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Effects of Seed Rhizome Size on Growth and Yield of Turmeric (*Curcuma longa* L.)

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Abstract: Turmeric (*Curcuma longa* L.) plant species produces different sizes of daughter rhizomes (R) and mother rhizomes (MR), which are the only propagules (seed) for its cultivation. Here, we evaluated the effects of seed rhizome size on growth and yield of turmeric. Daughter rhizomes of 5-50 g (R-5 g–R-50 g) and mother rhizomes of 48-52 g (MR) were tested. The heavier the R up to 40 g, the better the plant growth, and the plants from the R-30 g, R-40 g, R-50 g and MR grew similarly well. The seed rhizomes with a greater diameter developed vigorous seedlings. The plants grown from R-30 g, R-40 g and R-50 g had a similar plant height, tiller number and leaf number, which were significantly higher than those from lighter R. The plants from R-30 g, R-40 g and R-50 g had a significantly larger shoot biomass and higher yield than those from smaller R in both the greenhouse and field experiments. R-50 g was easily broken at the time of planting, and had secondary and tertiary daughter rhizomes, which developed thinner plants and resulted in a lower yield. The shoot biomass and yield were highest in the plants grown directly from MR, and lower in the plants grown from daughter rhizomes attached to MR. This study indicates that the turmeric seed rhizome should be 30-40 g with a larger diameter, and seed mother rhizome should be free from daughter rhizomes.

Keywords: [Daughter rhizome](#), [Early growth stage](#), [Mother rhizome](#), [Rhizome development](#), [Shoot elongation pattern](#)

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