

ABSTRACT

Land drought has become a fundamental problem for survival. Dry land itself is land with low rain intensity, lacking nutrients and difficult to plant. Additionally, oxygen necessities in the soil makes an important contribution to the development of soil and plants. Therefore, the aim of this research is to make Superabsorbent of Chitosan-Graft-Poly(acrylic acid) abbreviated as SAP modified CaO_2 0%, 5%, and 10% as water, fertilizer and oxygen slow-released. Then, the three SAPs were compared and the differences were seen in terms of appearance, structure, swelling, gel fraction and reusability. Next, it was applied to determine the effect of SAP in the process of germination and plant growth. The research results show that the increasing CaO_2 in SAP, the darker the color. Structure of SAP CaO_2 0% looks tight and elastic, while the structures of SAP CaO_2 5% and 10%, have many lumps, pores and cracks. From the gel fraction test, it was found that as the CaO_2 concentration increased, it reduced the gel fraction. In addition, SAP CaO_2 5% and 10%, tend to swell larger in the first 2 hours compared to SAP without CaO_2 . However, swelling from SAP without CaO_2 is more consistent compared to other SAPs. For reusability, after 2 soakings and drying again, their ability to absorb water did not change much between the first and second soakings. Last, their application as water, liquid fertilizer and oxygen slow-released was observed in 10 days and the maximum growth was found in plants with SAP CaO_2 10%.

Keywords : *Superabsorbent, Chitosan, CaO_2 , Liquid fertilizer, and Oxygen*