VARIASI GENETIK KARAKTER PRODUKSI GETAH DAN PERTUMBUHAN UJI KETURUNAN *Pinus merkusii* SUB-GALUR SUMEDANG-2 UMUR 16 TAHUN DI KPH BANYUMAS BARAT

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INTISARI

Pinus merkusii Jungh. et de Vriese merupakan spesies dari famili *Pinaceae* dan tumbuhan pionir *fast growing* spesies yang dapat tumbuh di lahan marjinal Selain kayu, pinus memberikan produk hasil hutan non kayu berupa getah dan turunannya (gondorukem serta terpentin) sebagai bahan baku industri ekstraktif. Namun, produksi getah menurun selama 5 tahun mulai 2018, dari 43.175 ton menjadi 38.356 ton di Jawa Tengah (2021) dan dari 31.645 ton menjadi 26.107 ton di Jawa Timur (2022). Selain manfaat ekonomis, pinus bermanfaat secara ekologis dalam mitigasi pemanasan global. Sehingga, sejak 1968, dilakukan program pemuliaan studi populasi pinus di Sumatra, Indonesia. Uji keturunan 1976 dikembangkan di Jember, Baturaden, dan Sumedang untuk perbaikan batang. Pada tahun 2006, uji keturunan produksi bocor getah generasi F1 dibangun di KPH Banyumas Barat, dan telah diteliti umur 4 dan 11 tahun.

Penelitian ini bertujuan untuk mengetahui variasi karakter dan menentukan famili produksi getah terbaik sub galur Sumedang 2 umur 16 tahun. Mengevaluasi 6 blok replikasi dengan 50 famili/blok dan memiliki 3 *treeplot*/famili/blok. Menginventarisasi pertumbuhan diameter, tinggi, tinggi batang bebas cabang (TBBC), dan hasil pengeboran getah 5 ulangan dengan interval 3 hari selama 17 hari. Desain penelitiannya menggunakan *Incomplete Block* (IBD) *by Row Column*, sesuai pembangunan uji keturunan tahun 2006. Sub galur Sumedang 2 diperoleh hasil 80% hidup baik, rerata produksi getah 20,96 g/pohon/3 hari, heritabilitas famili (0,48) konsisten sedang, korelasi genetik dan fenotip produksi getah dengan diameter, tinggi, dan TBBC bernilai negatif dan cenderung lemah, maka kapasitas produksi getah cenderung lebih baik daripada kayu. Total perolehan genetiknya 25,89% dengan famili yang konsisten unggul dalam produksi getah saja yakni, 1, 4, 15, 26, 39, dan 43.

Kata Kunci: *Pinus merkusii*, Getah, Uji Keturunan, Pertumbuhan, Sumedang 2

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GENETIC VARIATION IN RESIN PRODUCTION AND GROWTH TRAITS OF THE 16-YEAR-OLD *Pinus merkusii* SUMEDANG-2 SUB-PROVENANCE PROGENY TEST IN KPH BANYUMAS BARAT

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ABSTRACT

Pinus merkusii Jungh. et de Vriese, a species from the *Pinaceae* family, is a fast-growing and pioneer plant capable of thriving on marginal land. In addition to timber, it produces non-timber of forest products such as resin and its derivatives—gum rosin and turpentine—used as raw materials in extractive industries. However, resin production has declined over the past five years, from 43,175 tons in 2018 to 38,356 tons in Central Java (2021) and from 31,645 tons to 26,107 tons in East Java (2022). Beyond its economic value, pine also plays an ecological role in mitigating global warming. Consequently, breeding programs for *P. merkusii* have been implemented since 1968, starting with population studies in Sumatra. In 1976, progeny trials were established in Jember, Baturaden, and Sumedang to improve stem traits. In 2006, a trial for resin-yielding F1 generation pine was initiated at KPH Banyumas Barat and evaluated at 4 and 11 years of age.

This study aims to assess the variation in characteristic and identify the best resin-production of the 16-year-old Sumedang 2 sub-provenance. Six replicated blocks, each with 50 families, and 3 treeplot/family/block were assessed. Inventorying the growth of diameter, height, branch-free stem height (TBBC), and sap drilling results for 5 repetitions at 3-day intervals over a period of 17 days. The experimental design used was an Incomplete Block Design (IBD) arranged by row-column, based on the 2006 progeny test. Results showed 80% survival, an average resin yield of 20.96 g per tree per three days, and moderate family heritability (0.48). Genetic and phenotypic correlations between resin yield and growth traits were negative and weak, suggesting a tendency to prioritize resin production over wood growth. The genetic gain achieved was 25.89%. Families consistently showing superior resin production were 1, 4, 15, 26, 39, dan 43. These findings provide valuable insights for future breeding strategies focused on enhancing resin yield while maintaining sustainable growth.

Keywords: *Pinus merkusii*, resin, progeny test, growth, Sumedang 2

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