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# **Czech J. Genet. Plant Breed.**

# Stehno Z., Dvořáček V., Bradová J., Leišová L.: How can wheat landraces contribute to present breeding?

Czech J. Genet. Plant Breed., 46 (2010):  
S70-S74

Two sets of winter wheat landraces and obsolete cultivars were studied in three-year field experiments, and compared with 3 modern control cultivars. The higher spike productivity in modern cultivars could mainly be attributed to an increased number of grains in a spikelet and harvest index (HI), whereas thousand grain weight (TGW) has only a slight effect.

Landraces and old cultivars proved to have a higher content of crude protein. Spike productivity characteristics, except for TGW, showed a negative correlation with the crude protein content in the grain. The number of kernels in a spikelet strongly affected the spike's productivity, whereas the TGW has only half the effect. The mean yield of four modern cultivars was 51% higher than the mean yield of 31 landraces and obsolete cultivars. Regression analysis proved the much stronger response of modern cultivars to environment ( $b = 1.63$ ), then was the response of old cultivars ( $b = 0.87$ ). Different responses to environments were found within the set of 31 landraces, as well. We could also identify potentially valuable donors of earliness and winter hardiness among the old

cultivars. High crude protein content (up to 18%), and other valuable quality characteristics, were rather frequent. In both sets, HMW *Glu*-subunits were described, and we have additionally studied 67 selected lines. Among them, 10 lines showed the crude protein content of 17.5% to 18.3% (where the gluten index and Zeleny test varied from 28.5 to 54.0 and 36.8 to 61.7, respectively). High values of all quality characteristics showed lines gained from the cultivars Mindeszentpusztai (HUN), Szekacz 19 (HUN), Bartweizen linie a (AUT), Viglašská červenoklasá (CZE), as well as some others.

## **Keywords:**

donors of traits; genetic diversity; grain quality; landraces; stress tolerance; yield stability

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