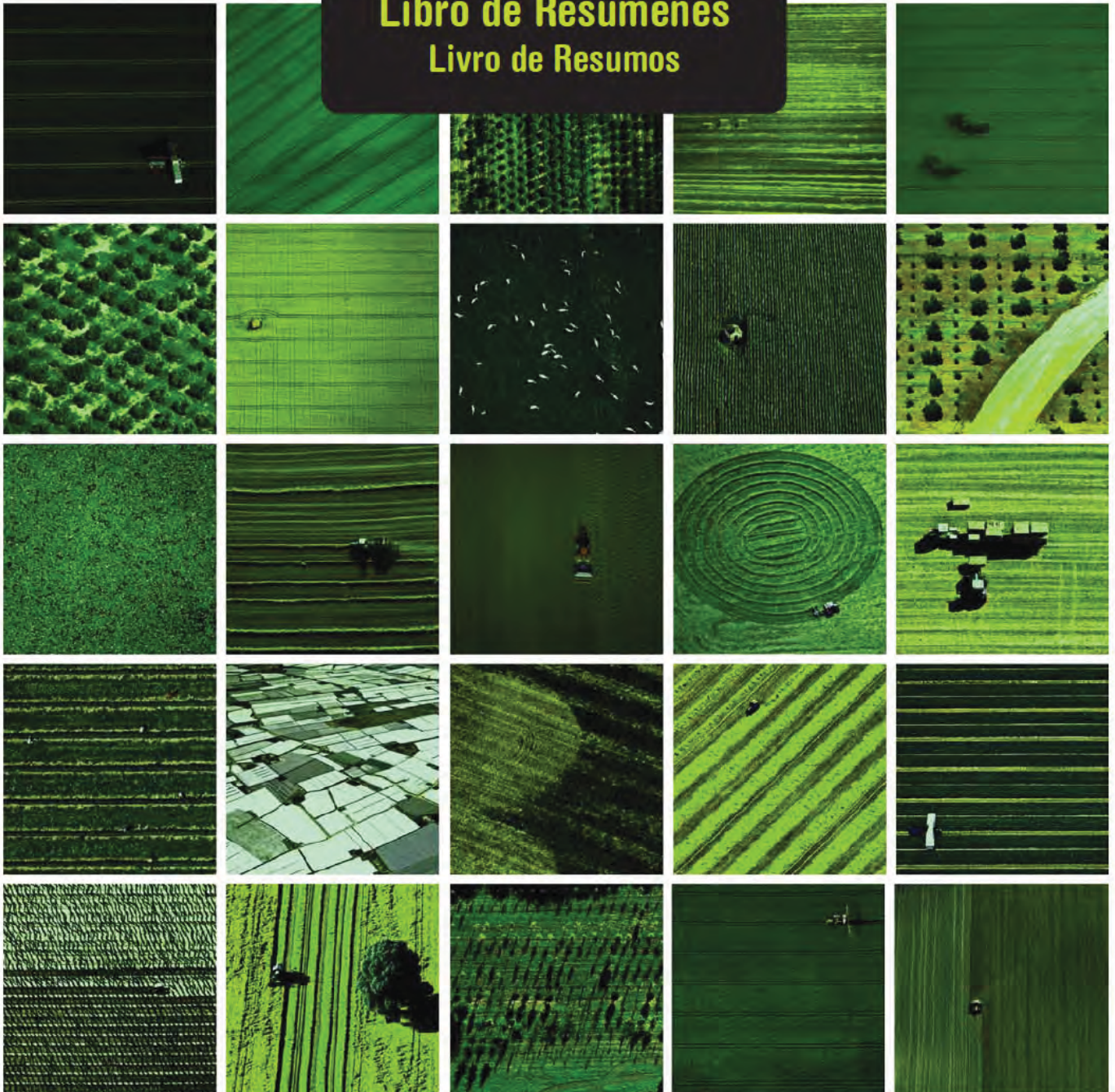


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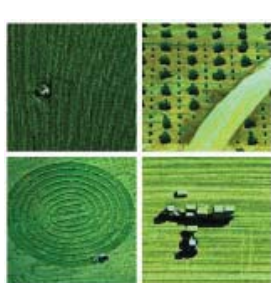
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## **Effect of two grapevine (*Vitis vinifera* L., cv Tinta Roriz) training systems on leaf gas exchange and water use efficiency**

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### **Effect of two grapevine (*Vitis vinifera* L., cv Tinta Roriz) training systems on leaf gas exchange and water use efficiency**

*Training systems which allow partial or full mechanization and facilitate hand management due to their simpler structure and pruning are therefore becoming more appealing to growers. In Trás-os-Montes region (northeastern Portugal) grapevine "traditional" training system (small bush vines close to the ground with no foliage support wires) have been reconverted mainly to non-irrigated unilateral and bilateral cordon training systems with a typical upright shoot growth supported by catch wires. In this hot and dry region, limitations in water supply have a great impact on grape production as the annual rainfall is not adequate to provide grapevines with their water requirements, and water deficits usually develop gradually during summer.*

*In this study two non-irrigated grapevine training systems (traditional small bush vines close to the ground (TSB) and bilateral cordon with vertical shoot positioned vines (VSP)) were compared for their effects on physiological performance and water use efficiency in Mediterranean weather conditions. The trial was carried out in a 25-year old experimental vineyard planted with cv. Tinta Roriz in Trás-os-Montes region (Planalto Mirandês sub-region). Experimental layout consisted in the measurement of physiological variables (net CO<sub>2</sub> assimilation rate (A), stomatal conductance (gs) and transpiration rate (E)) and pre-dawn and midday leaf water potential at the veraison and maturity on fully exposed leaves.*

*The grapevines trained in TSB showed a higher water status (lower predawn and midday leaf water potential), lower transpiration rate (E), lower stomatal conductance (gs) and higher intrinsic water use efficiency (A/gs). These preliminary results show that grapevine "traditional" training system, with no irrigation, seems to be well adapted to this hot and dry region.*