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شبكة المعلومات الجامعية



شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم



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شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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**Effect of Phytoplankton (*Chlorella vulgaris* and
Scenedesmus spp.) Inoculation on Water Quality
for Tilapia Culture by Urea and
Superphosphate**

By

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ABSTRACT

In this study fingerlings of tilapia hybrid (*Oreochromis niloticus* x *Oreochromis aureus*) were cultured in 18 glass aquaria (75 x 40 x 60 cm) and two species of phytoplankton (*Chlorella vulgaris* & *Scenedesmus spp*) were used.

The investigative experiment included six treatments, each in three replicate aquaria. The first treatment was fertilization by urea at the rate of 435 mg commercial urea / aquarium. The second was the same use of urea plus the addition of phytoplankton at the rate of 5×10^4 cells/ml. The third treatment was fertilization by mono superphosphate (MSP) at the rate of 830 mg commercial MSP / aquarium. The fourth treatment was the same use of MSP plus the addition of phytoplankton at the rate of 5×10^4 cells/ml. The fifth treatment was fertilized by urea and MSP mixture at the rates mentioned above for each. The sixth treatment was the control one without any fertilization or phytoplankton application.

Phytoplankton played an important role in removing ammonia and nitrite from the water milieu, thus providing fish by more healthy conditions to grow.

The average of individual fish body weight (ABW) in the urea+phy. treatment at the end of the experiment was $(29.37 \pm 0.60 \text{ g})$ which was significantly ($P < 0.05$) greater than that of control $(25.22 \pm 0.84 \text{ g})$, and the other treatments. The fish in urea treatment had the lowest value of ABW $(19.22 \pm 1.30 \text{ g})$, this is ascribed to the elevated values of un-ionized ammonia (NH_3) and nitrite concentrations in the water in this treatment. On the contrary urea+phy. treatment had the lowest values of un-ionized ammonia and nitrite due to phytoplankton uptake of the nitrogenous compounds (urea in this study) from the water milieu, consequently, transforming it to more appropriate medium for fish growth.

M.A. Salem

الموجز

فى هذه التجربة تم استزراع إصبعيات البلطى الهجين (البلطى النيلى X البلطى الأزرق) فى ١٨ حوض زجاجى بأبعاد (٧٥ X ٤٠ X ٦٠ سم) كما تم استخدام نوعين من الطحالب الخضراء (الكلوريلا فالجارس والسندسمس).

شملت هذه التجربة ستة معاملات لكل منها ثلاثة تكرارات وكانت المعاملة الأولى هى التسميد بسماد اليوريا بمعدل ٤٣٥ مجم/حوض. المعاملة الثانية هى التسميد باليوريا بنفس المعدل السابق بالإضافة إلى إضافة الطحالب إليها بتركيز ١٠ X ٥^٤ خلية/مل. المعاملة الثالثة هى التسميد بالسوبرفوسفات الأحادى بمعدل ٨٣٠ مجم/حوض. المعاملة الرابعة هى التسميد بسماد السوبرفوسفات الأحادى بنفس المعدل السابق بالإضافة إلى إضافة الطحالب إليها بتركيز ١٠ X ٥^٤ خلية/مل. المعاملة الخامسة هى التسميد بمخلوط سمادى اليوريا والسوبرفوسفات بنفس المعدلات المذكورة سابقاً. المعاملة السادسة كانت control بدون إضافة أى سماد أو طحالب.

لعبت الطحالب دوراً هاماً فى عملية إزالة الأمونيا والنترت من البيئة المائية مما وفر ظروفاً أفضل لنمو الأسماك.

كان متوسط الوزن الفردى فى نهاية التجربة فى معاملة urea+phy (٢٩,٣٧ ± ٠,٦٠ جم) أعلى معنوياً عنه فى الـ control (٢٥,٢٢ ± ٠,٨٤ جم) وباقى المعاملات. وكانت معاملة urea صاحبة أقل وزن للأسماك. وهذا يعزى إلى إرتفاع تركيز كلاً من الأمونيا غير المتأينة (NH₃) والنترت فى هذه المعاملة كنتيجة لإستخدام اليوريا كسماد وحيد. وعلى النقيض من هذا فإن معاملة urea+phy كانت صاحبة أقل تركيز من الأمونيا و النترت كنتيجة لإمتصاص الطحالب لهذه المركبات النيتروجينية من الوسط المائى مما جعله أكثر ملائمة لنمو الأسماك.



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