


consideration the nutrient demand of modern maize hybrids. This adjustment could be based on field experiments that need to be conducted in the different soil-climatic conditions of the maize growing regions. This will allow both to improve economic returns on fertilizer investments and to maintain soil fertility. Results of recent short-term field experiments conducted in Southern Russia allow us to conclude that later-maturing hybrids responded better to fertilizer compared to early maturing hybrids. 

Dr. Nosov is Director, IPNI Southern and Eastern Russia Region; e-mail: vnosov@ipni.net. He is located in Moscow. The author acknowledges Dr. R.V. Kravchenko and Dr. T.R. Toloraya and their co-researchers for providing some details and specifications.

References

- Bagrintseva, V.N. and G.N. Sukhoyarskaya. 2009. *Agrochemistry*, 4: 38-42. (In Russian).
- Bagrintseva, V.N., V.F. Nechaev, V.S. Vardanyan et al. 2009. In V.S. Sotchenko (ed.). *Breeding, Seed Production, Maize Cultivation Technology*. Russian Maize Res. Inst., Pyatigorsk, pp. 224-233. (In Russian).
- Belyukov, L.P. and I.M. Tyurin. 2009. *Proc. Int. Conf. on Development of Innovative Potential in Agrarian Production, Science and Education*. Vol. 2. Don State Agrarian University, Persianovskiy, pp. 67-68. (In Russian).
- Karova, I.A. and M.A. Shavaev. 2009. *Agrochemistry*, 8: 19-22. (In Russian).
- Kravchenko, R.V. 2009. *Agrochemistry*, 8: 15-18. (In Russian).

Table 3. Agronomic efficiency of applied NPK (N+P₂O₅+K₂O) in maize from recent short-term field experiments conducted in Southern Russia.

Region	Soil type	Number of years	Number of hybrids	kg N/ha + kg P ₂ O ₅ /ha + kg K ₂ O/ha	Agronomic Efficiency of NPK (kg of grain/kg NPK)	Reference
Annual rainfall 500-600 mm						
Stavropol Krai	Common chernozem	3	6	120 ¹ +90+90	1.8 - 3.5	Bagrintseva and Sukhoyarskaya, 2009
	Leached chernozem	3	8	110 ² +80+80	2.7 - 17.2	Kravchenko, 2009
Rostov Oblast	Common chernozem	2	4	60+40+30	4.2 - 4.6	Belyukov and Tyurin, 2009
	Leached chernozem	3	3	90+60+30	5.6 - 5.8	Karova and Shavaev, 2009
Kabardino-Balkar Republic	Common chernozem	3	3	90+60+30	5.4 - 5.7	
Annual rainfall 450-550 mm						
Stavropol Krai	Common chernozem	1	12	80+80+80	0 - 7.6	Kravchenko et al., 2009
	Common chernozem	3	3	60+60+60	1.2 - 10.5 ³	Bagrintseva et al., 2009
¹ 90 kg N/ha applied in the fall prior to tillage + 30 kg N/ha applied in the spring prior to cultivation. ² 80 kg N/ha applied in the fall prior to tillage + 30 kg N/ha applied in the spring prior to cultivation. ³ Figures for maximum plant density in this experiment (70 thousand plants/ha).						

- Kravchenko, R.V., O.V. Troneva and V.I. Prokhoda. 2009. In A.A. Romanenko et al. (eds.). *Genetics, Breeding and Maize Cultivation Technology*. Krasnodar Res. Inst. of Agriculture, Krasnodar, pp. 205-210. (In Russian).
- Malakanova, V.P., D.V. Lomovskoy, T.R. Toloraya, et al. 2009. In A.A. Romanenko et al. (eds.). *Genetics, Breeding and Maize Cultivation Technology*. Krasnodar Res. Inst. of Agriculture, Krasnodar, pp. 232-239. (In Russian).
- ROSSTAT. 2010. Federal State Statistics Service. <http://www.gks.ru/wps/portal/english>.
- Shmalko, I.A. and V.N. Bagrintseva. 2007. *Proc. Regional Workshop of Agrochemists of the Geographical Network of Field Experiments with Mineral Fertilizers in the Northern Caucasus*. Russian Res. Inst. of Agrochemistry, Moscow, pp. 155-160. (In Russian).
- Toloraya, T.R., V.P. Malakanova, D.V. Lomovskoy, et al. 2008. *Agrochemistry*, 12: 35-39. (In Russian).

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