P26- Correlation between climatic factors and productivity of different pear rootstocks

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Pear (*Pyrus communis*) has good adaptation in Southern Uruguay, but climatic factors not always reach desirable values for a satisfactory production. The objective of this work was to evaluate the correlation between climatic factors and the productivity of Williams cultivar on different pear rootstocks. The experiment was installed at Instituto Nacional de Investigación Agropecuaria – INIA Las Brujas (S 34° 67', W 56° 37'). Local climate according to classification of Köppen is 'Cfa' and soil is a Tipic Argiudoll. Trees were planted in July 2003, and the cycles evaluated were 2014/15, 2015/16, 2016/17, and 2017/18. The cultivar is Williams on rootstocks 'OH×F40' and 'BA29'. Productivity of these rootstocks, was correlated with: precipitation, cold units, chilling hours (<7,2°C), relative humidity, evapotranspiration and average temperature. Climatic data was collected from the meteorological station at INIA Las Brujas, located less than 500 m from the experiment. To value the incidence of climatic factors on productivity of pear trees, a Principal Components Analysis - PCA was applied using the statistical software R. The climatic factors had correlation with the productivity of pear trees independently of the rootstock used, and showed significant differences between years. Cycles 2014/15 and 2016/17, had high productivity with no significant difference between rootstocks and an average of 25,3 and 38,4 t.ha-1, respectively. Between the climatic factors analyzed, precipitation correlated strongly with the productivity these years, being correlation of the positive type. In years of low productivity (cycle 2015/16 average of 0,0 t.ha-1 and cycle 2017/18 average of 7,2 t.ha-1 for the two rootstocks), precipitation had a negative correlation. During the period of bud induction, of these two last cycles (period of December to January), there was low precipitation and high evapotranspiration, which might have harmed formation and proper nutrition of buds. This and other relationships will be discussed.

Keywords: *Pyrus communis*, PCA, Principal Components Analysis, alternate bearing, precipitation