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TÍTULO: LEAF SENESCENCE AND PROFILE OF EXPANDED LEA ÁREA IN MAIZE (ZEA MAYS L.)

Resumen

Leaf senescence is a major factor affecting light interception and dry matter accumulation during the grain-fihling period. Reduced leaf senescence has been associated with maize yield genetic improvement. The objectives of this study were i) to quantify maize senescence in temis of visual and functional symptoms in older and newer hybrids, and ji) to examine the area-per-leaf profile in maize plants grown under a range of environments, agronomic practices and hybrids. Greater green leaf area throughout the grain-fihling period in newer compared to older hybrids was the result of a greater leaf area index at silking and a delayed onset of visual leaf senescence. In addition, functional symptoms of leaf senescence (i.e., a decline in carbon exchange rate, stomatal conductance and chlorophyll fluorescence) were apparent in leaves that stayed green during later phases of the grain filling period. A bell-shape function proved to be a robust mean of quantifying the vertical leaf area distribution in maize. Variations due to year, nitrogen, plant density, hybrid, and row spacing on total leaf area could be quantified by measuring their effects on the area and position of the largest leaf. Overall, this study suggests that further advances iii maize yield improvement will likely occur by combining 'stay green' with the maintenance of high photosynthesis through the season rather than extending green leaf area duration per *se*. Furthermore, the study demonstrates that the profile of area per leaf profile of maize is conservative trait that could be exploited to make more rapid and precise estimations of both leaf area and senescence.