

VARIABILITY IN GROWTH AND DISTRIBUTION OF INTRAXYLARY PHLOEM IN CERTAIN CLONES OF *HEVEA BRASILIENSIS*

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The presence of Intraxylary Phloem (IP) tissue were quantified and variability assessed in a set of *Hevea brasiliensis* clones. It is expected that the presence of an additional phloem tissue will promote better translocation along with the external phloem. The present work discusses genetic variability of IP in relation to growth and girth increment rate of newly evolved clones in a clonal nursery. Four clones (704, 690, 712, 688) were identified with robust girth, high girth increment rate and high prevalence of IP, in comparison with similar parameters present in the check clone *i.e.*, RRII 429, adapted and recommended for abiotic stress prone non-traditional areas. Results indicated that variability in the number of IP could be an intrinsic anatomical trait useful for screening and shortlisting of clones for non-traditional areas.

Keywords: *Hevea brasiliensis*, Intraxylary phloem, Primary phloem, Secondary traits

INTRODUCTION

The Para rubber tree, *Hevea brasiliensis*, is an important tree species which provides Natural Rubber (NR), an important industrial raw material with multifaceted applications particularly in the automobile and allied industries. *H. brasiliensis* produces high quality latex (poly *cis*-isoprene) in the bark, which stands top in terms of quality. Due to ever growing demand of this material, natural rubber cultivation is expanding to non-conventional areas with extreme climatic factors. In order to circumvent this scenario, development of cultivars with adaptive features is required. Presence of an internal phloem or Intraxylary Phloem (IP) was first reported

in members of Cucurbitaceae (Hartig, 1854); later in Solanaceae and Apocynaceae (Vesque, 1875). Most often located at the adaxial end of protoxylem of vascular bundles of many dicots (Gondaliya and Rajput, 2017), it is largely exhibited through primary growth (Evert, 2006). Anatomical studies towards assessing variability of IP in different genotypes/cultivars are scanty. The role of internal phloem in physiological processes associated with drought resistance has been reported by Esau (1974). Presence of this tissue has been reported in crops like Cassava (Graciano-Ribeiro *et al.*, 2009) and Croton (Hayden and Hayden, 1994) and used as an indicator of stress tolerance potential. Literature indicates that