



SELECTED MORPHOLOGICAL TRAITS OF CHEAT (*BROMUS SECALINUS* L.) AND CEREALS GROWN IN MIXTURES

AGNIESZKA STOKŁOSA * & JOANNA PUŁA

Key words: *Bromus secalinus*, winter wheat, rye, tillering, length of culm, length of inflorescence

Department of Agrotechnology and Agricultural Ecology, University of Agriculture, Al. Mickiewicza 21, 31-120 Krakow, Poland;
* a.stoklosa@ur.krakow.pl

Bromus L. is a genus belonging to Poaceae family (KAPELUSZNY & HALINIARZ 2007). This genus includes about 80 species (MOWSZOWICZ 1986). The most frequent species among *Bromus* is cheat (*Bromus secalinus* L.), grown both, as spring and winter form. Cheat grows mostly in cereals, namely, winter wheat and rye, as a weed. It occurs on sandy soils but sometimes is observed on clay soils as well (TYMRAKIEWICZ 1976). It spreads mostly with cereal seeds, and this way either, gets back to soil or gets to flour.

In the past cheat was a common weed in Poland (KOZŁOWSKI *i in.* 1998) occupying large areas of lowlands and foothills, as well as floors of Carpathian mountains (KORNIK & DYNOWSKI 2010). Since 70's till the end of 20th century, a systematic vanishing of this species from arable fields of Poland was noted (KORNIK & DYNOWSKI 2010; MALARA I GANCARCZYK-GOLA 2009). Nonetheless, in the recent years reappearance of cheat on the arable lands was noted both, in south-eastern and also north-eastern parts of Poland (KORNIK & DYNOWSKI 2010; KAPELUSZNY & HALINIARZ 2010). Locally, the species is also noted as expansive.

Our work aimed at assessing the influence of cheat density on selected morphological traits of winter wheat, rye and cheat.

A micro-plot experiment was carried out during two vegetative seasons 2009-2011 at the Experimental Station of Agrotechnology and Agricultural Ecology Department in Mydlniki near Krakow, Poland. The experimental soil was sandy and belonging to the rye complex, pH 5,25, medium content of phosphorus, low content of potassium and very low content of magnesium.

Rye (cv. Kier) and winter wheat (cv. Batuta) were sown in the end of September 2009 and 2010, on 30 plots of 1m² area each (15 plots per rye and 15 per wheat) in a randomized block design, with 3 replications per treatment.

When cereals were in a 3-4 leaves stage in their interrows the pre-germinated seeds of cheat were sown. Early in the spring, the number of cheat plants per plot was established to: 25, 50, 75 or 100 plants. Control plots were free from cheat plants and any other weed species. During vegetation period all other weeds were removed by hand. When cheat plants reached the seed-wax maturity phase following measurements of their morphological traits: length of culm, total and productive tillering, length of panicles and number of primary branches per panicle, were taken. At the same time for cereals (full seed maturity phase) the measurements of the culm and ears length and total and productive tillering were undertaken. Biometrical measurements were carried out on 10 plants of each species selected randomly from each plot.

As a result, a significant decrease in a productive tillering in winter wheat was stated. The other traits of winter wheat as well as all the traits of rye were not affected by any of weed densities. Also, brome morphological features turned to be significantly unaffected by its density in the presence of each of cereal species. Obtained results suggest low influence of cheat (*Bromus secalinus*) on morphological traits of cereals, and as a result, lack of competitiveness of cheat against tested cereal species and varieties in the conditions of sandy soil.

References

- KAPELUSZNY J. & HALINIARZ M. 2007. Wybrane elementy kielkowania stulicy psiej (*Descurainia sophia* Webb. Ex Prantl.) i stokłosa żytniej (*Bromus secalinus* L.). *Ann. UMCS, Sec. E, LXII* (2): 226–233.
- KAPELUSZNY J. & HALINIARZ M. 2010. Ekspansywne i zagrożone gatunki flory segetalnej w środkowo- wschodniej Polsce. *Ann. UMCS, Sec. E, LXV* (1): 26–33.
- KORNIK T. & DYNOWSKI P. 2010. Występowanie *Bromus secalinus* w północno- wschodniej Polsce. *Materiały z*

- IX Ogólnopolskiego Spotkania Naukowego. Biologia traw. Kraków: 28.*
- KOZŁOWSKI S., GALIŃSKI P., SWĘDRZYŃSKI A. 1998.** Trawy w barwnej fotografii i zwięzłym opisie ich specyficznych cech. Wyd. I. Wyd. Literackie Parnas. Inowrocław.
- MALARA J. & GANCARCZYK-GOŁA M. 2009.** Charakterystyka gatunku *Bromus secalinus* L. *Pam. Puł.* **150**: 337–343.
- MOWSZOWICZ J. 1986.** Krajowe chwasty polne i ogrodowe przewodnik do oznaczania. Wyd. III poprawione i uzupełnione. Państwowe Wyd. Rolnicze i Leśne. Warszawa.
- TYMRAKIEWICZ W. 1976.** Atlas chwastów. Wyd. III rozszerzone. Wyd. Rolnicze i Leśne. Warszawa.