

## ABSTRACT

Potato (*Solanum tuberosum* L.) is a horticultural commodity whose tubers have a high carbohydrate content. The problem in potato cultivation is low seed quality. This research aimed to obtain the best concentration of paklobutrazol and sucrose on the formation of potato micro tubers *in vitro*. This research was conducted at the Plant Tissue Culture Laboratory of the Faculty of Agriculture, Malikussaleh University in North Aceh Regency from October to December 2024. This research used a two-factor Completely Randomized Design (CRD) with 10 replications. The first factor was paklobutrazol concentration consisted of 3 levels P0 (0 mg/L), P1 (5 mg/L), and P2 (10 mg/L). The second factor was sucrose concentration consisted of 3 levels S0 (30 g/L), S1 (60 g/L), S2 (90 g/L). Therefore, there were 9 treatment combinations with 10 replications, resulting in 90 experimental units. The results showed that the treatment of paclobutrazol concentration affected the variable number of leaves from 1 to 9 weeks after planting, shoot growth time, number of nodes from 1 to 9 weeks after planting, number of roots, and number of tubers per planlet. The best treatment was obtained at 5 mg/L paclobutrazol treatment. Sucrose concentration treatment affects the variable of shoot growth time and number of roots. The best treatment was obtained in the treatment of sucrose concentration of 90 g/L. The success of potato micro tuber formation was faster due to the application of paclobutrazol 5 mg/L and sucrose 90 g/L at 42 DAP.

**Keyword:** concentration, paklobutrazol, retardant, sucrose, tuber