



Effect of Presoaking and Depth on Germination Capacity of Castor (*Ricinus Communis*) Seeds

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ABSTRACT

Castor plant (Ricinus communis) is an economically important plant as oil seed and food plant of eri silkworm (Philosamia ricini) known to world since time immemorial for the castor seed production. The castor plant is widely distributed in Gujarat, Maharashtra, Andhra Pradesh, Rajasthan, Karnataka, Tamil Nadu, West Bengal and Uttar Pradesh. The castor plant regenerates through seeds. Effective germination of castor seeds can be optimized by proper presoaking treatment and appropriate nursery techniques. The present investigation was undertaken to determine the effect of seed presoaking and depth of sowing in nursery conditions.

KEY WORDS: *Castor seed, presoaking, germination, eri silkworm, Ricinus communis, Philosamia ricini*

INTRODUCTION

Castor (*Ricinus communis*) is economically important plants as oil seed and food plants of eri silkworm (*Philosamia ricini* Donovan) [1].

The word eri or eranda means castor, which derives its name from Sanskrit nomenclature for this food plant. The eri silkworm is almost domesticated and can be reared indoor like the globally popular mulberry silkworm *Bombyx mori* L. The challenge before the eri culture is to increase productivity of eri silk and reducing its production cost. The prospects of obtaining high silk production is depends on the food plants or host plants, which provide nutrition during the rearing of worms. Castor requires less water and least protection from heat and cold. It can be raised in any type of soil. Germination of seeds and growth of castor, plants is influenced by heat, light, moisture and aeration [2]. Castor is generally grown through seedling, which is sown during March-April and September-October in North Eastern India [3].

Castor is grown in about 30 countries in a total area of about 1.17 million hectares. India ranks first in both area and production of castor seeds in the world. The other major castor producing countries are China (23%) and Brazil (7%). In India castor is cultivated in an area of 6.25 Lack hectare keeping a production of 5.80 lack tons of castor seed, with productivity of 928 kg / ha in the states of Gujarat, Andhra Pradesh, Rajasthan, Maharashtra [4].

Castor leaves can be harvested with out affecting the seed yield, can be used for rearing of eri silkworm, and providing additional income to seed growers by adding to the rural economy and employment.

MATERIALS AND METHODS

The present study was carried out in the experimental garden of Department of Applied Animal Sciences, Babasaheb Bhimrao Ambedkar University, Lucknow. The mature castor (*Ricinus communis*) seeds were collected from the castor growers, and soaked for 12, 24 and 36 hours in cold water. The seeds were allowed for germinate in four replications consisting of 400 seeds.

In each treatment in the soil, the effect of sowing depth was determining by presoaking 24 hrs seed in nursery bed at 1.0 cm, 2.0 cm, 5.0 cm and 10 cm depth and mulched with paddy grass. Also, unsoaked seeds were maintained in nursery media and kept in shady condition as control. The nursery beds were kept moist throughout the experiment.

The germination tests were carried out at regular until the completion of germination.

RESULTS AND DISCUSSION

Germination capacity was higher in 24 hours presoaking treatment 86.5%. The germination had started after 4.5 days of sowing and completed 4 days after sowing of seeds. Germination capacity was 80.0% in 12 hours presoaking treatment the seed had germinated after 6 days of sowing and germination was completed in 5 days. In 36 hours presoaking treatment germination capacity of the seeds was 75.0 %, the germination had started after 4 days of sowing and completed in four days. Minimum capacity of germination was observed in control batch *i.e.* 72.0 %. the germination was started after 8 days of sowing and completed in 6 days (Table-1) (Fig-1).

Table-1 Effect of soaking of castor seeds on germination capacity

Treatment	Days for initiation of germination	Days for completion of germination	Germination (%)
Control	8.0±0.03	6.0±0.03	72.0±0.02
12 hours	6.0±0.01	5.0±0.02	80.0±0.04
24 hours	4.5±0.01	4.0±0.02	86.5±0.01
36 hours	4.0±0.02	4.0±0.01	75.0±0.01

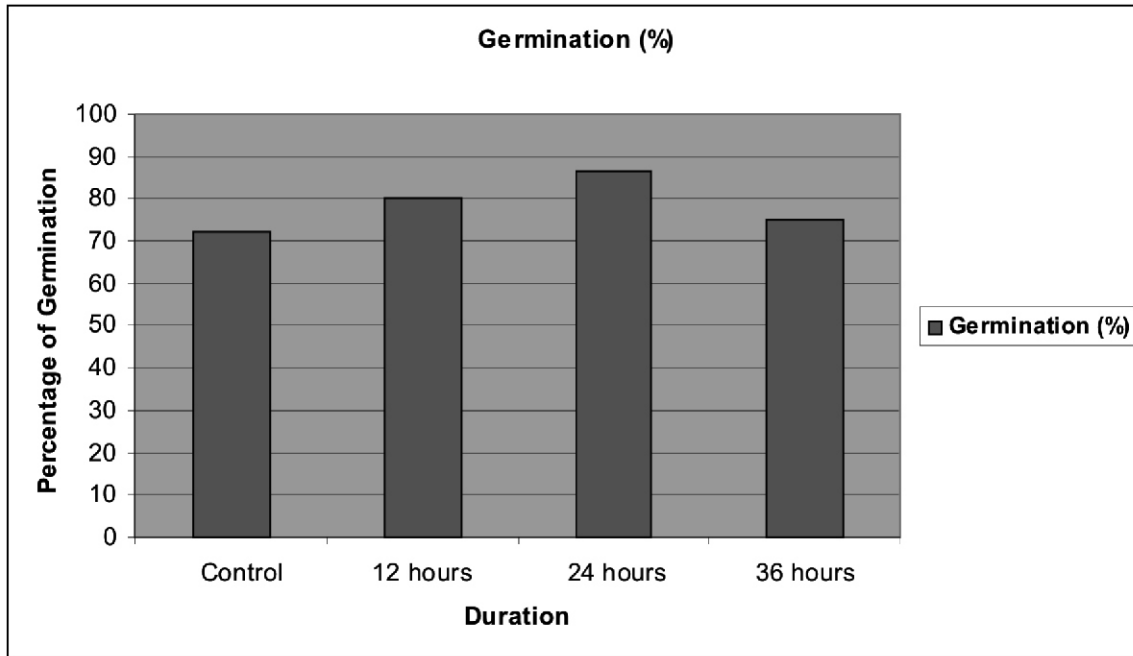


Figure-1 Effect of soaking on germination capacity of castor seeds

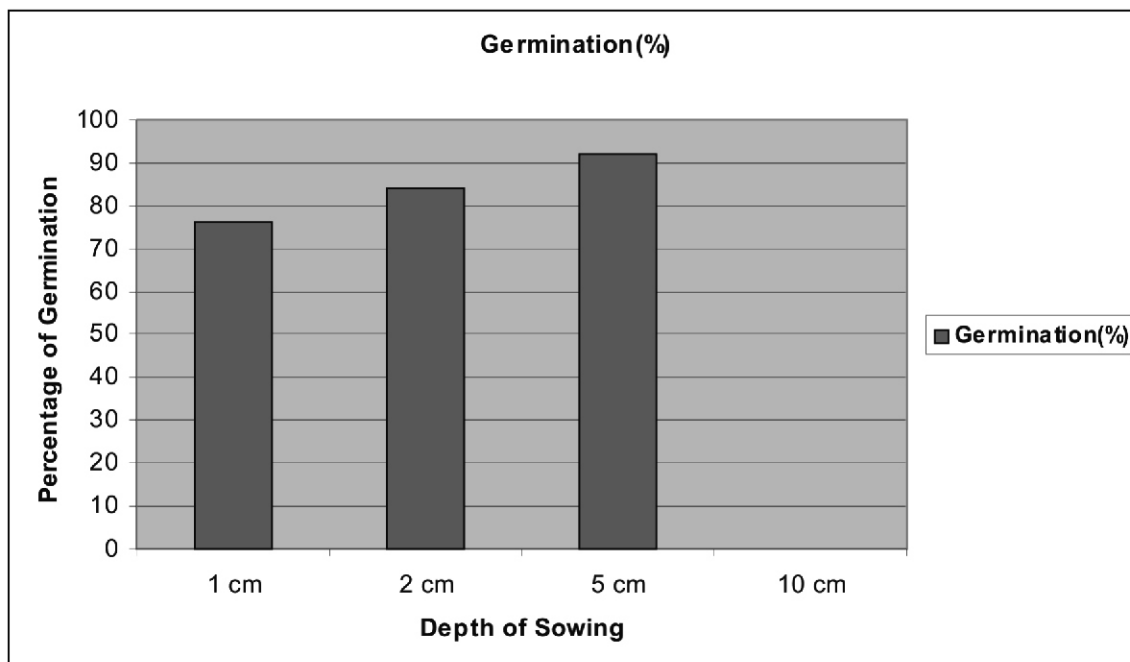
Table-2 Effect of depth for sowing in germination of castor seeds

Treatment (depth of sowing) cm	Days for initiation of germination	Days for completion of germination	Germination (%)
1.0	8.0±0.04	5.0±0.01	76.5±0.02
2.0	6.0±0.02	6.0±0.02	84.0±0.03
5.0	6.5±0.02	4.5±0.01	92.5±0.03
10.0	N.G.	N.G.	N.G.

±indicates S.D. N. G: Not Germinated

The germination percentage was affected by depth of sowing of seeds largely. The germination percentage gradually decreased as the sowing depth increased. Maximum germination of seeds was observed in 5.0 cm. depth of sowing (92.5%) followed by 2.0 cm depth of sowing (84.0%). Minimum germination capacity was observed in 1.0 cm depth of sowing treatment (76.5%). No germination was observed at 10 cm depth of sowing (Table-2) (Fig-2). Similar results were also reported by Singh *et al.*, [5] in *Pinus wallichiana* seeds and Bhatia and Chawan [6] in *Cassia acutifolia* and *Cassia angustifolia* seeds for increasing the germination percentage for commercial use.

Figure-2 Effect of depth of sowing of castor seeds on germination capacity



Our studies are also similar with Raja Ram and Saratchandra [7] who observed that Kesseru seeds presoaked for 36 hrs sown at the depth of 0.5 cm give better results.

It is evident from the present study that castor seeds presoaked for 24 hours should be sown at 5.0 cm depth for better germination percentage.

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