

INTISARI

Kawasan karst merupakan lingkungan yang rentan mengalami kerusakan. Aktivitas pertanian di kawasan karst sebagai bentuk pemenuhan kebutuhan manusia dapat memberikan dampak terhadap lingkungan karst. Penelitian ini dilakukan di Kawasan Karst Gunungsewu dengan fokus kajian di daerah tangkapan air Sungai Bawah Tanah Seropan dengan tujuan untuk: (1) mengidentifikasi aktivitas pertanian di Kawasan Karst Gunungsewu; (2) menganalisis faktor penyebab dan menilai tingkat kerusakan lingkungan akibat aktivitas pertanian di Kawasan Karst Gunungsewu; dan (3) menyusun *code of conduct* aktivitas pertanian di Kawasan Karst Gunungsewu.

Penelitian ini dilakukan dengan menggunakan metode deskriptif kuantitatif. Wawancara terhadap petani dilakukan untuk memperoleh informasi aktivitas pertanian berupa kalender tanam, penggunaan pupuk, dan bentuk konservasi lahan yang telah dilakukan. Dampak aktivitas pertanian terhadap lingkungan karst dibagi menjadi dampak terhadap tanah dan sumberdaya air. Informasi kerusakan tanah ditinjau dari kondisi KRd dan estimasi kehilangan tanah. Informasi kerusakan sumberdaya air ditinjau dari analisis kehilangan nutrisi. Hasil analisis kerusakan lingkungan digunakan untuk rumusan pengelolaan berupa *code of conduct*.

Hasil penelitian menunjukkan lahan ladang sebagian besar berada pada kondisi KRd ringan. Lahan ladang di lereng bukit yang mengalami erosi akut tidak dikelola lagi dan selanjutnya mengalami KRd sangat berat. Nilai KRDI di DTA Seropan memiliki rentang nilai 0,505 hingga 1,199. Estimasi total kehilangan tanah di DTA Seropan sebesar 4.975,01 ton/tahun. Sebagian besar lahan ladang memiliki tingkat kehilangan tanah ringan. Area dengan tingkat keilangan tanah sangat berat sebagian besar berada pada lereng bukit dengan penggunaan lahan berupa kebun campuran. Teridentifikasi adanya pengaruh penggunaan pupuk terhadap kualitas air di SBT Seropan melalui analisis aliran nutrisi dari aktivitas pertanian. Kehilangan nutrisi dalam bentuk nitrogen sebesar 14% dan fosfor sebesar 4%. Pengelolaan aktivitas pertanian di kawasan karst dalam bentuk *code of conduct* menitikberatkan terhadap pengurangan risiko kerusakan tanah, pengurangan risiko kerusakan sumberdaya air, dan zonasi daerah tangkapan air.

Kata Kunci: Kerusakan Karst, Aktivitas Pertanian Karst, *Karst Rocky Desertification*, Pencemaran Air, *Code of Conduct*

ABSTRACT

Karst areas are delicate ecosystems that are highly susceptible to damage. Agricultural activities in these areas, aimed at meeting human needs, can significantly impact the karst environment. This study was conducted in the Gunungsewu Karst Area, focusing on the Seropan Underground River catchment area, with the following objectives: (1) identifying agricultural activities in the Gunungsewu Karst Area; (2) analyzing the factors causing environmental damage due to these activities; and (3) formulating a code of conduct for agricultural practices in the Gunungsewu Karst Area.

This research uses a quantitative descriptive method. Interviews with farmers were conducted to gather information on agricultural practices, including planting schedules, fertilizer usage, and land conservation that have been done. The impacts of these activities on the karst environment were categorized into soil and water resource impacts. Soil damage was assessed using KRD and estimated soil loss, while water resource damage was evaluated through nutrient loss analysis. The findings were then used to develop management guidelines in the form of a code of conduct.

The results indicate that most farmland in the area has a light KRD. However, farmland on steep slopes experiencing severe erosion is often left unmanaged, leading to severe KRD. The KRDI value in Seropan catchment has a value range of 0.505 to 1.199. The estimated total soil loss in the Seropan catchment area is 4,975.01 tons/year, with most farmland experiencing only minor soil loss. Areas with severe soil loss are primarily located on steep slopes where mixed gardens are cultivated. The impact of fertilizer use on water quality in the Seropan Underground River was identified through nutrient flow analysis, with nitrogen and phosphorus losses estimated at 14% and 4%, respectively. The proposed code of conduct for agricultural activities in karst areas emphasizes reducing soil and water resource damage and zoning catchment area.

Keywords: *Karst Damage, Karst Agricultural Activities, Karst Rocky Desertification, Water Pollution, Code of Conduct*