Figure 1

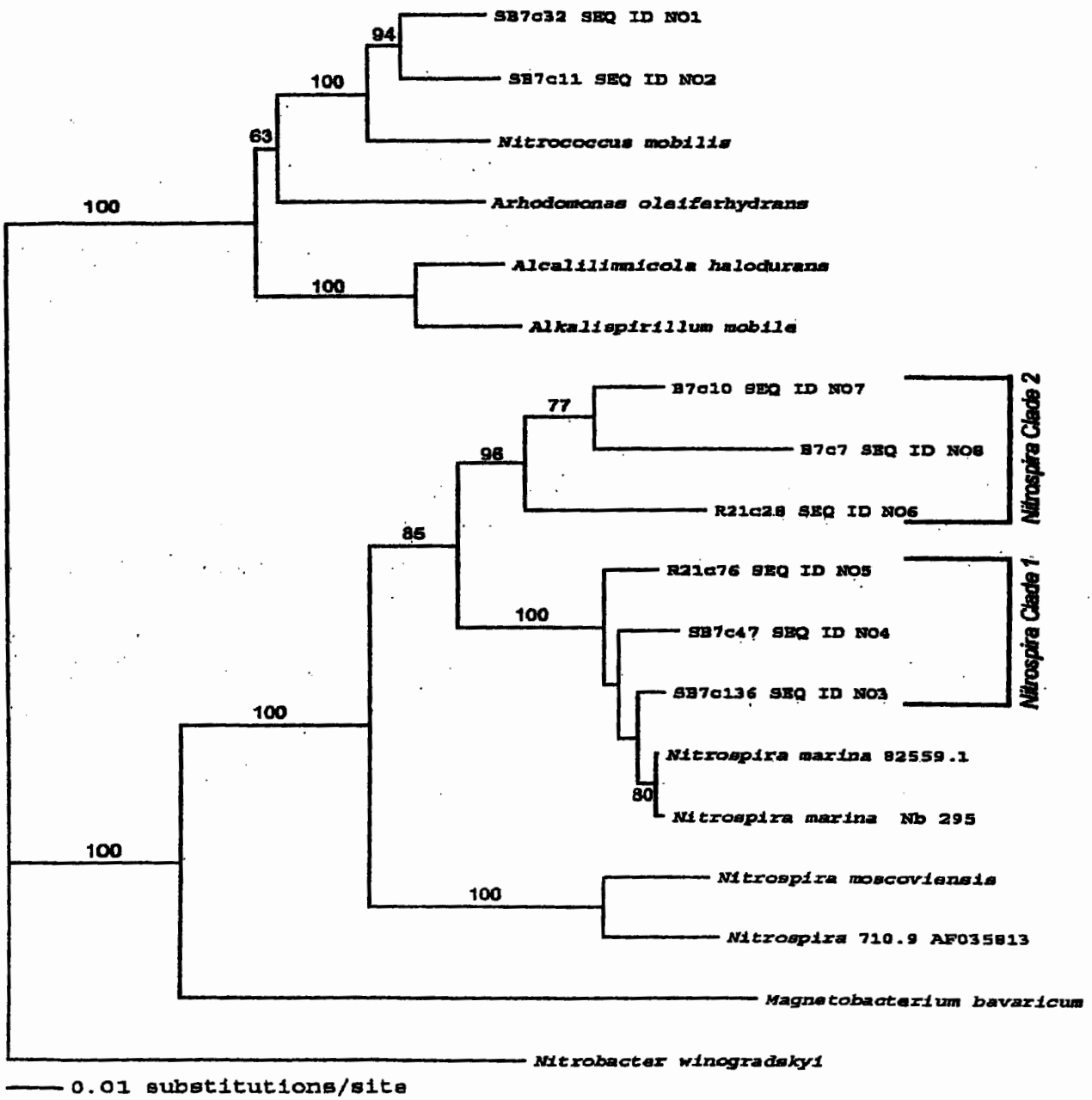

SB7c32 SEQ ID NO1
SB7c11 SEQ ID NO2
Nitrococcus mobilis
Arhodomonas oleiferhydrans
Alcalilimnicola halodurans
Alkalispirillum mobile
B7c10 SEQ ID NO7
B7c7 SEQ ID NO8
R21c28 SEQ ID NO6
Nitrospira Clade 2
R21c76 SEQ ID NO5
SB7c47 SEQ ID NO4
SB7c136 SEQ ID NO3
Nitrospira Clade 1
Nitrospira marina 82559.1
Nitrospira marina Nb 295
Nitrospira moscoviensis
Nitrospira 710.9 AF035813
Magnetobacterium bavaricum
Nitrobacter winogradskyi
94
100
63
100
100
77
98
85
100
100
80
100
100
0.01 substitutions/site

Figure 2

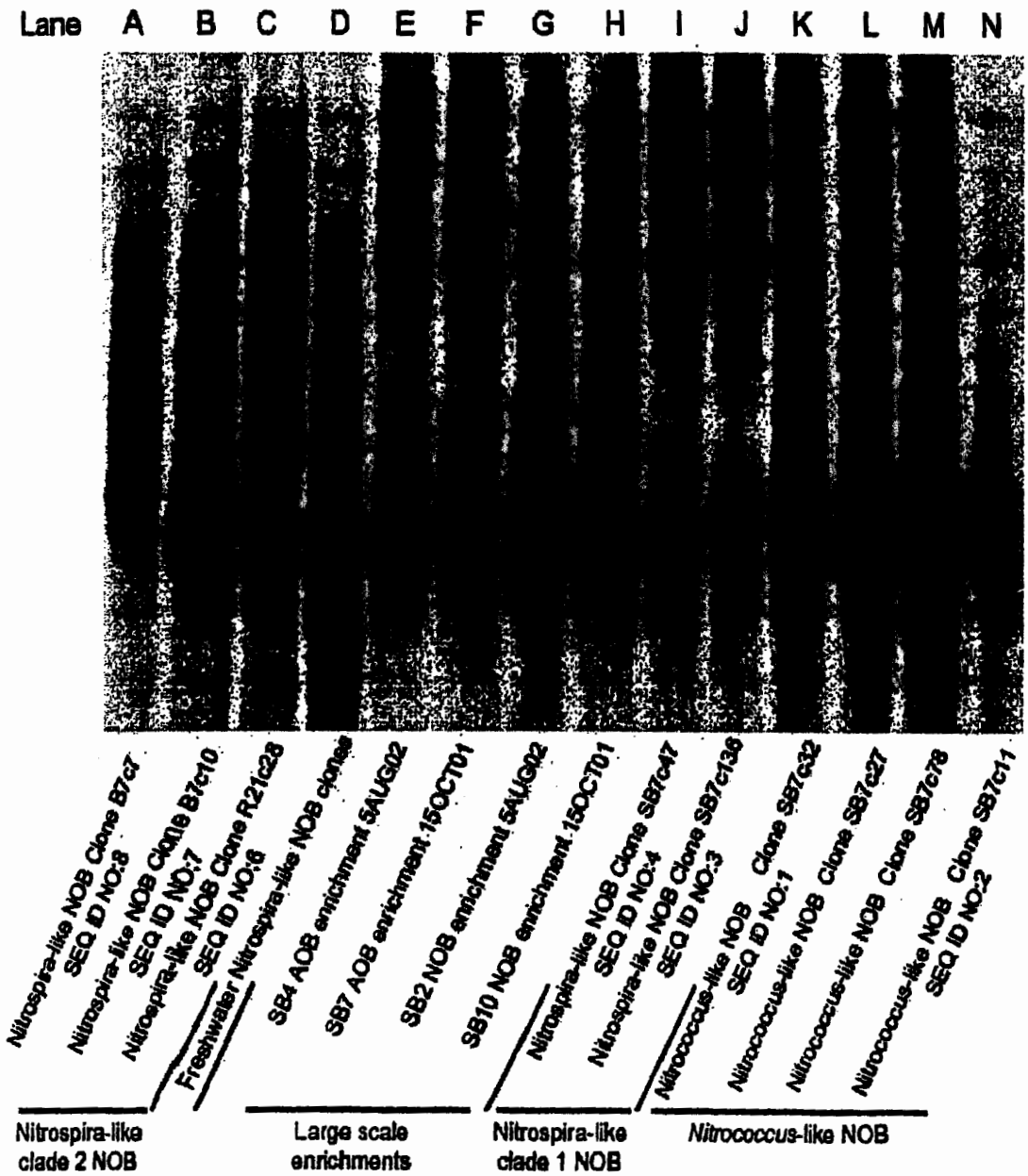

Lane A B C D E F G H I J K L M N
Nitrospira-like NOB Clone B7c7 SEQ ID NO:8
Nitrospira-like NOB Clone B7c10 SEQ ID NO:7
Nitrospira-like NOB Clone R21c28 SEQ ID NO:6
Freshwater Nitrospira-like NOB clones
SB4 AOB enrichment SAUG02
SB7 AOB enrichment 15OCT01
SB2 NOB enrichment SAUG02
SB10 NOB enrichment 15OCT01
Nitrospira-like NOB Clone SB7c47 SEQ ID NO:4
Nitrospira-like NOB Clone SB7c136 SEQ ID NO:3
Nitrococcus-like NOB Clone SB7c32 SEQ ID NO:1
Nitrococcus-like NOB Clone SB7c27
Nitrococcus-like NOB Clone SB7c78
Nitrococcus-like NOB Clone SB7c11 SEQ ID NO:2
Nitrospira-like clade 2 NOB
Large scale enrichments
Nitrospira-like clade 1 NOB
Nitrococcus-like NOB

Figure 3

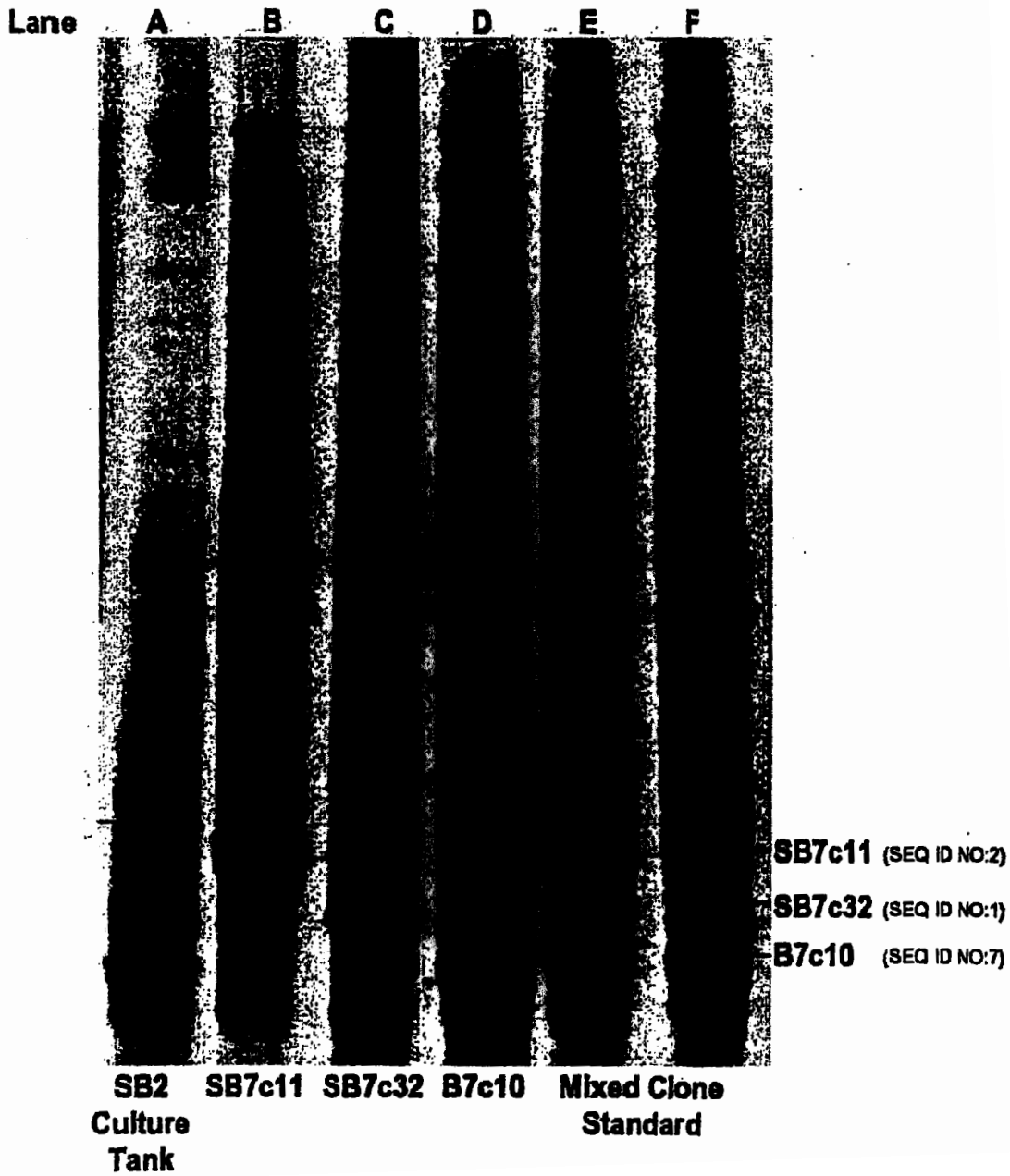

Lane
A
B
C
D
E
F
SB7c11 (SEQ ID NO:2)
SB7c32 (SEQ ID NO:1)
B7c10 (SEQ ID NO:7)
SB2 Culture Tank
SB7c11
SB7c32
B7c10
Mixed Clone Standard

Figure 4

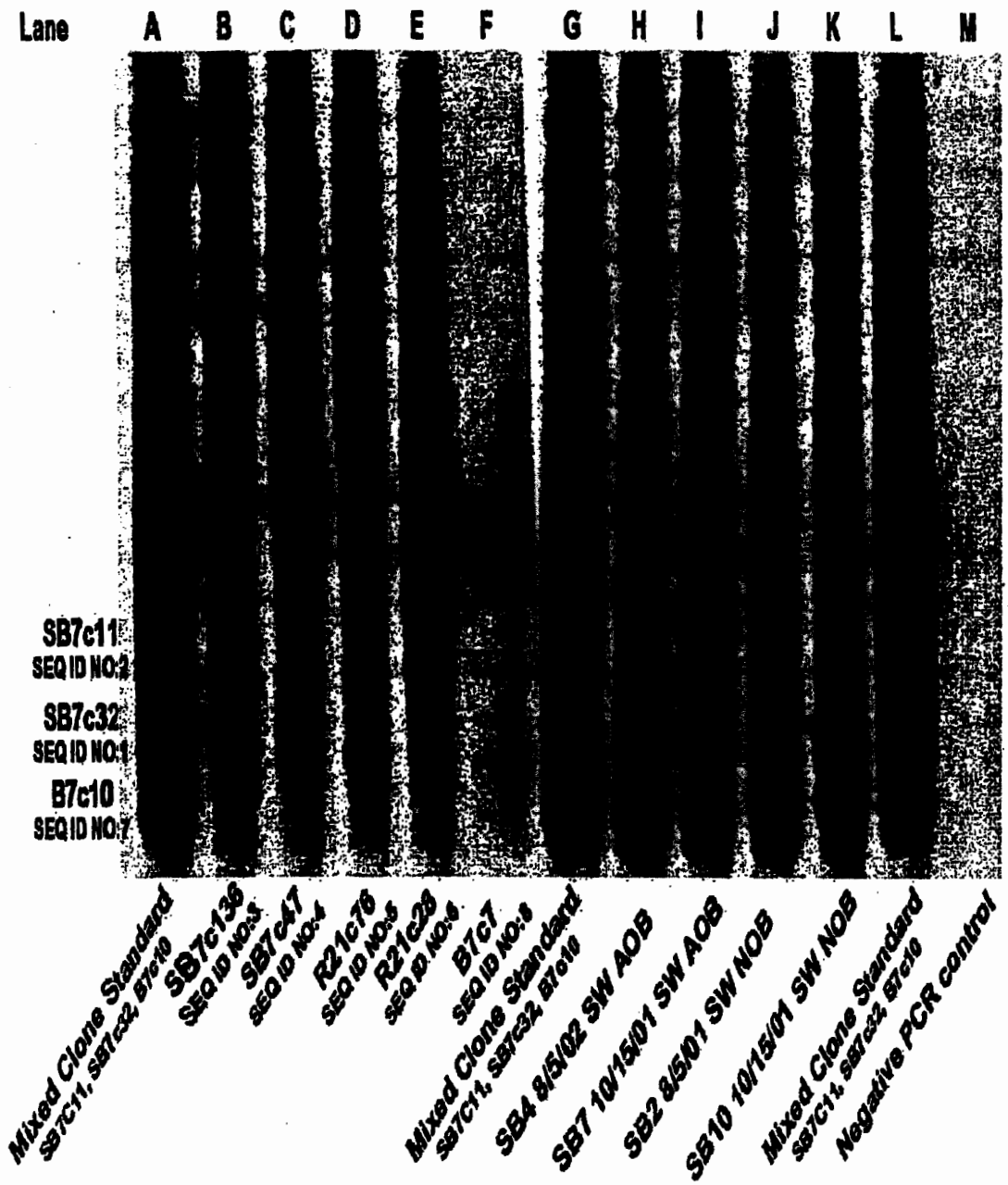
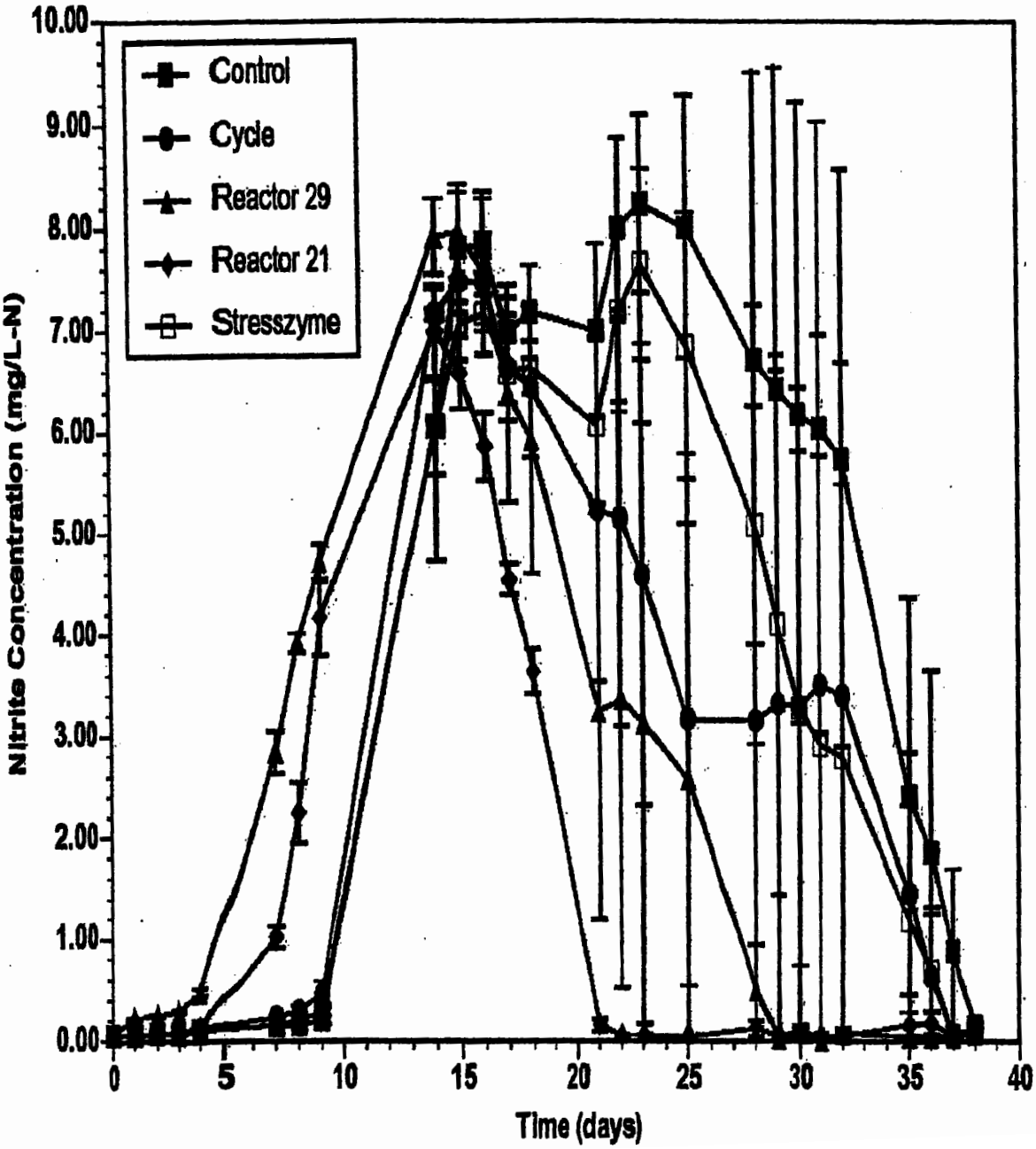

Lane
A
B
C
D
E
F
G
H
I
J
K
L
M
SB7c11
SEQ ID NO:2
SB7c32
SEQ ID NO:1
B7c10
SEQ ID NO:7
Mixed Clone Standard
SB7C11, SB7c32, B7c10
SB7c136
SEQ ID NO:3
SB7c47
SEQ ID NO:4
R21c76
SEQ ID NO:5
R21c28
SEQ ID NO:6
B7c7
SEQ ID NO:8
Mixed Clone Standard
SB7C11, SB7c32, B7c10
SB4 8/5/02 SW AOB
SB7 10/15/01 SW AOB
SB2 8/5/01 SW NOB
SB10 10/15/01 SW NOB
Mixed Clone Standard
SB7C11, SB7c32, B7c10
Negative PCR control

Figure 5


Control
Cycle
Reactor 29
Reactor 21
Stresszyme
Nitrite Concentration (mg/L-N)
Time (days)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0
5
10
15
20
25
30
35
40

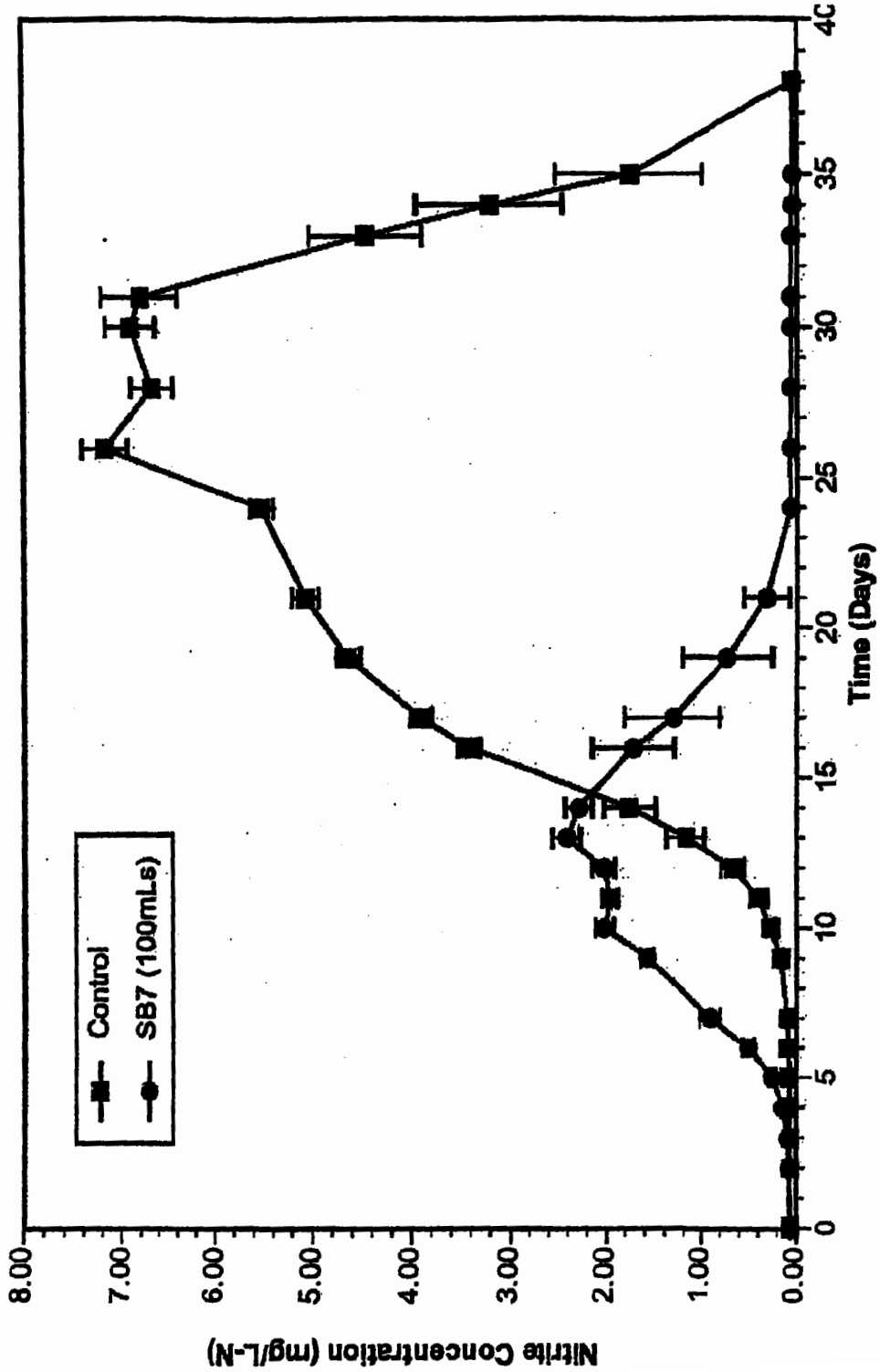

Nitrite Concentration (mg/L-N)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0
5
10
15
20
25
30
35
40
Time (Days)
Control
SB7 (100mLs)

Figure 6

Figure 7

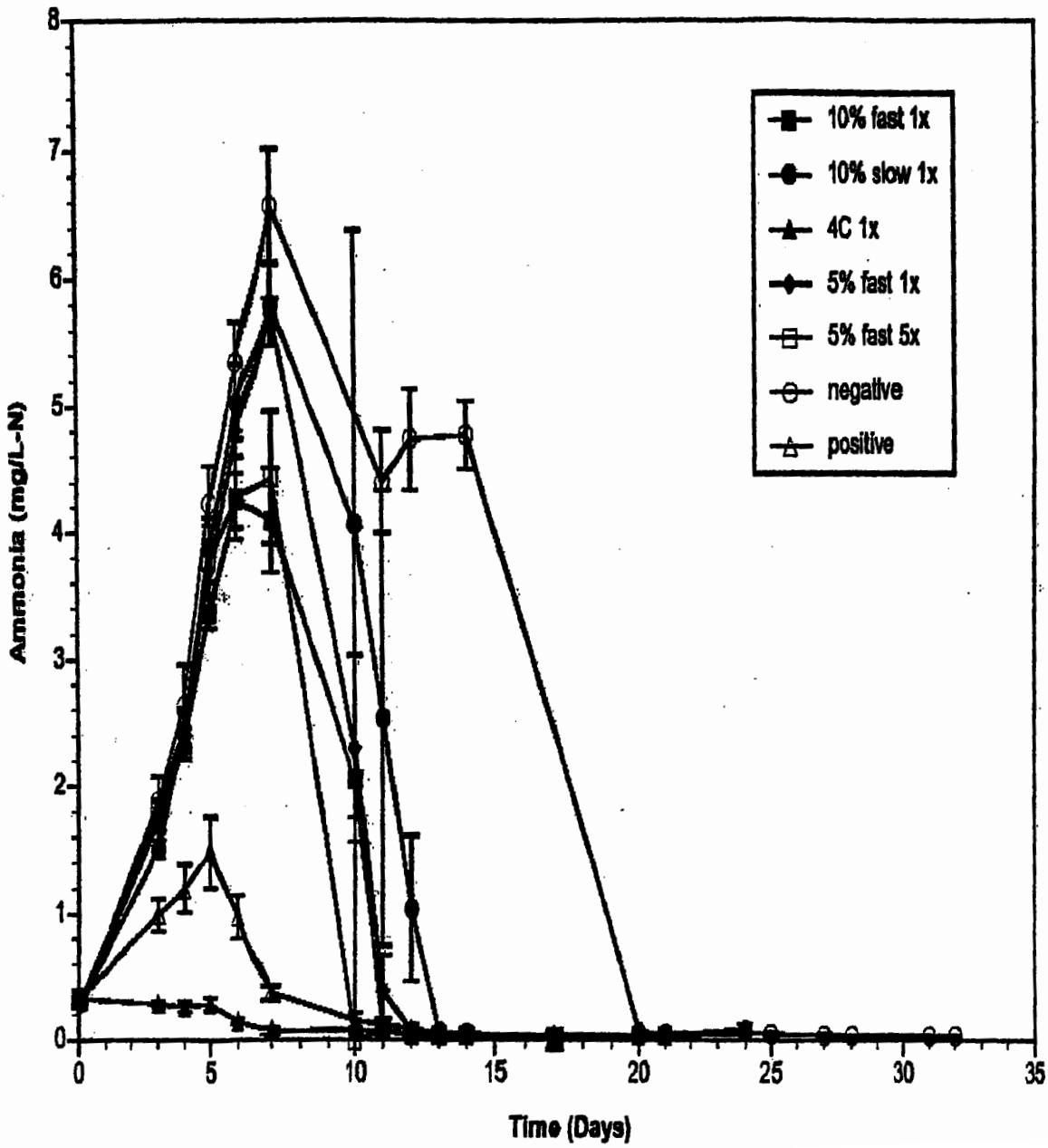

Ammonia (mg/L-N)
Time (Days)
10% fast 1x
10% slow 1x
4C 1x
5% fast 1x
5% fast 5x
negative
positive
0
1
2
3
4
5
6
7
8
0
5
10
15
20
25
30
35

Figure 8

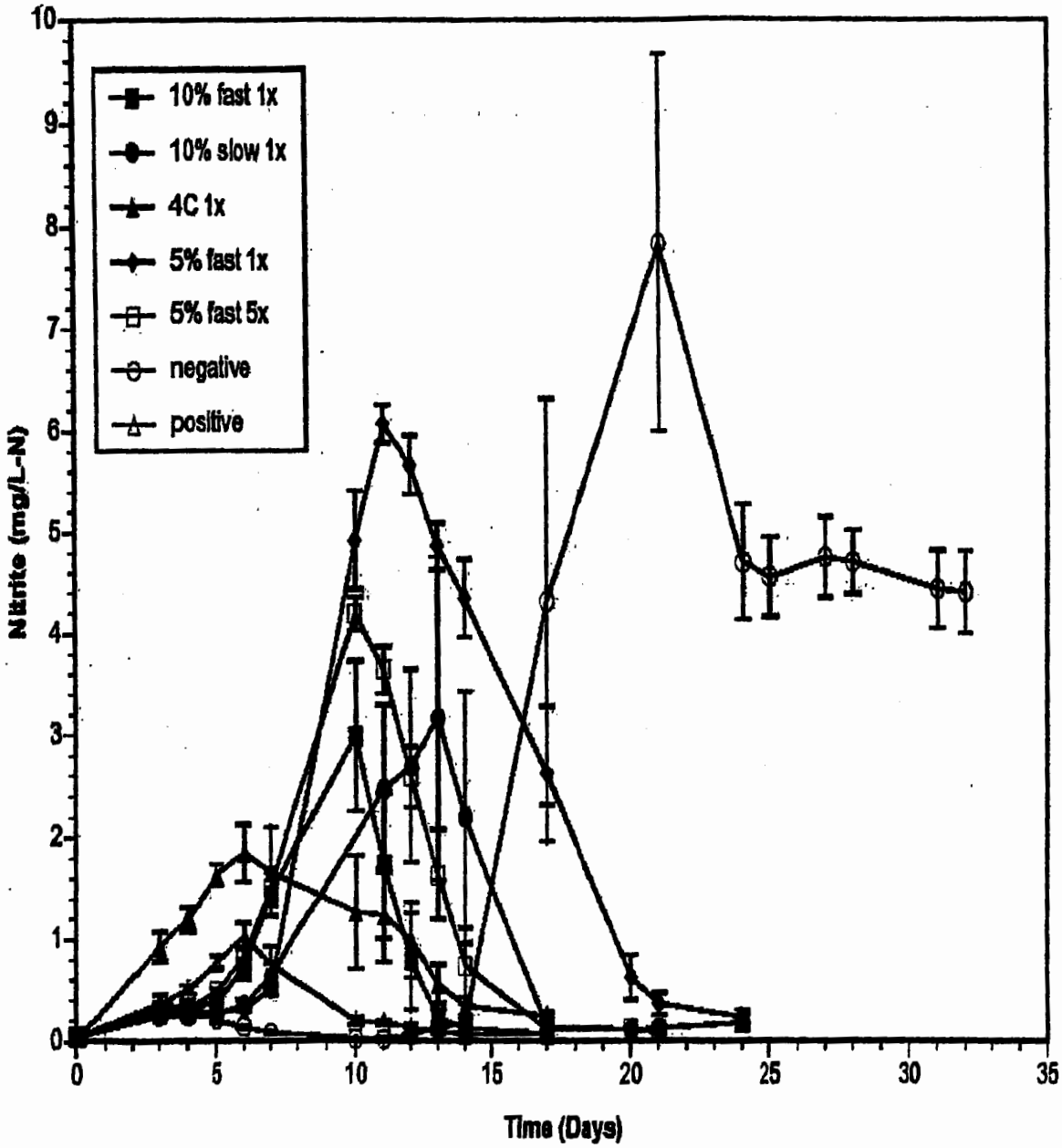

10% fast 1x
10% slow 1x
4C 1x
5% fast 1x
5% fast 5x
negative
positive
Nitrite (mg/L-N)
Time (Days)
0
1
2
3
4
5
6
7
8
9
10
0
5
10
15
20
25
30
35

Figure 9

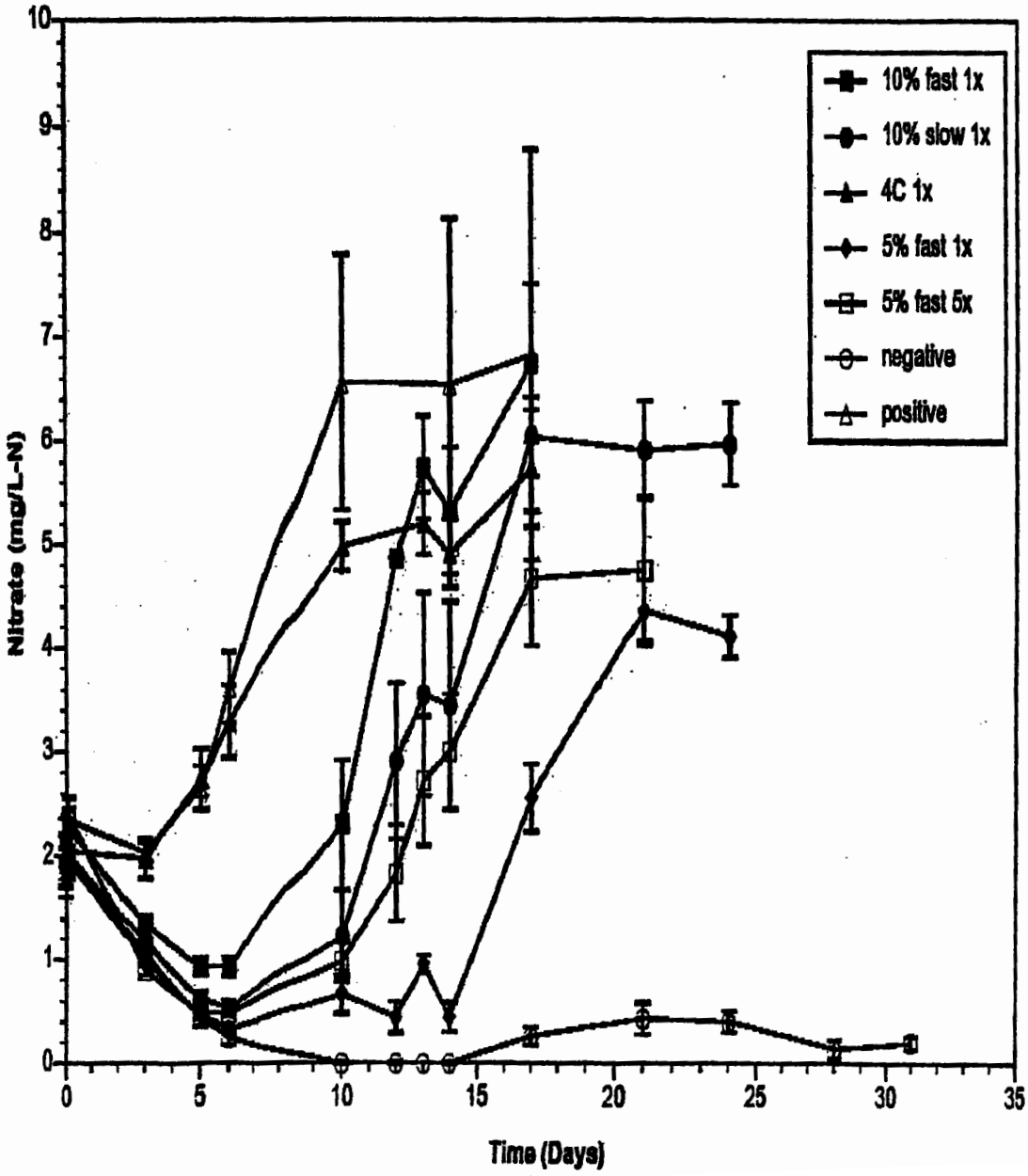

10% fast 1x
10% slow 1x
4C 1x
5% fast 1x
5% fast 5x
negative
positive
Nitrate (mg/L-N)
Time (Days)
0
1
2
3
4
5
6
7
8
9
10
0
5
10
15
20
25
30
35

Figure 10

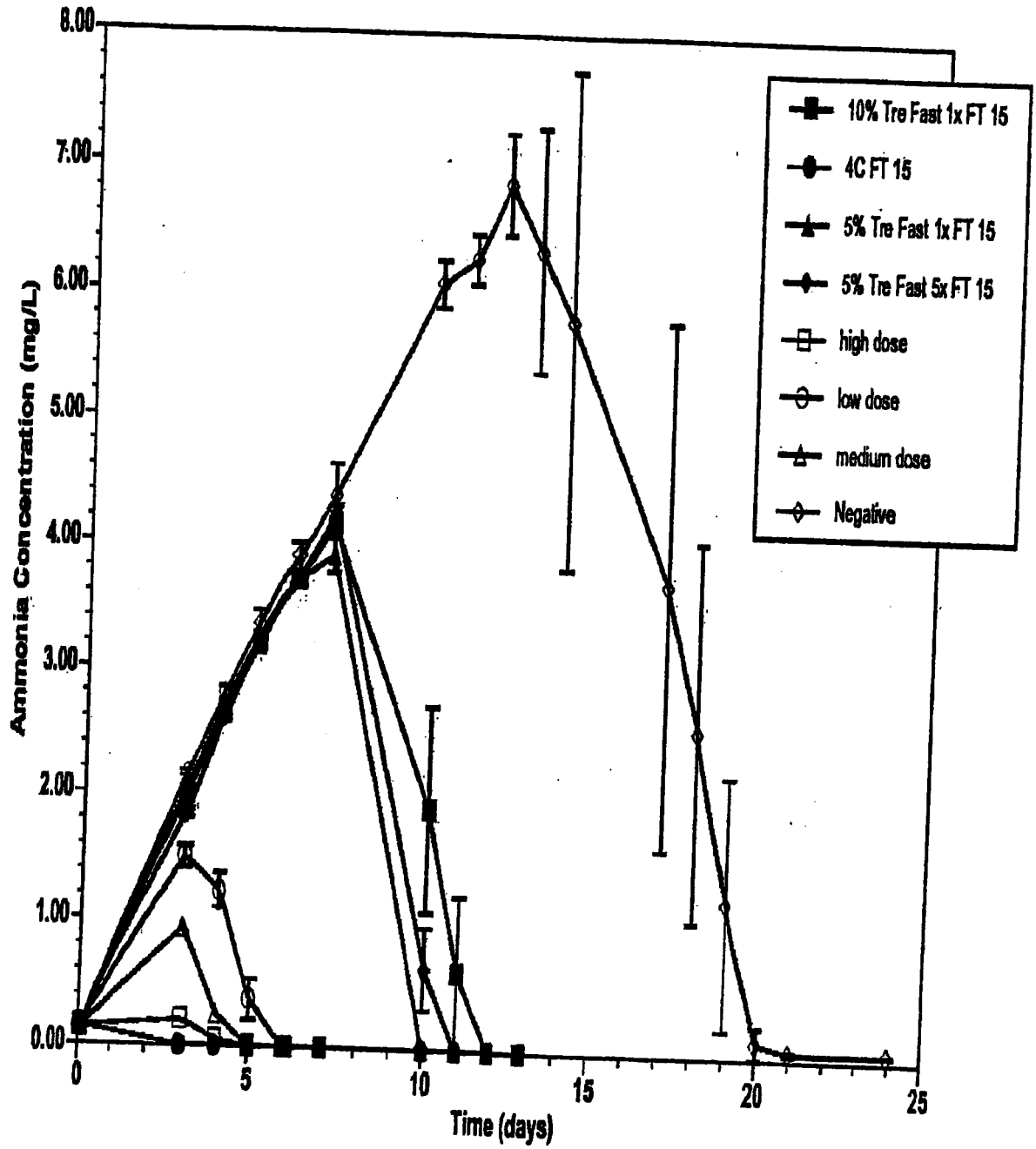

8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Ammonia Concentration (mg/L)
0
5
10
15
20
25
Time (days)
10% Tre Fast 1x FT 15
4C FT 15
5% Tre Fast 1x FT 15
5% Tre Fast 5x FT 15
high dose
low dose
medium dose
Negative

Figure 11

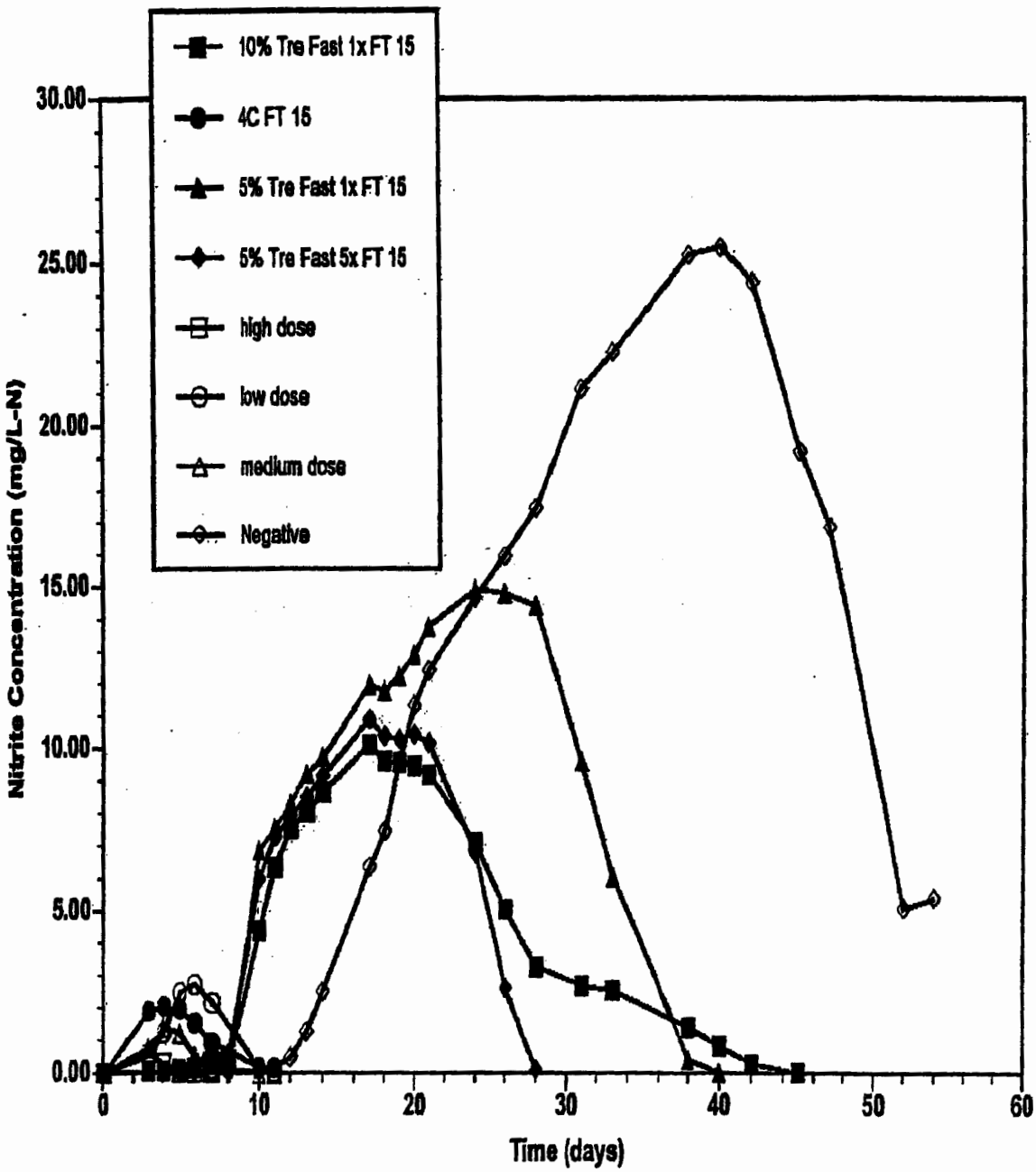
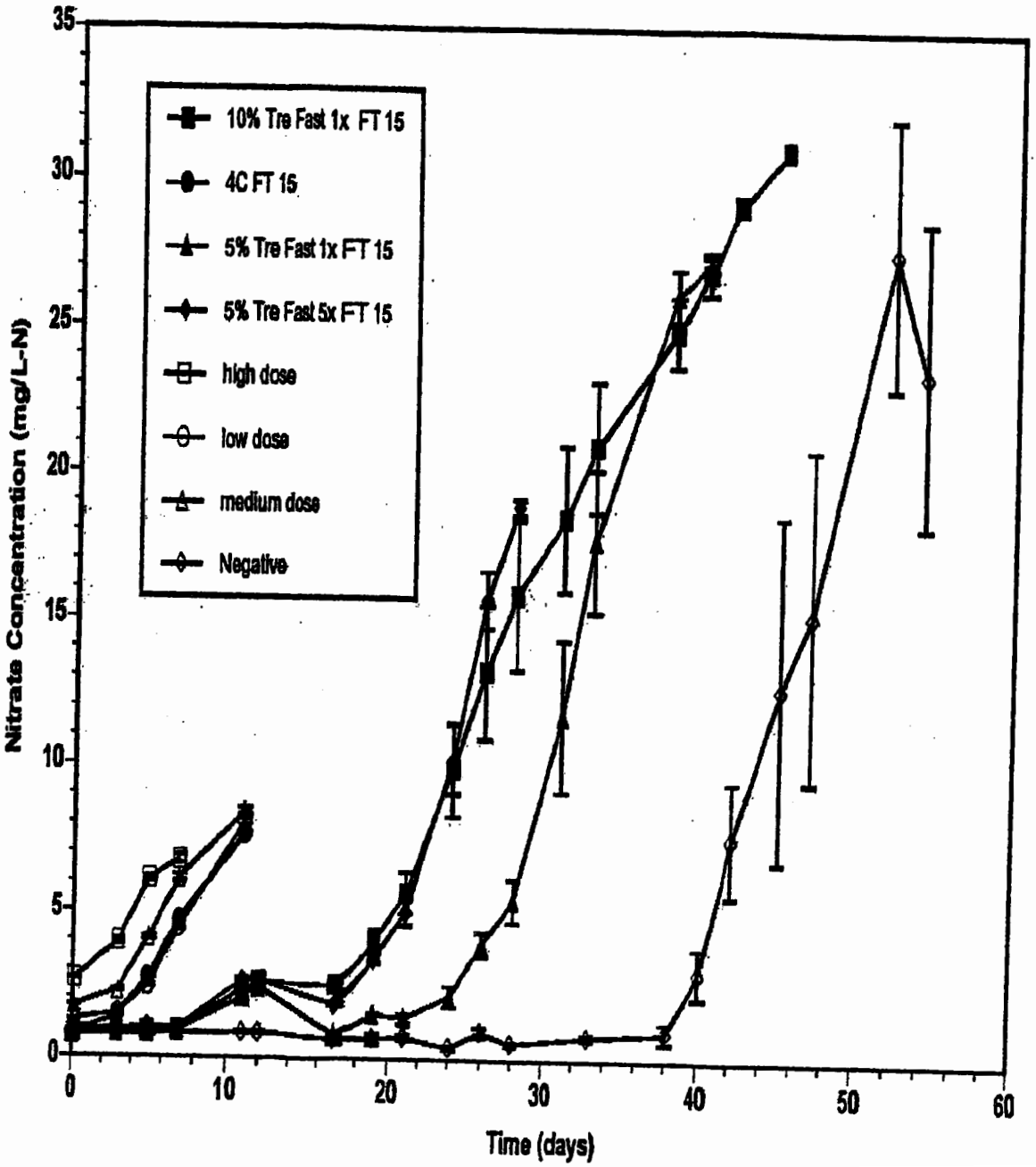

10% Tre Fast 1x FT 15
4C FT 15
5% Tre Fast 1x FT 15
5% Tre Fast 5x FT 15
high dose
low dose
medium dose
Negative
Nitrite Concentration (mg/L-N)
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0
10
20
30
40
50
60
Time (days)

Figure 12


10% Tre Fast 1x FT 15
4C FT 15
5% Tre Fast 1x FT 15
5% Tre Fast 5x FT 15
high dose
low dose
medium dose
Negative
Nitrate Concentration (mg/L-N)
Time (days)
0
5
10
15
20
25
30
35
0
10
20
30
40
50
60

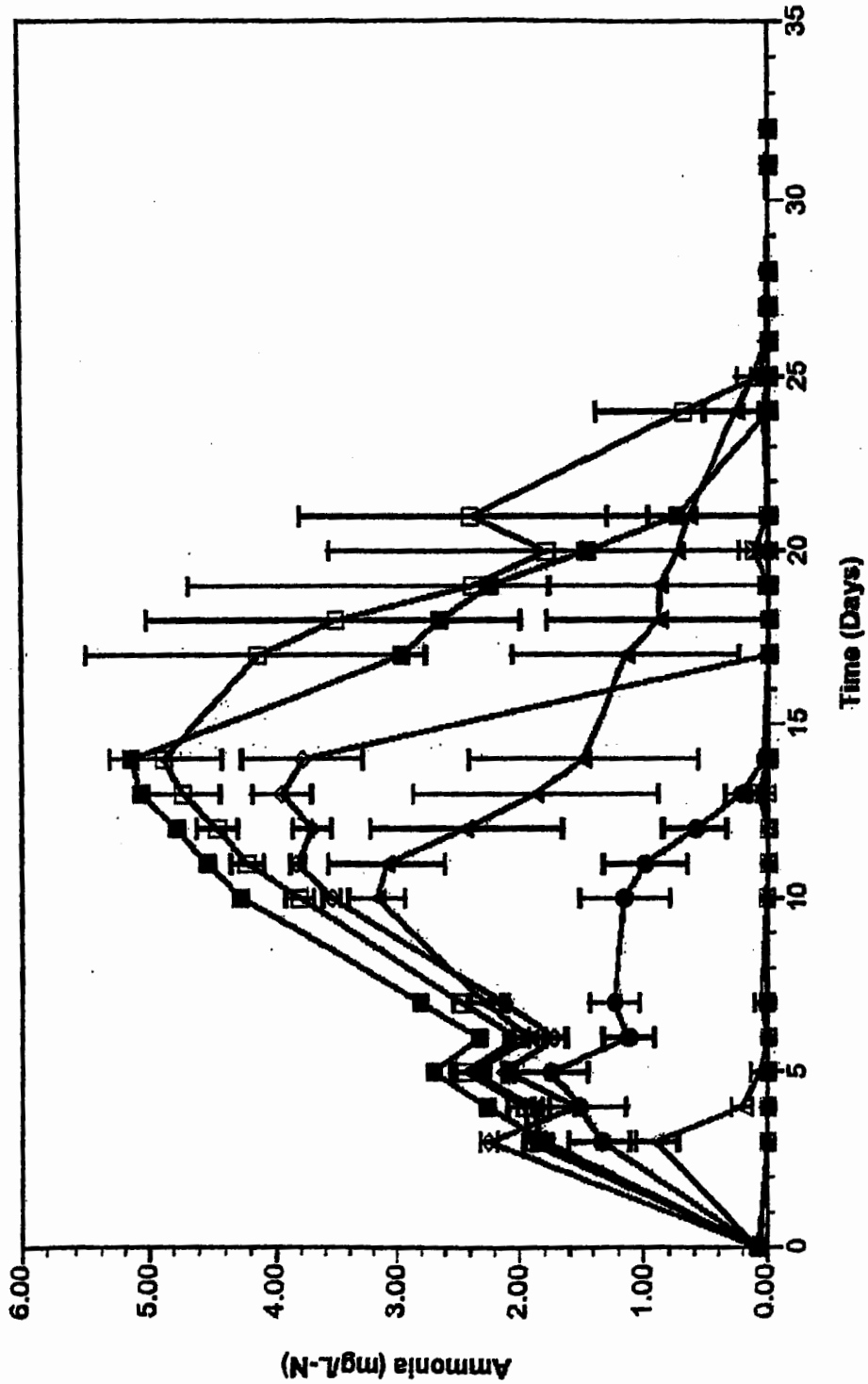

Ammonia (mg/L-N)
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0
5
10
15
20
25
30
35
Time (Days)

Figure 13

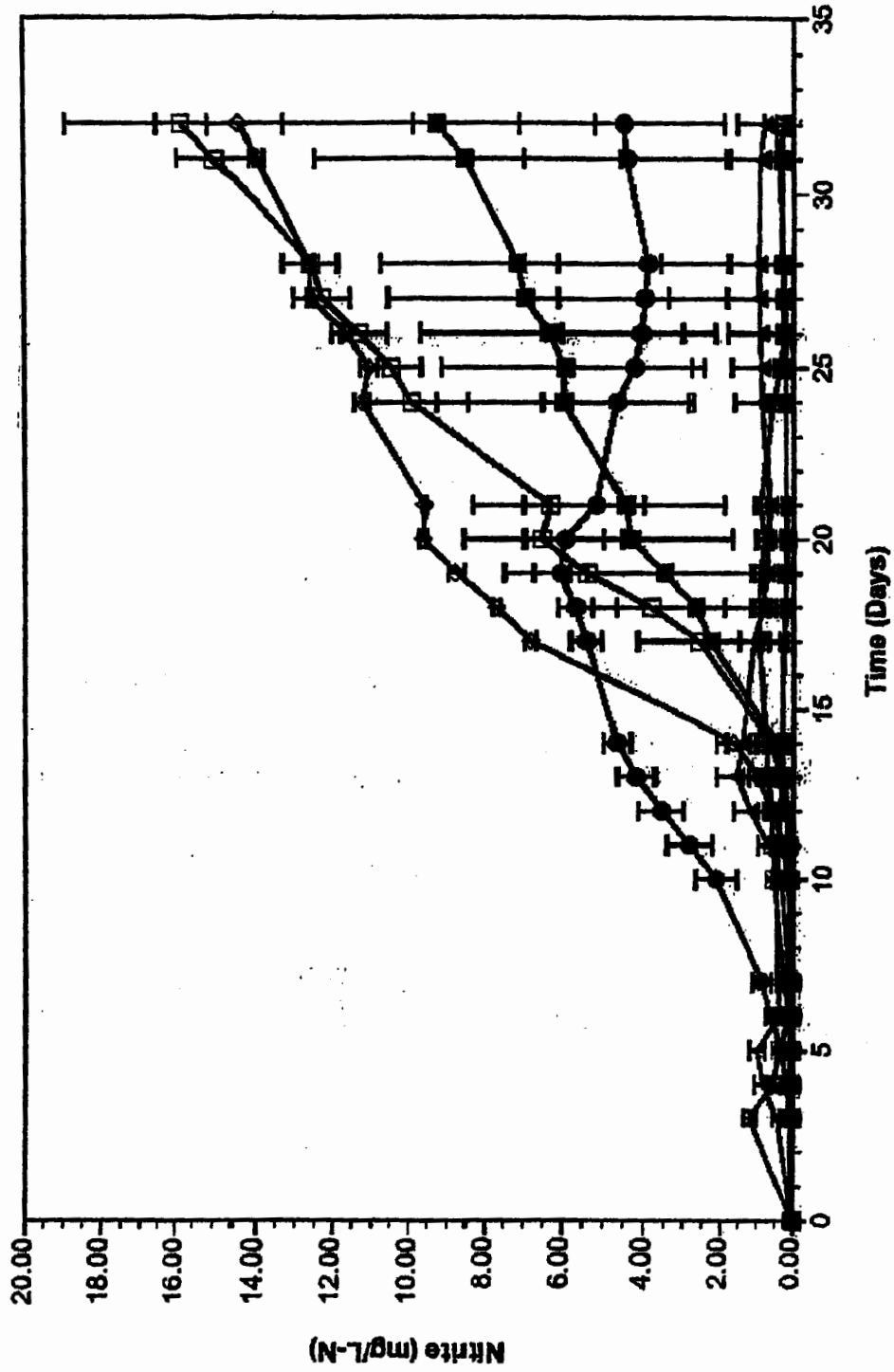

Nitrite (mg/L-N)
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0
5
10
15
20
25
30
35
Time (Days)

Figure 14

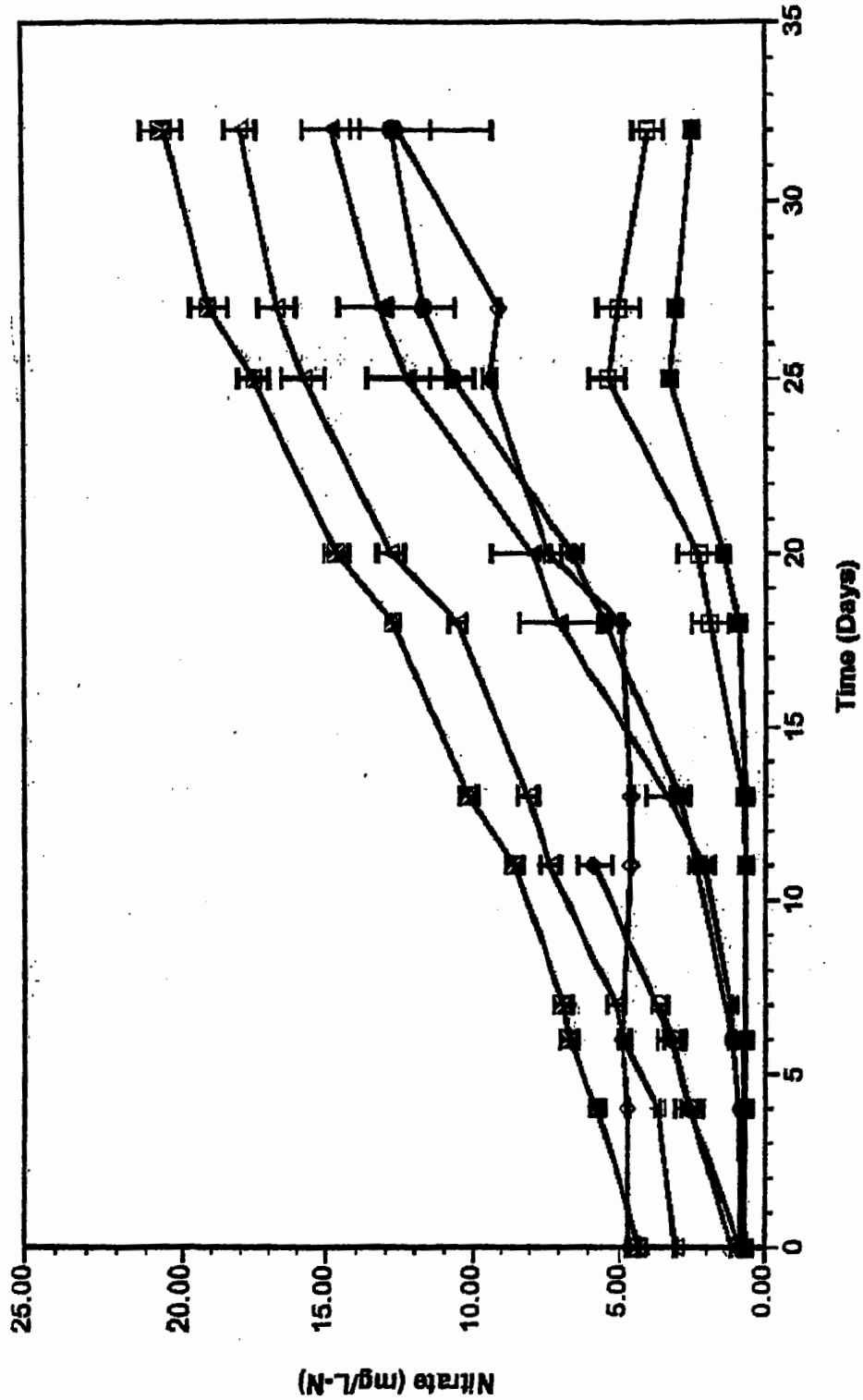

Nitrate (mg/L-N)
25.00
20.00
15.00
10.00
5.00
0.00
0
5
10
15
20
25
30
35
Time (Days)

Figure 15