

ABSTRAK

SELEKSI DURA ANGOLA DIDASARKAN ANALISIS VARIASI FENOTIPE

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Indonesia merupakan produsen minyak sawit terbesar di dunia, sehingga peningkatan produktivitas berkelanjutan menjadi kebutuhan strategis untuk menjaga daya saing industri. Upaya tersebut dapat ditempuh melalui pengembangan varietas unggul yang memiliki hasil minyak tinggi, pertumbuhan batang lambat, serta kualitas agronomis yang baik. Dura Angola, sebagai plasma nutfah asal Afrika yang diintroduksi PT Binasawit Makmur pada tahun 2010, berpotensi memperluas basis genetik dura yang selama ini relatif sempit, sekaligus menjadi sumber sifat penting bagi pemuliaan kelapa sawit. Penelitian ini bertujuan mengidentifikasi genotipe potensial dan menyeleksi populasi unggul dura Angola berdasarkan variasi fenotipe dan parameter genetik. Penelitian dilakukan pada 1.029 pohon berumur 11 tahun di Kebun Mesuji PT Aek Tarum, Sumatera Selatan. Karakter yang diamati meliputi komponen produksi (jumlah tandan, bobot tandan segar, bobot tandan rata-rata), pertumbuhan vegetatif (pertambahan tinggi batang, panjang rachis, luas daun, produksi pelepah), serta kuantitas minyak (F/B, M/F, O/WM, O/B, OER). Data dianalisis menggunakan rancangan blok tidak lengkap tidak seimbang (Unbalanced Incomplete Block Design) dengan General Linear Model, dilanjutkan estimasi heritabilitas, koefisien keragaman genetik dan fenotipe, serta korelasi antar karakter. Hasil penelitian menunjukkan keragaman fenotipe dan genetik yang signifikan pada sebagian besar karakter. Nilai heritabilitas tinggi ($h^2 > 0,60$) diperoleh pada karakter jumlah tandan, bobot tandan rata-rata, panjang rachis, pertambahan tinggi batang, M/F, O/B, dan OER. Ditemukan korelasi positif kuat antara M/F dan O/B ($r = 0,80^{**}$), serta korelasi negatif signifikan antara jumlah tandan dan bobot tandan rata-rata ($r = -0,75^{**}$), yang menunjukkan adanya kompromi fisiologis dalam ekspresi karakter produksi. Berdasarkan hasil skoring multi-karakter, teridentifikasi tujuh aksesori unggul, yaitu A074/20, A040/22, A040/12, A041/26, A041/22, A075/08, dan A095/05, yang direkomendasikan sebagai tetua potensial dalam pengembangan varietas unggul kelapa sawit berbasis sumber daya genetik Angola.

Kata kunci: dura Angola, heritabilitas, kelapa sawit, plasma nutfah, seleksi genetik.

ABSTRACT

SELECTION OF DURA ANGOLA BASED ON PHENOTYPIC VARIATION ANALYSIS

By

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Indonesia is the world's largest producer of palm oil, making sustainable productivity improvement a strategic necessity to maintain global competitiveness. This effort can be achieved through the development of superior varieties with high oil yield, slow stem growth, and favorable agronomic quality. Dura Angola, a germplasm originally from Africa and introduced by PT Binasawit Makmur in 2010, offers the potential to broaden the relatively narrow genetic base of dura while serving as an important source of desirable traits for oil palm breeding. This study aimed to identify potential genotypes and select superior populations of dura Angola based on phenotypic variation and genetic parameters. The research was conducted on 1,029 eleven-year-old palms at Mesuji Estate of PT Aek Tarum, South Sumatra. The observed traits included production components (bunch number, fresh fruit bunch weight, average bunch weight), vegetative growth (stem height increment, rachis length, leaf area, frond production), and oil yield traits (F/B, M/F, O/WM, O/B, OER). Data were analyzed using an Unbalanced Incomplete Block Design with a General Linear Model, followed by estimation of heritability, coefficients of genetic and phenotypic variation, and trait correlations. Results revealed significant phenotypic and genetic variation for most traits. High heritability values ($h^2 > 0.60$) were observed for bunch number, average bunch weight, rachis length, stem height increment, M/F, O/B, and OER. A strong positive correlation was found between M/F and O/B ($r = 0.80^{**}$), while a significant negative correlation was detected between bunch number and average bunch weight ($r = -0.75^{**}$), indicating physiological trade-offs among yield components. Based on multi-trait scoring, seven superior accessions were identified—A074/20, A040/22, A040/12, A041/26, A041/22, A075/08, and A095/05—recommended as potential parental materials for the development of superior oil palm varieties utilizing Angolan genetic resources.

Keywords: dura Angola, heritability, genetic selection, germplasm, oil palm.