

دراسة تطور أجناس الطحالب في بحيرات الأكسدة
للمعالجة البيولوجية لمياه الصرف الصحي في مدينة
السلمية / محافظة حماه

الملخص

/20/

(Cyanophyta)

(Diatomaphyceae)

.(Euglenophyta)

(Chlorophyta)

()

(Chlo)

(Dia)

/18/

PH

PH

(Euglena)

(8)

Cladophora

المقدمة:

:

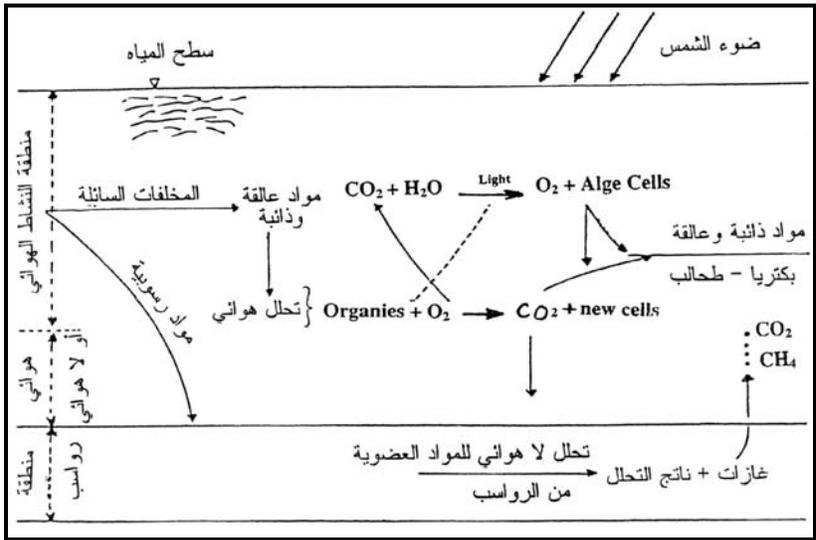
[1]

) (Phytoplankton

Chlorella

[2] Navicula Euglena Chlamydomonas Scendesmus

(1) [4 3]
] [5]
 [8 7 6
 .[9 6]
 [12 11 10]



.1

(O₂)

[14 13]

[15]

CO₂ . [2] O₂
PH

[18 17 16]

الدراسة النوعية للطحالب (**Quality Study of Algae**) :

20

(1) [22,21,20,19]

[1] O₂

:

آ - المشطورات (**Diatomphyceae**) :

:

:

centrales ▪

pennales ▪

PH
[24 23]

:1

(species)	-
1- Navicula SP	-
2- Pinnularia SP	-
3- Hantzschia SP	(Diatomphyceae)
1- Spirulina SP	() -
2- Oscillatoria SP	(Cyanobacteriophyta)
3- Anabaena SP	
4- Nostoc SP	
1- Chlorella SP	-
2- Microactinum SP	(Chlorophyta)
3- Scendesmus SP	
4- Chlamydomonas SP	
5- Chlorococcum SP	
6- Cladophora SP	
7- Closterium SP	
8- Oocystis SP	
9- Pediastrum SP	
10- Eudorina SP	
11- Pandorina SP	
1- Euglena SP	(Euglenophyta) -
2- Phacus SP	

ب - الجراثيم الزرقاء (Cyanobacteriophyta):

(1)

.()

[1] H₂S

ج - الطحالب الخضراء (**Chlorophyta**) :

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(

()

.Closterium

(6 > PH > 5)

د - الطحالب الأوغليينية (**Euglenophyta**) :

(

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[1].

الدراسة المخبرية
المواد والطريقة:

(2)

(1996 - 1998)

1997 ()

[22]

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19]

[22 21 20

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النتائج والمناقشة
توزع الطحالب:

15

20

:(1)

(Dia)

(Diatomaphyceae)

-

(Cya)

(Cyanophyta)

-

(Chlo)

(Chlorophyta)

-

(Eug)

(Euglenophyta)

-

(Total Algae)

(10 1)

(8 5 1)

(2)

:

(Starmmach)

(2)

[25]

Euglena

[1]

Hantzschia

(3 2 1)

[2]

(9 6 2)

(6 5 4)

Microactinium Scenedesmus
Chlamydomonas Chlorella

3)
() ()
Euglena Phacus Chlorococcum Pinnularia Navicula

Chlamydomonas Microactinium Chlorella Hantzschia Pinnularia Navicula
[25]

[1]
(4) [26] NH₄
(10 7 3) (9 8 7)

⁶ 10×5.41)
() (7) (1)
Cladophora
(7·8·9)
(4) PH
() PH
(4) Spirulina

O2 Spirulina Microactinium chlorella
O2 (3)

(7·8·9)

Anabaena Nostoc

Chlorococcum Phacus Osillatoria

(%90) Spirulina

[2] PH Spirulina

(30-18) 18 [27]

() (15·16 14) .

(7·8·9)
(4) PH Spirolena
(17)

Spirulina

(1998 -1996)

: (2)

(10)	9	8	7	6	5	4	3	2	1	
10.5	10	10	10.5	9.5	10	10	9.5	10	10	2
15	12	12	12.5	11.5	12	12.5	12	12	12	
16	11	10.5	14	10.5	10.5	13	11	11	12	
	14	14	14	13	13	13	13	12	12	
	20	20	21	18	18	20	18	18	20	
24.5	24	24	24	24	23	24	23	23	24	
29	27	28	29	26	28	29	26	28	28	
29	27	27	28.5	27	27	28	27	27	28	
26	23	22	25	23	22	24	23	22	24	
23	20	18	22	20	18	22	20	18	21	1
15	14.5	15	15	14.5	14	16	17	17	17	2
13	13	13	13	13	12	13	13	12	12	1

تغيرات الغزارة الكلية للطحالب:

(13 12 11)

- 7 - 4 - 1)

(

18

(2)

(1)

(3 2 1)

(2·3)

(1)

(2·3)

(4)

(6 5 4)

Microactinium Chlorella

.Euglena Hantzschia Pinnularia Naviculla Scenedesmus Chlamydomonas

(4)

(5·6)

Osillatoria Chlorococcum Phacus

(9 8 7)

Anabaen Nostoc

(8·9)

(7)

(4)

Spirulina (8·9)

(7)

(4)

Cladophora

.Cladephora

[1]

(7)

(10)

(7)

Nostoc Anabaena

(14·15·16·17)

(Chlo)

(29- 9.5)

(Chlo)

(2)

. [25]

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(3·4·7·10)
(13 11)

[30 29 28]

(N - P)
31]

. [33 32

()

(1998 -1996)

: (3)

1	2	1									2		
1.1	0.9	2.6	2.6	4.4	1.4	1.5	0.4	1.1	1.2	2.2	1.2	DO(mg/l)	1
12	9	27	31	55	17	19	4	11	12	22	11	DO%	
1.3	0.5	0.6	2.1	2.9	1.3	1.2	0.3	1	1.2	1.5	1.8	DO(mg/l)	2
14	7	8	25	30	16	12	3	10	11	15	19	DO%	
2	0.9	0.5	2.5	2.8	1.1	1.3	0.3	0.8	1.1	1.2	1.3	DO(mg/l)	3
20	9	6	31	36	15	16	3	8	11	12	11.6	DO%	
2.3	2.1	3.2	3.6	5	3	2.1	4.4	1.2	1.8	3.9	1.8	DO(mg/l)	4
24	23	38	44	62	40	26	45	13	18	37	16	DO%	
2.5	0.9	1.6	2.9	3.5	2.6	1.8	3.9	1.1	1.6	2.7	1.9	DO(mg/l)	5
26	9	20	35	45	34	23	40	11	16	25	19	DO%	
2.3	1.3	2.2	3.3	3.1	1.4	1.4	2	0.9	1.5	2.2	1.6	DO(mg/l)	6
24	14	25	41	38	19	17	20	9	15	20	14.3	DO%	
3.5	2.8	4.5	3.9	5.4	3.4	2.7	5.8	5.2	4.8	9.9	2	DO(mg/l)	7
36	29	45	48	68	49	34	59	52	45	94	18	DO%	
3.3	2.6	1.9	4.6	6.7	3.3	2.7	4.4	3.1	1.8	4.4	2.2	DO(mg/l)	8
34	27	24	54	82	35	33	45	32	17	47	21	DO%	
2.5	2.7	4.1	3.7	3.8	2.7	3.7	4	2.9	2.7	8.4	2.2	DO(mg/l)	9
25	29	46	43	48	36	47	40	29	27	80	20	DO%	
4.9	4.6	5.2	3.6	6.1	4.2	3.3			6	11.6	7.1	DO(mg/l)	(10)
50	48	56	46	69	45	41			62	120	66	DO%	

[34]

. [31]
 (Chlorella)

(7·8·9) (Chlorella)

(Euglena) .

PH NH₃ PH

(7·8·9) .8

.PH = 9 Euglena [26]

/ 30.8 NH₄

] () / 60 ()

(15-10) [36 35 27

30 20
 (Purple Bacteria)

(1·2·3)

(/ 5 - 0.9) (/ 2.9- 0.3) (1·2·3)

(4·5·6)

) [35]

(30 -25) () (15

NH₄ - SO₄ - SS - COD - BOD₅

[35]

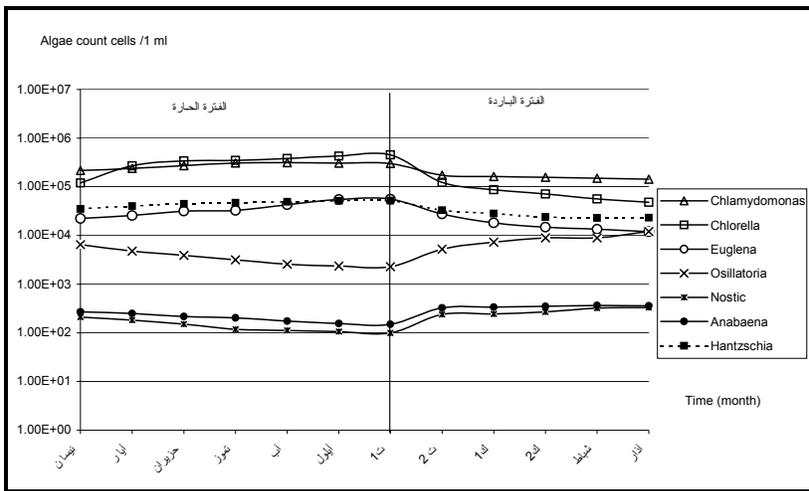
(1,2,3)

PH

(4,5,6)

NH₃ NH₄

(8)



) (1)

.1

(1998 - 1996

(1998 - 1996) NH4 PH :(4)

*						NH4	PH		NH4	PH		NH4	PH		
NH4	PH	NH4	PH	NH4	PH										
47.9	8.6	65.3	8.13	7.10	7.57	77.7 79 47.8	8.04 8.01 8.09	7 8 9	64.4 67.3 53.5	8.14 7.91 8.02	4 5 6	64.9 61.1 71.7	7.98 7.74 7.75	1 2 3	2
1.84		12.32	8.21	23.7	7.62	12.32 10.78 10.01	8.63 7.93 8.40	7 8 9	10.78 11.55 9.04	8.40 7.99 7.98	4 5 6	10.78 12.32 10.1	7.98 7.84 7.85	1 2 3	
		57.75	8.17	76.6	7.95	51.2 63	8.13 8.12	7 8	65.45 67.76	8.1 8.08	4 5 6	69.3 70.4	8.06 7.95	1 2	
		30.6	8.31	92	7.27	54 59.7	- 8.36	9 7	48 63.6	- 7.97	6 4	42 71.7	- 7.75	3 1	
		-	8.16	-	7.0	- - -	8.17 8.10 7.73	7 8 9	- - -	8.08 7.80 7.72	4 5 6	- - -	7.64 7.51 7.70	1 2 3	
-	8.69	-	8.17	8.34	7.41	- - -	8.18 7.98 8.08	7 8 9	- - -	8.05 7.87 7.97	4 5 6	- - -	8.08 8.02 8.01	1 2 3	

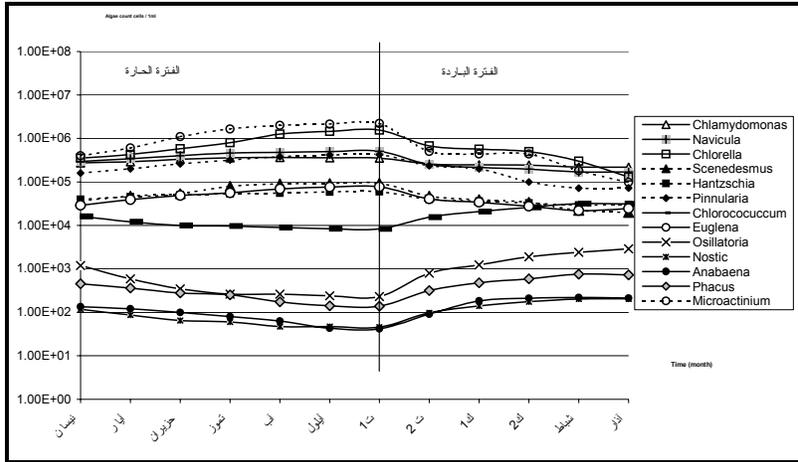
*						NH4	PH		NH4	PH		NH4	PH		

...

NH4	PH	NH4	PH	NH4	PH										
27.9	8.62	65.7	8.24	99.5	7.70	44.8 68	8.10 8.37 8.14	7 8 9	57.9 66.3 -	8.17 8.05 8.05	4 5 6	74.5 70.1 -	8.18 8.30 8.02	1 2 3	
9.6	9.27	39.8	8.15	77	7.45	13.4 51.5 21.5	8.14 8.10 7.75	7 8 9	38.8 45.7 42.8	8.35 8.14 8.08	4 5 6	55.2 4.4 52	8.39 8.72 8.63	1 2 3	
7.7	9.3	30	8.40	67	7.55	9.8 30.9 20.7	9.17 8.34 8.45	7 8	23.2 37.7 41	8.31 8.41 8.43	4 5	36.4 52.9 48.8	8.46 8.32 8.21	1 2 3	
		1.6	8.28	13	7.45	4.75 1.07 2.82	8.20 8.35 8.22	7 8 9	5.49 5.42 3.27	8.15 8.17 8.40	4 5 6	4.28 5.87 4.88	8.20 8.08 8.10	1 2 3	1
		63.6	8.36	108	7.35	59.6 74.8 59.7	8.30 8.40 8.27	7 8 9	71.5 82.4 72.3	8.43 8.40 8.28	4 5 6	77.5 88.6 78	8.33 8.61 8.54	1 2 3	2
		-	8.25	-	7.70	- - -	8.23 8.18 8.26	7 8 9	- - -	8.10 8.34 8.20	4 5 6	- - -	7.92 8.11 8.00	1 2 3	1

1998 - 1997

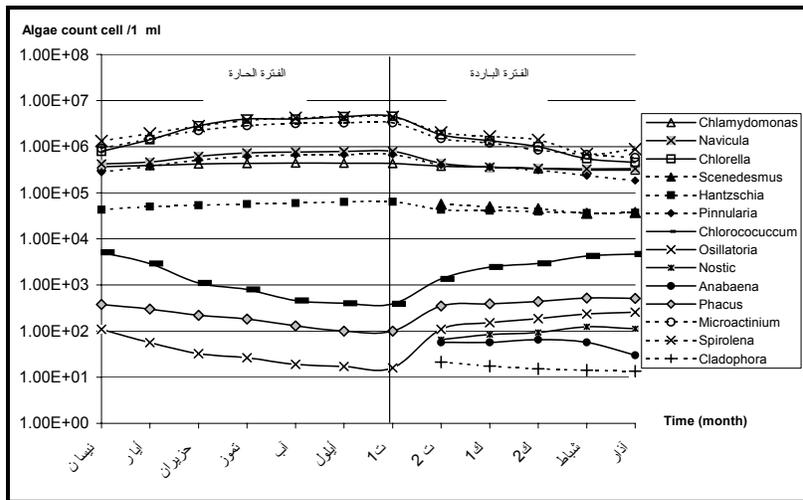
*



(4)

.2

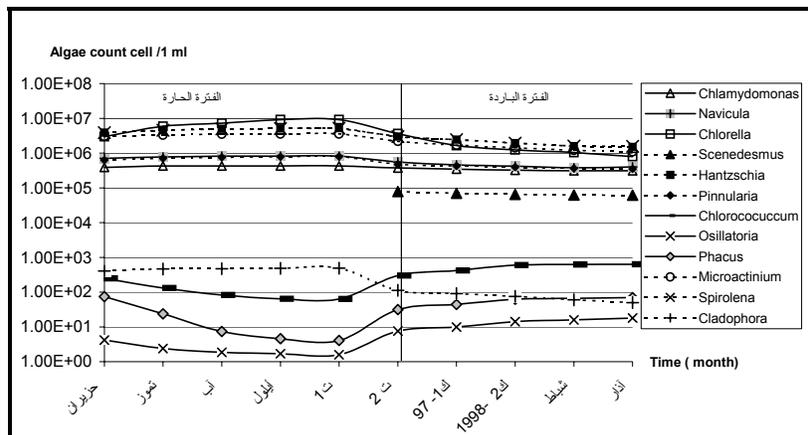
(1998 - 1996)



(7)

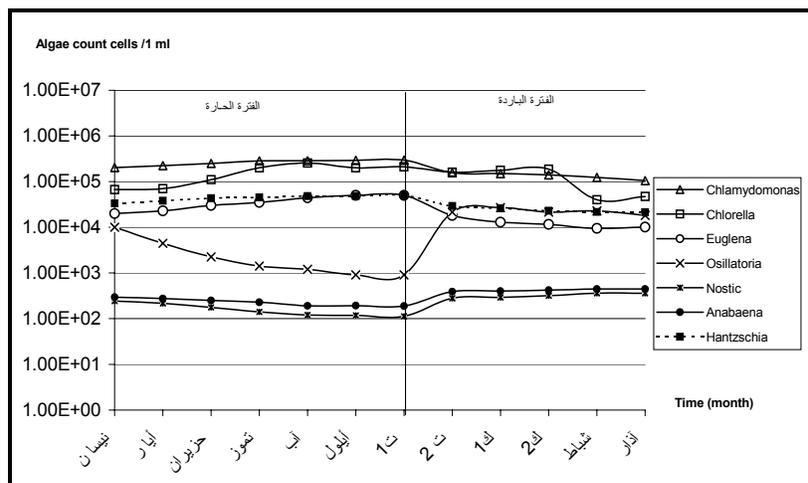
.3

(1998 - 1996)



.4

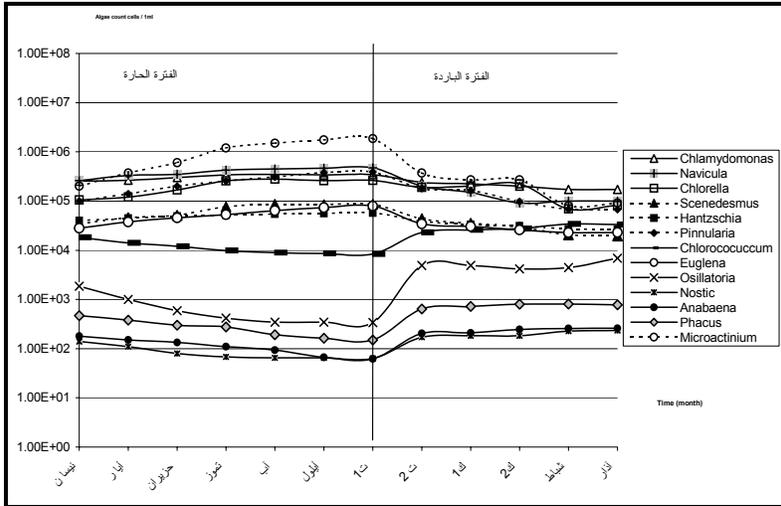
(1998 - 1997)



.5

(2)

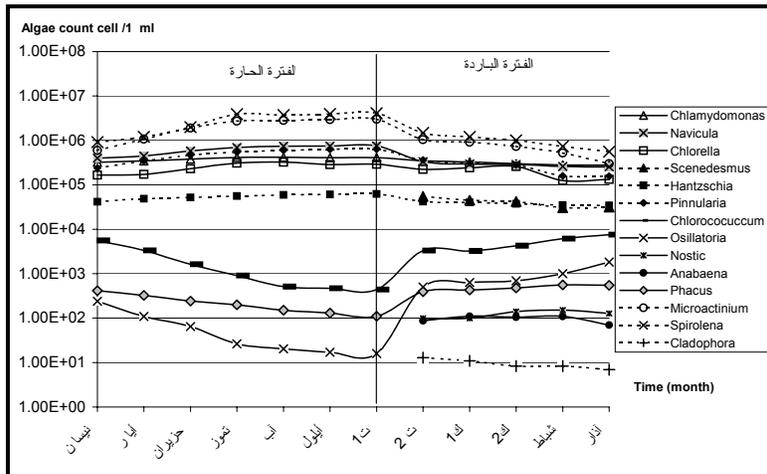
(1998 - 1996)



(5)

.6

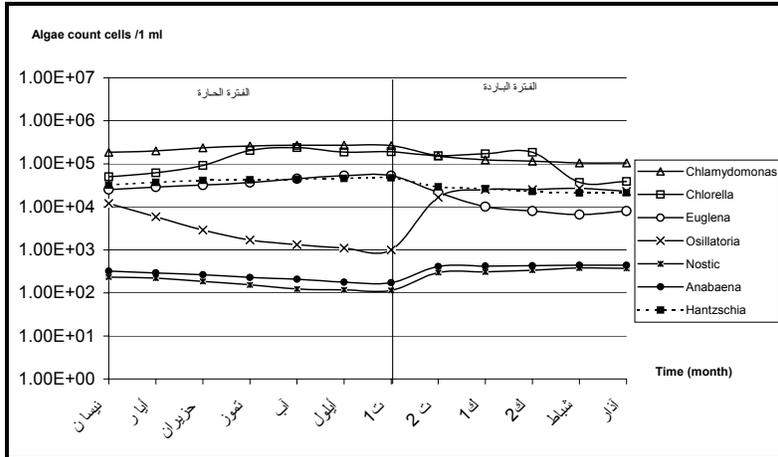
(1998 - 1996)



(8)

.7

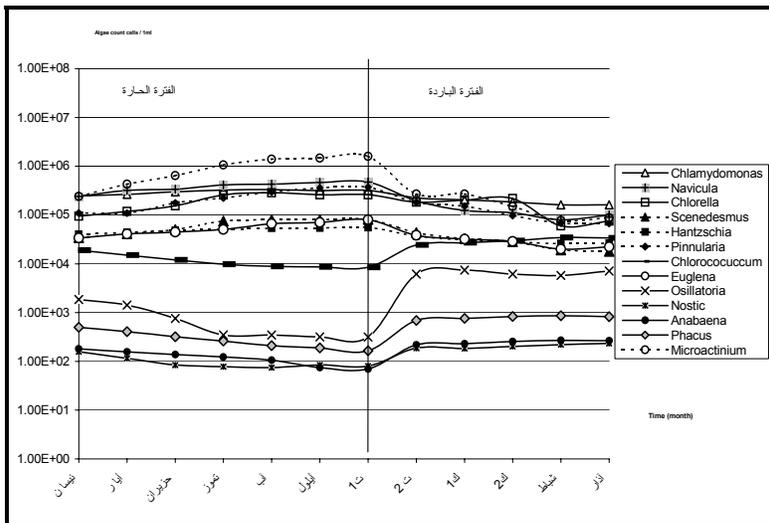
(1997 - 1996)



(3)

.8

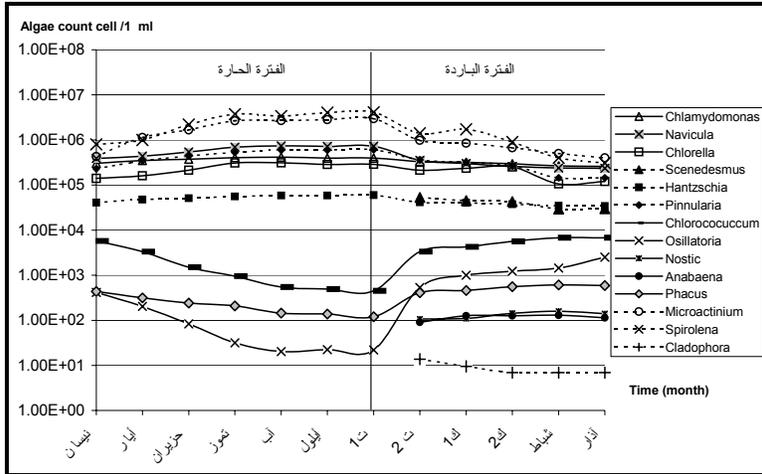
(1998 - 1996)



(6)

.9

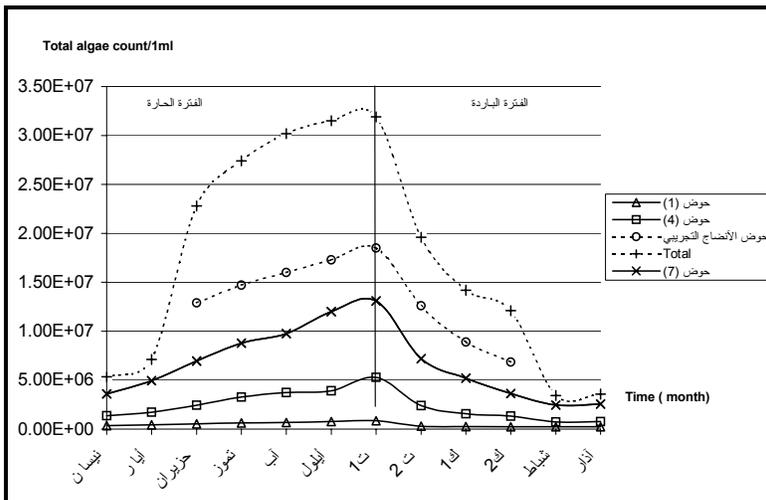
(1998 - 1996)



(9)

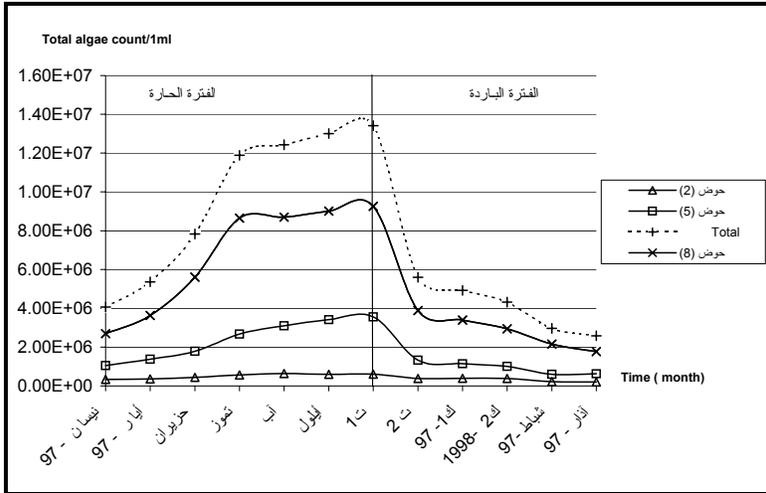
.10

(1998 - 1996)



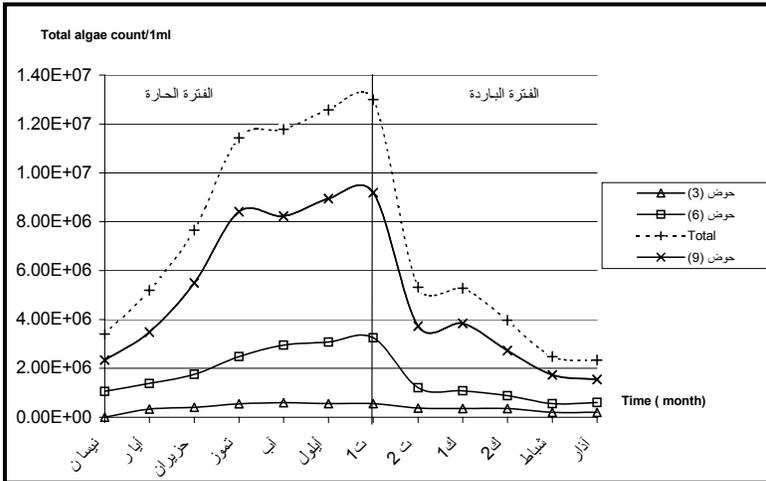
.11

(1998 - 1996)



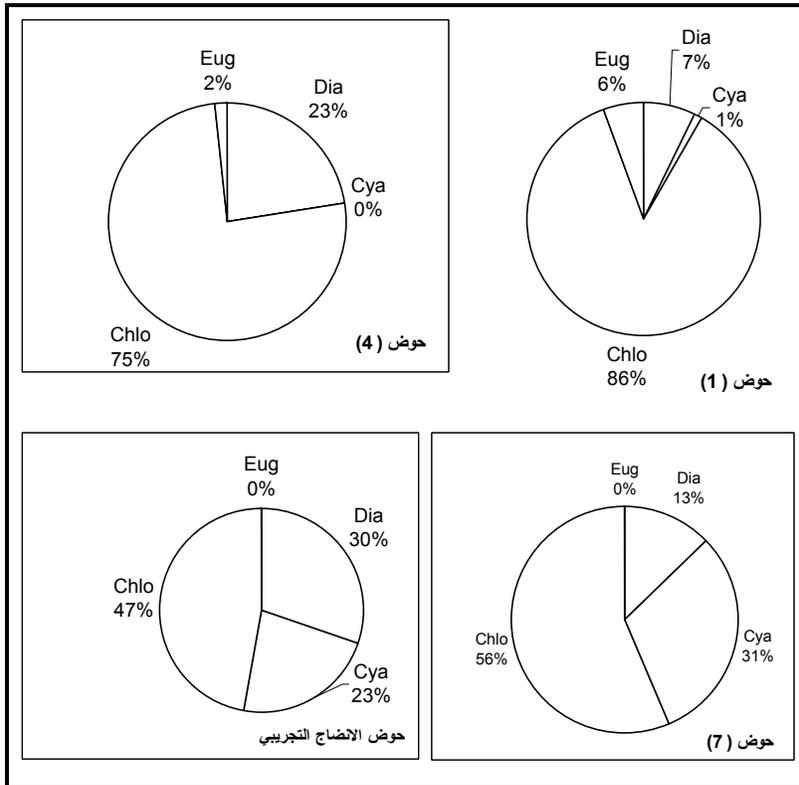
.12

(1998 - 1996)



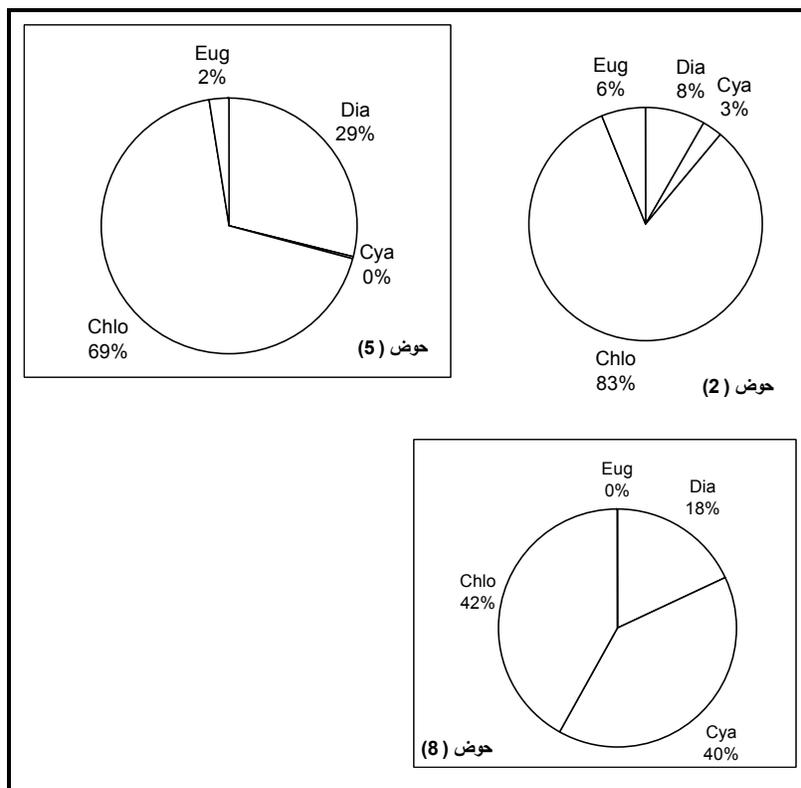
.13

(1998 - 1996)



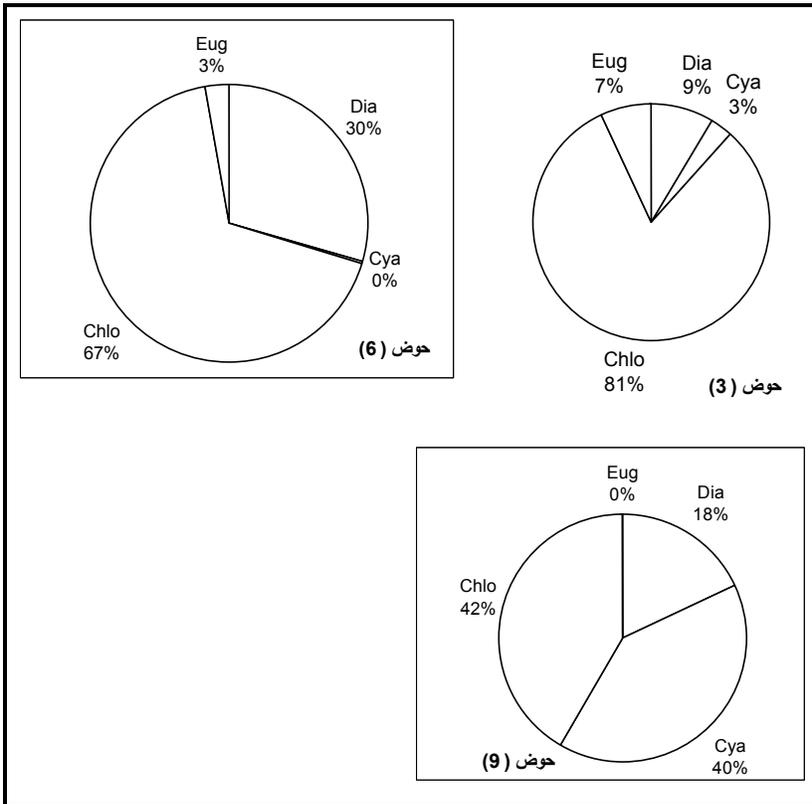
.14

(-7-4-1)



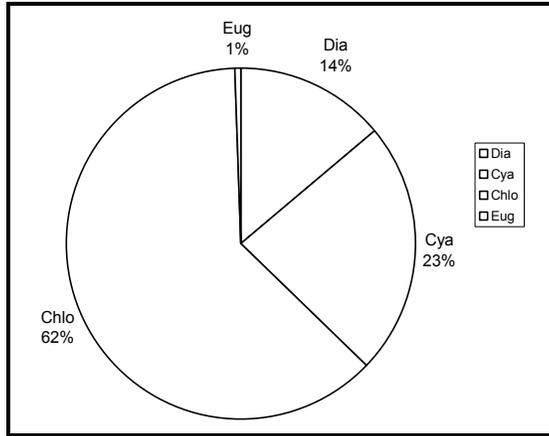
.15

(8 - 5 - 2)



.16

(9 - 6 - 3)



.17

(1998 1996)

الاستنتاجات

(Chlorella)

- 1

(.29 - 9.5)

- 2

Spirulina

- 3

PH

- 4

1)	()	- 5
			(
8	PH	(Euglena)		- 6
				- 7
	(20	18)	18	- 8
	(9-8-7)			- 9
		Cladphora		

ملحق الطحالب

المراجع

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