

ABSTRACT

Potato (*Solanum tuberosum* L.) is an alternative food source that is often processed into filling snacks and has great potential as a source of carbohydrates. The problem in increasing potato production is that the provision of healthy and quality seedlings is not yet adequate and consistent. This study aims to obtain the best treatment of irradiation duration and sucrose on the growth of micro cuttings of granola potato plants 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 was conducted using the split-plot design method in a two-factor completely randomized design (CRD). The main plots were length of irradiation (L), the first factor is the length of irradiation 0 hours of light, 12 hours of light, 24 hours of light as the main plot and the second factor is sucrose 30 g/l, 60 g/l, 90 g/l as a subplot. Thus there were 9 treatment combinations with 10 replications, so there were 90 experimental units. The results showed that the treatment of length of irradiation had a significant effect on shoot height, number of leaves aged 1 - 7 weeks after planting, number of books, tuber growth time, number of tubers, tuber diameter and tuber weight. The treatment of length of irradiation affects the growth of Granola potato micro tubers on the variables of shoot height, number of books, number of leaves 1-8 MST and the weight of micro tubers. The best treatment is obtained in the 24-hour light treatment. Sucrose concentration affects Granola potato micro tubers on the variables of shoot height, number of books, number of leaves 3-7 weeks after planting and weight of micro tubers. The best treatment was obtained at a sucrose concentration of 90 g/l. There is an interaction of irradiation duration and sucrose concentration on the growth of Granola potato micro tubers on the variable shoot height, number of leaves 1, 2, 4, 6 weeks after planting and the weight of micro tubers. The best treatment is obtained in the treatment of 24 hours of light + 90 g/L.

Keywords: Tissue culture, potato tuber, food source.