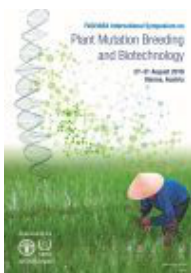


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## THE PRESENCE OF STEM SPLITTING AND FASCIATION IN CHRYSANTHEMUM AS RESPONSE TO GAMMA IRRADIATION AND PHOTOPERIOD

Chrysanthemum is the second economically most important floricultural crop. Photoperiod controls growth and flowering for many floriculture crops. A small change in photoperiod can trigger the switch between vegetative and flowering phase. For commercial production in tropical countries, additional light hours were commonly applied to prolong vegetative phase. This practice prevents the inflorescence emergence until the population homogeneously reaches optimum height. Mutation breeding in chrysanthemum has been developed for decades. Many experiments have been carried out to learn the effect of irradiation to both in-vitro and ex-vitro plants. However, most experiments were conducted only in natural light condition. The combined effect of irradiation and photoperiod is still poorly understood. The purpose of this experiment is to investigate morphological changes on plant growth as response to different levels of gamma irradiation in both natural and additional light treatments. The experiment was conducted in 2006 at PT. Saung Mirwan, a floriculture company in Ciawi, Indonesia. The materials used were shoot cuttings of chrysanthemum cv. Pink Fiji, subjected to gamma irradiation with doses of 0, 10, 15, 20, and 25 Gy, subsequently. The materials were grown in a green house and divided into two separate plots: one with 4 hours additional light and the other with natural light. Plant growth rate and morphological changes were observed. Plant growth was slower with higher irradiation doses given. Additional light delayed flower initiation by 2 weeks, induced faster plant growth and more primary branches compared to natural light treatment. Morphological changes in form of stem splitting and fasciated stems were found only in irradiated plants grown under additional light, and occurred mostly at 15-20 Gy. Under both light treatments, the optimal irradiation dose to increase genetic diversity in chrysanthemum cv. Pink Fiji stem cuttings was 15-20 Gy.

### Country or International Organization

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