ZONASI KUALITAS TANAH SAWAH DI KAWASAN INDUSTRI DAS BENGAWAN SOLO DAERAH KABUPATEN KARANGANYAR

(Mapping of Paddy Soil Quality in Industrial Area Bengawan Solo Watershed in Karanganyar Regency)

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ABSTRACT

The aim of this research was to find out rice field quality in industrial area in Karanganyar regency. The problem formulation of the research was that the industrial activity in the industrial area in Karanganyar regency gave pressure to the rice field quality.

The research method was descriptive exploration. It was conducted by determining Soil Map Unit (SMU) in research location though survey, getting sample based on purposive sampling method, conducting laboratory analysis for each selected soil function indicator (Minimum Data Set/MDS), conducting MDS scoring to discover the Soil Quality Index (SQi), and levelling SQi in each SMU. The dynamic factors to be observed to discover their influences for soil quality were fertilizing process, organic substance added, and plant rotation as soil management system.

The result of the research is that SQi research location has about moderate (4.4-6.6), high level (6.6-8.8) and very high level (8.8-11). Based on stepwise regression test through Minitab 13 software, the most influenced indicators for the soil quality are bulk density, organic soil carbon, and available N.

Fertilizer dosage application for next planting season SMU 1 was 263.23 kg/ha urea, SMU 2 379.43 was kg/ha urea, SMU 3 was 337.02 kg/ha urea, SMU 4 was 355.03 kg/ha urea, SMU 5 was 290.65 kg/ha urea, and SMU 6 was 305.67 kg/ha urea. Soil quality of excessive fertilizing (SQi = 8.14) higher than non excessive fertilizing (SQi = 7.85).

Soil quality of non-organic substance addition (SQi = 8.38) higher than organic substance addition 5 ton cow manure/ha (SQi = 7.90). Soil quality of plants rotation with ground nut (SQi = 8.34) higher than non plants rotation (SQi = 7.77). Soil quality in SMU that contaminated by waste disposal (SQi = 7.37) was lower than control (SQi control inside = 7.87 and SQi control outside = 9.27).

The research recommends some solutions for soil management system. The solutions are; determining industrial area based on rice field quality zone in SMU 5 (Dayu Village and Bulurejo Village, sub district of Gondangrejo), giving specific Fertilizer dosage application, conducting plant rotation with soybean, and adding decomposed organic substance or low C/N organic substance.

Key words: soil quality, rice fields, industrial area, Karanganyar Regency