

Phenotypic effects of the *Rht-17* dwarfing gene in spring wheat under two climatic conditions

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Such dwarfing genes as *Rht-B1b* (*Rht1*), *Rht-B1e* (*Rht11*) and *Rht-D1b* (*Rht2*) have been widely explored in wheat breeding to reduce plant height. The introduction of new variations of these genes into new wheat cultivars is relevant for sustainable agriculture. The *Rht-B1p* (*Rht17*) reduces plant height by 33 % and affects other economically valuable traits. Leaf elongation rate and coleoptile length are reduced by *Rht17* in early plant growth phases due to highly decreased sensibility to gibberellic acid that is similar to the effect of *Rht-B1b*, *Rht-D1b* and *Rht-B1e*. Our aim is to compare the effects of *Rht17* on nine valuable agronomic traits under conditions of Non-Black Earth Zone (Nechernozemye, Moscow) and Black Earth Region (Chernozemye, Krasnodar Territory). We studied the F₃ population of spring bread wheat [*Cltr17241*'(*Rht-B1p*) × × 'Novosibirskaya 67' (*Rht-B1a*)] and F₃ population of spring durum wheat [*Chris Mutant*'(*Rht-B1p*) × 'LD222'(*Rht-B1a*)], designated M17 and T17, respectively. Seeds were sown by families in 0.4 m rows in 2018. The plants were genotyped using molecular markers. The plants homozygous for presence/absence of *Rht17* were compared and the significance of differences in measured traits were determined by Fisher's analysis of variance. Here, we present some statistically significant results obtained in our work. In population M17 plant height is decreased by *Rht17* by 31 % in Black Earth Region and by 29 % in Non-Black Earth Zone, while in population T17 by 46 % and 41 %, respectively. Additionally, we revealed that *Rht17* decreases 1000 grain weight by 12 % in population M17 in Black Earth Region and by 15 % in Non-Black Earth Zone, while in population T17 by 27 % and 17 %, respectively.

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