CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Soil erosion is a naturally occurring process that affects all landforms. Erosion by human activity is agriculture, logging, burning and mining. Erosion will cause flooding, disruption of ecosystems, and water pollution. The erosion is an action by which the surface of the Earth into feeble. The erosion can be affected with water, ice, and wind are fluids because they will flow to one place to another place with to the force gravity. These are three elements is a main agent to happen of soil erosion in the earth's surface.

Water Erosion is rainfall and the surface runoff which may result from rainfall. The have four type of soil erosion from water is sheet erosion, gully erosion, splash erosion and rill erosion. Sheet erosion is the transport of loosened soil particles by overland flow. If runoff has adequate energy flow, it will carry sediment particles down slope. Second, gully erosion is happening when the runoff water accumulates, and fast flowing in narrow channels during or after heavy rainfall or melting snow, remove the soil to considerable depths. Third, splash erosion is the impact of raindrop that create a small crater in soil. The last, rill erosion is a series of small channels on a slope carved by running water (Mohamadi, 2015).
1.2 PROBLEM STATEMENT

Soil erosion can be effect for the land and its inhabitants in both off-site and on-site effects. Off-site effect, movement of sediments and agricultural pollutants into watercourses are the major problem, leading to sedimentation in rivers and disruption of ecosystems. While in, on-site effect is directly created through the loss of soil nutrients. This effect is particularly crucial on agricultural land because it involves the loss of soil stability, soil quality, and structure.

Nowadays, the rate of soil erosion increases the rate of soil formation over wide areas resulting in the depletion of soil. Rate of soil loss can have determined by measurement of annual precipitation, elevation, crop cover and practiced erosion control factors. Using RUSLE model, the rate of annual soil loss (A) can be predicted based on parameters such as; annual rainfall erosivity (R), soil erodibility (K), slope length and steepness (LS), cropping factor (C), practice and erosion control (P) factors.

Most measurements and determination of parameters have used in USLE and RUSLE equation are taken from studies conducted outside Malaysia, in particular, Europe. Malaysia different greatly in terms of vegetation, due to the leaf size, tree diameter and soil formation, compared to the temperate countries. Erosion particularly in forested and cultivated areas needs the accurate measurement of rate of soil loss. By using the existing parameters in RUSLE, the soil loss rates may contain a certain amount of error either too high or too low for Malaysia (Liu & Evett, 2005).
1.3 OBJECTIVES

The objectives of this study are:

a) To determine soil properties at Universiti Malaysia Pahang, Pekan
b) To compare soil erosion between two type of land surface at Universiti Malaysia Pahang, Pekan.

1.4 SCOPE OF STUDY

This study will estimated the soil erosion rates on the disturbed soil surfaces;

a) Soil loss will be measured at two different type of land cover (empty surface and vegetation surface).
b) To compare the estimation soil loss by using Revised Universal Soil Loss Equation (RUSLE).

1.5 LOCATION OF STUDY

The location of this study is located in Campus Pekan, University Malaysia Pahang. This area has been proved from time to time to be highly affected during heavy monsoon rain due to the area incapability to flow and infiltrate the excessive water. Floods in Pekan are mainly due to overflowing from Sungai Pahang which coincides with high tide that cause an increase in water level at surrounding swamps (Morgon, 1991). Flooding at Pekan has causes loss to soil properties and vegetation. The empty surface is located at 3°32'47.2"N 103°25'33.3"E and the vegetation surface is located at 3°33'00.4"N 103°25'46.9"E in Campus Pekan, University Malaysia Pahang. Figure 1.1 and Figure 1.2 shows the location of sample plot at Campus Pekan, Universiti Malaysia Pahang.