RESPONSE OF OKRA-LEAF ISOLINES FROM FOUR CONTRASTING MODERN COTTON CULTIVARS TO 76-CM ROWS

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Abstract

Previous research has indicated that some cotton (*Gossypium hirsutum* L.) genotypes are more likely to respond to narrow rows than other genotypes. This principle was first established in California with short, early maturing types. Later, our work with one obsolete okra-leaf type in Mississippi indicated that okra-leaf yielded greater in narrow rows than wide rows. However, this response was inconsistent. The objective of this research was to test okra-leaf types from modern genetic backgrounds on the response to narrow rows. In 1994 and 1995, four cultivars (DES 119, MD 51ne, Stoneville 6413, and Tamcot HQ95) and their okra-leaf isolines were grown in 76-cm and 102-cm rows near Stoneville, MS. White flowers were counted periodically during the flowering period and yield was determined by hand picking. The combined analysis of variance (on yield data from both years) indicated that the main effects (genotype and leaf type) and the genotype x leaf type interaction were significant. Row spacing (P=0.16) and its interactions with leaf type and genotype were not found to significantly affect yield. This indicated that genetic background of the okra-leaf type did not affect its response to row spacing. Among the normal-leaf types, Tamcot HQ95 (825 kg ha $^{-1}$) and DES 119 (774 kg ha $^{-1}$) outyielded MD 51ne (660 kg ha $^{-1}$) and Stoneville 6413 (670 kg ha $^{-1}$). Tamcot HQ95 normal-leaf produced more flowers per unit area (seasonal total) than the other three normal-leaf types. Tamcot HQ95's greater flower production was mostly due to greater flower production prior to 80 days after planting (DAP). Among the okra-leaf types, Tamcot HQ95 (878 kg ha^{-1}), DES 119 (817 kg ha $^{-1}$), and MD 51ne (853 kg ha^{-1}) outyielded Stoneville 6413 (744 kg ha^{-1}). MD 51ne okra-leaf produced more flowers per unit area (seasonal total) than the other okra-leaf genotypes. Averaged across genetic backgrounds, okra-leaf (823 kg ha^{-1}) outyielded normal-leaf (732 kg ha^{-1}) and this may have been partly due to its production of more flowers per unit area prior to 80 DAP. The reason for the significant (P=0.04) genotype by leaf type interaction was MD 51ne okra-leaf outyielded its normal-leaf isoline by 193 kg ha^{-1} which was a much greater difference than the isoline comparison of the other three genotypes. Within each leaf type, yield of each genotype was positively correlated with seasonal flower production (r=0.89* to r=0.93*). Averaged across genotypes and row spacings, okra-leaf reached 65% open at 128 DAP compared to 130 DAP for normal-leaf. Averaged across leaf types and row spacings, Tamcot HQ95 reached 65% open earlier (125 DAP) than DES 119 (129 DAP), MD51ne (130 DAP), and Stoneville 6413 (130 DAP). Yield was positively correlated to earliness (i.e., there was a negative correlation between yield and the date that 65% of seed cotton was on open bolls, r=-0.79*). The results observed in this study indicate that the flowering characteristics, earliness, and yield potential of Tamcot HQ95 or okra-leaf types may need to be explored further in Mid-South production systems. The results did not support the hypothesis that an early maturing genotype would respond differently to narrow rows than a late maturing type.

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