

Effects of ion beam irradiation on morphological and flowering characteristics of chrysanthemum

ABSTRACT

Chrysanthemum morifolium is an important temperate cut flower for Malaysian floriculture industry and the lack of new local owned varieties led to this mutation breeding research. The objective of this study was to compare the effectiveness of ion beam irradiation in generating mutations on ray florets and nodal explants of *Chrysanthemum morifolium* cv. Reagan Red. Ion beams has become an efficient physical mutagen for mutation breeding. The ray florets and nodal explants were irradiated with ion beams at doses 0, 0.5, 1.0, 2.0, 3.0, 5.0, 8.0, 10, 15, 20 and 30 Gy. The 50% of in vitro shoot regeneration (RD50) for ray florets explants was 2.0 Gy and for nodal explants was 4.0 Gy. Thus, relative biological effectiveness (RBE) for ray florets was found 2.0 times higher than the nodal explants. The regenerated plantlets were planted in the greenhouse at MARDI, Cameron Highlands for morphological screening. Overall performance of survival plantlets derived from in vitro nodal and ray floret explants was recorded. The characters studied include plant morphology and flowering characteristic. The ray florets explants were found to be more sensitive to ion beam irradiation and generated more mutations as compared to nodal explants.

Keyword: Chrysanthemum; Ion beams; Mutations; Regeneration; Screening