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## Current Status on Mangosteen Mutation Breeding in Indonesia

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### Abstract

Mangosteen (*Garcinia mangostana*) is a unique tropical fruit that rich with vitamin and mineral. This fruit is originated from South East Asian region, particularly Indonesia, Thailand and Malaysia. As an obligate agamospermy, the seed is developed without fertilisation and chromosome reduction. Therefore the variability of mangosteen is narrow. One possibility to widen genetic variability is using gamma rays irradiation. Germination and initial proceed of mangosteen very slowly. Slow seedling growth is attributed to a weak root system, characterized by the absence of root hair and poor development of laterals. Slow growth of root is one of mangosteen problems. Plant Breeding Lab, Padjadjaran University Bandung, Indonesia has an extensive program to broaden the genetic variability of mangosteen in Indonesia and to select the superior mutant as new variety. Irradiated seed with 1 krad, 2 krad, and 3 krad dossages of gamma rays, had been planted in nursery of College of Agriculture, Padjadjaran University, Bandung. However, irradiated seed with 3 krad emerge very late (15 days later after wild). Above 80% irradiated seed with 1 krad and 2 krad dosages of gamma rays were able to grow but differ in growth rate, height of plant, size of leave, color of leave, content of chlorophyll, a number of lateral root, root length in 50 days after planting compared to the wild. About 4% seedling is longer root compare to the wild. Furthermore, molecular analysis using RAPD showed DNA changing on mutant. Two primers, i.e. OPH13 and OPH18 could differentiate between wild and mutant, irradiated seed with 2 krad gamma rays. However, three others primers, i.e. OPH12, SB13 and SB19 could not be used as a differentiate marker since they showed monomorphism. Mutation could be used to broaden genetic variability in order to improve desired mangosteen traits.

**Keywords:** Indonesia, mangosteen, mutation breeding