

## Formation of yield and grain quality of winter wheat varieties depending on preceders and growing conditions

Kh.A. Malkanduev, R.I. Shamurzaev, A.Kh. Malkandueva

Institute of Agriculture –  
branch of Kabardino-Balkarian Scientific Center of the Russian Academy of Sciences  
360004, Russia, Nalchik, 224 Kirov street

**Annotation.** An important agrotechnical means of increasing the yield and quality of grain is the placement of wheat crops after the best predecessors that provide the soil with the necessary water, air and food regime. In the conditions of the South of Russia, winter wheat is cultivated in various agroecological conditions, while the optimization of water and food regimes, depending on the predecessors, is of particular relevance.

On the basis of domestic scientific literature, the state of knowledge of the issue is shown, data on the role of predecessors in solving the problem of grain production and improving its quality are presented. The results of the study of the literature showed that the issues of crop formation and grain quality according to predecessors in various soil and climatic conditions are well studied and covered quite fully in the Russian Federation. The best predecessors of winter wheat by cultivation zones are identified, a comparative analysis of the literature on the changes in the quality indicators of grain depending on the predecessors and cultivation conditions is given. On the example of specific varieties (Yuzhanka, Yuka, Moskvich, Nakhodka, Badulinka, Volgogradskaya 44, Moskovskaya 39, Zernogradka 8, etc.), recommendations are given for placement for various predecessors. Separately, the issue of placement after fusarium-hazardous predecessors is discussed.

It was noted that the use of new highly productive varieties, their placement after the best predecessors, in relation to specific cultivation conditions, taking into account their biological characteristics, will increase productivity, gross yields of high quality grain in all regions of cultivation of this strategic crop.

**Key words:** winter wheat, variety, predecessor, yield, grain quality, cultivation technology

### REFERENCES

1. Alabushev V.A. Variety as a factor in the innovative development of grain production. *Grain Economy of Russia*. 2011. № 3. Pp. 8–11. [\(In Russian\)](#)
2. Beltyukov L.P. *Sort, tekhnologiya, urozhaj* [Variety, technology, harvest]. Rostov-na-Donu: Kniga, 2002. Pp. 59–61. [\(In Russian\)](#)
3. Berbekov N.L., Khaniev M.H., Malkanduev H.A. *Ozimaya pshenica v Kabardino-Balkarii* [Winter wheat in Kabardino-Balkaria]. Nal'chik, 1979. 75 p. [\(In Russian\)](#)
4. Bepalova L.A., Kudryashov I.N., Aulov A.N. [et al.] Varietal structures - a systemic factor in the intensification of selection and production of wheat grain. *Zemledeliye*. 2014. No. 5. P. 41–43. [\(In Russian\)](#)
5. Galichenko I.I. Yield of winter wheat depending on predecessors. *Grain Economy of Russia*. 2015. № 2. Pp. 3–7. [\(In Russian\)](#)
6. Gromova S.N., Skripka O.V., Samofalov A.P., Podgornyy S.V. Yield and quality of varieties and lines of winter soft wheat of FGBNU named after G.I. Kalinenko breeding according to various predecessors. *Grain Economy of Russia*. 2017. № 3(51). Pp. 46–51. [\(In Russian\)](#)
7. Gubanov Ya.V., Ivanov N.N. *Ozimaya pshenica* [Winter wheat]. Moscow: Agropromizdat, 1988. Pp. 209–303. [\(In Russian\)](#)
8. Dubovik D.V., Vinogradov A.Yu. Influence of agricultural practices in different weather conditions on the yield of winter wheat grain. *Bulletin of the Kursk State Agricultural Academy*. 2014. Pp. 44–46. [\(In Russian\)](#)
9. Malkandueva A.H. *Priemy povysheniya produktivnosti i kachestva zerna ozimoy pshenicy v central'noj chasti Severnogo Kavkaza* [Methods for increasing the productivity and quality

of winter wheat grain in the central part of the North Caucasus]. Nal'chik: Print-Centr, 2018. Pp. 38–54, 195–204. [\(In Russian\)](#)

10. Malkanduev H.A., Malkandueva A.H., Ashkhotov A.M., Shamurzaev R.I. The influence of predecessors on increasing the yield and grain quality of winter wheat in the conditions of the steppe zone. *Saharnaya svekla* [Sugar Beet]. 2014. № 7. Pp. 42–44. [\(In Russian\)](#)

11. Malkanduev H.A., Malkandueva A.H., Shamurzaev R.I., Gazheva R.A. Predecessors, yield and grain quality of winter wheat in the foothill zone of Kabardino-Balkaria. *Grain Economy of Russia*. 2015. № 4. Pp. 58–61. [\(In Russian\)](#)

12. Malyuga N.G., Tarasenko N.D. Influence of growing conditions and fertilizers on the yield and grain quality of winter wheat in the North Caucasus. *Trudy VIUA*. 1985. Pp. 71–79. [\(In Russian\)](#)

13. Melnik A.F., Kondrashin B.S., Mitjushkin N.I. The influence of predecessors on the yield and grain quality of winter wheat. *Bulletin of agrarian science*. 2009. № 4 (09). Pp. 27–30. [\(In Russian\)](#)

14. Mineev V.G. *Agrotekhnicheskie osnovy povysheniya kachestva zerna pshenicy* [Agrotechnical bases for improving the quality of wheat grain]. Moscow: Kolos, 1981. Pp. 107–244.

15. Parahin N.V. *Ekologicheskaja ustojchivost' i effektivnost' rastenievodstva* [Environmental Sustainability and Crop Efficiency]. Moscow: Kolos, 2002. 197 p. [\(In Russian\)](#)

16. Pruckov F.M., Osipov I.P. *Intensivnaya tekhnologiya vozdelevaniya zernovykh kul'tur* [Intensive technology of cultivation of grain crops]. Moscow: Rosagropromizdat, 1990. Pp. 56–62.

17. Romanenko A.A., Bepalova L.A., Kudryashov I.N. *Novaya sortovaya politika i sortovaya agrotehnika ozimoy pshenicy* [New varietal policy and varietal agricultural technology of winter wheat]. Krasnodar: Edvi, 2005. Pp. 3–224. [\(In Russian\)](#)

18. Tangiev M.I., Malkanduev H.A., Malkandueva A.H., Bazgiev M.A., Barkinhoev M.M. [et al.] *Adaptivnaya tekhnologiya vozdelevaniya ozimyykh zernovykh kul'tur v central'noj chasti Severnogo Kavkaza* [Adaptive technology of cultivation of winter crops in the central part of the North Caucasus]. Nal'chik, 2009. 184 p. [\(In Russian\)](#)

19. Telitchenko N.I. Comparative assessment of the yield of winter wheat in the USP "Luch" Gorodishche. *Nauchnyj vestnik VGSHA/Agronomija*. 2004. Vyp. 3. Pp. 4–6. [\(In Russian\)](#)

20. Shokov N.R., Maljuga N.G. *Ozimaja pshenica v Krasnodarskom krae* [Winter wheat in the Krasnodar Territory]. Krasnodar: Edwy, 2000. 460 p.

#### **Information about the authors**

**Malkanduev Hamid Alievich**, Doctor of Agricultural Sciences, Senior Researcher, Institute of Agriculture – branch Kabardino-Balkarian Scientific Center of the Russian Academy of Sciences; 360004, Russia, Nalchik, 224 Kirov street;

[malkandyewaax@mail.ru](mailto:malkandyewaax@mail.ru), ORCID: <https://orcid.org/0000-0003-4946-3818>

**Shamurzaev Rustam Ilyasovich**, Candidate of Agricultural Sciences, Senior Researcher, Institute of Agriculture – branch Kabardino-Balkarian Scientific Center of the Russian Academy of Sciences; 360004, Russia, Nalchik, 224 Kirov street;

[tama8333@mail.ru](mailto:tama8333@mail.ru), ORCID: <https://orcid.org/0000-0002-0169-6826>

**Malkandueva Aminat Khamidovna**, Candidate of Agricultural Sciences, Senior Researcher, Institute of Agriculture – branch Kabardino-Balkarian Scientific Center of the Russian Academy of Sciences; 360004, Russia, Nalchik, 224 Kirov street;

[malkandyewaax@mail.ru](mailto:malkandyewaax@mail.ru), ORCID: <https://orcid.org/0000-0003-4306-3733>