

The strong negative correlation was found between protein content and falling number, volume weight, and starch content.

The positive correlation was found between starch content and falling number and volume weight.

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References

1. AS. Dobeles dzirnavnieka 2016. gada graudu pieņemšanas prasības (Grain processing company Dobeles dzirnavnieks requirement for grains of acceptance in 2016) [accessed 11.06.2016]. Available at: <http://dzirnavnieks.lv/lv/graudu-piegadatajiem> (in Latvian)
2. Alijošius S., Švirmickas J., Bliznikas S., Gružasuskas R., Šašyte V., Racevičiūtė-Stupeliene A., Kliševičiūtė V., Daukšiene A. (2016). Grain chemical composition of different varieties of winter cereals. *Zemdirbyste-Agriculture*, Vol. 103, (3), p. 273–280.
3. Banu I. (2006) The evaluation of the quality rye flours on the basis of the biochemical and rheological indices. *Journal of Agroalimentary Processes and Technologies*, Vol. 12 (2), p. 291–298.
4. Chmielewski F.M., Kohn W. (2000) Impact of weather on yield components of winter rye over 30 years. *Agriculture and Forest Meteorology*, Vol. 102 (4), p. 253–261.
5. Dvorakova P., Burešova I., Kračmar S., Havlikova R. (2012). Effect of Hagberg Falling number on rye bread quality. *Advances in Environment, Biotechnology and Biomedicine*, p. 257–260.
6. Hansen H.B., Møller B., Andersen S B, Jørgensen J.R., Hansen Å. (2004) Grain characteristics, chemical composition, and functional properties of rye (*Secale cereale* L.) as influenced by genotype and harvest year. *Journal of Agriculture and Food Chemistry*, Vol. 52 (8), p. 2282–2291.
7. Ingver A., Koppel R., Tupits I., Annamaa K. (2002) Sprouting resistance of bread cereals. *Zemdirbyste – Agriculture*, Vol. 78, p. 86–93.
8. Jansone I., Gaile Z. (2015) Heat of winter cereal crops. *Research for Rural Development*. Vol. 1, p. 40–44.
9. Kunkulberga D., Ruza A., Linina A., Galoburda R. (2007). Evaluation of wholegrain flour baking properties depending on variety. *Food Chemistry and Technology*, Vol. 41 (2), p. 24–29.
10. Maļeckā S., Strazdiņa V. (2004) Rudzu šķirņu produktivitāte un graudu kvalitāte. *Agronomijas vēstis* Vol.6, p. 40–46.
11. Nowotna A., Gambus H., Liebhard P., Praznik W., Ziobro R., Berski W., Krawontka J. (2006) Characteristic of carbohydrate fraction of rye varieties. *Acta Sci. Pol., Technol. Aliment.*, Vol. 6 (1), p. 87–96.
12. Ruzgas V., Plycevaitiene V. (2005) Activity of alpha-amylase in rye grain and its relationship with other traits. *Latvian Journal of Agronomy*, Vol. 8. p. 162–165.
13. Salmenkallio-Marttila M., Hovineen S. (2005) Enzyme activities, dietary fibre components and rheological properties of wholemeal flours from the cultivars grown in Finland, *Journal of Cereal Science of Food Agriculture*, Vol. 85, p. 1350–1356.
14. Skuodiene R., Nekrošiene R. (2009). Effect of preceding crops on the winter cereal productivity and diseases incidence. *Acta Agriculturae Slovenica*, Vol. 93 (2), p. 169–179.
15. Stepien A., Wojtkowiak K., Pietruszewicz M., Sklodowski M., Pietrzak-Fiečko (2016) The yield and grain quality of winter rye (*Secale cereale* L.) under the conditions of foliar fertilization with micronutrients (Cu, Zn and Mn). *Polish Journal of Natural Sciences*, Vol. 31 (1), p. 33–46.
16. Tupits I. (2008) Yield and quality of winter rye in trials at the Jogeva PBI. *Latvian Journal of Agronomy*, Vol. 11, p. 165–171.
17. Vidmantiene D., Joudeikiene G. (2010) Endoxylanase and endoxylanase inhibition activities in the grain of winter rye cultivars. *Zemdirbyste-Agriculture*, Vol. 97 (1), p. 3–10.
18. Zdubel A., Dubis, B., Laskowski J. (2009) Influence of nitrogen fertilization of rye on falling number protein and ash contents in whole kernel and flour. *Acta Agrophysica*, Vol. 13 (2), p. 543–553.