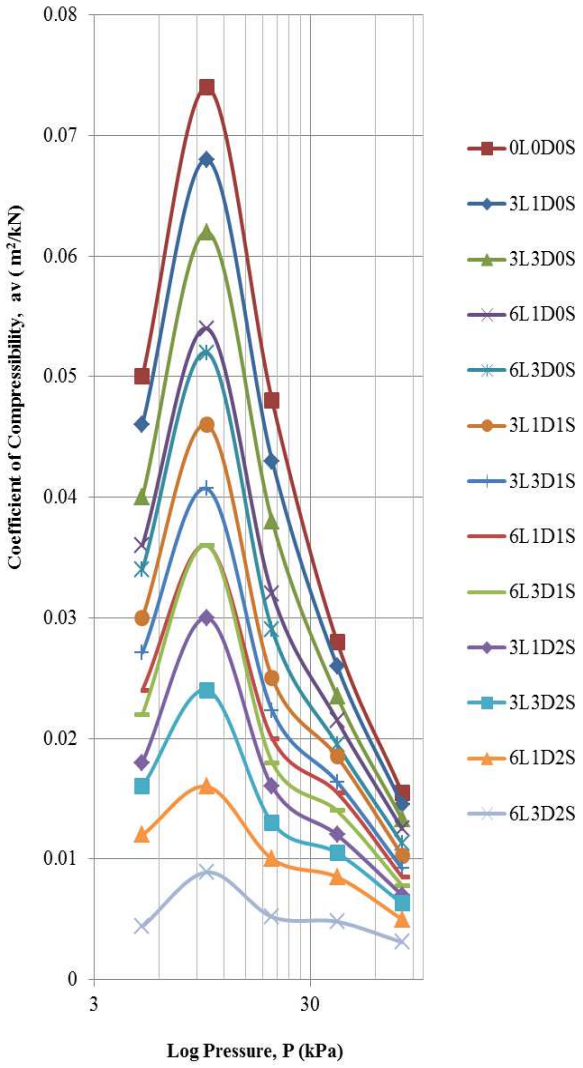

Fig.5 a_v-log P graph for Borneo peat soil

The higher amount of sand column reduces the a_v of the peat soil where peat treated with 3% lime cured for 1 day added with 1 and 2 sand columns shows the value of 0.0103 and 0.0070 m^2/kN respectively.

IV. Conclusions

Generally, incorporation of the lime-sand column reduces the compressibility of Borneo peat soil as observed from the void ratio, coefficient of consolidation, coefficient of compressibility and the coefficient of volume compressibility. The reduction in e, c_v, a_v, and m_v is caused by the increasing density of the soil and decreasing water content as the soil undergoes the process of consolidation and stabilization. Lime acts as a binder between the soil particles and is responsible for accelerating the reduction of compressibility.

Longer curing time decreases the soil compressibility as it achieves a greater reduction in initial void ratio. Longer curing period produces more reaction that binding the soil particles by allowing more time frames for the stabilization process to take place. Huat [5] noted that the chemical reaction between additives and soil are time-dependent. During the third day, chemical reactions still occurred in the peat soil, as indicated by all the graphs.

A higher number of sand columns decreases the compressibility of peat soil as the amount of the reaction is higher. Wong [19] suggested that stabilized peat become denser with the increase of silica sand in addition to the formation of more calcium silicate hydrates which is the major cementing products in the stabilized soil with a higher dosage of binder and prolonged curing time in the water.

Lime is known to react with silica in the sand. As cementation effect in silica sand takes place in the form of cementation products, they bind the organic particles together [20]. Therefore, the organic particles in peat not only fill up the void spaces but also tied up [21]. In physical terms, the particle shape of the sand is almost spherical and uniform, and the structure of each grain is strong and sound with almost no interval voids. These allow the sand to be exposed to more contact points with the lime [22]. In addition, the sand column provides drainage for the seepage of water from the peat soil. The presence of sands acts as a good drainage material, which alternatively helps in good seepage of lime into the soil system effectively.

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