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COMPARISION OF UPTAKE MODELS FOR STRONTIUM (Sr) AND BARIUM (Ba) IN VINE (Vitis vinifera L.) IN CASTILLA-LA MANCHA (SPAIN).

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Castilla-La Mancha is the biggest vine-growing region in the world (about 500,000 ha) and one of the most important in terms of production of wine. The soils diversity should induce differences in the uptake of mineral elements by the vineyard. Of over the regional vine extension, 101 plots were selected and analyzed soil samples from each of them, following the description by FAO procedures. Samples of leaves were also taken from each soil plot. We analyzed the contents of mineral elements in both soil and leaf, using the FRX technique. This paper is focused on the elements strontium and barium because they are the trace elements having a higher concentration in the soils of the region, with values in soil range from 22.3 mg•kg-1-3602.7 mg•kg-1 in strontium and from 65.4 mg•kg-1 to 469.3 mg•kg-1 in barium. The contents of both elements in leaves have ranged from 23.3 mg•kg-1 y 1084.5 mg•kg-1 for strontium, and between 3.86 mg•kg-1 and 235.0 mg•kg-1 for barium. The aim of this work is state the behaviour in the soil-plant system for both elements.

For this study, different statistical adjustment models have been tested (linear, multiplicative, exponential and logarithmic). The results show that the values of "R" for strontium are higher than barium in all models. Samples have also been studied by soil order (classified according to the FAO criteria). In this case, significant correlation from strontium have been found in all soil orders, except in calcisols. Significant correlations for barium appear only in entisols and luvisols.

In conclusion it can be seen how these two elements differ in their behaviour in the soil-plant system. In general, the concentration of strontium in the soil is better correlated with leaf content than barium in the same soil. We can suggest a greater facility for the absorption of strontium by the grapevine. In calcisols, bearing in mind the interference of calcium, this uptake does not present such a high correlation. The correlation soil-leave of barium is better in poorly developed soils (entisols) and highly evolved (luvisols), although this fact may obey other edaphic parameters (pH, electrical conductivity, mineralogy, etc.).