



# Inheritance of kernel row number, a multicategorical threshold trait of maize ears

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Genet. Mol. Res. 10 (3): 2133-2139 (2011)

Received January 3, 2011

Accepted June 27, 2011

Published September 21, 2011

DOI <http://dx.doi.org/10.4238/vol10-3gmr1114>

**ABSTRACT.** Information about the inheritance of threshold traits is scarce, especially in plants. We examined the genetic control of kernel row number in maize (*Zea mays*). Knowledge of this inheritance is especially important because it is a primary component of grain yield. This trait has a discontinuous distribution. Characters like these are conceptualized as threshold traits. Crosses were made between the inbred line Geneze 3 (G3) with many kernel rows and the inbreds Argentino IV (A4) and Dente de Cravo (DC), with fewer kernel rows. The F<sub>1</sub> and F<sub>2</sub> generations and the backcrosses BC<sub>11</sub> and BC<sub>21</sub> were obtained for the combinations G3 x A4 and G3 x DC. These populations were evaluated under field conditions, and the kernel row number was determined by direct counting of approximately 14, 140 and 75 ears for the F<sub>1</sub>, F<sub>2</sub> and backcrosses, respectively. Genetic control was determined through estimates of generation means and variance analysis and was also performed by Wright's method for threshold traits. It was found that genetic control is predominantly due to additive alleles. The component *a*, was greater than zero, additive variance was

positive and the variance of dominance did not differ from zero. In the  $F_2$  generation, the range of the kernel row number was 10 to 28 in G3 x A4, while in G3 x DC it was 12 to 26. Inheritance of the number of kernel rows, estimated by the two methods, gave similar results. This correspondence is due to adjusting of the data to the normal distribution.

**Key words:** Crop improvement; Threshold traits; Kernel row number