Effects of seed storage time and salt stress on the germination of *Jatropha curcas* L.

Flavio Lozano-Isla1, Mariana L.O. Campos1, Lauricio Endres2, Agnaldo R. Chaves, Egidio B. Neto3, Marcelo F. Pompelli1

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# Authors

1. Plant Physiology Laboratoty, Federal University of Pernambuco, Department of Botany, Recife, PE, Brazil, 50670901
2. Plant Physiology Laboratory, Federal University of Alagoas, Center of Agronomy, Maceió, AL, Brazil
3. Department of Chemistry, Federal Rural University of Pernambuco, Recife, PE, Brazil.

Corresponding author: [marcelo.pompelli@ufpe.br](mailto:marcelo.pompelli@ufpe.br) (Pompelli, M.F.)

# Highlights

* Reduction of water in the interstice of the seeds in *J. curcas* helps to maintain seed viability and oils content.
* The NaCl in the irrigation water can affect the seedlings since 75 mM, producing reduction in the biometrics and germination parameters.
* Exist a different levels of tolerance between the genotypes of *J. curcas* from different regions of Brazil
* The biometric parameter explain better *J. curcas* behavior under salinity condition.

# Abstract

*Jatropha curcas* L. is a plant that can be used in the production of biofuel with strong resistance to drought. However, the crop presents two important problems: i) rapid loss of viability, resulting from the high respiratory rate of the seeds during the storage period; ii) seed sensitivity when germinated under salinity conditions. To achieve these objectives, two experiments were developed. In the first experiment were verified how the storage of seeds in a drier environment can influence germination, respiration rate and the main biochemical and physiological parameters. In the second experiment, five different genotypes (114, 133, 171, 183 and 218) originating from different producing regions of Brazil were studied under the effect of the addition of NaCl (0, 50, 75, 100 and 150 mM) in water irrigation. In this experiment, we evaluate the germination and initial growth. The results of the first experiment show that the use of desiccant, can stabilized the germinability of the seeds stored, a fact corroborated by the reduction of the water potential of the seeds and reduction of the respiratory rates. On the other hand, we showed that *J. curcas* presents a moderate tolerance to salinity, being able to germinate up to 150 mM NaCl, even though a drastic reduction in the biomass accumulation was observed with the increase of the salt concentration in the irrigation water. The results show that the germination was reduced to values close to 4% in the treatment of 150 mM, while the mean germination time was increased with the increase in the concentration of salts. The biometric and biomass componets were strongly affected by the increase of the salts, while in the biomass allocation parameters, accumulation was observed in the stem of the seedlings. In this sense, genotypes 114, 171 and 183 were shown to be potentially tolerant while genotypes 218 and 133 were sensitive.

**Key words:** salinity tolerance, seed germination, biomass, biofuel, NaCl