

**METODE ANALYTICAL HIERARCHY PROCESS DAN FUZZY LOGIC
UNTUK PENILAIAN KESESUAIAN LAHAN BUDIDAYA SIRSAK
(*Annona mucirata* L.) STUDI KASUS: KABUPATEN BANTUL DAN
KEBUN BUAH NAWUNGAN, DESA SELOPAMIORO, KECAMATAN
IMOGIRI, KABUPATEN BANTUL, D.I. YOGYAKARTA**

INTISARI

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Tujuan dari penelitian ini adalah menerapkan metode AHP (*Analytical Hierarchy Process*) dan *Fuzzy Logic* untuk menilai kesesuaian lahan budidaya sirsak (*Annona mucirata* L.) di Kabupaten Bantul dan Kebun Buah Nawungan untuk memberikan arahan rekayasa budidaya sirsak. Pada penelitian ini, evaluasi lahan untuk budidaya sirsak dilakukan dengan dua skala, yaitu skala regional (Kabupaten Bantul) dan skala detail (Kebun Buah Nawungan) menggunakan metode AHP dan *Fuzzy Logic*. Parameter yang digunakan untuk evaluasi lahan skala regional yaitu curah hujan, jenis tanah, penggunaan lahan dan kemiringan lereng menggunakan analisis spasial melalui *ArcGIS* dengan jenis penggunaan lahan belukar/semak, rumput, sawah tadah hujan, tegalan, dan kebun. Luas penggunaan lahan yang digunakan untuk evaluasi seluas 13.145 Ha atau sekitar 25,56% dari total luas wilayah kabupaten Bantul. Sedangkan parameter untuk mengevaluasi lahan skala detail yaitu tekstur, drainase, pH tanah, bahan organik, kedalaman efektif, curah hujan dan kemiringan lereng. Hasil evaluasi lahan skala regional diperoleh 4 kelas kesesuaian lahan yaitu S1 (sangat sesuai) sebesar 13,04%, S2 (cukup sesuai) sebesar 0,97%, S3 (sesuai marginal) sebesar 5,07%, dan N (tidak sesuai) sebesar 4,9%. Berdasarkan analisis evaluasi secara regional, kebun buah sirsak Nawungan tergolong dalam kelas S3. Hasil analisis evaluasi lahan skala detail dibagi dalam 3 wilayah, yaitu lereng atas tergolong dalam kelas S2, lereng tengah tergolong S1 dan lereng bawah tergolong S3. Arahan yang direkomendasikan untuk meningkatkan potensi lahan berdasarkan hasil evaluasi lahan yaitu dengan pembuatan saluran drainase, penanaman sirsak di sepanjang lereng, penambahan pupuk kompos, dan penambahan kapur untuk meningkatkan pH.

Kata kunci: *analytical hierarchy process*, *fuzzy logic*, sirsak, penilaian kesesuaian lahan

**ANALYTICAL HIERARCHY PROCESS AND FUZZY LOGIC METHODS
FOR ASSESSMENT OF LAND SUITABILITY FOR CULTIVATING
SOURSOP (*Annona mucirata* L.) CASE STUDY: BANTUL REGENCY
AND NAWUNGAN ORCHARD, SELOPAMIORO VILLAGE, IMOGIRI
SUBDISTRICT, BANTUL REGENCY, YOGYAKARTA**

ABSTRACT

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The main purpose of this study was to apply the AHP (*Analytical Hierarchy Process*) and *Fuzzy Logic* method to assess the suitability of land for soursop (*Annona mucirata* L.) cultivation in Bantul Regency and Nawungan orchard to design recommendation on manipulating soursop cultivation. The land evaluation for soursop farming carried out in two scales: regional (Bantul Regency) and detail (Nawungan orchard) by using *Analytical Hierarchy Process* and *Fuzzy Logic* method. The parameters used for regional evaluation were rainfall, type of soil, land use, and slope using spatial analyst tools in ArcGIS. Evaluated land use types were solely shrubs, grasses, rain rice fields, fields, and gardens. They cover 13.145 Ha or around 25,56% of the total area of the Bantul Regency. While the parameters for detail evaluation land were soil texture, drainage, soil pH, organic material, solum, rainfall, and slope. Regionally, very suitable land was 13,04%, moderate was 0,97%, marginal was 5,07%, and not suitable was 4,9%. Based on regional evaluation analysis, Soursop Nawungan orchards belong to class S3. The detailed scale land evaluation analysis were divided into 3 regions, the upper slope of soursop farming was classified as moderate, middle slope was very suitable, and lower slope was marginal. Slope and drainage were constraints of soursop productivity in upper slope. The drainage, slope, organic materials, pH and solum were constraints of soursop farming in lower slopes. This study recommended to improve drainage system in terrace as well as soil amelioration such as composting and lime to increase soil pH.

Keywords: *analytical hierarchy process, fuzzy logic, soursop, land suitability assessment*