Determination of the Relationship Between Peelability and Water Relations of Cinnamon (*Cinnamomum zeylanicum*)

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Cinnamon (Cinnamomum zeylanicum) is one of the highest-earning spice crops exported from Sri Lanka. Peeling cinnamon bark is a highly skilled technique that has been handed down from generation to generation. The peelability of cinnamon bark is known to change with the weather, maturity of the stem, and variety; however, the physiological reasons behind the peelability have not been identified yet. Therefore, the present study was conducted to determine the relationship between peelability and water relations of cinnamon. Cinnamon sticks and leaves were sampled from 30cm above the bottom of the plant. A total of 50 peelable and 50 non-peelable samples were collected from 3-year-old plants in Kamburupitiya, Sri Lanka in 2023. The peelability of cinnamon sticks was measured by a texture analyzer, which estimated the force required to remove the bark. Leaf water potential and hydraulic conductivity were measured by pressure chamber and flow-through method. Soil moisture content and moisture content of leaves were measured using the gravimetric method and oven drying method. The statistical analysis was conducted using a t-test and interpreted by R. There were significant differences between the treatments in the de-barking force, hydraulic conductivity, and leaf water potential values (p<0.05). Hydraulic conductivity exhibited a significant, strong negative correlation with de-barking force (p<0.05). There were no significant correlations between the leaf water potential, soil moisture content, leaf moisture content, and stem moisture content with the de-barking force (p < 0.05). It can be concluded that the peelability is strongly associated with the hydraulic conductivity of the stem. The factors influencing the hydraulic conductivity in cinnamon stems need to be studied further.

Keywords: Cinnamon, Hydraulic conductivity, Peelability, Soil moisture

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