ANALISIS MATEMATIS PENGARUH JENIS BIJI DAN TINGKAT PENYANGRAIAN TERHADAP KARAKTERISTIK FISIK DAN MEKANIS KOPI (*COFFEA SP*)

INTISARI

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Indonesia menduduki posisi ketiga sebagai negara pengekspor kopi terbesar di dunia setelah Brazil dan Vietnam. Salah satu faktor pendukung hal tersebut adalah karena beragamnya jenis biji yang ada di Indonesia. Jenis biji-biji tersebut berasal dari verietas dan tempat tumbuh yang berbeda, sehingga bentuk dan ukuran dari biji kopi juga akan berbeda. Dengan mengetahui sifat fisik dan mekanis dari biji kopi, dapat mempermudah proses analisis perancangan alat seperti untuk alat pemisahan bijian dari bahan lain, proses penyangraian, pengemasan dan penyimpanan. Untuk mempermudah hal tersebut, diperlukan analisis terhadap sifat fisik dan mekanis biji kopi. Penelitian ini bertujuan untuk mengetahui pengaruh perbedaan jenis biji dan tingkat penyangraian terhadap sifat fisik dan mekanis pada kopi serta menganalisis hubungan matematis antara kadar air dengan parameter sifat fisik dan mekanis pada biji kopi. Variasi jenis biji kopi yang digunakan adalah arabika, robusta dan excela. Tingkat penyangraian yang digunakan adalah *light, medium* dan *dark*. Secara umum, dari hasil penelitian ini didapatkan bahwa perbedaan jenis biji secara signifikan mempengaruhi nilai panjang, lebar, tebal, *sphericity*, *geometric mean diameter*, berat seribu butir, *lightness, chroma*, *hue angle, particle density, loose density, tapped density, loose porosity, terminal velocity, angle of internal friction* dan *angle of wall friction.* Perbedaan tingkat penyangraian secara signifikan mempengaruhi nilai panjang, lebar, tebal, *sphericity, geometric mean diameter,* berat seribu butir, *lightness, chroma, hue angle, particle density, loose density*, *tapped density, loose porosity, tapped porosity*, *terminal velocity* dan kekerasan. Terdapat interaksi antara jenis kopi dengan tingkat penyangraian terhadap nilai berat seribu butir, *particle density, loose density, tapped density* dan *terminal velocity*.

Kata Kunci : Analisis matematis, Jenis kopi, Kadar air, Sifat fisik dan mekanis, Tingkat penyangraian.

MATHEMATICAL ANALYSIS ON THE EFFECT OF BEAN TYPES AND THE ROASTING LEVEL TOWARD COFFEE'S MECHANICAL AND PHYSICAL CHARACTERISTICS (*COFFEA SP)*

ABSTRACT

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Indonesia is at the third rank as the biggest coffee exporter after Brazil and Vietnam. One of the reason is because Indonesia has variety of coffee bean. Different type of beans come from variety and different growth place, which affect the shape and the size of the beans. By knowing coffee beans' mechanical and physical characteristics, it eases the process of planning the tools to separate the bean from other materials, straining process, packaging as well as storing process. To eases those process, analysis toward coffee beans' mechanical and physical characteristic is needed. This experiment is conducted to know the effect of bean types and the roasting level toward mechanical and physical characteristics while also xxiamilyxxiexxi the mathematical relationship between water content with coffee beans' mechanical and physical characteristics. Types of coffee that are being used are Arabica, Robusta, and Excelsa. The roasting level that are used are light, medium, and dark. Generally, the result of this experiment shows that different type of beans significantly affects the length, width, depth, sphericity, geometric mean diameter, weight of one thousand amount, lightness, chroma, hue angle, particle density, loose density, tapped density, loose porosity, terminal velocity, angle of internal friction dan angle of wall friction. The different of roasting level significantly affects the length, width, depth, sphericity, geometric mean diameter, weight of one thousand beans amount, lightness, chroma, hue angle, particle density, loose density, tapped density, loose porosity, tapped porosity, terminal velocity dan solidity. There is interaction between types of coffee with roasting level toward the weight of one thousand beans amount, particle density, loose density, tapped density dan terminal velocity.

Keyword: Mathematical analysis, mechanical and physical characteristics, roasting level, variety coffee's, water content.