

## INTISARI

Logam berat di tanah berasal dari beberapa sumber, salah satunya adalah abu vulkan letusan gunungapi. Material tanah di sub DAS Bompon berasal dari material Gunungapi Sumbing dan Pegunungan Purba Menoreh yang tertimbun dan menjadi tanah dengan jangka waktu sangat lama. Sedangkan, material di lereng selatan Gunung Merapi berasal dari aktivitas Gunungapi Merapi yang masih sering mengeluarkan abu vulkan sehingga materialnya cenderung baru. Rimpang tanaman biofarmaka banyak dibudidayakan pada daerah penelitian. Rimpang tanaman biofarmaka dapat berpotensi tercemar logam berat Cd dan Cu. Penelitian ini akan menganalisis perbedaan kandungan logam berat Cd dan Cu di tanah sub-DAS Bompon dengan tanah di lereng selatan Gunung Merapi serta mempertimbangkan penggunaan pupuk kimia oleh petani di sub-DAS Bompon terhadap kandungan logam berat di tanah dan rimpang tanaman biofarmaka. Penelitian dilakukan dengan mengumpulkan data lapangan (wawancara petani) dan data laboratorium (pH tanah, bahan organik, Kapasitas Pertukaran Kation (KPK), kadar lempung, logam berat Cd dan Cu di tanah dan rimpang. Hasil menunjukkan bahwa pengaruh kemasaman pH tanah, bahan organik sedang, KPK tinggi, dan kadar lempung tinggi menyebabkan kandungan logam Cd pada tanah dan rimpang di sub-DAS Bompon lebih tinggi masing-masing 24,3% dan 17,2% dibandingkan lereng selatan Gunung Merapi. Namun tidak berpengaruh banyak terhadap kenaikan logam Cu pada tanah dan rimpang. Kemudian, pengaruh penggunaan pupuk kimia memberikan kenaikan kandungan logam Cd pada tanah dan rimpang masing-masing 4,9% dan 19%. Namun, tidak berpengaruh banyak terhadap kenaikan logam Cu pada tanah dan rimpang.

Kata kunci : abu vulkanik, biofarmaka, kadmium, pupuk kimia, tembaga.

## ABSTRAK

Heavy metals in soil come from several sources, one of them is volcanic ash from volcanic eruptions. The soil material in the Bompon sub-watershed comes from the Mount Sumbing and the Ancient Menoreh Mountains which have been buried and become soil for a very long time. Meanwhile, the material on the Southern Slope of Mount Merapi comes from the activity of Mount Merapi which still often emits volcanic ash so that the material tends to be new. The rhizomes of biopharmaceutical plants are widely cultivated in the research area. Rhizome of biopharmaceutical plants can potentially be contaminated with heavy metals Cd and Cu. This study will analyze the differences of the heavy metal content of Cd and Cu in the soil of the Bompon Sub-watershed and the Southern Slope of Mount Merapi. This study also considers the treatment of chemical fertilizer mixtures from farmers in the Bompon sub-watershed on the heavy metal content in the soil and rhizomes of biopharmaceutical plants. The research was conducted by collecting field data (farmer interviews) and laboratory measurement i.e soil pH, organic matter, Cation Exchange Capacity (KPK), clay content, heavy metal Cd in the soil, heavy metal Cd in the rhizome, heavy metal Cu in the soil, and heavy metal Cd in the soil. the weight of Cu in the rhizome. The results showed that the effect of acidity in soil pH, medium organic matter, high CEC, and high clay content caused the Cd content in the soil and rhizomes in the Bompon Sub-watershed are 24.3% and 17,2% higher than the southern slope of Mount Merapi, but did not have much effect on the increase of Cu content in the soil and rhizomes. Then, addition of chemical fertilizers gave an increase in Cd metal content in the soil and rhizomes by 4.9% and 19%, respectively, but didn't have much effect on the increase Cu content in soil and rhizomes.

**Keywords :** biopharmaceutical plants, cadmium, chemical fertilizer, copper, volcanic ash.