ABSTRACT

Tomato plants (*Solanum* sp) are one of vegetable or fruit commodities with high economic value and increasing market demand. Increasing crop productivity can be done by modern plant breeding activities, for example by artificial mutation. This reaserch aimed to determine the effect of concentration and duration of immersion of tomato seeds in EMS solution on growth and production as well as morphology diversity of tomato plants. The reasearch was conducted at the Agroecotechnology Laboratory, Faculty of Agriculture, Malikussaleh University and at the Reuleut Timu Village, Muara Batu District, North Aceh Regency from July to September 2024. The research used a two factor Randomized Block Design (RBD) with 3 replications. The first factor was the application EMS concentration consisted of 3 levels K0 (0,000%), K1 (0,025%) and K2 (0,050%). The second factor was the soaking time consisted of 3 levels L0 (0 hour), L1 (4 hour) and L2 (6 hour). The results showed that the treatment of EMS concentration affected the flowering age variable. The fastest flowering age was obtained at the K0 level (0,000%). In the treatment of EMS soaking time affects the variables of plant height, leaf width, leaf length, and fruit length by plant. The best soaking time was obtained at the L1 level (4 hours). There was an interaction between the concentration treatment and the length of soaking on the variable length of fruit harvest 1 and harvest 2. The best treatment was obtained in the combination of EMS concentration treatment of 0,050% and soaking time of 4 hours.

Keywords: Genetics, mutation, mutagen.