



## Experimental strategies in carrying out VCU for tobacco crop I: plot design and size

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**ABSTRACT.** We aimed to establish standards for tobacco Valor de Cultivo e Uso (VCU) in Brazil. We obtained information regarding the size and design of plots of two varietal groups of tobacco (Virginia and Burley). Ten inbred lines of each varietal group were evaluated in a randomized complete block design with four replications. The plot contained 42 plants with six rows of seven columns each. For each experiment plant, considering the position of the respective plant in the plot (row and column) as a reference, cured leaf weight (g/plant), total sugar content (%), and total alkaloid content (%) were determined. The maximum curvature of the variations in coefficients was estimated. Trials with the number of plants per plot ranging from 2 to 41 were simulated. The use of a border was not justified because the interactions between inbred lines x position in the plots were never significant, showing that the behavior of the inbred lines coincided with the different positions. The plant performance varied according to the column position in the plot. To

lessen the effect of this factor, the use of plots with more than one row is recommended. Experimental precision, evaluated by the CV%, increased with an increase in plot size; nevertheless, the maximum curvature of the variation coefficient method showed no expressive increase in precision if the number of plants was greater than seven. The result in identification of the best inbred line, in terms of the size of each plot, coincided with the maximum curvature method.

**Key words:** Field trial; Plot size; Monte Carlo simulation; Statistics; Plant breeding