

Number of grains in modern and old cultivars of wheat, *triticum aestivum*, grown under preanthesis shading.

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The higher yields of modern cultivars is associated with an increase in the number of grains per m<sup>2</sup> (NG) and with a higher spike dry weight at anthesis (2). Preanthesis shading reduces NG *via* reductions in spike dry weight at anthesis (1). However, the effects of preanthesis shading on cultivars of different potential NG have not been analyzed yet.

## Methods

A factorial experiment was conducted in 1990 at the experimental field of the Dept. Plant Production, Univ. Buenos Aires (34°35'S, 58°29'W). Three Argentine wheat cultivars released in 1920 (Klein Favorito), 1940 (Eureka FCS) and 1980 (Buck Pucara) were shaded from the beginning of stem elongation to heading or left unshaded. Shading was applied by means of black Sarlan shade cloth suspended about 0.2 m above the top of the canopy that decreased incident light intensity by 50±3%. Treatments were arranged in a completely randomized design with three replicates.

## Results and discussion

Both cultivars and shading significantly affected NG, but their interaction was not significant (Fig. 1). Cultivar effects were in agreement with previous results (2,3). Cultivars differed only in number of grains per spikelet, while shading reduced both the number of spikes/m<sup>2</sup> and the number of grains/spike. The lack of a significant interaction indicates that shading reduced NG of all cultivars similarly (in absolute values), but since cultivars differed in NG, the relative impact of shading was greater in old, low NG cultivar than in the modern cultivars (Fig. 1).

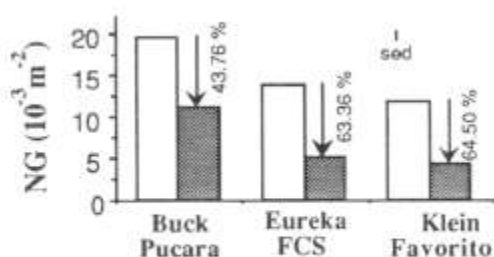


Figure 1. Number of grains of 3 cvv. in the unshaded (clear bars) or shaded (shaded bars) situations.

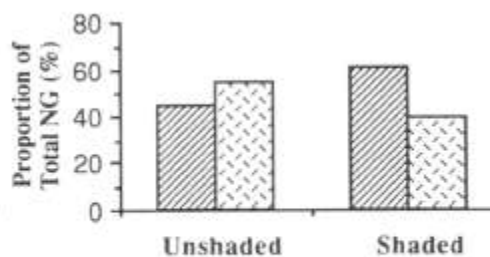


Figure 2. Relative Contribution of main shoots (hatched) and tillers (checkered) to total NG under two shading conditions.

The effect of shading was greater in tillers than in main shoots. NG of main shoot and tiller spikes were reduced 42 and 65% (averaged over cultivars) by preanthesis shading. Therefore, the relative contribution of these shoot categories to total NG was highly modified by shading (Fig. 2). This effect agrees with some previous papers, but disagrees with some others. An evaluation of published data with conflicting results about the effects of preanthesis shading on the relative contribution of main shoots and tillers to total NG suggests that the effect is related to canopy structure (i.e. the relative proportion of tiller and main shoot spikes in the unshaded situation).

## References

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2. Slafer. G.A., Andrade, F.H.and Satorre, E.H. 1990. Field Crops Res. 23, 255-264. Slafer. G.A. and Miralles, D.J. 1993. J. Agron. & Crop Sci. (in press).