

Abstract Submitted
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Drag reduction by reconfiguration of a full tree in a wind tunnel EMMANUEL DE LANGRE, LOIC TADRIST, TRISTAN LECLERCQ, PASCAL HEMON, XAVIER AMANDOLESE, LadHyX, Ecole Polytechnique, MARC SAUDREAU, ANDRE MARQUIER, INRA-PIAF, GRAHAM KNAPP, OLIVIER FLAMAND, CSTB-Nantes — The results of drag measurements performed on a full 3 m-tall cherry tree in an atmospheric wind tunnel are presented. The drag on the trunk alone is shown to increase quadratically with the velocity of the flow, as expected, but the drag on the whole tree with branches and leaves follows a smaller power law with velocity, after the reconfiguration of most leaves. The transition from the quadratic law to a linear increase of the drag of the leaves with the magnitude of the flow is observed. Data is also obtained on moment loading on the base of the tree showing also an effect of the reconfiguration. Finally, these results are compared with current models of drag reduction by reconfiguration.

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