

Anuwat Kumpeangkeaw 2008: Effects of Pruning on Growth and Yield of Physic nut (*Jatropha curcas* L.). Master of Science (Agriculture), Major Field: Agronomy, Department of Agronomy. Thesis Advisor: Associate Professor Sombat Chinawong, Ph.D. 122 pages.

The effect of pruning on growth and yield of Physic nut was carried out during February 2006-October 2008 at research field of Department of Agronomy Kasetsart University, Kamphaengsaen campus, Nakhon Pathom province. The first experiment consisted of 4 different patterns of pruning: 1) pruned down at primary scaffold, 2) pruned down at secondary scaffold, 3) pruned down at tertiary scaffold and 4) un-pruned (control). In the second experiment, the effects of different spacings of 2×2 m (400 plants/rai), 2×3 m (267 plants/rai) and 3×3 m (178 plants/rai) in combination with 5 pruning methods were investigated. Trees were not pruned (control) or hard-pruned to 50 cm above the ground and new shoots were allowed to grow from the pruned branches as 2 shoots/tree, 3 shoots/tree, 4 shoots/tree and more than 4 shoots/tree were investigated. The results of the study on 4 different patterns of pruning showed that plant height was not different when compared with control but un-pruned trees had highest canopy diameter. Pruning at primary scaffold showed higher stem diameter and yield than that of other patterns. The results of the study on different spacing and different pruning methods showed that yield was in the range of 439.9-585.2 g/plant and there was no difference among 3 spacings tested. The results of different pruning methods showed that un-pruned trees had highest height (276.9 cm) and canopy width (327.2 cm). Un-pruned trees had lower percent of female flower (4.4%) than other pruned trees (6.4%). Pruned trees had total seed yield of 454.71-557.62 g/plant which was higher than that of un-pruned trees (295.41 g/plant). These observations indicated that different spacing and pruning methods had influences on canopy diameter, light penetration into canopy, development of fruited panicles, % female flower, seed quality and yields. Hence, hard-pruned to 50 cm above the ground and new shoots were allowed to grow from the pruned branches more than 4 shoots/tree was a viable option to sustain production of 'Physic nut' orchards after planting more than 2 years.

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Thesis Advisor's signature