عنوان مقاله:

Association of transpiration efficiency with N2 fixation of peanut under early season drought

محل انتشار:

مجله تولید گیاهان, دوره 5, شماره 4 (سال: 1390)

تعداد صفحات اصل مقاله: 14

نویسندگان:

D. Puangbut - *Department of Plant Science and Agricultural Resources, Faculty of Agriculture, Khon Kaen University, Muang, Khon Kaen ۴۰۰۰۲, Thailand.*

S. Jogloy - *Department of Plant Science and Agricultural Resources, Faculty of Agriculture, Khon Kaen University, Muang, Khon Kaen ۴۰۰۰۲, Thailand.*

N. Vorasoot - *Department of Plant Science and Agricultural Resources, Faculty of Agriculture, Khon Kaen University, Muang, Khon Kaen ۴۰۰۰۲, Thailand.*

C. Akkasaeng - *Department of Plant Science and Agricultural Resources, Faculty of Agriculture, Khon Kaen University, Muang, Khon Kaen ۴۰۰۰۲, Thailand.*

خلاصه مقاله:

Peanut is grown mostly in rainfed areas where drought is a recurring problem. Peanut genotypes with high transpiration efficiency (TE) use less water and produced yield better under drought conditions. Specific leaf area and SPAD chlorophyll meter reading are used as surrogate traits for TE. N2 fixation (NF) is also used as a surrogate trait for yield under drought. The objective of this study was to demonstrate the relationship between TE and NF and their contributions to yield under early season drought (ESD). A field experiment was conducted in a split-plot design with four replications for two seasons. Early drought (1/3 available water from emergence to 40 days after emergence) and irrigated control were assigned in main-plots, and 12 peanut genotypes were assigned in sub-plots. Data were recorded for TE, NF and pod yield at harvest. ESD increased TE and NF. KK 60-3 had high TE and also had high NF under drought conditions. Under drought conditions, TE was strongly and positively correlated with N2 fixation. Hence, high NF might contribute to high TE under ESD conditions. KK 60-3 is a superior genotype for its ability to maintain high N2 fixation, and it could improve TE under ESD conditions. Improvement of NF combined with high TE would have contributed to higher pod yield under drought conditions. It was apparent that enhanced NF also increased TE and pod yield. Thus, selecting for improved NF under ESD conditions may be an effective indirect selection technique to improve yield under drought conditions.

کلمات کلیدی:

Arachis hypogaea L, Water deficit, Nitrogen fixation, Pod yield