
()
(*Lactuca sativa*) (*Oreochromis sp.*)
(Aquaponic)

()
()
/ ±/
(P > /)
/ ±/ / ±/
(P < /)
± ±
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/ / : / / :

(Email :rezarafiee@yahoo.com)

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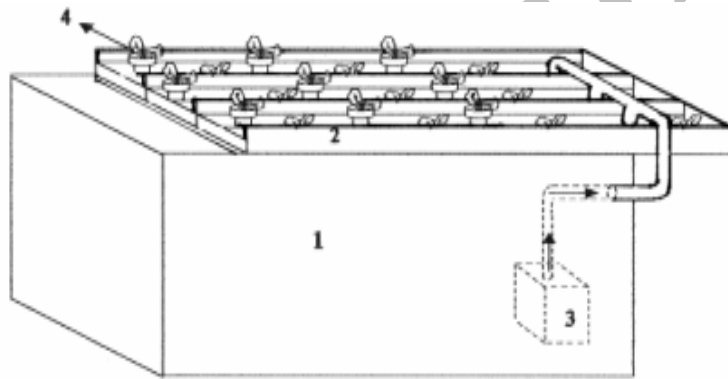
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(PVC)

×



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-Pellet
-Cargill

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(T) (DO)

(YSI, Model
(Ec) 57)

(Arc sin) (HANNA HI8033)
t-Test (pH)
(Zar, 1996) (Orion Model 410A)

(APHA)

() (APHA, 1992)

/)

(P> / ±/

ε

(Mean± SD)

	()	()	()
	/ ± /	.00 ± /	/ ± /
	/ ± /	/ ± /	/ ± /

()

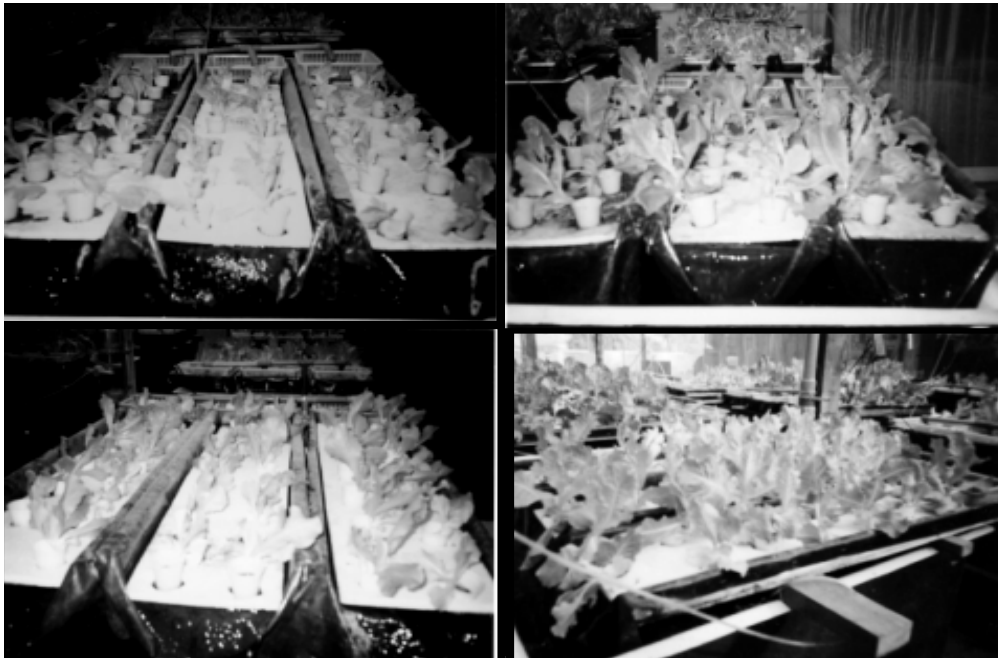
(P > /)

(P < /)

-T-test A Simple Ineependent

	()	()
	/ ± / a	± a
	/ ± / a	± b

/



ε

()

(())

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(P < /)

()

(Mean ± SD)

/ ± / a	/ ± a	/ ± / a	/ ± / a	/ ± / a	/ ± / a	/ ± a
/ ± / a	/ ± / a	/ ± / a	/ ± / a	/ ± / a	/ ± / a	/ ± /

/

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$K^+, Na^+, Ca^{++}, Cu^{++}, NH_4^+$

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NH_4^+, Cu^{++}, Zn^{++}

K^+, Ca^{++}, Na^+

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Effects Of Dietary Zeolite on the Growth of Red Tilapia (*Oreochromis Sp.*) And Lettuce (*Lactuca sativa*) in an Aquaponic System

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Ch. R. Saad²

Abstract

The effect of natural dietary zeolite (at a level of 3%) on the growth of red tilapia and lettuce seedlings in an aquaponic system was evaluated. The experimental unit was a recirculating system consisted of a fiberglass tank with 120 cm (width) x 80 cm (Length) x 100 cm (height) equipped with three hydroponic troughs (110 cm L x 30 cm W x 7cm D) and a submersible pump (Model Aqua, 1500) with the power of pumping 30 l/ min of water used for recycling water from the rearing tank through the hydroponic troughs. At the initiation of the experiment each fish tank was filled with 640 liters of gentle aerated tap water, then 50 pieces of red tilapia juvenile with a mean body weight of 6.23 ± 0.10 g were introduced into it. After two weeks of initiating the experiment, 42 cups, each containing one-week aged seedlings of lettuce were introduced in the hydroponic troughs in each experimental unit. The experimental design was a completely randomized one in triplicates for each treatment. In the investigating treatment, fish were fed with a dietary zeolite and in the control treatment they were fed with a zeolite free diet. The quality in both diets based on biochemical composition (protein, fat, fiber and total energy) was the same. The individual weight, biomass and mortality of fish were not significantly different ($P > 0.05$) among treatments at the end of experiment. Mean individual body weight in fish was 32.50 ± 2.00 and 32.80 ± 2.02 in treatments control and dietary zeolite, respectively at the end of experiment. Utilization of dietary zeolite increased the yield of lettuce significantly ($P < 0.05$) as compared to control. Lettuce yield was 275 ± 83 and 768 ± 67 in treatments control and dietary zeolite, respectively. The concentration of total ammonia was significantly lower ($P < 0.05$) in fish rearing tanks in treatment with dietary zeolite at the end of experiment. The results in this research indicated that use of a dietary zeolite (at a level of 3%) evidently increases the growth of lettuce seedlings in an aquaponics system and emphasized the need for a further research to investigate the effect of different levels dietary zeolite on the growth of red tilapia in an aquaponic system.

Keywords: Aquaponic system, Fish diet, Lettuce, Red tilapia, Zeolite.

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