

Interactions between growth, sex, reproduction, and activity levels in control and fast-growing strains of Nile tilapia (*Oreochromis niloticus*).

Cultured fish play an important role in meeting increasing demands of human consumption around the world. To meet consumer demand for larger-sized fish, fish culturist seek strains that possess a high growth rate and reach harvestable size before attaining sexual maturation. Given the importance for farmers of understanding growth phenomena and controlling sexual maturation in fish stocks, this thesis examined the relationship between growth, behavioural activity, and sexual maturation in control strains of Nile tilapia, *Oreochromis niloticus*, and in strains resulting from a project devoted to the Genetic Improvement of Farmed Tilapias (GIFT). Behavioural activity of fish groups was videorecorded each month of the three month study period.

Under laboratory conditions, the fast-growing GIFT fish performed less locomotory and agonistic activity than the slow-growing control fish. Mirror image stimulation tests performed on individual males supported the finding that controls are more aggressive than GIFT fish. In the comparison of females and males, the fast-growing male GIFT performed less locomotory, but more agonistic behaviour than the slow-growing female GIFT. In the controls, growth rates of males and females were relatively similar even through, the male controls performed more locomotory and agonistic behaviour than the female control fish. In all, low growth was associated with a high activity level; however, a few experimental observations appear to deviate from this relationship and are discussed.

Nesting behaviour, which is often the first indication of sexual maturity, was observed only in males. Male controls performed more nesting behaviour than male GIFT fish. Also, significantly more nests were built by the control than GIFT fish. This suggest, at least in males, that the slow-growing control fish became sexually mature sooner, and at a smaller size than the fast-growing GIFT fish. Furthermore, male GIFT fish required more time to complete their nest(s), and built fewer nests than male control fish.