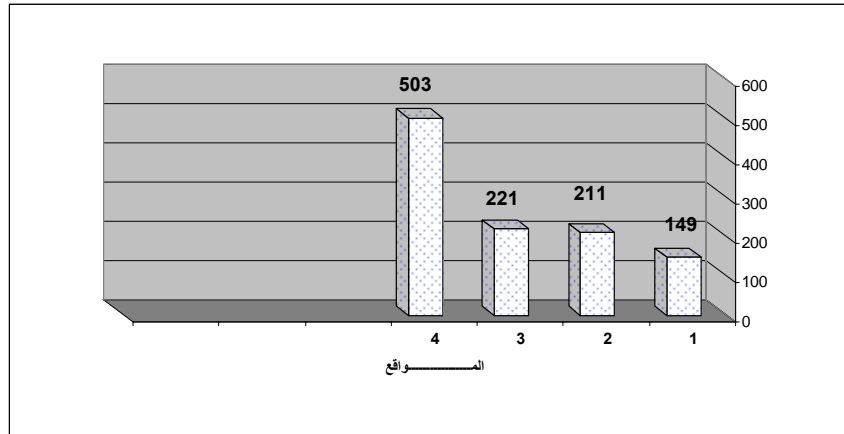
: 5

					/
194 b	254 ed	114 e	182 e	224 ed	1
211 b	257 ed	278 cde	163 e	146 e	2
221 b	347 bcd	233 ed	160 e	142 e	3
503 a	574 a	428 adc	516 a	494 ab	4

bcd cde adc ed ab

e b a

(/)



(/)

: 5

-1

-2

-3

(2009)

-1

-2

-3

.....

.(2005)

Helianthus annuus

.99-98 . . - / . .L

.(2009)

.32 . . - / .

.(2010)

-71. . - / .

.73

.(2003)

.38-36 . . - / .

.128 . . " " .(1987)

.(2005)

.73 . . - /

.(2005)

.49 . . - /

.(1984)

. 238-231

- .(2006)

.82 . . - /

/ . (2001)

.39-38 . . -

.(2006)

.47 . . / .

.(2009)

.63. . /

.(1980)
 .29 . .
 .(2007)
 .10-1 6-5 . ,
 .(1999)
 .59-51 35 . .
 (GIS) .(2008)
 .31. . -
 / . .(2009)
 .56 . .
 .(1989)
 .26 9 8 .
 .(2000)
 .93-79 (2)2 .

- APHA, (1998). "Standard Method for the Examination of Water and Waste Water", 20th edn. A.P.H.A. 1015 fifteen street, N.W., Washington DC, USA. : pp. 594-610 .
- Hynes, H. B. N. (1974). "The Biology of Polluted Water". Liverpool University, press, London, 92p.
- Weiner , E.R . (2000) . "Application of Environmental Chemistry". Lewis Publishers, London, New York , 99p.