PDF - THE EFFECT OF LAND SCOPE ON SOIL LOSS FROM EROSION SITES (A CASE STUDY OF NEKEDE AND AKAOKWWA ALL IN IMO STATE - researchcub.infoABSTRACT

Soil loss is as a result of detachment and transportation of soil particles from one place to another due to rainfall. The rate of soil erosion has been of great concern to the government and people of Imo state as regards to farm land and environmental degradation. This work analyzed the soil samples collected from two erosion sites namely, nNkede and Akaokwa all in Imo State and the soil loss for the samples which is the mainstay of this project was determined using a rainfall simulator. It was observed that Nekede recorded the highest soil loss of 190.3g and Akaokwa with a soil loss of 178.0g both at 9% slope. In terms of steepness of slope, Nekede has the steepest slope of 1/253.3 which led to a greater volume of run off and resulted to the highest soil loss. Recommendations were made on how best to reduce soil loss in Imo state.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Soil is the naturally occurring, unconsolidated or loose covering or broken rock particles and decaying organic matter on the surface of the earth, capable of supporting life. Soil is also known as earth; it is the substance from which our planet takes its name. it consists of sand, clay, sit and organic matters. The important of foil is too many to mention. For instance, the life we are living today depend on soil. Soil is a critical component in the mining and construction industries. Soil serves as a foundation for most construction projects. Massive volumes of soil can be involved in surface mining, road construction, and construction of other structures. Soil is critical to the environment, as well as food and fiber production. Soil provides plants with minerals and water. Soil absorbs rainwater and releases through evaporation preventing and controlling both flood and drought respectively. Soil is also the natural dwelling place for earth micro and macro organisms. Also houses water for mans use. Today, one of the most serious environmental problems facing our nation and the

world on general is the loss of top soil layer through the process of detachment and transportation caused by the impact of raindrop and the resulting overland flow. Soil erosion is the process by which the surface of the land is attacked, resulting to gullies, in valleys, cliffs and hills and it is completely washed into water bodies. It is composed of many factors the most basic if it is the soils and rainfall factors which is a function of intensity, duration, infiltration, susceptibility including soil detachability and transportability.

When water is applied into the soil continually in form of irrigation or rainfall, it filter downward into the soil at a certain time the soil will be saturated, then the excess above infiltration capacity will result to surface runoff thereby leading to transportation of detached particles and erosion. The basic causes of erosion have been classified into three factors, the climatic factor and geologic factor and human activities.

The climatic factor: The climate factors that influence erosion are rainfall amount, intensity and frequency. During the period of frequent rainfall, a greater percentage of the rainfall will become runoff this is due to high soil moisture or saturated conditions.

The Geologic factors: This is caused as result of the action of the wind, water, ice and gravity in wearing away rock to form soil and shape the ground surface.

The Human Activities: Erosion Human causes most soil erosion when strip the natural vegetation from the sleeper slopes and do not put back a cover of healthy grass of other vegetation. This leads to the worse erosion. Take for instance in Imo state, high annual rainfall helps in speeding up soil erosion including river bank and sediment transportation. The geology of an area is a useful index for gauging the erodibility if particular that place.

In Imo state particularly, soil erosion has a focus on the human activities as the primary cause of erosion, a good cover of vegetation, including grass shields the soil from the impact of raindrops. It also binds the soil together, making it more resistance to runoff and filters sediment. A cover of vegetation is one of the best protections against erosion.

1.2 Specifically the Objectives of the study are

1) Collection of soil samples from two erosion sites in Imo state namely, Nekede and Akoakwa.

2) Selection of different rainfall intensities and shape

3) Subjecting the collected soil samples to soil tests like, plastic limit test, liquid limit test, grain size analysis, moisture content, shear strength, and soil conditioning test with cassagrand method.

4) To determine the rate of soil loss in Imo state.

5) To relate land slope to erosion.

1.3 Justification of the Study

Erosion is an environmental problem that is generally spread in our country Nigeria today. It is seriously causing ecological problems by destroying lives and properties, Agricultural land and social infrastructures. Outside the distraction of form land through removal of top soil, houses, road, bridges, telecommunication, electric power and railway lines are being washed away. Also the erosion of arable land is a threat to food productions and agro-industrial raw materials. Erosion produces load of silts and other particles which pollutes our inland water and cause siltation of dams, reservoirs thereby reducing their storage capacity and useful life span of structures. The pollution of water by silt is known to have caused serious damage to our aquatic lives. Therefore urgent measures are needed to control erosion in other to avoid termination of lives and endangering of structures.

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