

ISSN 2412-0324 (English ed. Online)
ISSN 0131-6397 (Russian ed. Print)
ISSN 2313-4836 (Russian ed. Online)

AGRICULTURAL BIOLOGY

Since January, 1966

PLANT
BIOLOGY

Vol. 52, Issue 1
January-February

2017 Moscow

EDITORIAL BOARD

I.V. SAVCHENKO (Moscow, Russia) — Chairman (plant biology)

BESPALOVA L.A. (Krasnodar, Russia)	LITVINOV S.S. (Moscow, Russia)
DRAGAVTSEV V.A. (St. Petersburg, Russia)	LUGTENBERG E.J.J. (Leiden, The Netherlands)
DZYUBENKO N.I. (St. Petersburg, Russia)	LUKOMETS V.M. (Krasnodar, Russia)
FEDOROVA L.M. (editor-in-chief) (Moscow, Russia)	PIVOVAROV V.F. (Moscow, Russia)
GONCHARENKO A.A. (Moscow, Russia)	SANDUKHADZE B.I. (Moscow, Russia)
GORBACHEV I.V. (Moscow, Russia)	SEDOV E.N. (Orel, Russia)
KHARITONOV E.M. (Krasnodar, Russia)	SHABALA S. (Tasmania, Australia)
KHOTYLEVA L.V. (Minsk, Belorussia)	TIGERSTEDT P.M.A. (Esbo, Finland)
KORPELA T. (Turku, Finland)	TIKHONOVICH I.A. (St. Petersburg, Russia)

Covered in Scopus, Web of Science (BIOSIS Previews, Biological Abstracts, Russian Science Citation Index), Agris

Science editors: E.V. Karaseva, L.M. Fedorova

Publisher: Agricultural Biology Editorial Office NPO

Address: build. 16/1, office 36, pr. Poleskii, Moscow, 125367 Russia

Tel: + 7 (916) 027-09-12

E-mail: felami@mail.ru, elein-k@yandex.ru **Internet:** <http://www.agrobiology.ru>



For citation: Agricultural Biology,
Сельскохозяйственная биология, Sel'skokhozyaistvennaya biologiya

ISSN 0131-6397 (Russian ed. Print)
ISSN 2313-4836 (Russian ed. Online)
ISSN 2412-0324 (English ed. Online)

© Agricultural Biology Editorial Office (Редакция журнала
«Сельскохозяйственная биология»), 2017

CONTENTS

REVIEWS

- Kulaeva O.A., Kliukova M.S., Povydysh M.N. et al.* Plant defensins: biological function, mechanisms of action and methods of analysis (review) 3
- Dykman L.A., Shchyogolev S.Yu.* Interactions of plants with noble metal nanoparticles (review) 13

POTATO FARMING: SCIENCE AND TECHNOLOGIES

- Khlestkin V.K., Peltek S.E., Kolchanov N.A.* Target genes for development of potato (*Solanum tuberosum* L.) cultivars with desired starch properties (review) 25
- Strygina K.V., Khlestkina E.K.* Anthocyanins synthesis in potato (*Solanum tuberosum* L.): genetic markers for smart breeding (review) 37
- Yermishin A.P., Voronkova E.V.* Development of initial material for marker assisted potato (*Solanum tuberosum* L.) parental line breeding at the diploid level (review) 50
- Saik O.V., Demenkov P.S., Ivanisenko T.V. et al.* Development of methods for automatic extraction of knowledge from texts of scientific publications for the creation of a knowledge base SOLANUM TUBEROSUM 63
- Novikova L.Yu., Kiru S.D., Rogozina E.V.* Valuable traits of potato (*Solanum* L.) varieties as influenced by climate change in European Russia 75
- Fadina O.A., Beketova M.P., Sokolova E.A. et al.* Anticipatory breeding: molecular markers as a tool in developing donors of potato (*Solanum tuberosum* L.) late blight resistance from complex interspecific hybrids 84
- Antonova O.Yu., Apalikova O.V., Ukhatova Yu.V. et al.* Eradication of viruses in microplants of three cultivated potato species (*Solanum tuberosum* L., *S. phureja* Juz. & Buk., *S. stenotomum* Juz. & Buk.) using combined thermo-chemotherapy method 95
- Burygin G.L., Popova I.A., Kargapolova K.Yu. et al.* A bacterial isolate from the rhizosphere of potato (*Solanum tuberosum* L.) identified as *Ochrobactrum lupini* IPA7.2 105
- Shcherbakov A.V., Shcherbakova E.N., Mulina S.A. et al.* Psychrophilic endophytic *Pseudomonas* as potential agents in biocontrol of phytopathogenic and putrefactive microorganisms during potato storage 116

Brassica: MOLECULAR MAKERS AND IN VITRO BREEDING

- Artemyeva A.M., Solov'eva A.E., Berensen F.A. et al.* Ecological and genetic evaluation of morphological and biochemical characters of quality in *Brassica rapa* L. accessions from VIR collection 129
- Pivovarov V.F., Bondareva L.L., Shmykova N.A. et al.* New generation hybrids of white cabbage (*Brassica oleracea* L. convar. *capitata* var. *alba* DC) based on doubled haploids 143

EVALUATION AND SELECTION OF GENOTYPES

- Kharitonov E.M., Goncharova Yu.K., Ochkas N.A. et al.* Application of multidimensional methods to separate varieties on their response to environment factors 152
- Porokhovina E.A., Pavlov A.V., Brach N.B. et al.* Carbohydrate composition of flax mucilage and its relation to morphological characters 161

BIOEFFECTS OF METALS AND THEIR FORMS

- Korotkova A.M., Lebedev S.V., Kayumov F.G. et al.* Biological effects in wheat (*Triticum vulgare* L.) under the influence of metal nanoparticles (Fe, Cu, Ni) and their oxides (Fe₃O₄, CuO, NiO) 172
- Ul'yanenko L.N., Reva E.V., Synzynys B.I.* Cytogenetic effects in *Allium cepa* L. resulted from separate and combined exposure to Cu, Zn and Ni 183
- Yausheva E.V., Sizova E.A., Gavrish I.A. et al.* Effect of Al₂O₃ nanoparticles on soil microbiocenosis, antioxidant status and intestinal microflora of red Californian worm (*Eisenia foetida*) 191

FRUIT AND BERRY CROPS — PHYSIOLOGY AND MORPHOLOGY

- Boyarskikh I.G.* Features of *Lonicera caerulea* L. reproductive biology 200
- Kiseleva N.S.* Method of determination of pear leaf area on linear measurements by calculation of correction factors and variation statistics approach 211