

## **Morphological and Physical Properties of Fragipan in Contrasting Material Derived Soils**

**Kanitta Panmeung, Somchai Anusonpornperm and Wanpen ViriyakitnathEEKUL**

### **Abstract**

A study on characteristics of fragipan in soils on footslope of a sandstone mountain was conduct in the area of Farmer Occupational Research and Development Centre, Kasetsart University, Panead Subdistrict, Khok Samrong District, Lopburi Province. Two sampling transects along different toposequences across the footslope with five soil profiles each plus two additional profiles located in the north of the first transects. This study was designed to evaluate morphological of fragipan in a contrasting material. Results revealed that parent material of the soils are colluvium and wash over residuum derived from tuff. The soils are very deep, occupying sloping surface ranging from 1-5%. They have coarser texture in the upper part than do in the lower part of the profiles, varying from loamy sand to clay loam with soil colour being quite similar for all soils. They have low pH value (4.5-6.5) in the upper sandier-textured horizons and the pH value tends to increase with depth (6.5-8.0). This pan generally has angular blocky and prismatic structures. Mottles are commonly found in the fragipan indicating that there have been fluctuations of groundwater level and there are practically no roots throughout the thick layer of the fragipan. Its very hard when dry property and slaking in water. The depth of fragipan found in these soils varies from 40-132 cm from the mineral soil surface. This pan has very to extremely low saturated hydraulic conductivity ( $0.51\text{-}0.0002 \text{ cm hr}^{-1}$ ), which coincides with high bulk density values ( $1.58\text{-}1.90 \text{ Mg m}^{-3}$ ). Dry soil strength of fragipan layers varies between 0.46-2.02 MPa. The occurrence of fragipan within soil profiles has no relationship with landscape position. However, the depth of this layer in the lower position of the landscape tends to be closer to the surface, possibly due to severe erosion in the past.

**Keywords:** Morphological and Physical Properties, fragipan, footslope