Morphological traits alteration of mutant common turf grass (Cynodon dactylon) induced by gamma ray irradiation

ABSTRACT

The experiment was conducted to study Cynodon dactylon morphological improvement and breeding by induced mutation using gamma ray irradiation at Universiti Putra Malaysia (UPM) and Malaysian Institute of Nuclear Technology Research (MINT) center. C. dactylon is a widely used turf in Malaysia especially for golf course and football field. However, its coarse leaf texture and long internodes are undesirable for good quality golf field. In this purpose mutagenesis by gamma ray irradiation was employed using 0, 20, 40, 60, 80, 100, 120 and 140 Gy to treat 30 single node stolons per treatment. Dosages of 90 Gy were determined as LD50 for the radio sensitivity test. Survival rate of C. dactylon stolon was greatly reduced when irradiated with higher dosages. This experiment was repeated using LD50 on 1500 single node stolons. Twenty-two (22) morphological mutants were identified and evaluated. Most mutants were semi-dwarf type with reduced internode length and leaf blade length. The altered morphological traits were stable after third cutting back (M1V3) shown by their morphological performance. Mutation breeding is effective in improving C. dactylon when easily recognized cultivars are needed.