

4. LnVar from individual growth as potential indicator of resilience in Nile tilapia (*Oreochromis niloticus*)

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Resilience is defined as the ability of an animal to respond to environmental changes or to quickly return to the condition had before being exposed to the disturbance. Resilient animal can maintain a consistent level of growth over time. Genetic parameters for resilience as the consistency in growth can be measured from the deviation of actual weight from expected production on longitudinal measurement. *LnVar* is the most promising indicator for the resilience based on its moderate heritability and can easily be calculated from longitudinal records on body weight that represent growth. In this study, we estimate genetics parameter of *LnVar* that calculated from expected individual growth (*LnVar_{ind}*). In breeding program, we would ideally select for high resilience and fast-growth fish. This requires further knowledge on the estimate of genetic correlation between *LnVar_{ind}* and growth rate. We grew tilapia in brackish water pond with fluctuating salinity in Indonesia and freshwater pond with fluctuating dissolved oxygen in Malaysia. We measured weight at 5 time points during grow-out period. To obtain *LnVar_{ind}*, we log-transformed variance from the deviation of actual growth from unperturbed individual growth per time point. The heritability for *LnVar_{ind}* in Indonesia and Malaysia were 0.10 – 0.30 and 0.09 – 0.41, respectively. The moderate heritability for *LnVar_{ind}* indicate a sufficient amount of additive genetic variance to produce more resilience fish for future selection. We found negative and strong correlation between *LnVar_{ind}* and growth rate from experiment in Malaysia. This favorable correlation showed that the improvement in growth rate could simultaneously improve the capacity of fish to cope with disturbances and maintain their performance.