



Genetic evaluation of *Jatropha curcas*: an important oilseed for biodiesel production

R.G. Freitas¹, R.F. Missio², F.S. Matos³, M.D.V. Resende⁴ and L.A.S. Dias¹

¹Departamento de Fitotecnia, Universidade Federal de Viçosa, Viçosa, MG, Brasil

²Universidade Federal do Paraná, Palotina, PR, Brasil

³Universidade Estadual de Goiás, Ipameri, GO, Brasil

⁴Departamento de Ciências Florestais, Embrapa Floresta, Universidade Federal de Viçosa, Viçosa, MG, Brasil

Corresponding author: L.A.S. Dias

E-mail: lasdias@ufv.br

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ABSTRACT. *Jatropha curcas*, internationally and locally known, respectively, as physic nut and pinhão manso, is a highly promising species for biodiesel production in Brazil and other countries in the tropics. It is rustic, grows in warm regions and is easily cultivated. These characteristics and high-quality oil yields from the seeds have made this plant a priority for biodiesel programs in Brazil. Consequently, this species merits genetic investigations aimed at improving yields. Some studies have detected genetic variability in accessions in Africa and Asia. We have made the first genetic evaluation of *J. curcas* collected from Brazil. Our objective was to quantify genetic diversity and to estimate genetic parameters for growth and production traits and seed oil content. We evaluated 75 *J. curcas* progenies collected from Brazil and three from Cambodia. The mean oil content in the seeds was 31%, ranging from 16 to 45%. No genetic correlation between growth traits and seed oil content was found. However, high coefficients of genetic variation were found for plant height, number of branches, height of branches,

and stem diameter. The highest individual narrow-sense heritabilities were found for leaf length (0.35) and width (0.34), stem diameter (0.24) and height of branches (0.21). We used a clustering algorithm to genetically identify the closest and most distant progenies, to assist in the development of new cultivars. Geographical diversity did not necessarily represent the genetic diversity among the accessions collected. These results are important for the continuity of breeding programs, aimed at obtaining cultivars with high grain yield and high oil content in seeds.

Key words: Oil content; Genetic diversity; Heritability; Clustering; Genetic correlation