

Penilaian Status Kesehatan Dan Kualitas Tegakan *Eucalyptus* Hibrida (*E. pellita* x *E. brassiana*) Di KHDTK Wanagama I

*Assessment of Health and Quality Status of Eucalyptus Hybrid Stands (*E. pellita* x *E. brassiana*) at KHDTK Wanagama I*

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ABSTRACT

Eucalyptus plays a crucial role in the multifunctional forestry industry. Hybridization efforts involving Eucalyptus pellita x E. brassiana have been conducted at the Hutan Pendidikan Wanagama (HPW) I. Previous studies have indicated that hybridization can enhance plant productivity and health. However, there has been no prior evaluation regarding the health and quality of hybrid Eucalyptus stands. This research aims to assess the health and quality of the stands, explore correlations between health and crown conditions with plant productivity, and investigate hybrid and pure plant responses to the health and productivity of Eucalyptus pellita x E. brassiana. Stand observations of eucalyptus hybrid were conducted through a census method. Plant health and stand quality assessments were determined based on plant health, crown conditions, and plant productivity parameters. Plant health was evaluated by calculating the Damage Area and Damage Intensity. Crown conditions were determined based on observations of the Crown Ratio, Crown Density, Crown Transparency, Dieback, and Crown Diameter, converted into Visual Crown Rating (VCR) values. Plant productivity was assessed based on the Basal Area (BA) through diameter measurements at breast height. Correlations between health and crown conditions with plant productivity were determined using correlation tests between Damage Intensity for each damage type and VCR values with BA. Hybrid and pure eucalyptus plant responses were investigated using variability tests on Damage Intensity and BA data. The results revealed that families B4P3, B3P5, and B3P1 exhibited the best health and stand quality conditions. The research also indicates differing responses of health responses compared to plant productivity at the family level. Correlation tests showed a weak positive correlation between crown conditions and plant productivity, while plant health did not correlate with plant productivity. The variability test indicates that hybrid and purebred eucalyptus plants show no difference in response to plant health conditions but exhibit different responses in terms of plant productivity.

Keywords: *hybridization, Eucalyptus pellita, Eucalyptus brassiana, health evaluation*

INTISARI

Eucalyptus berperan penting dalam industri multifungsi kehutanan. Upaya hibridisasi *Eucalyptus* telah dilakukan di Hutan Pendidikan Wanagama (HPW) I dengan jenis *Eucalyptus pellita* x *E. brassiana*. Penelitian terdahulu menyatakan hibridisasi mampu meningkatkan produktivitas dan kesehatan tanaman. Akan tetapi, evaluasi terkait kondisi kesehatan dan kualitas tegakan *Eucalyptus* hibrida belum pernah dilakukan. Penelitian ini bertujuan untuk menilai kondisi kesehatan dan kualitas tegakan, mencari korelasi antara kesehatan dan kondisi tajuk dengan produktivitas tanaman, serta mencari respon tanaman hibrida dan murni terhadap kesehatan dan produktivitas pada *Eucalyptus pellita* x *E. brassiana*. Pengamatan tegakan *Eucalyptus* hibrida dilakukan dengan metode sensus. Penilaian kondisi kesehatan tanaman dan kualitas tegakan ditentukan berdasarkan parameter kesehatan, kondisi tajuk, dan produktivitas tanaman. Kesehatan tanaman dilakukan dengan menghitung Luas Serangan dan Intensitas Serangan. Kondisi tajuk ditentukan berdasarkan pengamatan Rasio Tajuk Hidup, Kerapatan Tajuk, Transparansi Tajuk, *Dieback*, dan Diameter Tajuk yang dikonversi menjadi nilai VCR (*Visual Crown Rating*). Produktivitas tanaman dinilai berdasarkan Luas Bidang Dasar (LBDs) melalui perhitungan



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luas berdasarkan pengukuran diameter batang setinggi dada. Korelasi kesehatan dan kondisi tajuk dengan produktivitas tanaman ditentukan menggunakan uji korelasi antara nilai Intensitas Serangan tiap tipe kerusakan dan nilai VCR dengan nilai LBDs. Respon tanaman *eucalyptus* hibrida dan murni dicari menggunakan uji variabilitas pada data nilai Intensitas Serangan dan LBDs. Hasil penelitian menunjukkan famili B4P3, B3P5, dan B3P1 merupakan famili dengan kondisi kesehatan dan kualitas tegakan terbaik. Penelitian juga menunjukkan adanya respon kesehatan yang berbeda dengan produktivitas tanaman pada tingkat famili. Hasil uji korelasi menunjukkan kondisi tajuk berkorelasi positif lemah terhadap produktivitas tanaman, sedangkan kesehatan tanaman tidak berkorelasi terhadap produktivitas tanaman. Uji variabilitas menunjukkan tanaman *eucalyptus* hibrida dan murni memberikan respon yang tidak berbeda terhadap kondisi kesehatan tanaman, tetapi memberikan respon yang berbeda terhadap produktivitas tanaman.

Kata kunci: hibridisasi, *Eucalyptus pellita*, *Eucalyptus brassiana*, evaluasi kesehatan