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STUDY EFFECT OF LAND MANAGEMENT OF HORTICULTURAL ON SOIL ERODIBILITY AT THE UPSTREAM OF SUMANI WATERSHED

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ABSTRACT: Upstream watersheds in Sumani, is a large horticulture farming area widely cultivated by vegetables, such as cabbage, onions, potatoes etc. Due to intensive farming business activities, which tend to have an impact on the level of erodibility inherent soils, a large portion of land is destroyed by rain leading to erosion. The purpose of this study, therefore, is to determine the erosion level and determining erodibility factor on farm lands on the upstream of Sumani Watershed. The research method adopted is purposive random sampling. Furthermore, soil samples were taken in order to analyze its physical properties (texture, organic matter, structure, permeability) at a depth of 0-20 cm. The samples were analyzed in the soil Department laboratory at the Faculty of Agriculture Andalas University. Data analysis was processed using the soil erodibility equation and to determine the factors, the principal component analysis (PCA) was utilized. The results of the analysis showed the value of soil erodibility against rainfall which was determined by using its organic matter, structure and permeability. The soil was also prepared by applying the conservation method. The resh organic material of the harvest is capable of improving its durability damaged by rainfall.

Keyword; watersheds, soil, horticultural, erodibility, rainfall

1. INTRODUCTION

The use of various poor farming management activities leads to land damage. Agricultural ventures, which fail to implement the conservation rule, tend to make the land susceptible by rainfall thereby, leading to erosion. Furthermore, this is influenced by several factors which are dependent on the soil's characteristics, precipitation, land management, and its cover vegetation.

To determine the erosion factor and predict the misplaced land, the researcher used the Universal soil loss equation (USLE) method, therefore, the lost soil's arbiter factor was analyzed. According to some researchers, erosion is sometimes in the form of land resistance owing to heavy rainfall. According to [1] K factor is an integrated effect from rainfall precipitation and land resistance to the detachment particle and transportation. This process is influenced by soil characteristics such as particle size distribution, structural stability, organic material content, land chemistry, loam mineralogy, and water transmission characteristic. Therefore, erodibility is a combined influence of land attributes with very powerful conditions used to arrange the power which can refuse the debris potency from rainfall erosivity.

To appraise and decide the land misplaced across the globe, the researcher used soil erodi-bility.The research proved that there is a strong relationship between the soil erodibility value and proved-lost land [2] [3]. Furthermore, it consists of several land characteristics which include physique, chemical, biology, and mineralogy capable of influencing the land [4]. This is also related to the combination of actions from rainfall, run-off, and land infiltration. K factor is the effect of land and its profile reduction features [5]. Nowadays, it has been considered as erosion indicator due to its detachment sensitivity and particle transportation [6].

Land erosion has become a reduction problem at farming soil regions, especially at sulfur regions such as the upstream watersheds in Sumani (DAS). Furthermore, this research aims to review the land erodibility value of horticulture farming. The purpose of this study, therefore, is to determine the erosion level and determining erodibility factor on farmlands on the upstream of Sumani Watershed.

2. MATERIALS AND METHOD

2.1 The Research Setting

The research is located in the upstream watersheds Sumani (DAS). *Andisol* and *Inseptisol* are dominant materials found in volcanic ash. The rainfall precipitation in this area is 2.333 mm/year. The research is agriculturally grouped into A, B, C and D. Group A cultivates radish, potato, and tomato, B consists of chili, radish, and tomato, while C comprises of onion, chili, and potato, and group D (chili, radish, and tomato). Therefore, it is the center of horticulture production.