Probiotic effects of bio-floc technology: Depression of tilapia infection by Streptococcus

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One of the problems of tilapia culturing all over is the infection of the fish by Streptococcus iniae.

Several observations were made, indicating that infection with streptococcus and fish mortality is low, almost negligible in bio-flocs ponds

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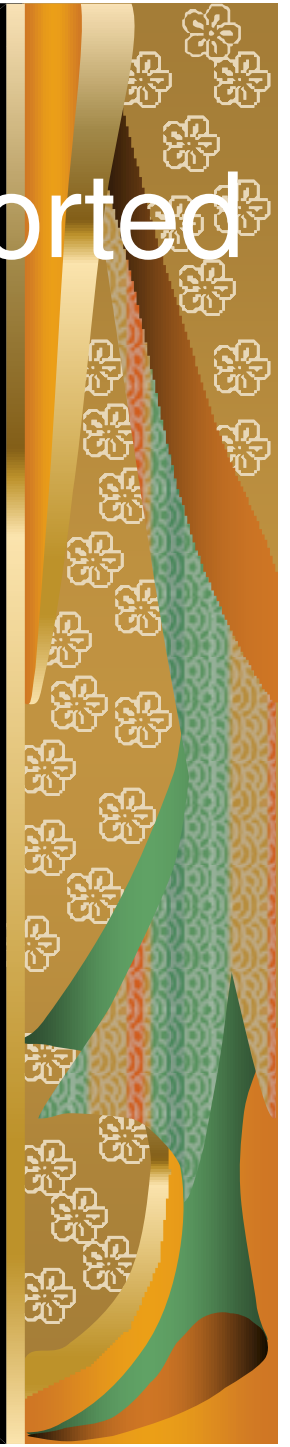
The goal of the experiment reported here was to objectively and statistically evaluate the effect of the bio-floc technology on infection of tilapia by streptococci.



Tilapia (Areochromis sp., all male) were grown in tanks,at a density of ca 7kg m-1 using two treatments: Exchanging water at a rate on 7 time a day (conventional control) and a limited 10% daily exchange (BFT).

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10% of the fish
were challenged
by injecting a dense
Streptococcus iniae dose.
The infected fish were tagged.
Fish were sorted to healthy. Sick and dead fish following 20 days.

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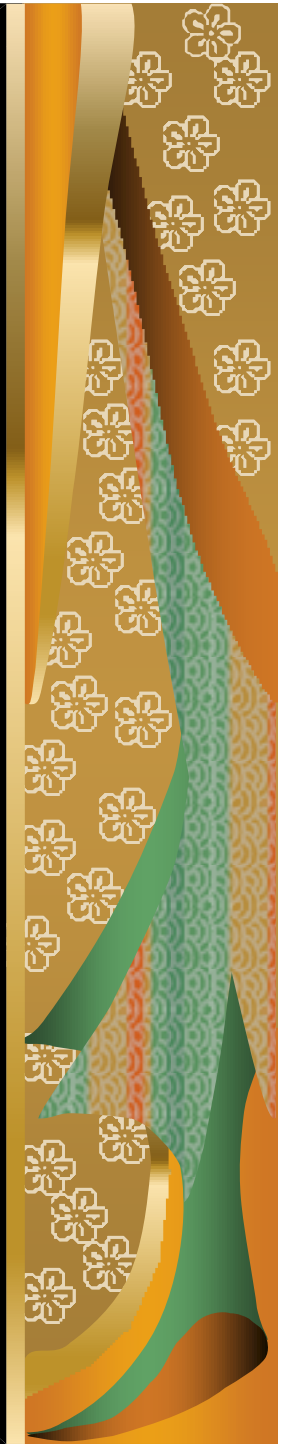
No significant differences were found regarding the infection in the challenged fish.



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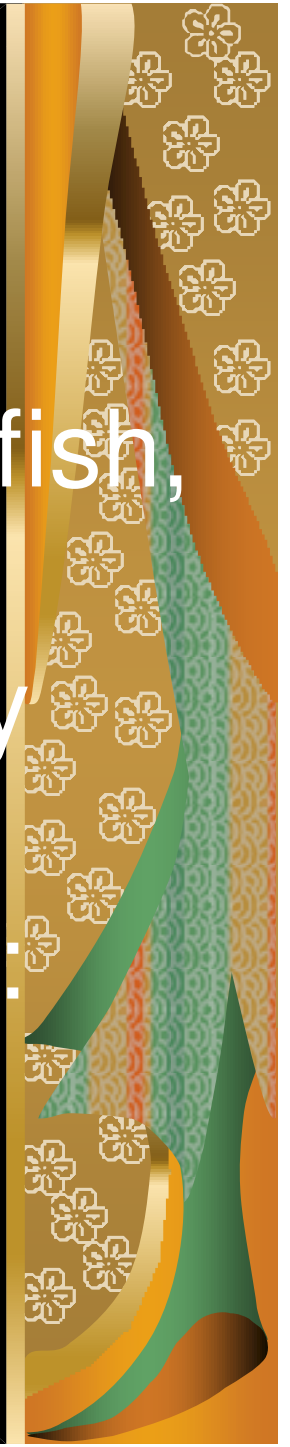
However, for the non-challenged fish, the rate of disease in the BFT treatmentwas significantly lower (25%) as that found in the control treatment:



Treatment, Tank #	Dead fish	Sick fish	Total infected
Control, High water exchange			
1	3	3	6
2	6	6	12
3	14	3	17
4	4	5	9
Average (± SD)	6.8 (5.0)	4.3 (1.5)	11 (4.7)
Bio-flocs			
1	2	2	4
2	1	2	3
3	4	0	4
4	0	1	1
Average (± SD)	1.8 (1.7)	1.3 (1.0)	3 (1.4)
t-test significance	0.107 **N.S**	0.015	0.017

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The effect demonstrated here could be due to several mechanisms. It is possible that the dense heterotrophic population (1,000,000 - 10,000,000 per ml)), attack the pathogens released to the water
by sick and dying fish.

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Other possibilities may be
a competition on sites for
microbial adherence,
or a positive effect of the bio-flocs
on the well being and vigor of fish.

The work presented here
demonstrates
that naturally
occurring bacteria, may have a
beneficiary effect on the health of the
cultured animal and
its resistance toward disease

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It was shown that the bio-flocs
systemprovides a protective shell
to the fish, through a probiotic
effect.