studies on rearing of some avilable species of cayp and tilapia in ponds

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Silver carp (Hypophalmichthys VaL) and Nile tilapia(Oreochromis niloticus, Linn) were reared in polyculture system in order to investigate the effect of different ecological and dietary experimental conditions on the biology and consequently production of both fish speices in freshwater ponds.The physico-chemical properties and living population of the water of the rearing ponds were greatly affected on the development of fish culture. Temperature was the main abiotic factor affecting the properties of ponds water. Transparency showed its minimum value (0.6± 0.2 meter) in April, where the abundance of plankton organisms was very high, which inturn affected on the chemical properties of ponds water. So the maximum dissolved oxygen (9.3 ± 1.0 mg/1) was recorded in April due to increase of photosynthetic activity of phytoplanIcton species (chlorophyta). Total alkalinity, nitrites, phosphates, silicates and pH values showed obvious variations from month to another during the rearing period .There was an intensive growth and increase of phytoplanIcton, zooplanIcton and bottom fauna in April and May at the beginning of rearing period). Its maximum numbers were 2692 /1 for chrysophyta, 7826 / 1 for chlorophyta, 1100 / 1 for cyanophyta (phytoplankton), 568/1 for zooplanIcton and 144 for bottom fauna. It was also noticedthat, there is a positive relationship between the quantitites of phytoplankton, zooplankton and bottom fauna in rearing ponds during all the experimental period (from April to November, 1991).The effects of stocking density, dietary protein level, initial size and food ration on the growth rates, stomach analysis and biohemical parameters of rearing fish (carp and tilapia). The growth rates include; the growth in length and weight, percentage weight gain, specific growth rate, food conversion , protein efficiency ratio, protein retention and production.It was found that, the growth in length and weight of the two rearing fishes (silver carp and Nile tilapia)slightly increased with the decreasing stocking density. They increased from initial size of 12.16cm, 21.8 gm for carp and 9.00cm, 15.2 gm for tilapia to 42.00cm, 892.0 gin for carp and 27.50 cm, 368.0 gm for tilapia at the lowest stocking density (one fish/m2)However, the average length and weight recorded their maximum values for carp species (41.20 ± 1.50 cm and 1012.0 ± 25.6 gm) at diet contain 40% protein level , but for Tilapia species (26.70 ± 0.89 cm and 332.0 ± 16.0 gni) at 30% dietary protein level.On the other hand, the growth of length and weight of carp and tilapia were greatly increased with the increasing of initial size andfood ration of rearing fish . They recorded the maximum values (43.60 cm, 1074.0 gui for carp and 27.20 cm, 361.0 gin for tilapia) at larger

initial size and (17.56 cm, 61.05 gm for carp and 12.00 cm, 35.79 gm for tilapia) at highest food ration (5% of body weight).The percentage weight gain of H. molitrix and O. niloticus showed its maximum values (140.625 and 200.00 for carp and tilapia respectively) at April and May due to the suitable of climatic and ecological factors which were greatly affected on the growth rate of rearing fish. In general, the percentage weight gain of both rearing fish showed its maximum values for fishes stocked at lowest density (on fish / m2) and fed on diet contain 40% protein level for carp and 30% protein level for tilapia with highest food ration for both (5% of body weight) and larger initial size.Similarly, the specific growth rate of the same fish species was also recorded its maximum values (2.77 and 2.26 for carp and tilapia respectively) at the first months of rearing period (April and May). Its average values in general increased with the decreasing stocking density, increasing of the dietary protein level (40% for carp and 30% for tilapia) and food ration as well as initial size fo rearing fish species.The average values of food conversion of silver carp and Nile tilapia showed its maximum values (ranged from 1.502 to 2.624 for carp and from 1.909 to 2.529 for tilapia) in fishes stocked at three fish/ m2 and fed on diet contain 40% protein level with 5% food ration and larger initial size.While, the protein efficiency ratio of both rearing fish (carp and tilapia) increased to reach its maximum level for carp and tilapia at the lower stocking density of one fish / m2 and dietary protein level of 20% and smallest initial size for rearing and food ration of 1% of bodyweight.Furthermore, the protein, fat and energy retention of H. molitrix and 0.niloticus recorded its maximum values (2.83, 2.67; 6.70, 4.40 and 2.40, 2.00) at stock of one fish/m2, 20% dietary protein level, smaller initial size and 1% food ration.It was also noticed that, the maximum values of total fish crop / pond (area 100 m2) for carp and Tilapia species where observed at stocicing density of two fish /m2 for silver carp (57.844 kg/pond) and three fish/m2 of Nile tilpia (34.951 kg/pon). While at different dietary protein levels, the total crop/pond showed its maximum values (94.074 kg/pond) for carp at 40% protein level and (31.359 kg/pon) tilapia at 30% dietary protein level. These values increased to 99.269 and 32.521 kg / pond at larger initial for carp and tilapia. When the food ration increased from 1% to 5% the total production / pond increased from 32.810, 26.338 kg/pond to 75.672, 31.826 kg / pond for carp and tilapia respectively.The variations of hepatosomatic, gastrosomatic, gonadosomatic, food indices, condition of fish flesh and condition factor of the rearing fish (silver carp and Nile tilapia) were slightly increased when the stocicing density decreased from three fish /m2 to one fish m2 . However, its average values increased gradually with the increasing of dietary protein level to 40% in silver carp and 30% only in Nile tilapia. Similarly, the values were slightly increased with the increasing of initial size of rearing fish and food ration.Studying the stomach analysis of H. molitrix and niloticus (filter feeding behaviour) it was noticed that, in addition to artificial food which was found by large quantities in the guts of both rearing fish, the silver carp preferred the phytoplankton organisms in its feeding habits (phytophagous fish). While, the Nile tilapia eating both animal and plant planktonic materials (omnivorous fish).The natural food organisms recorded in the alimentary canals of carp and tilapia were chrysophyta, chlorophta, cyanophyta (phytoplanlcton); cilliata, rotifera, cladocera, copepoda (zooplankton) and chironomidae, oligochaeta (bottom

fauna) with different percentage composition and frequency occurrence.Generally, the natural food organisms in guts of carp and tilapia were slightly increased with increasing the stocking density from onefish/m2 to three fish/m2 and on the contrary, with the increase of protein level in diet to 40% and food ration to 5%, the natural food organisms were decreased in the stomach of both fish species. It was also observed that, the smaller H.molitrix and 0.niloticus (initial size of 6.20 cm, for carp and 4.30 cm, for tilapia) prefer to feed on natural food organisms than the largest fish .The biochemical parameters within the framework of the present study comprise blood and serum analysis, liver and muscle analysis and carcass (body) composition.The erythrocyte counts, haematocrit values and haemoglobin contents of H. molitrix and O. niloticus were inversely proportional to stocking density. While its average values were gradually increased with the increasing initial size and food ration for rearing fish. These parameters recorded maximum values in carp fed on diet contain 40% protein level and tilapia fed on 30% dietary protein level. It was also found that, there is a strong correlation between the erythrocyte count, haematocrit value and haemoglobin content in blood of both rearing fish.The average values of serum protein and lipid in the same two fish (silver carp and Nile tilapia) were slightly decreased with the increasing stocking density from one fish /m2 to three fish/m2 while serum glucose increased. The serum protein and lipid showed its maximum values incarp fed on 40% dietary protein level and tilapia fed on diet contain 30% protein level. While, glucose concentration in carp species decreased with the increasing dietary protein level, but in Tilapia species it was decreased from diet contain 20% protein level to diet contain 30% protein level , then increased again at 40`)/0 dietary protein level. The serum protein and lipid in both rearing fish were gradually increased with the increasing of initial size and food ration, while theserum glucose decreased.The protein, lipid and glycogen in wet matter basis of liver and muscle of H. molitrix and O. niloticus were slightly decreased with the increasing stocking density, while the lipid content increased. The liver protein and glycogen of the same rearing fishes recorded its maximum values at 40% dietary protein level, but the liver lipid decreased with the increasing protein level in diets. The protein and glycogen content of liver of both fish speceis also increased with the increasing initial size and food ration , whereas the lipid content decreased.The present data also showed the effects of stocking density, dietary protein level, initial size and food ration on the carcass (body) composition of H.molitr& and O. niloticus and give similar results as previously mentioned in wet matter basis of muscles. It was noticed that the average values of crude protein, ash, water and energy contents (including gross energy, metabolizable energy and energy protein ratio)in both rearing fish were slightly decreased with increasing the stocking density, while the crude fat increased.On the other hand, when the protein level in diets increased to 40% for carp and 30°A for tilapia, the crude protein, ash and water contents increased, while the crude fat and energy contents decreased. In case of Tilapia species, when the dietary protein level increased to 40% the crude protein, ash and water contents decreased, while the crude fatand energy contents increased.Moreover, in the two fish species (silver carp and Nile tilapia) the crude protein, ash and water contents showed its maximum values in fishes reared with larger initial size and fed with highest food ration. While the crude fat and energy

contents were slightly decreased.