

Evaluasi Heritabilitas Beberapa Karakter dan Respon Seleksi "Edible Portion Trait" Pada Populasi Udang Galah (*Macrobrachium rosenbergii*)

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Abstrak

One of the most important factors in the formulation of effective breeding plans for improving the genetic quality of crops and livestock is a knowledge of the relative contribution made by genes to the variability of a trait under consideration. The variability of phenotypic values for quantitative trait can be partitioned into genetic and non genetic (environment) components.

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The heritability is defined as a ratio of additive genetic variances to phenotypic variances. The most important function of the heritability is its predictive role. Heritability value is an expression of the reliability of the phenotypic value as a guide to breeding values.

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The edible portion trait of giant freshwater prawn has a high heritability, since most of the phenotypic variability is due to genetic variations. Thus, genetic improvement can be made by selecting individuals with preferred phenotype because the offspring-parent correlation should be high. This is called mass selection or individual selection, but it is actually based on the individual's own performance record or phenotype.

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The giant freshwater prawn population from Cimanuk (Tanjung Air, West Jawa), Cimandiri (Pelabuhan Ratu, West Jawa) and Walanae (Maros, South Sulawesi), obtained from natural habitat, were used in this study. The determination of heritability were conducted on several character i.e. carapace length, standard length, dressing percentage, edible portion and weight. The determination of heritability was based on regression between parents and offsprings. Structure of selection was conducted by individual selection. Parental stocks were selected based on individual breeding value. Natural breeding were used for first and second progeny.

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Larvae were reared of eggs originated from individual female that had been mated to double males. Female were reared in 200-litre concrete tanks and newly hatched larvae were placed in 50-litre conical tanks. Water was recirculated through the tanks. The duration of rearing the larvae was 35 days.

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Fingerlings were reared in cages replaced on 500 m² earthen pond. Grow-out of juveniles were reared on 100 m² earthen ponds. Juveniles were fed pellets with 30 % protein content. The duration of grow-out was 3 months.

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The results showed that the heritability values of carapace length, standard length, weight, dressing percentage, and edible portion trait were in the level of medium to high. These suggest that giant freshwater prawn populations from Cimanuk, Cimandiri and Walanae are responsive to selection. Indeed, individual selection on edible portion trait show a positive response to selection. Therefore, selection programme can

be utilized for genetic improvement of giant freshwater prawn.

Heritabilitas merupakan rasio antara keragaman aditif dan keragaman fenotipe. Fungsi penting dari heritabilitas adalah bersifat prediktif pada generasi berikutnya. Nilainya dapat memperlihatkan nilai fenotipe yang pada akhirnya dapat digunakan sebagai breeding value. Nilai heritabilitas edible portion trait cukup tinggi pada udang galah. Oleh karena itu, program seleksi dapat diterapkan untuk meningkatkan mutu genetik udang galah.

Penelitian dilakukan dengan menggunakan populasi udang dari Cimanuk (Tanjung Air, Jawa Barat), Cimandiri (Pelabuhan Ratu, Jawa Barat), dan Walanae (Maros, Sulawesi selatan) yang di koleksi dari alam.

Penentuan heritabilitas dilaksanakan pada beberapa karakter yaitu panjang karapas, panjang standar, berat, dressing percentage, dan edible portion. Penetapan nilai heritabilitas didasarkan atas perbandingan antara induk dengan keturunannya. Struktur seleksi yang dilakukan adalah seleksi individu. Untuk memilih induk udang digunakan breeding value.

Untuk memproduksi keturunan F₁ dan F₂ dilakukan pemijahan secara alami. Pemeliharaan larva udang dilakukan dengan menggunakan sistem air jernih. Untuk menghasilkan udang ukuran juvenil dan pembesaran udang, dilakukan di kolam tanah.

Hasil penelitian menunjukkan bahwa nilai heritabilitas pada karakter panjang karapas (0,68 - 0,86), panjang standar (0,43 - 0,90), berat tubuh (0,85-0,97), dressing percentage (0,49 - 0,95) dan edible portion trait (0,46- 0,67) memperlihatkan nilai medium sampai tinggi. Hasil yang diperoleh ini dapat diinterpretasikan bahwa populasi udang dari Cimanuk, Cimandiri dan Walanae memperlihatkan indikasi respon yang positif, jika karakter-karakter tersebut akan di seleksi. Implementasi struktur seleksi individu pada edible portion trait populasi udang galah tersebut memberikan respon yang positif.