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Analysis of parameters to Challenge Elementary Principles in Viticulture

Abstract

Three different pruning methods were used as a model system to challenge fundamental principles in viticulture. Different viticultural and physiological parameters of field grown Chardonnay, Sauvignon blanc, Chenin blanc and Syrah have been quantified, analysed and compared; main focus was on the comparison of ratios between and amongst vegetative and reproductive parameters. Changes in grapevine morphology due to the pruning system as already described in literature could be proofed; number of buds left at winter-pruning is "correlated" with the number of shoots, leaves and bunches formed during the next year. Shoot length, internode length, leaf size and bunch mass are correlated inversely to the number of remaining winter buds. Source:sink relationship has been affected by pruning method due to changes in size and priority of the source and sink organs, which also affected carbon allocation as well as plant biomass development. Impacts on the rachis development have been found, impacting on the % share of berries on a bunch and the ratio rachis length to rachis mass. Alternative pruned vines seemed to have more sanitary problems and appeared not to be adapted for high quality grape production. Almost no parameter or ratio was stable when changing pruning system; indicating the difficulty of imposing absolute numbers and use them as a recipe for decision making in viticulture.

Keywords: Viticultural parameter, pruning method, grapevine balance, carbon allocation, source:sink relationship, *Vitis vinifera*