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Examining Germination Rates of Seeds of Physic Nut (*Jatropha curcas* L.) from Philippines and Viet Nam

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Abstract

Due to an increasing demand for energy and lacking energetic resources, biofuels are worldwide recognised as an alternative source of energy. Physic nut (*Jatropha curcas* L.) is a perennial shrub of the tropics and subtropics, which produces seeds containing approximately 30% of oil. It is drought resistant, grows on poor soils, and is able to increase soil fertility in a long run. Due to its properties, physic nut is promoted by many researchers, NGOs, private entrepreneurs and even governments as a possible solution to combat environmental degradation and shortage in energy supplies at the same time.

Huge plantations in many parts of the world have been established and more are planned for the future. However, propagation up to now is mainly done vegetatively by cuttings, which involves the related problems, such as reduced vigour, transport of diseases, and a shallow rooting system of the propagated plants. When seeds are used for propagation, mainly wild collections are used, with unclear yield potential. In India generally three seeds are sown in one planting whole, to insure germination of at least one seed. One goal of today's research is producing higher yielding cultivars of physic nut. Due to the enormous cost related to breeding of perennial plants, promising planting material of physic nut will have a high price in the future market. Therefore examining of useful propagation methods, selection of propagation material and pre-treatments of seeds for reaching desired germination rates is of high importance.

In the presented experiments seeds from Leyte Island (Philippines) and Son La province (Viet Nam) were tested. Two factors were tested: “Storage time” of seeds and “degree of ripeness” of fruits. Storing the seeds for 20 days after harvest led to an increase in germination rate from 1% to 92% (Philippines) and 8% to 73% (Viet Nam). The older the fruits the seeds were obtained of, the lower the germination rate.

Success of different pre-treatments was tested additionally on the seeds from Philippines. Plants of seeds that had been soaked in water over night before planting showed the highest survival rate.

Keywords: Biofuels, germination, *Jatropha curcas*