ABSTRACT


Exploration and characterization of morphological and agronomical aspects of physic nut to determine plant description including growth and development pattern were conducted. This research was conducted at dry land of Northern West Lombok, West Nusa Tenggara, since July 2006 until October 2008. In the first research, exploration was conducted in several areas where high population of physic nut was already grown as fence. Characterization was based on morphological and agronomical traits and oil yield of each ecotype during two-year growth period. Experiment was arranged in Randomized Blocked Design with three replications of ecotypes (West Lombok, Central Lombok, East Lombok, Sumbawa, Bima, Palu, and IP-1A). The second research was arranged in Completely Randomized Design with single factor, as combination of planting material and nursery media i.e. seed in soil-manure mix media (2:1 v/v), seed in soil-sand-manure mix media (1:1:1 v/v), seed in soil-fresh rice hulls-manure mix media (1:1:1 v/v), seed in soil-fresh wood dust-manure mix media (1:1:1 v/v), stem cutting in soil-manure mix media (2:1 v/v), stem cutting in soil-sand-manure mix media (1:1:1 v/v), stem cutting in soil-fresh rice hulls-manure mix media (1:1:1 v/v), and stem cutting in soil-fresh wood dust-manure mix media (1:1:1 v/v). There were three replications. Each experimental unit contained 20 seedlings. The third research consisted of two experiments: cutting length (20 cm, 25 cm, and 30 cm) with the same size of diameter (2.5-3.0 cm), and then the second experiment cutting diameter (3 cm, 2.5-2.9 cm, 2.0-2.4 cm, and 1.5-1.9 cm) with the same cutting length (30 cm). Each experiment was designed in Completely Randomized Design in three replications. Each experimental unit contained 25 seedlings. In the fourth research, three types of propagules, i.e., stem cutting, seed, and seed followed by pruning after transplanting were as treatments. The experiment was conducted in a Randomized Blocked Design and three replications, each experimental unit consisted of 24 trees with planting distance 2 m x 2 m. In the fifth, an experiment was conducted during one fruiting period at primary branches and arranged in Randomized Blocked Design with five treatments i.e., load of 5, 10, 15, 20, and 25 capsules/infloroscence. Each treatment was replicated three times and each experimental unit consisted of 24 trees with planting distance 2 m x 2 m. The results showed that there were character differences among the seven ecotypes, especially on yield components, however, little differences on vegetative components were observed. West Lombok, Sumbawa, Bima, and IP-1A were ecotypes showing high yield potential compared to Central Lombok, East Lombok, and Palu ecotypes. During dry season, plant dropped their leaves. Stem elongation and branching stopped. Seed yield was lower compared to rainy season. However, seed oil content was higher during dry season. Kind of seedling medium has significant effect on seedling growth, development, and survival rate of physic nut plant both from seed and stem cutting. Soil-sand mix media was the best media. The best seedling growth
and better survival of young plant of physic nut could be attained by stem cutting with 20-30 cm in length and stem cutting with 2.5-3 cm in diameter. Productivity of nut in the first year of cultivation was 890,78 kg/ha (357,21 g/plant) from seed, and 1,087,4 kg/ha (433,9 g/plant) from stem cutting. In the second year, the productivity was followed by pruning 2 weeks after planting. In the third year, the productivity was followed by pruning 1201,1 kg/ha (477,8 g/plant) from seed, and 1,286,9 kg/ha (515,7 g/plant) from stem cutting. Seed dry weight/capsule decreased by increasing capsule load. However, seed dry weight/capsule increase. The highest seed oil content was found in ripe stage of capsule.