Morphological mutants of Zoysia japonica steud. induced by gamma ray irradiation

ABSTRACT

Study of Zoysia japonica morphological improvement and breeding by induced mutation using gamma ray irradiation was conducted. 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. It was demonstrated that single node stolon is suitable for gamma ray irradiation mutagenesis in Z. japonica. It has been identified that 76 Gy as the value LD50 is effective to induce mutagenesis on Z. japonica. Survival rate of Z. japonica stolon was greatly reduced when irradiated with higher dosages. This experiment was repeated using LD50 on 1500 single node stolons. Thirty nine morphological mutants were identified and evaluated. Most of the mutants were semidwarf and have horizontal growing pattern 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 Z. japonica when easily recognized cultivars are needed.

Keyword: Gamma ray irradiation; Mutagenesis; Semi-dwarf; Zoysia japonica