

СПИСЪК
на публикациите на гл. ас. д-р Галин Янков Николов
представени в конкурс за академичната длъжност „Доцент”

1. Стайков, Й., В. Видев, Г. **Николов** (2002). Влияние на оптимизираната схема на хранене върху времето за улов на тилапии, култивирани в рециркуляционна система. *Journal of Mountain Agriculture on the Balkans*, vol. 5, 3, 242-252.

Abstract

The technology for growing of different species of hydrobionts in closed system insures sustainable production in aquaculture avoiding conflicts with the environment over the past years there has been increased attention on development of models and operating systems of practical importance, which may be modified and used under practical conditions. The aim of the study was to determine the influence of optimized feeding schedule on the harvesting time of hybrid tilapia. For optimizing of the feeding schedule and harvesting time of cultivated tilapia deterministic dynamic programming was used, which helped determining of the profit from fish production. Applying of optimized feeding schedule of tilapia, cultivated in close system entailed decreasing of cultivating period to marketing size and, consequently, increased the profit on fish farms.

2. Атанасов, В., Й. Стайков, Г. **Николов** (2004). Изкуствено размножаване на Щука (*Esox Lucius*). *Животновъдни науки*, 5, 67-71.

Abstract

*The experiments were carried out with sperm activating media for artificial insemination of eggs from freshwater fishes. It was found that extender N 49283, which increased the ejaculate volume, did not activate the spermatozoa of *Esox lucius* and did not have a negative effect on the gametes. Medium N 49397 had the best sperm activating effect and multiplied the genetically esteemed fish males. It may be used for artificial insemination of pike's eggs along with extender N 49283. The reproductive effect obtained was 20% higher with medium N 49397 only or in combination with extender N 49283.*

3. Atanasov, V., J. Staykov, G. **Nikolov** (2006). Sperm diluent VKA-3 for artificial propagation of carp (*Cyprinus carpio*). *Bulg. J. Agric. Sci.*, 12, 176-184.

Abstract

*Experiments were carried out with several world known sperm activating media for artificial insemination of eggs from freshwater fishes. It was found that extender VKA-3 increasing the ejaculate volume does not activate the *Cyprinus carpio* L. spermatozoa and does not have negative effect on the gametes. VKA-3 protects carp spermatozoa from destructive changes of the membranes - fact marked by low cholesterol level in seminal plasma. Medium VKA-2 have the best sperm activating effect and may use along with diluent VKA-3 for artificial insemination of carp's eggs and multiply of genetic-esteemed fish males. The obtained reproductive effect was more 22% by using of sperm activator VKA-2 - single or along with extender VKA-3. The application of that media will be optimized the carp's propagation processes.*

4. Атанасов, В., Й. Стайков, Г. **Николов** (2006). Изпитване влиянието на някои протективни среди върху мотилитета и фертилитета на сперматозоиди от бял амур. *Животновъдни науки*, №1, 44-48

Abstract

Experiments were carried out with several well known sperm activating media for artificial insemination of eggs from freshwater fishes. It was found that media VKA-1 and VKA-2 have very good activating effect on spermatozoa. The time of activity was prolonged from 5 to 8 times at undiluted semen. Extender VKA-3 save vitality of the gametes but does not activate the Ctenopharyngodon idella Val. spermatozoa. Only media VKA-1 and VKA-2 have perfect activating effect on diluted with VKA-3 spermatozoa and the time of motility up to 5-8 times.

5. Атанасов, В., Й. Стайков, Г. **Николов**, Т. Пашов (2006). Енергиен метаболизъм на щука през предличинковия и личинковия период. *Животновъдни науки*, 5, 55-60

Abstract

Experiments were carried out with 82 fingerlings from Esox lucius L. cultivated in Trakia University and Tundja -73 - Nikolaevo. Some biochemical parameters were investigated. The energy metabolism of pike fingerling from Gabarevo was more intensive in comparison with these one from Thracian University, probably in connects with food diverse in natural lake. Diversification of food, with some other zooplankton species, like as Daphnia, Ciclops, Gamarus and Tubifex will be optimized the pike's growth.

6. Павлов, А., Г. **Николов** (2007). Натриев перкарбонат - перспективи за приложението му в аквакултурата. *Екология и бъдеще*, 2, 20-25.

Abstract

Натриев перкарбонат е важен неорганичен продукт, който може да се разглежда като смес от натриев карбонат и водороден пероксид. Натриевият перкарбонат има широко приложение освен като кислороден избелител в перилната индустрия, но и като генератор на кислород за малки изкуствени водоеми, почистващо и дезинфекциращо средство, средство за третиране на отпадни води и др.

7. Павлов, А., Г. **Николов** (2007). Изследване на натриев перкарбонат като средство за борба с при някои сладководни видове. *Екология и бъдеще*, 3, 18-21.

Abstract

Effect of sodium percarbonate independently and with combination with formaldehyde, on parasitic disease was investigated. Effect of treating was showed by percent surviving or relativity mortality during 14 days period of experiment. The best results on the fish treating with 100 mg/l sodium percarbonate were reported. The results of investigation show, that sodium percarbonate is one alternative means of fight with that parasitic disease.

8. Атанасов, В., Й. Стайков, Г. **Николов** (2007). Изпитване влиянието на някои протективни среди върху мотилитета и фертилитета на сперматозоиди от каракуда (*Carassius auratus*). *Животновъдни науки*, 1, 44-48.

Abstract

Experiments were carried out with several world-known sperm activating media for artificial insemination of eggs from freshwater fish. It was found that the VKA-3 extender increasing the ejaculate volume did not activate the Carassius auratus and its spermatozoa and did not have a negative effect on the gametes. The VKA-2 medium had the best sperm-activating effect and might be used along with diluent VKA-3 for artificial insemination of carassius eggs and for multiplying of genetically-esteemed fish males. The obtained reproductive effect was 16% higher when the sperm activator VKA-2 was used single or along with the VKA-3 extender. The application of this media would optimize the carassius propagation processes.

9. Г. **Николов**, Й. Стайков, В. Видев, Л. Йорданова (2007). Оптимизиране на влиянието на храненето върху времето за улов на руска есетра (*Acipenser gueldenstaedtii*) култивирана в рециркулационна система. *Животновъдни науки*, 6, 112-123.

Abstract

The technology of rearing of different hydrobionts in recirculation system ensures steady production of aquaculture without creation confliction with environmental protection. The matter of development of practically oriented models and operation system, which could be easily modified and maintained under the industrial conditions during the recent years increased. The aim of research was to determine the influence of optimization scheme on the catch of Russian sturgeon, reared in a recirculation system. Deterministic dynamic programming was used to the optimization of the feeding scheme of cultivated Russian sturgeon on the time of their catch which allowed determination of the profit of fish rearing. The applying of optimized system feeding of Russian sturgeon in RAS allowed shortening of their cultivation period to consumable size and led to increase the profit of the fish farm.

10. Д. Гиргинов, Й. Стайков, Г. **Николов**, В. Видев (2007) Намиране на времето на улов на шаран култивиран в затворена система при хранене с гранулирани фуражи с различно протеиново съдържание. *Животновъдни науки*, 5, 51-57.

Abstract

This study was carried out in the experimental base in aquaculture of Trakia University, Stara Zagora. The aim of this research was to determine the time for catch of cultivated carps. The carps were reared in a density of implantation 30 n/m³ in a cement tubs 1/1/1m, in size. The tubs were elements of a RAS with shared capacity of 16 000l. The flow rate of water in the bath-tubes was 10l/min. The feeding of cultivated carps was manual, five times a day. In this feeding scheme were used fodders with different protein levels (CP 26%, CP 24%, CP 22%). The optimized feeding system for carps could be used for shorting the cultivation period for reaching the market size. It led to an increase in the profit of the fish farm.

11. Гиргинов, Д., Г. **Николов**, Г. Кирякова, А. Атанасов (2007). Влияние на нивото на суровият протеин в хранителните смеси върху растежа на шаран (*Cyprinus*

caprio) култивиран в рециркулационна система. Международна научна конференция, Стара Загора, Сборник том II, Животновъдство, 450-455.

Abstract

The study was taken in the experimental base in aquaculture of Trakia University, Stara Zagora. The object was to examine the effect of crude protein in granulated fodder to the growth of carps, cultivated in RAS. The carps were reared in a density of implantation – 30 n/m³ in a cement bath-tubes with the following sizes – 1/1/1m, which are parts of the RAS with shared capacity of 16 000l. The feeding of cultivated carps was taken manually five times in a day. In this feeding scheme were used fodders with different protein levels (CP 26%, CP 24%, CP 22%). It is found that the biennial carps, which were fed with granulated fodder with protein level of 22% - 568,91 g, has the highest increase, then comes the fishes from the second experimental version – 559,89g and the lowest increase had been seen in the first experimental version – 497,36g. The crude protein quality does not influence on the carps subsistence or their vitality.

12. Д. Гиргинов, Й. Стайков, Г. **Николов**, Г. Кирякова, К. Неделков (2007). Влияние на храненето върху времето на улов на шаран (*Cyprinus caprio*) култивиран в рециркулационна система. Международна научна конференция, Стара Загора, 2007г., Сборник том II, Животновъдство – 456-462.

Abstract

The study was taken in the experimental base in aquaculture of Trakia University, Stara Zagora. The aim of research was to determine the time for catch of cultivated carps. The carps were reared in a density of implantation – 30 n/m³ in a cement bath-tubes with the following sizes – 1/1/1m, which are parts of the RAS with shared capacity of 16 000l. The flow rate of water in the bath-tubes was 10l/min. The feeding of cultivated carps was taken manually five times in a day. In this feeding scheme were used fodders with different protein levels: (CP 26%, CP 24%, CP 22%). The optimized system in feeding of carp could be used for shorting of their cultivation period to consumable size and led to increase of the profit in the fish farm

13. Д. Гиргинов, Г. **Николов**, В. Видев, К. Неделков (2008) Оптимизационен модел за контрол върху растежа на рибите. *Животновъдни науки*,

Abstract

This paper presents a bioeconomic model for determining cost-effective feeding regimes for pond-reared fish. The interplay among feed allowance, diet quality, and harvest date is explored. The optimal control model used is flexible, incorporates the effects of water temperature on fish appetite, and can be used to gain insight into efficient management of aquaculture production systems in different geographical regions.

14. **Николов, Г.**, А. Атанасов (2008). Chemical composition and food values of rainbow trout (*Oncorhynchus mykiss*) cultivated in recirculation system. *Научни трудове по химия, ПУ-Паусий Хилендарски*, ISSN 0204-5346, т. 38, кн. 5, 127-131.

Abstract

The objective of this experimental trial was to determine the chemical composition of meat of rainbow trout. The experiment was conducted on four concrete tanks. The tank experiment (45 days) involved 40 fishes with an initial average weight of 150 g. The fishes received feeds containing 45% crude protein and 18% fat. The percentage values of the protein, water, fat and ash contents of the rainbow trout meat samples were 15.26 – 16.36, 74.92 – 75.98, 3.59 – 5.48 and 1.56 – 1.66%, respectively. The amount of trace elements in fish meat: calcium, 00,15 – 0,30 %; phosphorus, 0,26 – 0,32 %.

15. **Николов, Г.**, (2008). Влияние на храненето и гъстотата на посадка върху хидрохимичните показатели при отглеждане на руска есетра (*Acipenser gueldenstaedtii*) в рециркуляционна система. *Journal of Mountain Agriculture on the Balkans*, vol. 11, 3, 381-396.

Abstract

The effect of stock density on hydro chemical parameters of water on fish reared in a RAS was studied. Subject of the experiment were Russian sturgeon of average individual weight of 10 g. the fish were reared with the following stock density: D1 – 20 fish/m³, D2 – 35 fish/m³, D3 - 55 fish/m³

16. **Николов, Г.**, А. Атанасов, Д. Георгиев (2008). Контрол върху аквакултурни продукти и технологията им на производство (ДПП). *Сборник ТК-Ямбол*, ISBN 978-954-9999-563-1 , 283-288.

Abstract

Good Manufactures Practices is the system of basic hygiene and technology rules, which use of food industry and trading, for minimize risk of infections. GMP is address environmental, economic and social sustainability for on-farm processes, and result in safe and quality food aquaculture products. Four 'pillars' of GMP (economic viability, environmental sustainability, social acceptability and food safety and quality) are included in most private and public sector standards, but the scope which they actually cover varies widely.

17. **Николов, Г.**, А.Атанасов, В.Иванов (2008). Ефект на биофлавоиди и мананолигозахариди върху растежа на дъгова пъстърва (*Oncorhynchus mykiss*) култивирана в рециркуляционна система. *Journal of Mountain Agriculture on the Balkans*, vol. 11, 5, 791-799.

Abstract

*The effect of bioflavonoid and mannan oligosaccharide on the hydro-chemical parameters of water on fish reared in a recirculation system was studied. The experiment was conducted on twenty cages. Subject of the experiment (45 days) were 480 rainbow trout (*Oncorhynchus mykiss*) fish with an initial average weight of 15 g. The experiment compared a commercial extruded diet with 2.0% mannan oligosaccharide and 0.2% bioflavonoid supplementation.*

18. Иванов, В., Г.Николов, А.Атанасов Н.Грозева (2008) Електронномикроскопско изследване на лиофилизирана кръвна плазма след термична деструкция. *Селскостопанска наука*, XLI, 4, 11-15.

Abstract

Activated carbon is produced by thermal destruction (from wood, blood, peat, bone and other organic material) and activated by different methods. The purpose of this report is to investigate by electronic microscopy the products of thermal destruction of lyophilized blood plasma with a view to produce of activated materials with good sorption capacities.

19. Иванов, В., Г. Николов, А. Атанасов, Н. Грозева (2008). Диференциално-термичен анализ на лиофилизираните кръвни продукти пред и след сорбция на пари на някои органични съединения. *Селскостопанска наука*, XLI, 4, 16-23.

Abstract

The purpose of this investigation is to determine the properties of lyophilized blood products, applying differential-thermal analysis before and after sorption of vapours of organic compounds has occurred. Laboratory test analyses show that thermal destruction of lyophilized blood products, which have absorbed vapours of a kind of organic solvents, starts to occur at lower and completes at higher temperature, compared to the temperature levels in experiments with pure lyophilised blood products.

20. Николов, Г., А. Атанасов, В. Иванов (2008). Изследване влиянието на хранителни добавки, върху хидрохимичните параметри при отглеждане на дъгова пъстърва (*Oncorhynchus mykiss*) в рециркуляционна система. *Животновъдни науки*, XLV, 5, 70-74.

Abstract

The effect of bioflavonoid (Taxifolin®) and mannaoligosaccharide (BioMos®) on the hydro chemical parameters of water on fish reared in a recirculation system was studied. The experiment was conducted on twenty cages. Subject of the experiment (45 days) were rainbow trout (Oncorhynchus mykiss) 480 fish with an initial average weight of 15 g. The experiment compared a commercial extruded diet with 2% manna oligosaccharide and 0.2% bioflavonoid supplementation. The feeding was manual, five times a day. This experimental trial demonstrated no effect of bioflavonoid and manna oligosaccharide on the hydro chemical parameters of water of rainbow trout cultivated in recirculation system.

21. Николов, Г., А.Атанасов, А.Павлов, Д.Георгиев (2008). Влияние на натриев перкарбонат в комбинация с негансена вар, върху заразени с Лерниоза шарани (*Cyprinus carpio*). *Сборник СУБ-Стара Загора*, ISBN 978-954-932-944-5.

Abstract

*Effect of sodium percarbonate independently and with quicklime, on parasitic disease *Lernaea cyprinacea*, was investigated. Effect of treating was showed by percent of surviving, health status and average body weight of the experimental fish. The results of*

investigation show, that sodium percarbonate is one of alternative means on fight with that parasitic disease.

22. **Николов, Г.,** А.Атанасов, А. Павлов, Е.Вълкова (2009). Алтернативна терапия I. Заразени с ихтиофтириус (*Ichthyophthirius multifiliis*) шарани (*Cyprinus caprio*). Сборник СУБ-Стара Загора, ISBN 978-954-932-945-2 , 71–75.

Abstract

Effect of biocide product HMI[®] Supersept and malachite green, on parasitic disease (Ichthyophthirius multifiliis) in recirculation system, was investigated. The experiment was conducted on four concrete tanks. Subject of the experiment (14 days) were carp (Cyprinus caprio) 150 fish with an initial average weight of 50 g. The experimental fish treated with 0.10 mg, or 0.10 ml. per liter malachite green, and use HMI[®] Supersept 0.04 mg, or 0.04 ml. per liter. The results of investigation show, that HMI[®] Supersept is alternative means on malachite green.

23. **Николов, Г.,** А. Атанасов, В.Видев (2009). Ефект от използването на хранителни добавки върху максимизиране на печалбата при отглеждане на дъгова пъстърва (*Oncorhynchus mykiss*) в рециркуляционна система. *Животновъдни науки*, 1, 59-63.

Abstract

*The effect of bioflavonoid (Taxifolin[®]) and mananoligosaccharide (BioMos[®]) on the profit was studied. The experiment was conducted on twenty cages. Subject of the experiment (45 days) were rainbow trout (*Oncorhynchus mykiss*) 480 fish with an initial average weight of 11 g. The experiment compared a commercial extruded diet with supplementation. The feeding was manual, five times a day. In this feeding scheme were used 2% mananoligosaccharide and 0,2% bioflavonoid supplementation. This experimental trial demonstrated no improve the reaching market size of rainbow trout with supplementation produced in recirculation system.*

24. Видев В., А.Атанасов, **Г.Николов**, М.Маринова (2009). Характеризиране на качеството на месото на пъстърва (*Oncorhynchus mykiss*) и шаран (*Cyprinus caprio*) чрез биологични дистанции. *Trakia Journal of Sciences*, Vol. 7, Suppl. 2, 201–206.

Abstract

The objective of this experimental trial was to determine the meat quality of rainbow trout and carp using biologically distances. The experiment involved 12 rainbow trout (6 male + 6 female) and 6 carp (3 male + 3 female) with an initial average weight of 280 g and 1000g respectively. The protein, water, fat, ash contents and trace elements of the rainbow trout meat and carp meat were analyzed. The chemical composition of fish varies greatly from one species and one individual to another depending on age, sex, environment and season.

25. Атанасов, А., **Г.Николов**, Г.Кирякова, Л.Йорданова (2009). Сравнение на месото от пъстърва (*Oncorhynchus mykiss*) и шаран (*Cyprinus caprio*) с други бели и червени меса. *Trakia Journal of Sciences*, Vol. 7, Suppl. 2, 199 – 201.

Abstract

This study was carried out to compare the food values and meat quality of the rainbow trout and carp cultivate with some mammalian and bird meats. The experiment involved the 2-years old male and female fish with different initial weight. We analyzed the protein, amino acids, lipid of the rainbow trout meat and carp meat. This study is related to the problems associated with the choice on consummators and sales of the freshwater fish in Bulgarian markets.

26. Атанасов, А., **Г.Николов**, В.Семерджиев (2009). Влияние на манан-олигозахариди върху растежните показатели на шаран (*Cyprinus caprio*) култивиран в рециркулационна система. *Животновъдни науки*, XLVI, 6, 32-36.

Abstract

*The objective of these experimental trials was to determine the effect of a mannanoligosaccharide (BioMos[®]) derived from the outer cell wall of *Saccharomyces cerevisiae*¹⁰²⁶ strain on the growth performance of carp cultivated in recirculation system. The concrete cage experiment (90 days) involved 40 fish with an initial average weight of 0,780 kg. The experiment compared a commercial extruded diet (Bonmix 50-2) with and without 2 ppm (BioMos[®]) supplementation. These experimental trials demonstrated no influence of a mannanoligosaccharide (BioMos[®]) to the growth performance carp in recirculation system.*

27. Atanasov, A., **G. Nikolov**, Z.Zhelev, L.Yordanova (2009). Aquaculture as a subsidiary subject in the ecology, animal science and vet students` curriculums. *Proceeding of 5th Congress*, vol. 1, 36 – 40.

Abstract

Aquaculture is a relatively new subject for the students who major Ecology, Animal science and Veterinary medicine at Trakia University, Stara Zagora, Bulgaria. In the classes they become familiar with the technical supplies, gadgets, arranging and sustaining the suitable hydro-chemical and physical characteristics of the waters in an aquarium. In the article we research the impact of this course on their GPA scores. Some statistical and data analysis has also been presented.

28. Atanasov, A., **G.Nikolov**, K.Stankov, V.Videv (2010). Economic efficiency and environmental impacts of extruded diets in Rainbow trout (*Oncorhynchus mykiss*). *Trakia Journal of Sciences*, Vol. 8, Suppl. 1, 162 – 165.

Abstract

Rainbow trout is a species with a high potential for aquaculture in Bulgaria. One of the priorities for development of a profitable commercial activity is formulation of cost-effective diets. The present work was developed with the aim of testing two extruded diets differing in the

sources of protein (SM or FM). The effect of the diets was evaluated based on growth (SGR), feeding performance (FCE, PER). The tested diets induced good performance results and profits.

29. **Nikolov, G.**, A. Atanasov, D. Georgiev, E. Raichev (2010). Analysis of the plankton in the area around the Cape Maslen Nos, Bulgaria: Possibilities for cultivation of Mediterranean mussels (*Mytilus galloprovincialis*). *Ecologia Balkanica*, vol. 2, 15-18.

Abstract

The aim of the study was to establish the species taxonomic composition and the quantitative characteristics of plankton in the Cape Maslen Nos area. Representatives of the Protozoa, Rotatoria, Annelida, Mollusca and Arthropoda predominated in the composition structure of zooplankton whereas members of Bacillariophyta, Chrysophyta, Dinophyta, Cyanophyta, Euglenophyta in that of phytoplankton. The comparative analysis of phytoplankton data shows that the highest mean biomass values were 24.76 – 33.33 g/m³ and mean biomass values of zooplankton – 51.43 g/m³.

30. **Николов, Г.**, А. Атанасов, К. Станков, А. Джоскан 2010. Определяне на brutния доход при различни гъстоти на посадката за руска есетра (*Acipenser gueldenstaedtii*). *Икономика и управление на селското стопанство* vol. 6, 58-61.

Abstract

Представяне на проблема: Основната цел на този експеримент се състои в определяне ефекта на гъстота на посадка при руска есетра, отглеждани в рециркуляционна система за аквакултури. **Подход:** Влиянието на гъстотата и качеството на водата върху брутен доход при руска есетра е изследвана в продължение на 90 дни. Трите експериментални варианти (D1, D2 и D3) са формиранни при отглеждане с различна плътност на риба: 35 риби/m³ (първоначално средното тегло 19,56 грама), 45 риби/m³ (първоначално средното тегло 19,06 грама) и 65 риби/m³ (първоначално средното тегло 19,16 грама). Рибите са били хранени с храна съдържаща 45% протеини, 18% мазнини, като дневния порцион представлява 3% живата маса/ден. По време на експеримента показатели за качеството на водата (pH, O₂, T, NO₃) са отбелязали ежедневно, а на всеки 2 седмици, рибите са измервани индивидуално. **Резултати:** Оптимизиране на гъстота на посадка за руска есетра в рециркуляционна система се използва за намаляване на разходите и до увеличаване на печалбите в стопанството.

31. Atanasov, A., Z. Zhelev, V. Ivanov, **G. Nikolov** (2010) Effects of dietary VITASIL® on the growth performance of carp (*Cyprinus caprio*) cultivated in a recirculation system. *Bildiriler Kitabı II*, 551-554.

Abstract

Problem statement: We investigated the effects of Vitasil® supplementation on growth performance of the carp (Cyprinus caprio). Two hundred and forty carp with initial average weight 63,3±0,2 g were divided into three groups and reared in nine concrete tanks (1 m x 1 m x

1 m). Approach: The animals were fed with 3 diets: basal diet only (control), standart diet with 5% Vitasil[®] and diet with high content of protein and fat. Results: The results show that dietary Vitasil[®] levels significantly influenced the growth of the carp compared with the control group, average weight gain (AWG) in all treatment groups, body weight gain (RWG) and specific growth rate (SGR) in fish fed with diets supplemented with 5% Vitasil[®] were significantly increased ($P < 0.001$). Conclusion: In general, with the supplementation of Vitasil[®], particularly at dose of 5%, the growth performance can be improved effectively.

32. Atanasov, A., N. Rusenova, Y. Staykov, **G. Nikolov**, A. Pavlov, D. Stratev, E. Raichev (2011). Chemical surface disinfection of funnel type fish egg incubators. *Agriculture Science and Technology*, vol. 3, 3, 281-284.

Abstract

Different procedures and disinfectants are currently used to disinfect in aquaculture for preventing transmission of diseases and reducing problems with bacterial overgrowth in intensive egg incubation systems. The effect of two disinfectants and one anionic detergent on fish egg incubator funnel type was investigated. The fish egg incubators were disinfected for 20 min using various concentrations of glutaraldehyde (10000 mg L⁻¹), sodium percarbonate (25000 mg L⁻¹) and detergent surfactant (20000 mg L⁻¹). Bactericidal effect of disinfection, survival of hatching and hatching success were assessed. Effective disinfection was also recorded using apparatus Hy-lite2®Merck. Disinfection had a highly positive effect on the viability of yolk-sac larvae. Because of the low effect of sodium percarbonate and anionic detergent, glutaraldehyde is recommended for routine disinfection of fish egg incubator surface.

33. Sirakov, I., Y. Staykov, E. Ivancheva, **G. Nikolov**, A. Atanasov (2012). Morphometric characteristic of European perch (*Perca fluviatilis*) related to sex dimorphism. *Agriculture Science and Technology*, vol. 4, 3, 203-207.

Abstract

The relationships among 15 morphometric measurements and carcass weight in European perch (*Perca fluviatilis*) were examined in connection with sexual dimorphism. The determined sex ratio was 1:1.3 in the advantage of the male sex. The female perch were larger than male perch by 20,7%, but the carcass weight of the male specimens was by 4,7% better in comparison with the ones measured in female specimens. There were found five morphometric characters that differ between genders: LD1 (1-st dorsal fin length) ($p \leq 0.05$), LA (anal fin length) ($p \leq 0.05$), hA (anal fin height) ($p \leq 0.05$), lp (pectoral fin length) ($p \leq 0.001$), LV (ventral fin length) ($p \leq 0.05$).

34. Sirakov, I., K. Velichkova, **G. Nikolov** (2012). The effect of algae meal (*Spirulina*) on the growth performance and carcass parameters of rainbow trout (*Oncorhynchus mykiss*) *J. BioSci. Biotech.*, SE/ONLINE: 151-156.

Abstract

The effect of algae meal (*Spirulina* spp.) on the growth performance and carcass parameters of rainbow trout (*Oncorhynchus mykiss*) was studied. Algae meal was used as supplementary feed. One experimental diet – consisting of 10% *Spirulina*'s meal + basal diets (10% SD) – was used in the trial and compared to a control diet – a basal diet (BD) with 0% algae. The initial size of

rainbow trout from the control group was 14.95 g, whereas the group fed with experimental feed was at 14.66 g. They were stocked in semi-closed RAS at a density of 26 pcs/m³. The fish were acclimatized in the RAS for two weeks. The duration of the trial was 35 days. The weight gain, condition factor and average daily growth of rainbow trout fed with 10% SD were higher than those from the group fed with feed without algae supplement, but the differences were not statistically proven ($p>0.05$). The fish fed with experimental feed showed better weight of eviscerated fish, consumable yield and carcass weight compared with the carcass parameters showed from fish fed with BD, but difference was statistically proven ($p<0.05$) just for consumable yield.

35. Atanasoff, A., V. Ivanov, **G. Nikolov**, G. Zhelyazkov, B. Petrova 2012. Effects of dietary VITASIL® on growth performance of carp (*Cyprinus caprio*). *Proceeding of days of veterinary medicine*, ISBN: 978-9989-774-20-X, 90-93.

Abstract

One of the most widely cultured species in the world is common carp. The use of supplements in carp culture has become inevitable for the success of fish culture. There has been heightened research in developing new dietary supplementation strategies in which various health- and growth-promoting compounds as probiotics, prebiotics and other functional dietary supplements have been evaluated. The supplements using plays an important role in intensive and super-intensive fish culture system. It also offers best means of fish production within shortest possible time. Several artificial feedstuffs of plant (byproducts) are useful to formulate the feed for different developmental stages of carp. One of them is silymarin, a purified extract of seeds of milk thistle, contains flavolignans like silybinin. Such potential was attributed to its ability to maintain the cell fluidity, to enhanced protein and DNA synthesis, and to its anti-inflammatory ability and ability to modulate the hepatic detoxification machinery. The main objective of this study was to compare the growth performance of carp, with and without Vitasil® supplement, in super intensive culture system.

36. Atanasov, V., E. Valkova, G. Kostadinova, G. Petkov, N. Georgieva, Ts. Yablanski, **G.Nikolov** (2012). Study on levels of some heavy metals in water and liver of carp (*Cyprinus carpio* L.) from waterbodies in Stara Zagora region, Bulgaria, *Agriculture Science and Technology*, 4, 3, 321–327.

Abstract:

*The concentrations of 8 elements (Fe, Mn, Cu, Cr, Ni, Zn, Pb and Cd) were determined in the water and liver by common carp (*Cyprinus carpio* L.) from 6 waterbodies in Stara Zagora region using atomic absorption spectrometry. Despite having a reputation for being heavily polluted, the investigated waters were not heavily burdened with examined metals. Our results suggest that fish liver were accumulating elements in the same manner such are increasing metal concentrations in waterbodies. Heavy metals concentrations were highest in the water and carp liver from Zagorka Lake and Ovcharitsa Dam, and especially of the Pb did exceed established quality standards for fish. Because the liver accumulates highest levels of heavy metals, it may to be use as an important biological indicator for ecological monitoring of the fish inhabiting waterbodies.*

37. Atanasoff, A., **G. Nikolov**, Y. Staykov, G. Zhelyazkov, I. Sirakov (2013). Proximate and mineral analysis of atlantic salmon (*Salmo salar*) cultivated in Bulgaria. *Scientific works. Series C. Veterinary medicine*, LIX, 1, 87-92.

Abstract

Problem statement: Only limited information exists on nutrients in salmonoids meat in Bulgaria, which may to be different and vary to a greater extent than the nutrient composition of other fish items. The present paper is aimed to determine the proximate composition, macro and trace elements of Atlantic salmon meat. These data could be helpful in judging the value of nutrient composition data as a base for dietary recommendations. Organisms: 12 species of Atlantic salmon (Salmo salar). Approach: The aim of this study was to determine the proximate composition and levels of iron, potassium, sodium, calcium, phosphorus, magnesium, copper, selenium and zinc in Atlantic salmon cultivated for the first time in Bulgaria. The content of protein, fat and ash and concentrations of iron, potassium, sodium, calcium, phosphorus, magnesium, copper, selenium and zinc were determined by automatic systems and electro thermal atomic absorption spectrometry (ETAAS) after microwave digestion. Mean values and their respective coefficients of variation were calculated from the measured concentrations. Conclusion: In order to provide an accurate overview and to be able to calculate reliable dietary intakes, it is important to know the fish composition data.

38. Stoyanova, S., K. Velichkova, **G. Nikolov**, A. Atanasoff, I. Sirakov (2014). Oxygen uptake in a freshwater air-breathing fish with macrophytes. *Turkish Journal of Agricultural and Natural Sciences*, 1, 1, 915-918.

Abstract

*In the cultivation of various fish species in aquaculture is an important to have enough dissolved oxygen available for fish respiration. This oxygen can be produced by the photosynthesis of aquatic plants and algae. The purpose of this study is to investigate the influence of two macrophytes *Myriophyllum spicatum* and *Lemna minor* on uptake of oxygen in the feeding of perch. The experimental part was consisted of three tanks with *Perca fluviatilis* - as one without macrophytes (like a control) and the other two with macrophytes (*Lemna minor*, *Myriophyllum spicatum*). Oxygen uptake rate was measured at water temperature $23 \pm 1^\circ\text{C}$. The measurement of pH, dissolved oxygen and temperature was made with a portable combined meter. The mean oxygen uptake rate is better in the cultivation of *Perca fluviatilis* with *Lemna minor*.*

39. Stoyanova, S., **G. Nikolov**, K. Velichkova, A. Atanasoff, S. Mümün (2014). Local monitoring program for invasion of zebra mussel (*Dreissena polymorpha*) in the Dam lake Zhrebchevo, Bulgaria. *Turkish Journal of Agricultural and Natural Sciences*, 2, 1, 1747-1752.

Abstract

*Zebra mussels (*Dreissena polymorpha*) are bivalve mollusks approximately 1 to 5 cm long that live in freshwater lakes. They have invaded many Bulgarian freshwater ecosystems in recent decades. Because of their ability to settle on almost any substrate, zebra mussels cause severe damage to closed water systems, RAS and intensive fish farming systems. In order to assess the status of the mussel population in the lake in the area of the Forest group fish farm, the distribution, extent of colonization, abundance, biomass and size-frequency, structure of post-*

settlement stages were studied in 2012 and 2013. The purpose of this management plan is to identify the spread of zebra mussel colonies in the Zhrebchevo Dam Lake. Zebra mussels in Zhrebchevo Dam Lake are category 2+, and 3+ according to the existing classification of abundance, population belongs to the class 6 and hydrochemical parameters have values close to the optimal development of invasive mussels.

40. Zhelyazkov, G., Y. Staykov, **G. Nikolov** (2014). Effect of linseed and sunflower oil supplementation in the diet on the growth performance in carp (*Cyprinus carpio*), cultivated in a recirculating system, *Agriculture Science and Technology*, 6, 3, 263-266.

Abstract

The aim of this study was to determine the influence of linseed and sunflower oil supplementation on the survival rate, weight gain and feed conversion ratio in carp (*Cyprinus carpio*), raised in a recirculating system. The fish in the experiment were reared in concrete tanks that were part of the recirculating system and had a capacity of 0.8 m³. The carps received extruded pellets (6 mm) obtained by "Aqua garant". For a period of 60 days the feed of the fish of the experimental group (EL) was supplemented with 5 % linseed oil, while the carps of the group (ES) received additionally 5 % sunflower oil with the diet. The fish of the control group (C) received feed without any of the above mentioned vegetable oils. The weight gain of the carps was controlled at 15-days intervals. The live weight (g) and the linear growth (mm) were determined as the fish were weighed and measured individually. The final live weight of the carps of the experimental and control groups was as follows: EL-871.45±240.39 g, ES-849.00±223.22 g and C-819.55±269.91 g. The value of this parameter in the fish of EL groups was by 2.58% and 5.96% higher than those of the individuals of ES and C groups, respectively, but the differences were not significant ($P>0.05$). This tendency was similar for the linear measurements, as in the carps receiving linseed oil they were the highest. The EL group displayed the lowest feed consumption. The value of this parameter was lower than those of the ES.

41. Sandeva, G., D. Zapryanova, A. Atanasoff, **G. Nikolov**, V. Ivanov (2015). Chemical analysis of water used for fish farming in Tundzha River, Bulgaria. *Analele Universității din Craiova, seria Agricultură – Montanologie – Cadastru* (Annals of the University of Craiova - Agriculture, Montanology, Cadastre Series) Vol. XLV, 248-254.

Abstract

The aim of the study was to assess some chemical parameters in water from Tundzha River used for common carp (*Cyprinus carpio* L.) farming. Water samples were taken according to protocol in September 2014 from the fish farm located near the town Nikolaevo. Results showed compliance with regulations for most of the studied parameters. A slight increase of ammonia (NH₃) was found in the control sample. In both locations elevation of nitrates (NO₃) and phosphates (PO₄) was registered, suggesting contamination of the water from agricultural use of organophosphate insecticides and nitrogen fertilizers. In conclusion, effective measures should be taken to protect water resources in Tundzha River used in fish farming from agricultural pollution.

42. Çağiltay, F., A. Atanasoff, M. Sağlam, S. Çağatay, **G. Nikolov**, O. Ekim, S. Seçer (2015). Comparison of different anesthetic protocols for morphometric measurements of carp (*Cyprinus carpio*). *Sylwan*, 159, 4, 50-55.

Abstract

Measurement of growth performances in fish is carried out in stressful and unnatural environment. The purpose of the present investigation is to compare the effect of four different water-borne anesthetic agents. The fish (Ave. wt. 400.3±7.12 g) were divided into four groups in the glass tanks (80x48x30 cm.) containing 80 L of dechlorinated bore water. First group, clove oil (CO) and anesthetic agents used for other three groups are as follows: second group-lidocaine 1% (LC), III group-isoflourane (IF), IV group-halothane (HT). During experiment water quality parameters (to , pH, O2, and NO3) were recorded. The desired concentration of anesthetics was established and induction time, maintenance and recovery time were recorded. In two groups out of four (LC and HT) time of induction was longer approximately with 1 minute and time of recovery was shorter with 30 seconds in comparison with other two groups (CO and IF) where the time for both was 3 minutes. It could be concluded that each of the used anesthetic protocols ensures enough anesthetic time for measurement of growth performances

43. Zapryanova, D., A. Atanasoff, R. Simeonov, **G. Nikolov**, V. Raykov, V. Ivanov, T. Georgieva (2016). Changes in certain acute phase proteins of common carp (*Cyprinus carpio*) exposed to organophosphate insecticides. *The Journal of Environmental Protection and Ecology*, *In press*

Abstract

*The acute phase response (APR) is a nonspecific reaction of fish to disturbances in homeostasis. The aim of present study was to investigate quantitative changes that occur in the concentration of acute phase proteins (APPs) in the blood of common carp (*Cyprinus carpio* L.) exposed to organophosphate insecticides during ameliorative activities. Parameters examined were fibrinogen (Fib), ceruloplasmin (Cp) as a positive APPs and albumin (Alb) as a negative APP. The hepatopancreas was chosen for this investigation as it is the primary site of acute phase protein synthesis. APP parameters plasma fibrinogen ($P<0.05$) registered a significantly increased and albumin ($P<0.05$) exhibited statistically declined in treated group. Based on the data acquired in this study, it was concluded that, the carp do not exhibit a strong APP synthesis during the early stages of an APR after spraying with organophosphate insecticides.*

12.09.2016 г.
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