VARIASI KARAKTER MORFOLOGIS DAN MOLEKULAR UDANG WINDU (*Penaeus monodon* Fabricius, 1798) HASIL *INBREEDING* G7 DAN *OUTCROSSING* DENGAN INDUK ALAM

INTISARI

Udang windu (*Penaeus monodon* Fabricius, 1798) merupakan salah satu komoditas unggulan Indonesia. Hasil pembenihan di Balai Besar Perikanan dan Budidaya Air Payau (BBPBAP) Jepara menunjukkan penurunan variasi genetik pada generasi ke-tiga, serta variasi genetik yang rendah pada generasi ke-enam dibandingkan dengan induk alam. Upaya memulihkan penurunan variasi genetik telah dilakukan dengan mengawinkan populasi hasil *inbreeding* dengan populasi alam. Penelitian ini bertujuan untuk mengetahui variasi karakter morfologis dan molekular udang windu induk (G7), hasil *inbreeding* (G8), hasil *outcrossing* dengan induk alam Aceh (G7A) dan Jepara (G7J) di BBPBAP Jepara. Lima puluh lima karakter morfologis digunakan untuk mengetahui variasi karakter morfologis antar populasi. Variasi genetik secara molekular diamati melalui persentase polimorfik pita DNA hasil amplifikasi dengan primer ISSR 1 dan ISSR 7. Analisis regresi linear untuk mengetahui hubungan antar karakter morfomerti. Konstruksi dendogram similaritas berdasar karakter morfologis menggunakan program MVSP 3.1. Jarak genetik antar populasi berdasar karakter molekular di analisis menggunakan GenAlex 6.5. Konstruksi dendogram berdasar jarak genetik karakter molekular menggunakan software MEGA 6. Hasil penelitian menunjukkan udang windu hasil *outbreeding* dengan induk asal Aceh (G7A) memiliki variasi morfologis yang paling tinggi. Hasil regresi menunjukkan karakter morfologis udang windu jantan lebih seragam daripada betina. Variasi karakter molekular udang windu berdasarkan persentase polimorfik berkisar 57% – 84,62%, variasi karakter molekular paling tinggi dimiliki oleh hasil persilangan G7 dengan induk asal Aceh (G7A). Similaritas karakter morfologis paling besar dimiliki oleh populasi G8 dengan G7J. Similaritas krakter molekular paling besar dimiliki oleh populasi G8 dengan populasi G7A. Penelitian ini menunjukkan bahwa G7A merupakan hasil persilangan yang paling unggul.

Keyword: Udang windu, *Penaeus monodon*, variasi genetik, morfometri, PCR-ISSR, jarak genetik

MORPHOLOGICAL AND MOLECULAR VARIATION GIANT TIGER PRAWN (*Penaeus monodon* Fabricius, 1798) INBREEDING OF G7 AND OUTCROSSING OF G7 WITH NATURAL BROODSTOCK

ABSTRACT

Giant Tiger Prawn (Penaeus monodon Fabricius, 1798) is one of Indonesia's main commodities. Hatchery in the Center for Fisheries and Aquaculture Brackish Water (BBPBAP) Jepara showed a decrease in genetic variation of the third generation, and also low genetic variation in the sixth generation compared with the natural broodstock. Efforts to recover the decrease of genetic variation has been done by mating population of cultural broodstock with natural broodstock populations. This study aims to determine the morphological and molecular variations of the broodstock culture tiger shrimp (G7), the result of inbreeding (G8), the results of outcrossing with natural broodstock from Aceh (G7A) and the results of outcrossing with natural broodstock from Jepara (G7J) in BBPBAP Jepara. Fifty five morphological characters were used to determine the morphological variation between populations. Molecular genetic variation was observed by the percentage of DNA polymorphism by ISSR amplification product. Linear regression was analyzed to determine the relationship between the morphomertic characters. Construction of similarity dendogram based on morphological characters was determined by MVSP 3.1. Genetic distance between populations based on molecular characters was determined by GenAlex 6.5. Construction of dendogram based on genetic distance was using MEGA 6. The results showed that G7A population has the highest morphological variation. Regression results showed more morphological uniform in males than females. Molecular variation based on the percentage of polymorphic ranges from 57% - 84.62%, the highest molecular variation is G7A. The Largest morphological similarity was possessed by the population of the G8 with G7J. The Largest molecular similarity was possessed by the G8 with G7A. The result shows that G7A has the superior characters.

Keywords: Tiger Prawn, Penaeus monodon, genetic variation, morphometric, PCR-ISSR, genetic distance