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Relationship Between Leaf Area Index at Anthesis and Yield in Wheat Under Çukurova Conditions

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Abstract: Wheat yields are closely related to leaf area index (LAI) at anthesis. The optimum leaf area index differs according to genotype and location conditions. Three field experiments were conducted to determine the pattern of the relationship between LAI at anthesis and yield in Çukurova , a region with an acclerated ear and grain growth. Different genotypes, seeding density and nitrogen doses were used to create a range of LAI. Biological yield (BY) and grain yield (GY) increased quadratically in response to LAI values, with greater responses for BY (R 2 =0.46**) than for GY (R 2 =0.35**). As LAI increased above 6.5-7.0 no more BY and GY increases occured. The nature of the response of grain number (GN) to changes in LAI were similar to BY and GY. There was no remarkable relationship between grain weight (GW) and LAI (R 2 =0.041 n.s.). The relationship between LAI and GY was related to the relationship between the flag leaf area index (FLAI) and GN (R 2 =0.50**). GW was not significantly affected by FLAI values (R 2 =0.035). The GN-reduction at higher FLAI values seems to be a result of a steady decrease in fertile spikelet number per ear. The results show that when excessive leaf growth is promoted, leaf area cannot be used effectively after a certain level because insufficient grains develop as a result of ear growth towards anthesis being negatively affected.

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