

**THE ROLE OF 2,4-D AND BAP GROWTH REGULATOR COMBINATION
ON CALLUS FORMATION OF SUGARCANE
(*Saccharum officinarum* L.) IN VITRO**

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ABSTRACT

*This study aimed to determine the effect of the combination of plant growth regulators 2,4-D and BAP on the formation of sugarcane (*Saccharum officinarum* L.) callus of the NXI-4T variety in vitro. The study was conducted at the Agricultural Production Tissue Culture Laboratory of Jember State Polytechnic using a factorial Completely Randomized Design with two factors, namely the concentration of 2,4-D (1, 2, and 3 ppm) and the concentration of BAP (0, 0.05, and 0.1 ppm). The results of the analysis of variance (ANOVA) showed that the single factor 2,4-D was significantly different from the percentage of explants forming callus, while the single factor BAP was significantly different from the time of callus emergence and callus color. The combination factor of 2,4-D and BAP was very significantly different from the percentage of live explants and significantly different from the fresh weight of callus. Further tests of 5% LSD showed that the BAP treatment (0.1 ppm) gave the best results with the fastest average time for callus emergence, namely 25 days. The highest percentage of live explants was 89.96% in the A3P2 treatment, the highest percentage of explants forming callus was 59.98% in A2, while the highest percentage of callus color was 3 callus colors in the P1 treatment. The A1P2 treatment produced the highest fresh weight of callus of 1.2138 g (1 ppm 2,4-D + 0.1 ppm BAP). These results indicate that the combination of 2,4-D and BAP plays a synergistic role in callus formation, with the most effective concentration (1 ppm 2,4-D + 0.1 ppm BAP) in accelerating callus initiation.*

Keywords: *Sugarcane, In Vitro, Callus, 2,4-D, BAP*