

Dedication

I dedicate this study to my father's soul.

To my mother, brothers and sisters.

To my beloved wife.

Acknowledgements

I thank Dr. Ahmed E. Hamad for his guidance during the study period. The Principal, General Directorate of Fisheries, Blue Nile State is also acknowledged for giving time permission for the research work. Special thanks to my colleagues in Departments of Fisheries Science and Wildlife, College of Animal Production Science and Technology, Sudan University of Science and Technology for their technical advices. The manager and technical staff at Khartoum State Fish Hatchery are acknowledged for their technical assistance and Dr. Asaad Hassan Widaa for statistical advice.

Abstract

The present study was conducted over a 40 days period based on a 3×3 factorial design with three rearing densities ($D1 = 100$, $D2 = 200$, and $D3 = 300$ fish/m³) and three levels of feeding rates (25%, 30%, and 35% of body weight) using feed having 36.8 crude protein (CP) to study the effects of stocking density and feeding levels on the growth and survival of fry *Oreochromis niloticus* L. cultured in hapas in an earthen pond. Fish of average initial weight $1.1 \text{ g} \pm 0.03$ were stocked at three different rates: 6, 12 and 18 fish per hapa ($30 \times 40 \times 50$ cm about 60 litre each). Fish of each density were fed on the above experimental diets till satiation twice daily, 6 days a week, for 6 weeks.

The growth parameters were inversely affected by stocking density and feeding level with positive effect on their interaction. The average final weights varied significantly ($P < 0.05$) and varied at $D1$ from 2.30 to 4.23 g, at $D2$ from 2.80 to 2.97 g and $D3$ from 2.63 to 2.90 g. Fish stocked at 100/m³ with feeding level 25% exhibited the highest average weight gain (3.17 ± 0.03 g) while; fish stocked at 300/m³ with feeding level 35% recorded the lowest average weight gain (1.60 ± 0.07 g). The lowest feeding rate with lowest stocking density recorded the best feed conversion ratio, protein efficiency ratio and relative growth rate, with significant differences. Condition factor and fish survival in different experimental groups were significantly affected by rearing densities and protein levels. The overall results recorded here reveal that the best growth performance of *Oreochromis niloticus* was obtained when the fish were fed on the 25% of body weight diet and when reared at a stocking density of 100 fish/ m³.

الخلاصة:

أجريت الدراسة لمدة ٤٠ يوماً اعتماداً على طريقة تعدد العوامل (٣×٣) بواسطة ثلاثة كثافات تخزينية (ك١=١٠٠، ك٢=٢٠٠، ك٣=٣٠٠ سمكة/م^٣) وثلاثة معدلات تغذية (٢٥%، ٣٠%، ٣٥%) (من وزن السمكة) باستخدام عليقة تحتوي على ٣٦,٨ بروتين للتحقق من تأثير مستوى الكثافة التخزينية ومعدلات التغذية على النمو والإعاشة لزريعة البلطي النيلي بإستزراعها في هابات داخل أحواض ترابية. أدخلت الأسماك بالوزن الإبتدائي ١,١٠ ± ٠,٠٣ جرام في ثلاثة كثافات مختلفة ٦، ١٢، ١٨ سمكة / الهابا (٣٠ × ٤٠ × ٥٠ سم). أعطيت أسماك التجربة هذه العلائق مرتين في اليوم ولمدة ٦ أيام في الأسبوع لفترة ٦ أسابيع.

دلت نتائج معدلات النمو والإعاشة على وجود فروق معنوية (٥%) عند رعاية زريعة البلطي النيلي في كثافات تخزينية مختلفة وفي معدلات تغذية مختلفة، حيث تتأثر عكسياً مع كل من الكثافة التخزينية ومعدل التغذية. سجلت الاختلافات في الكثافات التعميرية في (ك١ من ٢,٣٠ إلى ٤,٢٣ جرام، ك٢ من ٢,٨٠ إلى ٢,٩٧ جرام و ك٣ من ٢,٦٣ إلى ٢,٩٠ جرام. الزريعة التي تمت رعايتها في كثافة ١٠٠ سمكة / م^٣ بمعدل تغذية ٢٥% سجلت أعلى متوسط في الزيادة الوزنية (٣,١٧ ± ٠,٠٣ جرام) بينما سجلت الزريعة المرباه في كثافة ٣٠٠ سمكة / م^٣ بمعدل تغذية ٣٥% أقل متوسط في زيادة الوزن (١,٦٠ ± ٠,٠٧ جرام). معامل الحالة ومعدل الإعاشة في كل مجموعات التجربة تأثرت باختلاف الكثافة ومعدل التغذية بفروق معنوية (٥%). النتائج التي سجلت في هذه الدراسة تشير إلي أن أفضل معدل نمو وإعاشة حدث عندما تمت رعاية أسماك التجربة في كثافة تخزينية ١٠٠ سمكة / م^٣ بمستوى تغذية ٢٥% من وزن السمكة.

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