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## MODERN TRENDS IN BREEDING OF VEGETABLE CROPS

**Pivovarov V.F., Seredin T.M., Krivenkov L.V., Gerasimova L.I.**  
Assessment of the samples of winter garlic based on accumulation level of heavy metals at background concentration

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The results of estimation of 2 varieties and 6 collection samples of winter garlic (*Allium sativum* L.) of resistance to accumulation of plumbum, cadmium, cuprum, and mercuric in condition of the Moscow region are presented. The biochemical content of the studied samples of winter garlic is shown.

**Key words:** winter garlic, accumulation of heavy metals, biochemical content

**Shantasov A.M., Sokolov S.D., Bocharnikov A.V., Maletina V.A.**  
Determination of fertility and pollen viability of breeding line of patty-pan squash with male sterility of functional type

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of Irrigated Vegetable and Melon Growing

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This article describes the features of the development of male sterility trait of functional type in patty-pan squash. The viability of pollen grains in different periods of vegetation was studied. The determined fertility ability of pollen can be used for hybrid seed production of different varieties of pumpkin.

**Key words:** male sterility of function type, patty-pan squash, pumpkin, pollen viability

## PLANTS PHYSIOLOGY AND BIOCHEMISTRY

**Naumova N.B.<sup>1</sup>, Fotev Y.V.<sup>2</sup>, Bugrovskaya G.A.<sup>1</sup>, Belousova V.P.<sup>2</sup>**  
Content of macro- and micro-elements of vigna, kiwano, bitter melon, and wax gourd in greenhouse cultivation.

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The content of macro- (C, N, P, S) and micro-elements, as well as some metals was analyzed in fruits, leaves, stems, and roots of vigna, kiwano, bitter melon, and wax gourd growing in the condition of unheated polyethylene-covered greenhouse in Novosibirsk (Russia). The revealed low concentration of sulfur and big atomic ratio of nitrogen to sulfur in plant phytomass is the result of insufficient macro-elements supply from fertilizers and peat-substrates. The kiwano fruits are characterized by high concentration of K, Ca, Mg, Zn, Fe, Cu, and Ni and therefore is worth introducing this culture in Russia.

**Key words:** vigna, kiwano, bitter melon, wax gourd, macro nutrients, micronutrients, phytomass

**Golubkina N.A., Fedorova M.I., Stepanov A.N., Nadezhkin S.M.**  
Content of micro- and macro-elements of parsnip (*Pastinaca sativa* L.)

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The two varieties of parsnip, «Krugliy» and «Bely aist», were estimated for micro- and macronutrients. The differences in accumulation of 25 micro- and macro-elements between two varieties were revealed. It was found that parsnip is the source of phosphorus, potassium, magnesium, ferrum, calcium, silicon, cobalt, chrome. The cultivar «Krugliy» is able to accumulate the high concentration of iodine.

**Key words:** parsnip, micro- and macronutrients, daily intake

## THEORY AND PRACTICE OF CROPS BREEDING AND SEED PRODUCTION

**Anokhina V.S.<sup>1</sup>, Sauk I.B.<sup>1</sup>, Romanchuk I.Y.<sup>1</sup>, Zhardetskiy S.S.<sup>1</sup>, Dronov S.M.<sup>1</sup>, Chaikovskiy A.I.<sup>2</sup>**  
Molecular markers

for vegetable pea samples

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The paper presents the results of research on the presence in genomes of pea hybrid materials of the DNA regions complementary to the primers that are associated with the biochemical characteristics and resistance to powdery mildew.

**Key words:** hybrid, molecular marker, resistance to powdery mildew, vegetable pea

## PROBLEMS OF STORAGE AND PROCESSING OF VEGETABLE PRODUCTS

**Machulkin V.A.<sup>1</sup>, Sannikova T.A.<sup>1</sup>, Pavlov L.V.<sup>2</sup>**

Natural loss of biomass

of early-ripening potato

depending on variety

and soil type during short-time storage

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The storage of yield of potato depends on quality of potato tuber. During storage the respiration process and evaporation are the cause of natural loss of potato tuber biomass. In our experiments, the loss of mass depended on variety, tuber size, and place of growing. During first day of storage, the natural loss of biomass of cv. «Rosara» was 2,9-3.1%, and cv. «Udacha» – 1,9-6.3%.

**Key words:** potato, variety, tuber size, soil type, storage

## PLANT PROTECTION

**Bukharov A.F., Baleev D.N., Bagrov R.A.**

Minstrel bug (*Graphosoma lineatum* L.)

as a cause of germless seeds, low productivity,

and seed quality of Umbelliferae crops

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In condition of Ramenskiy district (Moscow region) there was wide spreading of minstrel bug (*Graphosoma lineatum* L.), which is cause of yield loss of vegetable crops of Umbelliferae family. It was found up to nine mature insects per one plant. The larvae and imago feed mainly on buds, flowers, and seeds in all stages of its development. Because of damaging the seed productivity is decreased by 11-45%, the weight of 1000 seeds is decreased by 12-40%, germination energy is decreased by 13-100%, and germination ability is decreased by 10-82%. The germless seeds can range from 5% to 15 % and seeds without endosperm can range from 7% to 36 %.

**Key words:** seeds, seed productivity, embryo, germination, Umbelliferae, Pests, *Graphosoma lineatum* L.

**Golubev A.S., Kirilenko E.I., Borushko P.I.**

Modern assortment of herbicides

for protection of white head cabbage

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The species of pests spreading in cabbage planting are listed in the article. The recommendation for the herbicides application for cabbage protection against different pests is presented. The ways of improvement of herbicides application are shown.

**Key words:** herbicides assortment, pests, white head cabbage

**Timina L.T., Timin N.I., Fedorova M.I., Engalicheva I.A.**

Rot of plants of the Apiaceae family

caused by pathogen *Trychothecium roseum* L.

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The previously unknown and not wide spread pathogen of carrot, *Trychothecium roseum* L., was revealed. The etiology and pathogenicity of this pathogen were studied.

**Key words:** carrot, celery, parsnip, Apiaceae family, sensitivity, pathogen, *Trychothecium roseum* L.

**Monakhos G.F.<sup>1</sup>, Nguyen T.L.<sup>2</sup>, Nguyen M.L.<sup>2</sup>**

Breeding of tomato (*Lycopersicon esculentum*)

resistant to tomato spotted wilt virus

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The results of tomato lines resistance test to tomato spotted wilt virus and its comparison to molecular marker SCAR Sw421 genotyping data is shown. A molecular marker SCAR Sw421 analysis allowed identifying homozygous and heterozygous tomato genotypes possessing Sw5 alleles in segregating populations. Selected tomato lines possessing dominant homozygous alleles of Sw5 gene represent a tomato germplasm resistant to tomato spotted wilt virus and would be useful for following crop improvement.

**Key words:** *Lycopersicon esculentum*, tomato, allele Sw5, tomato spotted wilt virus, molecular marker

## VARIETIES AND HYBRIDS OF VEGETABLE CROPS

**Temirbekova S.K., Malakhova E.I., Kulikov I.M.**

Imamkulova Z.A., Afanasieva Y.V.

Vegetable basil (eugenol type) in condition

of the Central Region of Russia

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As a result of long-term study and several rounds of selection, the new variety of eugenol type of basil «Zhemchuzhina Podmoscovya» was developed for the Central Region of Russia. This variety was included in the State Register of selection achievements.

**Key words:** vegetable basil, eugenol type, anthocyan color, yield, weight of 1000 seeds

## STANDARDS FOR SEEDS AND VEGETABLE PRODUCTS

**Pavlov L.V.<sup>1</sup>, Kondratyeva I.Y.<sup>1</sup>, Puchkov M.Y.<sup>2</sup>,**

**Sannikova T.A.<sup>2</sup>, Machulkin V.A.<sup>2</sup>, Avdeev Y.I.<sup>2</sup>**

Ware tomato. Original varieties (typical technological process)

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The specification for performance of technological operation for cultivation, storage, and transporting of original tomato varieties are presented. The standards for technological process was developed for the first time in Russia.

**Key words:** tomato, original varieties, typical technological process, storage, transporting, quality, control, package

**Pavlov L.V., Shtikhno A.P., Sergeeva V.A.**

Quality parameters of cow pea seeds

for development of organizing standard

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Based on data of varietal and sowing characteristics of cow pea seeds the organizing standard «Cow pea seeds. Varietal and sowing characteristics. Specifications» STO 45727225-40-2011 was developed.

**Key words:** standard, cow pea, original seeds

## AGROTECHNICS OF VEGETABLE CROPS

**Chernetskiy V.M., Vdovenko S.A., Kostyuk O.A.**

Particularity of assimilative leaf surface and photosynthetic ability of vegetable bean depending on topping

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The results of influence of topping on the development of the leaf surface and photosynthetic ability of plants of vegetable bean are presented.

**Key words:** topping, assimilative leaf surface, growth stage of plant, photosynthetic ability, interstage period

**Chefonova N.V.**

Mulching of soil at drop-irrigating cultivation of late-ripening

white head cabbage

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of National Academy of Agricultural Science of Ukraine

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The results of influence of types of irrigation and soil mulching on weed infestation, yield, and phytosanitary state of late-ripening white head cabbage are presented. Using of drop-irrigation increased the yield of the crop. The mulching of soil decreased the weed infestation and degree of development of black rot of white head cabbage at all types of irrigation.

**Key words:** white head cabbage, mulching of soil, sprinkling irrigation, drop-irrigation, weed, yield.

**Zhidkov V.M., Khrichenko A.V.**

Soil treatment and efficiency of herbicides application for red beet cultivation on the light chestnut soil of the Volgograd region.

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The optimal combination of soil treatment and herbicides application in condition of the light chestnut soils of the Volgograd region is suggested.

**Key words:** red beet, soil treatment, herbicides, weed infestation, yield

## DEVOTED TO THE MEMORY OF THE SCIENTIST

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