B-58 The effect of gamma radiation on sprouting and survival of three types of *Piper betle* L. cuttings

R S Kularatne, I M H B Herath, A Raveendran
Research Station, Dept of Export Agriculture, Matale

Betel *Piper betle* L. produces 3 types of branches described as runners, orthotropic, and plagiotropic branches. It is a general practice for farmers to use cuttings only from orthotropic branches due to the free availability of materials and higher success in establishment in the field. However, all 3 types of cuttings were used in this study. Cuttings with 2 nodes without leaves from all 3 types of branches were subjected to different levels of gamma radiation (0, 1, 2, 3, 4, and 5 Krds). Treated cuttings were planted in 5" x 7" polyethylene bags filled with the standard potting mixture (top soil, sand, cattle manure and coir dust in equal parts). The bags with planted cuttings were placed in high humidity condition for 4 weeks and thereafter maintained in the normal nursery conditions. The number of surviving plants after sprouting were recorded commencing from the fourth week after planting.

The results showed that the highest rate of survival was in the cuttings from runners while plagiotropic cuttings had the lowest rate. The cuttings from orthotropic branches showed moderate survival rate. The LD50 values were detected after 8 weeks of irradicition treatment. The LD50 value for orthotropic was 2.75 Krds. The LD50 value for runners seems to be above the highest irradiation level used. The cuttings from plagiotropic branches had a very low survival ability. Hence the LD50 value could not be detected. Therefore it can be concluded that 2 nodal cuttings of orthotropic branches of betel can be used as initial irradiation material in mutation breeding programmes.