

Full Length Research Paper

Patula pine (*Pinus patula*) cones opening under different treatments for rapid seed extraction in Londiani, Kenya

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Received 28 April, 2020; Accepted 26 May 2020

Seed extraction from pines is challenging to the forestry sector globally. This is usually contributed by the pine cone anatomy that opens through a function of temperature and humidity which varies widely in the pine growing regions of the world and the *Pinus* species as observed in previous works done on *Pinus roxburghii*, *Pinus halepensis*, *Pinus wallichiana*, *Pinus pinaster*, *Pinus radiata*, and *Pinus sylvestris*. This study sought to reduce the extraction time and improve the extraction efficiency of *Pinus patula* seed in Kenya. The experimental design used was two factorial design with replicates of twenty cones randomly picked per treatment. Data analysis was analyzed through ANOVA with a P-value of 0.05. We present evidence that soaking does not influence the opening of cones and seed yield for the optimum temperature which the study determined to be 65°C. We also present evidence that, for rapid seed extraction, the temperature 65°C with an exposure period of between 4 and 24 h is significantly effective. This study presents a new understanding of rapid seed extraction, which contributes to one of the Kenya Forestry Research Institute's strategic objectives of generating technologies for enhanced production of superior germplasm for priority tree species.

Key words: Soaking effects, temperature treatments, seed yield.

INTRODUCTION

Seed extraction from pines globally is challenging to the forestry sector (Bhat et al., 2017; Reyes and Casal, 2001) with most countries using the conventional methods for seed extraction from cones, which entails drying in beds to facilitate seed release. This weather-dependent process is particularly slower and less efficient in moist; cool temperate climates as an increase in the atmospheric humidity may cause a reclosing of the cones

(Willan, 1984). In moist conditions, this method is not very reliable. However, it is the most economical, convenient, and effective method of seed extraction for many cone-bearing species (Bhat et al., 2017; Ghildiyal et al., 2008). This is due to the fact that the process in most countries is based on natural sun drying in canvas or drying beds to facilitate the release of seeds (Bhat et al., 2017; Wyse et al., 2019).

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