

Hibernal Behavior of Different Grapevine Cultivars under Climatic Conditions of Bento Gonçalves-RS, Brazil.

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Chilling requirement and budburst prediction are important factors in deciding the pruning date and needs of chemical sprays for breaking dormancy in grapevines. However, there is lack of knowledge about these factors in the climatic conditions of southern Brazil, which usually show great daily thermal amplitude during the hibernal period. This work defines the chilling requirement and extension of dormancy period in grapevine, using a 10 year meteorological and phenological data series (1984-1993) of *Vitis vinifera* (Cabernet Sauvignon and Chardonnay) and *Vitis labrusca* (Concord) cultivars, in Bento Gonçalves, Brazil (29°09'44"S, 51°11'02"W, 640 m). These cultivars were selected due to the contrast in budburst date. Based on that data series (from April 1st to the budburst date in each year, for each cultivar), chilling hours (CH-10, 10°C as basis temperature) and chilling units (CU) were calculated, according to the Utah (UM), North Carolina modified by Ebert et al (1982), (NCM) and Erez Dynamic models (EDM). The results show that chilling requirements of C. Sauvignon and Chardonnay were, respectively, 955 and 836,6 CH-10, which correspond to 435.9 and 432.9 CU by UM; 479.7 and 462.15 CU by NCM; and 46.99 and 40.35 CU by EDM. Regarding to Concord, the chilling demand was approximately 922.9 CH-10, and the CU was respectively 430.45 by UM; 477.65 by NCM; and 45.26 by EDM. According to these results, the cultivars were classified as having high (C. Sauvignon), medium (Concord) and low (Chardonnay) chilling requirement, with hibernal periods of 171, 163, 157 and 146, respectively. Furthermore, the EDM was also the best fit model, correlated to CH-10 data and budburst date of grapevine cultivars, and could be useful in the prediction of budburst date.

Keywords: temperature, budburst, dormancy, chilling unit, mild winter.

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