Genomic selection for improved survival of shrimp

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ABSTRACT:
Acute Hepatopancreatic Necrosis Disease (AHPND) or Early Mortality Syndrome (EMS) is a frequent and problematic disease in shrimp aquaculture. It is characterised by high mortalities, in many cases reaching 100 percent within 30-35 days after stocking. Hence, it causes huge financial losses to the global shrimp aquaculture industry. Selective breeding of resistance to EMS is an effective approach to alleviate the problem as one component of a comprehensive strategy aiming at reducing economic losses and improving animal welfare. Genetic variation for EMS is present and family-based selection can be used to improve survival and resistance to EMS. Although family-based selection will improve EMS resistance, it does not take within-family genetic variation into account. Genomic selection (GS), which uses genetic markers to calculate the genomic estimated breeding values (GEBVs), improves accuracy of genetic merit predictions as it also accounts for within-family genetic variation. Hence, genomic selection is a useful addition to selection for improved survival of shrimp.

KEYWORDS:
Aquaculture; Shrimp; Selective breeding; Genomics; EMS.