

Summary

Many varieties of triticale are characterised by high resistance to cereal pathogens, they have small soil requirements, good frost resistance, and are distinguished by high fertility and a very good fodder value. New varieties of triticale maintain the great stability of the grain characteristics and its good quality. It allows to use the triticale grain for consumption purposes, and beneficial dietary characteristics induce to use triticale flour in the bakery industry. The triticale flour is a valuable material for bread production. Among the factors limiting its common use, it is possible to mention a high amylolytic activity, a low gluten content and unfavourable rheological properties of triticale dough.

In this paper, the studies on the assessment of the baking value of triticale flour of new selected varieties of triticale were undertaken. The grain of Borwo, Fredro and Panteon varieties as well as flour and bread obtained from them were assessed. The grain, flour and wheat bread of Tonacja variety were respectively used as an attempt of reference. In the first stage, the commodity assessment of the triticale grain was implemented, and its chemical composition was determined. The studies aimed at determination of optimal conditions related to the preparation of grains for milling. The grain milling properties of the tested triticale varieties were characterised. The obtained triticale flour was subject to the chemical composition tests and a value of quality features was determined. In addition, the flour water absorption and dough rheological properties were established. The baking value was also assessed in the laboratory baking with a direct method with the addition of yeast and with the use of a three-phase method with natural acidification by means of fermentation. The values of quality features of triticale bread were determined and its chemical composition was indicated. The content of phenolic acids was determined in grain, flour, bran and bread.

The triticale grain was characterised by good indicators of the milling value, and the flour productivity was lower compared to the wheat grain milling. The flour quality tests indicated the diversity of triticale varieties in terms of the protein and wet gluten content. The best marks were obtained by flour of the Panteon variety grain. In terms of value of the falling number, the triticale flour of the tested varieties also showed a large diversity. The falling number value was variable in a wide range. This parameter strongly correlated with a flour baking value, and consequently, with the quality of its obtained bread. The triticale flour water absorption is higher than the one of wheat flour. The triticale dough

was characterised by unfavourable rheological properties, and particularly high dough softening.

The triticale bread obtained from flour of the tested varieties varied in terms of quality. Very good quality bread was obtained from flour of Fredro and Panteon varieties. The triticale flour of Borwo variety was the least useful material for baking bread with the direct method using yeast. In the studies of baking properties of triticale flour of the tested varieties, it was shown that the quality of bread also depends on a method for preparing dough and baking. The bread of equally good quality of flour of the tested varieties was obtained in a three-phase method, on the so-called sour dough. The significant quality improvement of bread made of Borwo triticale flour, obtained with the use of the three-phase method, was observed.

Furthermore, an attempt was made to enrich triticale bread with the additive of triticale bran. The bread baked of a blend of flour and bran from milling of Fredro and Panteon grain varieties gained very good scoring. The portion of bran in the baking blend resulted in an increase of water absorption and improvement of dough rheological properties, including a decrease in dough softening.

The nutritional value of triticale bread was similar to wheat bread. In case of bread with bran, a higher content of protein and fibre was recorded. In addition, the studies on the content of phenolic acids also confirmed its potentially greater pro-health value.

In this paper, it was demonstrated that the selection of the appropriate method for preparing dough and bread baking allows to obtain triticale bread of good quality with the increased amylolytic activity. The rheological properties of triticale dough improved in the dough with triticale bran, and their participation in the baking blend also resulted in an increase of the nutritional value of such bread.

The conducted studies confirm that triticale flour of the tested Borwo, Fredro and Panteon varieties is a valuable material for bread production. Along with the leading position of Poland among the triticale grain producers in the world, its use for milling into flour for baking purposes seems to be a noteworthy direction of using the grain of the cereals.

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