SUMMARY

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Two experiments were carried out at the World Fish Center, Abbassa, Abou Hammad, Sharkia, Egypt. The first experiment was aimed to investigate the effect of spawning month (April and May) dietary protein level (25 or 35%) and protection of spawning tanks (covering or uncovering of spawning tanks) on fry production and average fry weight of Nile tilapia. The second experiment aimed to study the effect of spawning month (February, March, April and May) and protection method (uncovered without heater tanks, cover without heater and cover with heater tanks) on fry production, average fry weight, ovary weight, gonadosomatic index, absolute and relative fecundity of Nile tilapia, *Oreochromis niloticus*. The obtained results can be summarized as follow:

5.1. First experiment:

- Fry production/tank were found to be 6462 and 19082/tank during the two months April and May, 10719 and 14824/tank for the two dietary protein levels, 25 and 35% and 16428 and 9115 fry/tank for the covered and uncovered tanks, respectively and the differences in fry production due to the effect of spawning month, dietary protein content and tank protection method were significant.
- Averages of individual fry weight as affected by month, dietary protein content and protection were found to be 0.025 and 0.016 g during the two months April and May, 0.021 and 0.019 g for the two dietary protein levels, 25 and 35% and 0.018 and 0.023 g

for the covered and uncovered tanks, respectively. Spawning month and tank protection significantly affected individual fry weight while dietary protein content had no significant effect on fry weight.

- The interaction between the studied factors affecting individual fry weight of Nile tilapia indicated that the highest average individual fry weight was recorded for fish group raised in covered tanks and received the lower protein content during April. On the other hand, the lowest average individual fry weight was recorded for broodfish raised in an uncovered tanks and received the higher protein level (35%) in May.

5.2. Second experiment:

- Average fry production/tank for the studied spawning months were found to be 6492, 5897, 11608 and 17106 for the four months studied, February, March, April and May, and 4929, 9063 and 16834/tank for the uncovered, covered and covered with heater groups, respectively.
- The effect of interaction between spawning month and protection method on fry production of Nile tilapia indicated that, during the first spawning month (February) there were no fry in covered and uncovered tanks. During the second spawning month (March) there were no fry in the uncovered tanks. On the other hand, fry production/tank found to be 4475 in covered tanks and supplying covered tanks with electrical heaters increased fry production to 13215/tank and the same trend was also observed during the other months (April and May). Analysis of variance indicated that,

interaction between spawning month and protection method had a significant effect on fry production of Nile tilapia.

- The average individual fry weight were found to be 0.0087, 0.0087, 0.0140 and 0.0150 g for the four months studied, February, March, April and May, respectively. Analysis of variance showed that spawning month had a significant ($P<0.001$) effect on fry weight of Nile tilapia. The highest average fry weight (0.015 g/fry) was obtained during May and the lowest fry weight (0.0087 g/fry) was recorded for Nile tilapia females during February and March.
- With respect to the effect of protection method on fry weight of Nile tilapia, results indicated that, average fry weight of spawning females found to be 0.0078, 0.0108 and 0.0165 g for the uncovered, covered and covered with heater groups, respectively and the differences in individual fry weight due to the effect of protection method were significant.
- With regard to the effect of interaction between spawning month and protection method on average fry weight of Nile tilapia, the obtained results indicated that, during the first spawning month (February) there were no fry in covered and uncovered tanks. During the second spawning month (March) there were no fry in the uncovered tanks. The interaction between spawning month and covering method had a significant effect on the average fry weight of Nile tilapia.
- The average body weight and body length of the spawning females did not significantly differ for the two groups uncovered without heater and cover without heater while the differences

between each of these two groups and the third group (cover with heater) were significant. The interaction between the two factors (month of spawning and protection method) indicated that the heaviest and longest spawning females were recorded in March especially when electrical heaters were used for adjusting water temperature.

- The average ovary weight for spawning females were 2.13, 2.19 and 4.13 g for the three months January, February and March, respectively and the differences were significant. Covered and uncovered tanks without water heating did not significantly affect ovary weight of spawning females *O. niloticus* while ovary weight of the third female group (cover with heater) significantly increased the ovary weight of spawning females. The interaction between spawning month and protection method seemed to have a significant ($P<0.01$) effect on ovary weight of females.

- GSI varied from 0.85 (January) to 0.93 (February) and 1.41 (March) and the differences in GSI due to the effect of spawning month were significant. GSI of female spawned in the uncovered tanks showed the lowest value (0.69) of GSI. On the other hand covering of spawning tanks and supplying tanks with electrical heaters increased the GSI to reach the highest value (1.66). Analysis of variance indicated that both spawning month and protection method had a significant effect on GSI while the interaction between the two factors did not significantly affect GSI.

- Covering of spawning tanks increased absolute fecundity and supplying the covered spawning tanks by electrical heaters

significantly ($P<0.001$) increased absolute fecundity especially during March (4254.2) compared to January (1332.5).

- Results of the second experiment also indicated that neither spawning month nor protection method had significant effect on relative fecundity.

- Correlation coefficients between reproductive traits of Nile tilapia, *Oreochromis niloticus* indicated that, female body length is significantly and positively correlated with each of body weight (0.80), ovary weight (0.508) GSI (0.394) and absolute fecundity (0.373). Also, the correlation coefficient between body weight was significantly and positively correlated with ovary weight (0.606), GSI (0.424) and absolute fecundity (0.496). Ovary weight was positive and significantly correlated with GSI (0.968)) and absolute fecundity (0.660), and the same trend was also observed for correlation coefficient between each of GSI and absolute fecundity (0.576) and between absolute fecundity and relative (0.547).