

**Evaluation of Health Status, Regeneration of Rehabilitated and Succession Plants  
on The Southern Slopes of Mount Merapi Heavily Affected by The Eruption  
2010**

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**Abstract**

Mount Merapi is one of the volcanoes in Java Island referred as the most active in Indonesia. The eruption in 2010 is one of the largest eruptions in the last century and resulted in the destruction of forest ecosystems around Mount Merapi. Evaluation of health status and regeneration of rehabilitated plants are carried out in areas with severe damage on its vegetation conditions. The evaluation were vital given the status of Mount Merapi as a water catchment area which provides many ecosystem services including maintaining the ecosystem diversity. The purposes of this study were to (1) Measure the diversity and relative abundance of vegetation in severely damaged areas on the Southern slopes of Mount Merapi, (2) Evaluate the variety and extent of the damage to vegetation from natural or artificial regeneration in areas affected by Mount Merapi eruption.

The study was conducted on the Southern slopes of Mount Merapi and plots were determined by elevation difference of every 200masl; i.e. 800-1000masl, 1001-1200masl and 1201-1400masl. Each elevation range contains six nested sampling plots. Evaluation of plant regeneration was assessed based on the vegetation diversity, relative abundance and forest diversity. Supporting data in the form of soil fertility and the presence of Snags and fallen trees were recorded. The assessment of vegetation health was calculated by the variety and the extent of damage. The variety of damage is calculated for each type of vegetation and altitude. The extent of damage was assessed at each level of plant growth and elevation.

The diversity of forest diversity exists at various altitude levels, namely 800-1000masl (0.20); 1001-1200masl (1.8) and 1201-1400masl (0.35) This was due to the presence of *Acacia decurrens* species which formed very high natural stands (95.83%) thus preventing other species from growing. The relative abundance of natural succession vegetation mostly occurs to *A. decurrens* (95.83%) at an altitude of 800-1000 masl while the artificial succession mostly occurs to *Falcataria moluccana* (20.93%) at an altitude of 1201-1400 masl. (2) The greatest variety of damage to natural succession species was *Acacia decurrens* at an altitude of 800-1000 masl (71.43%), while the highest damage variance was *Pterocarpus indicus* (57.14%) at an altitude of 800-1000 masl. The largest area of damage was dry canopy at an altitude of 800-1000 mdp1 (80%), 1001-1200 mdp1 (45.45%) and 1201-1400 mdp1 (60.38%).

Keywords: Mount Merapi, regeneration, rehabilitation, succession, evaluation forest health

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## Evaluasi Status Kesehatan, Regenerasi Tanaman Hasil Rehabilitasi di Lereng Selatan Gunung Merapi Terdampak Berat Erupsi 2010

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### Intisari

Gunung Merapi merupakan salah satu gunung api di Pulau Jawa yang menunjukkan status paling aktif di Indonesia. Erupsi tahun 2010 merupakan erupsi terbesar pada satu abad terakhir dan berdampak pada rusaknya ekosistem hutan sekitar Gunung Merapi. Evaluasi status kesehatan dan regenerasi hasil rehabilitasi dilakukan pada kawasan dengan kerusakan berat berdasar kondisi vegetasi. Evaluasi tersebut penting mengingat Gunung Merapi merupakan kawasan tangkapan air, penyedia keragaman ekosistem dan mempunyai fungsi ekologis lainnya. Tujuan Penelitian (1) Mengukur keragaman dan kelimpahan relatif vegetasi pada kawasan terdampak kerusakan berat di lereng selatan Gunung Merapi, (2) Mengevaluasi ragam dan luas kerusakan vegetasi hasil regenerasi alami maupun buatan pada kawasan terdampak kerusakan berat di lereng selatan Gunung Merapi.

Penelitian dilakukan di lereng Selatan Gunung Merapi dan plot ditentukan berdasarkan perbedaan ketinggian setiap 200mdpl; yaitu 800-1000 mdpl, 1001-1200 mdpl dan 1201-1400 mdpl. Setiap ketinggian tersusun dari enam plot *nested sampling*. Evaluasi regenerasi tanaman dikaji berdasarkan keragaman vegetasi, kelimpahan relatif dan keragaman diversitas vegetasi. Data pendukung berupa kesuburan tanah dan keberadaan *Snags* serta pohon tumbang. Penilaian kesehatan vegetasi dihitung berdasarkan ragam kerusakan dan luas kerusakan. Ragam kerusakan dihitung pada tiap spesies vegetasi dan ketinggian tempat. Luas kerusakan dikaji pada setiap tingkat pertumbuhan spesies tanaman dan ketinggian tempat.

Nilai indeks keragaman vegetasi pada berbagai tingkat ketinggian yaitu 800-1000 mdpl (0,20); 1001-1200 mdpl (1,8) dan 1201-1400 mdpl (0,35) hal ini disebabkan karena terdapat jenis *A. Decurrens* yang membentuk tegakan murni dengan kelimpahan sangat tinggi (95,83%) sehingga menghalangi jenis lain untuk tumbuh. (2) Ragam kerusakan terbesar pada spesies hasil suksesi alami adalah *Acacia decurrens* pada ketinggian 800-1000 mdpl (71,43%), sedangkan pada vegetasi rehabilitasi nilai ragam kerusakan tertinggi yaitu *Pterocarpus indicus* (57,14%) pada ketinggian 800-1000 mdpl. Luas kerusakan terbesar adalah tajuk kering pada setiap ketinggian 800-1000 mdpl (80%), 1001-1200 mdpl (45,45%) dan 1201-1400 mdpl (60,38%).

Kata kunci: Gunung Merapi, regenerasi, rehabilitasi, suksesi, evaluasi kesehatan hutan

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