Seleksi dan Pendugaan Parameter Genetik Beberapa Sifat Batang Bawah Kakao (*Theobroma cacao* L.) pada Semaian Famili Saudara Tiri

Selection and Estimation the Genetic Parameters of Rootstock Characteristics on Cocoa Seedling of Half-sibs Families

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Ringkasan

Dalam perbanyakan kakao secara klonal diperlukan batang bawah unggul. Famili saudara tiri (*half sibs*) dapat digunakan sebagai alternatif sumber genetik untuk seleksi batang bawah unggul. Penelitian ini bertujuan melakukan seleksi dan pendugaan parameter genetik sifat batang bawah kakao pada semaian famili saudara tiri asal klon DR 1, DR 2, ICS 60, DRC 15, BLC 4, DRC 16, KEE 2, ICS 13, KW 162, KW 163, PA 300, RCC 70, TSH 858, Sca 6 dan Sca 12. Penelitian dilakukan di KP Kaliwining, Pusat Penelitian Kopi dan Kakao Indonesia. Pendugaan parameter genetik berdasarkan nilai duga komponen ragam dan peragam sifat jumlah daun, tinggi tanaman, diameter batang, luas daun, volume akar, panjang akar lateral dan panjang akar tunggang yang diukur selama fase pertumbuhan bibit hingga umur 90 hari di kebun. Berdasarkan nilai duga parameter genetik hampir semua sifat batang bawah yang diukur memiliki nilai duga daya waris arti sempit tergolong tinggi (h^2 >0,5). Sifat tinggi tanaman, luas daun, volume akar, panjang akar lateral dan panjang akar tunggang memiliki variabilitas genetik tergolong luas ($d^2_A > 2SE_{d}^{2}{}_A$). Sifat panjang akar tunggang dan panjang akar lateral yang bervariabilitas genetik luas dan berdaya waris tinggi dapat digunakan sebagai kriterium seleksi. Keragaan sifat panjang akar lateral dapat diduga berdasarkan sifat diameter batang (r = 0,5*) dan luas daun (r = 0,23*), sedangkan sifat panjang akar primer diduga berdasarkan sifat tinggi tanaman (r = 0,81*) dan luas daun (r = 0,72*). Seleksi positif berdasarkan kriteria panjang akar tunggang dan seleksi negatif berdasarkan kriteria panjang akar lateral mendapatkan famili asal klon KEE 2 dan Sca 12 yang memiliki panjang akar primer tergolong tinggi dan panjang akar lateral tergolong rendah sehingga diunggulkan dalam hal potensi kemampuan penyerapan air tanah dan vigor tumbuh yang rendah.

Summary

For cocoa clonal propagation it need rootstock with good characteristics. Half sibs families is the most appropriate alternative for rootstock selection. This study was aimed to select and estimate genetic parameters of cocoa seedling on the half sibs families of DR 1, DR 2, ICS 60, DRC 15, BLC 4, DRC 16, KEE 2, ICS 13, KW 162, KW 163, PA 300, RCC 70, TSH 858, Sca 6 and Sca 12. Research was carried out in Kaliwining Experimental Station of Indonesian Coffee and Cocoa Research Institute. Genetic parameter were estimated based on variance and covariance component of the variables of the number of leaf, stem height, stem girth, leaf acreage, the volume of fresh root, the length of secondary root and the length of primary root which assessed along seed growth till 90 day after planting. The result showed that most of the recorded variables perform high category of narrow sense heritability (h^2 >0.5). Stem girth, leaf acreage, volume of fresh root, length of secondary root and the length of primary root were assessed as the broad category of genetic variability ($d^2_A > 2SE_{d}^{2}{}_A$). Therefore, length of primary root and length of secondary root would be the main criterion for rootstock selection as their performance on broad category of genetic variability and high category of narrow sense heritability. Length of secondary root can be estimated based on the performance of stem girth (r = 0.5) and leaf acreage (r = 0.23*) and the primary root can be estimated based on the performance of stem height (r = 0.81*) and leaf acreage (r*

= 0.72). Based on positive selection of primary root lenght and negative selection of secondary root lenght it was identified that the families of KEE 2 and Sca 12 potentially would be good rootstock due to their long category of the primary root and short category of the secondary root that having characteristics of high water uptake and low vigor.*

***Key words**:* selection, genetic parameter, half-sib familiy, rootstock, cocoa.

masih terbatas. Padahal diketahui bahwa peranan batang bawah sangat penting dalam