The main objectives of this research were to determine C-factor and CP-factor in USLE for maize and soybean which was representative of the major land use types at Mae Thang sub-watershed and to study relationships among C-factor, CP-factor and plant growth stages. The RCBD was used in 15 percent slope field experiment. The experiment consists of 5 treatments and 3 replications. The study was carried out by using the rainfall simulator with 75 mmh^{-1} intensity. 5 simulated rainfalls were applied along successive plant growth stages. Moreover, results of this study were applied through GIS technique for scenario under land use planning policy in order to reduce soil losses.

The results showed that the average C-factor of maize and soybean throughout study period were 0.18 and 0.12 while CP-factor of maize and soybean were 0.14 and 0.12 respectively. According to plant growth stages, the maximum C-factor and CP-factor were in the initial stage and after the harvesting stage showed the minimum value. The relationships between C-factor and plant growth stage of maize and soybean were as $Cmaize = 0.85e^{-0.02day}$ ($R^2 = 0.96$) and $Csoybean = 0.38e^{-0.02day}$ ($R^2 = 0.89$). Besides, the relationships between CP-factor and plant growth stage of maize and soybean were as $CPmaize = 0.00002day^2 - 0.0041day + 0.3041$ ($R^2 = 0.91$) and $CPsoybean = 0.0000002day^2 - 0.0009day + 0.1716$ ($R^2 = 0.87$) respectively.

Soil losses in the major part of Mae Thang Sub-watershed in Phrae Province were in the slight level, about 41.58 percent of total land area. The extremely severe soil losses occurred in minimum area about 5.36 percent. Furthermore, the remaining areas covering about 53.07 percent were in moderate, severe and very severe of the soil loss classes. In addition to scenario under land use planning policy, the result showed that the scenario of serious control of maize and soybean in WSC 1A and growing maize and soybean with soil and water conservation measures in WSC 2 and 3 could remarkably reduce soil losses.

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