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Genetic analysis of two new quantitative trait loci for ear weight in maize inbred line Huangzao4

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ABSTRACT. Ear weight is one of the most important agronomic traits considered necessary in maize (*Zea mays* L.) breeding projects. To determine its genetic basis, a population consisting of 239 recombinant inbred lines, derived from the cross Mo17 x Huangzao4, was used to detect quantitative trait loci (QTLs) for ear weight under two nitrogen regimes. Under a high nitrogen fertilization regime, one QTL was identified in chromosome bin 2.08-2.09, which explained 7.46% of phenotypic variance and an increase in ear weight of about 5.79 g, owing to an additive effect. Under a low nitrogen regime, another QTL was identified in chromosome bin 1.10-1.11; it accounted for 7.11% of phenotypic variance and a decrease of 5.24 g in ear weight, due to an additive effect. Based on comparisons with previous studies, these two QTLs are new loci associated with ear weight in maize. These findings contribute to our knowledge about the genetic basis of ear weight in maize.

Key words: Maize (*Zea mays* L.); Ear weight; Quantitative trait locus; Nitrogen regime; Recombinant inbred line

