IMPACT OF *POPULUS CILIATA* FOR SOIL EROSION CONTROL WITHIN UNION COUNCIL GHORA GALI, TEHSIL MURREE .

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ABSTRACT

Populus ciliata also known as the Himalayan Poplar is being used extensively for erosion control and the re-vegetation of eroded hilly areas in the developed countries such as China, Japan, United States of America, and New Zealand. Two samples of *Populus ciliata* were uprooted to study the root distribution of each of trees for every ten cm thick layer. Evident from the excavation of both sample trees, it is found that a majority of the roots are found at depths of 50-80cm. Trees and other vegetation impart a roughness to water flow in channels, causing flow retardance, which results in reduced flow and lower flow energy for detachment and transport of the sediment. The data that was gathered revealed that the *Populus ciliata* is a stable plant species and breaks new ground on steep eroded slopes with shallow soil that was subjected the climatic movement of the area. The current study has also showed that *Populus ciliata* has roots that have the ability to grow and stretch out to shallow soils, unlike other tree species that may not have the ability to do so. *Populus ciliata* has very fast growth rates and strong spreading root systems as examined in the current study. A-type slope has a growth of tap roots which is restricted by bedrock resulting in no reinforcing strength effect at the potential shear zone boundary. However, root reinforcement is increased by the growing plant only to a depth of 70 to 80cm. In the B-type slope, the roots invade and reinforce the transitional zone, and the change of the occurrence of landslides begins to decrease as the plant becomes older. When the plant begins to age or become older after about 25 years, the root reinforcement becomes stronger than the soil shear strength and the shear stress of the rooted soil. The potential shear zone also increase for the Type B slope as the age of the plant increases between the ages of 25 to 40 years.

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