AGRICULTURAL SCIENCES

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INTRODUCTION OF DOGWOOD (CORNUS MAS L.) FORMS IN THE MIDDLE URALS

Dogwood is one of the oldest fruit plants. Cultivated as a fruit and ornamental plant, undemanding to the soil, rather drought-resistant and photophilic. Well standing the haircut and provides abundant growth. On a permanent place it is planted at the age of two years. Fruits can be eaten raw, and processed for making jams, compotes and marmalades. Dogwood is known from the times immemorial, and shows the prospects of the species for introduction as a fruit culture in the Middle Urals. The paper highlights the main issues of morphometric characteristics of the fetus and bones of 24 forms of dogwood culture. Fruits drupes reach up to three centimeters long. In shape, the fruits are distinguished as cylindrical and elongated-oval. According to the terms of maturation, the samples are grouped into middle-ripe and late-ripe, according to the color of the fruits: red, dark red, light red. In size, the fruits are large and medium. According to the taste of the fruit pulp, sweet and sour-sweet forms were isolated. The fruit surface of the studied specimens is mostly smooth, but there is also a tubercleone. Male dogwood fruit have a pleasant taste and peculiar aroma. Dogwood drupes consist of stony cells, have big air cavities, and inside the drupe itself, there are 2 seed chambers, typically, all of the samples. Dogwood fruit of some forms reach the weight of up to 4.5 g, whereas the yield of pulp from the drupes the fruit's weight is 80.2–81.0 %. In natural and climatic conditions of the Middle Urals the dogwood can successfully grow and give good harvest of fruit and of high quality.

Key words: Dogwood, fruit, seed, ripening period, weight.

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GARDENING IN THE OLD PARK "ALEXANDRIA"

The Park «Alexandria» of the NAS of Ukraine was created more than 200 years ago by the crown Hetman of Poland Ksaveriy Branitsky and Alexandra Engelhardt, Niece of G. Potemkin, chamber-

maid of honor of Cathe-rine II. Now it is the best landscape Park in Ukraine and one of the largest parks in Europe. An important part of the ancient Park was gardening. The purpose of our research was to systematize archival data on the gardening of the ancient Park «Alexandria», the experience of restoring garden complexes. The historical-archival method was used in the work. It is known about three fruit gardens – «Southern», «Russian» and the garden «Moore». The latter, created by gardener August Yens in 1816, had a complex structure that provided a specific microclimate and allowed to grow in the Northern part of Ukraine exotic fruit plants and many varieties of grapes. The greatest memories of famous people of that time, mentions in official publications remained about the Grand greenhouse of the Park «Alexandria», where heat-loving plants were grown, figs, persimmons, lemon, orange, pepper, peach trees, melons and strawberries in winter. To our time, «Southern» and «Russian» gardens have not survived. Since 2007, the restoration of the garden «Moore» began. In a short time, a large collection of fruit plants, including historical varieties of Apple trees and created a unique form garden, in particular, 2 pyramids. The latter are «built» of a metal frame and apple trees, observing all the proportions of the Egyptian pyramids. Currently, this site is fully restored and is one of the attractions of the Park.

Key words: ancient park, „Alexandria", gardening, greenhouse, „Moore" garden, molded garden, restoration.

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INTRODUCTION OF BATATA IN THE UDMURT REPUBLIC

The most important crop issue is the introduction of food plants. One of them is sweet potato (Ipomoea batatas Lam.). In 2018, a study of 16 varieties of sweet potatoes was conducted. The aim of the research was to assess the prospects of introduction and of the yield of sweet potato variety specimens in the conditions of the Udmurt Republic. The experiment is a small-sized plot, replication is three-fold, the arrangement of plots is systematic, the number of plants on a plot is 4 pcs. Studies were carried out in two agroclimatic regions of Udmurtia: central (Celtinsky District, village of Khaldy) and southern (KarakulinskyDistrict, village of Nyrginda). In the central agroclimatic region, the average number of tubers formed was 7.0 pcs., of 6 variety samples: White NBS, Amateur, Afghan, Brazilian, Betty and Pobeda 100 had formed marketable tubers (more than 75 g). A surely average size of tubers was observed for in the White NBS and Lyubitelsky, 130.9 and 109.2 g, respectively. High yield from the plant was observed in the variety of the specimens followed: Victory 100 and White NBS. In the southern agroclimatic region, the average number of formed

tubers was 9.6 pcs, 12 variety samples formed commodity tubers (more than 75 g). Significantly the largest average size of tubers was observed in the White NBS, Pobeda 100, BM 17 and Beauregard (NSR_{05} = 32.65). High yield from the plant was observed in the variety of specimens: White NBS, VM 17 and Druzhkovsky. The obtained results testify to the prospects of cultivating sweet potatoes in the Republic and thus allow selection of variety samples for specific agro-climatic regions: for the central and northern regions of Udmurtia and adjacent regions of Perm Territory and Kirov Region, the following sweet samples are recommended, which are able to form marketable tubers under these conditions: White NBS, Amateur, Afghan, Brazilian and Victory 100. For the southern regions of Udmurtia, north-east of Tatarstan and north-west of Bashkiria the following sweet potato cultivars that are capable of forming commodity tubers under the given conditions are recommended by the irians: White NBS, Pobeda 100, BM 17, Beauregard, Afghan, Druzhkovsky, Amateur, Brazilian, Vinnitsa, Beige and Baiu Bell.

Key words: sweet potato, batat, Ipomoea batatas Lam, variety sample, yield.

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APPLICATION OF MICROBIOLOGICAL FERTILIZERS FOR GROWING SHALLOTS

The results of studies of microbiological fertilizers on shallots in the Udmurt Republic are presented. The objective of the research was to study the effect of planting material, variety specimens and top dressing by microbiological fertilizers on the yield and quality of shallots.

Shallots are demanding on nutritional conditions, given the poor development of the root system, the bulk of which is located in the upper soil layer. The change of agrochemical management to agrobiological seems very promising. In this regard, EM technology has achieved great success. Due to the symbiotic activity of various cultures of effective microorganisms, a drug made on their basis has a complex effect on soil biocenosis. Since 1998, in Russia mainly domestic EM preparations have been used in the cultivation of agricultural crops, created on the basis of microorganisms of the Baikal ecosystem. The main drug of this group is Baikal EM-1. Production tests of the Russian EM technology have shown its high efficiency. These fertilizers stimulate plant growth, inhibit the development of phytopathogens, provide plants with nitrogen (due to its fixation from the atmosphere), and also increase the intake of other elements of plant mineral nutrition.

In 2016, on average, fertilizing with HUMATEM fertilizer provided an increase in the total yield of shallots. In 2017, when hallots of a variety sample 2/16 fed with microbiological fertilizers (Baikal EM-1, HUMATEM, Emix), a significant increase in total and marketable yield had been obtained.

Key words: shallots, microbiological fertilizers, variety samples, planting stock, productivity.

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BIOTECHNOLOGICAL METHOD OF ROSES REPRODUCING AS INNOVATION IN NURSERIONG OF THE UDMURT REPUBLIC

In the article, the effect of various concentrations of 6-benzylaminopurine cytokinin (6-BAP, 1.0, 2.0, and 3.0 mg/L) on the success of clonal micropropagation of Camelot climbing roses was studied. The concentration of 6-BAP 1 mg/l is optimal: the net reproduction was 3.9 pcs/stalk, which is 1.2 pcs/stalk more than the hormone level 3.0 mg/l with LSD_{05} = 1.4. On the control medium after the propagation stage 35.8 % of the cuttings were suitable for rooting, this indicator in the experimental variants had reached as much as 15.8 and 22.8 %, respectively (LSD_{05} = 18.4).

Key words: rose, clonal micropropagation, 6-benzylaminopurine.

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ASSESSING PUMPKIN VARIETIES UNDER CONDITIONS OF THE UDMURT REPUBLIC

The results of the two years' research on the characteristics of the growth and productivity of varieties of large-fruited and nutmeg pumpkins when grown in the open grounds in the Udmurt Republic are presented. The research objectives encompassed the study of the characteristics of the growth and development of pumpkin varieties, and identification of the most productive varieties for the Udmurt region. The bookmark of experiments, records and observations were carried out

in accordance with the requirements for experiments in vegetable growing. The research results showed that in the conditions of the Udmurt Republic, higher productivity is formed by the varieties of pumpkin Marble, Pearl, Honey Tale. The same pumpkin varieties proved to be more adaptive to the conditions of the Udmurt Republic. The studied pumpkin varieties Kroshka and Zolotaya Grusha hads also shown a significant decrease in yield by 29.0 and 21.0 t/ha. Valuable portioned pumpkin varieties Kroshka and Zolotaya Grusha had turned out to be less adaptable to growing conditions in the Udmurt Republic.

Key words: large-fruited pumpkin, clary squash, productivity.

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THE INFLUENCE OF GROWTH REGULATOR OF HB-101 AND EXPERIMENTAL LED VETOABLECHANGE ON THE RHIZOGENESIS OF THE GARDEN STRAWBERRY (*FRAGARIA ANANASSA DUCH*) *IN VITRO*

In the article there are presented experimental data 2017–2018 on the effect of the growth regulator HB-101 and experimental LED phytoradiators on the rooting of the garden strawberry varieties (Fragaria ananassa duch) in conditions in vitro are presented. The object of research is micro-cuttings of the garden Korona and Brighton strawberries. The HB-101 growth regulator at concentrations of 50, 100 and 150 μl/L and the rhizogenesis inducer of indolyl-3-butyric acid (IMA) at a concentration of 0.5 mg/L had been studied, by contributing the above chemicals to the nutrient medium for rooting the garden strawberries. Strawberry micro-cuttings were cultured under illumination with fluorescent lamps for the control variant; whereas programmable LED combined phytoradiators with a changing spectrum and flashing were being studied. It was established that the use of HB-101 at a concentration of 100 μl/L, and when illuminated by both experimental LED phytoradiators in 20 days after having been planted for rooting, contributed to a significant increase in rooting of Korona strawberries'micro-cuttings to 100 % (at 90.0 % for the control variant). The rooting of micro-cuttings of the remontant Brighton strawberry was 100 % when illuminated with an experimental flashing phytoradiator with the contribution of the growth regulator HB-101 at a concentration of 100 μl/L, 20 days after planting for rooting into the nutrient medium. The onset of rhizogenesis of strawberry micro-cuttings using the HB-101 growth regulator under LED installations in both varieties was observed on the 10th day after having been planted for rooting, whereas for the control variant – on the 20th day. Thus, with the use of the growth regulator HB-101 followed and when illuminated

by experimental LED installations the stage period of rooting for the micro-cuttings of both varieties had reduced from 30 to 20 days, then providing 100 % yield of conditioned microplants by the end of the stage.

Key words: clonal micropropagation, garden strawberry, growth regulator, LED phytoradiator, rhizogenesis.

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INFLUENCE OF MICROBIAL AND MINERAL FERTILIZERS ON THE CONDITION OF THE PIGMENT FUND OF ASSIMILATING ORGANS OF THE FRUITS OF BLUEBERRY AT THE RUN OUT PEATLANDS IN BELARUS

The results of the first investigation held in 2016–2018 are presented as a comparative study of the content of photosynthetic pigments in assimilating organs of V. angustifolium and Northcountry and Northblue V. corymbosum varieties on the background of the contribution of complete mineral and domestic microbial fertilizers MaClor, AMG, Agromic and Bactopin with joint application in an experimental culture at the reclaimed area of a run out peat deposit in northern Belarus. Field experiments were carried out on the site of strongly acidic, low-fertile, completely deprived of vegetation residual layer of ground peat of medium degree of decomposition, represented by the sphagnum-tree-cannon association. The experimental design included 6 options in triplicate and provided for a double-well application of tested fertilizers per season (in May and June): 1 – control, without fertilizing; 2 – the introduction of a 10 % solution of fertilizer MaClor (0.5 l/plant) in combination with dry mycorrhizal preparation AMG at the rate of 100 g per 10 l of working solution, or 5.5 g per 1 plant; 3 – introduction of a 50 % solution of fertilizer MaClor (0.5 l/plant); 4 – introduction of the liquid preparation AgroMik (0.5 l/plant); 5 – introduction of the liquid preparation Bactopin (0.5 l/plant) in combination with the preparation AMH (100 g per 10 l of working solution, or 5.5 g per 1 plant); 6 – the introduction of full mineral fertilizer into the soil, which was used as a «Solution» of brand «B» at a dose of $N_{16}P_{16}K_{16}$ kg/ha ai, or 5 g per 1 plant. In each experiment, 18 blueberry plants were planted. In fresh averaged leaf samples of experimental plants, the content of photosynthetic pigments – chlorophylls a and b – was variably determined by the method of T. N. Godnev, ß-carotene and the amount of carotenoids – according to GOST 8756.22-80. A higher content of plastid pigments in the leaf tissue of V. angustifolium had been established compared with the varieties of V. corymbosum, with its changes less pronounced than theirs against the background of the tested agricultural practices. The greatest stimulating effect had been proved on the accumulation of chlorophylls and carotenoids in V. angustifolium of contribution of microbial preparations – 50 % MacroRa and to a lesser extent had

been shown Bactopin in combination with AMG, while in the varieties V. corymbosum Northcountry and Northblue – the use of 10 % MacroRa in combination with the drug AMG and to a greater extent introduction of $N_{16}P_{16}K_{16}$.

Key words: run out peatland, mineral fertilizers, microbial preparations, blueberry species, assimilating organs, chlorophylls, carotenoids.

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RESULTS OF APRICOT SPECIMENS' STUDIES IN THE CONDITIONS OF THE SOUTHERN ZONE OF THE KRASNOYARSKY KRAI

Apricot is a valuable fruit crop that combines such biological properties as intensive growth, early maturity and rapid growth of the crop. The purpose of the work is to study the specimens of apricot forms and varieties introduced in the south of the Krasnoyarsky Krai, to give a preliminary economic and biological assessment of apricot varieties and to identify promising ones for gardening and selection. The study had been conducted for 6 years (2014–2019), on 15 varieties of common apricot from various regions of the world: Bulgaria, France, Armenia, Ukraine, the Middle Strip and the Far East of Russia, based on the V. K. Zhelezov's nursery-garden in the southern fruit growing zone of the Krasnoyarsky Krai (Krasny Khutor, Shushensky District). The control was a zoned and widely cultivated Sibiryak Baikalova variety. We studied the biology of plant development, the period of fruit formation, winter hardiness and yield indicators. According to the degree of winter hardiness, the following specimens were distinguished: very winter hardy – Manchzhursky, Akademik, Amur, Korolevsky, Serafim, Sibiryak Baykalova; winter hardy – Bai, Peter I, Early Melitopol', Krasnoschyoky; moderately resistant – Van'kov Early, Gift of Heaven, Black Apricot and Shalakh. By accounting for low-yielding yields (yields of less than 80 kg/ha), the following specimens can be classified: Bai, Early Van'kov, Gift of Heaven, Black Apricot; to medium-yielding (yield 80–160 kg/ha) are: Amur, Academician, Royal, Krasnoschyoky, Serafim, Shalakh and variety specimen Son-of-the-Regiment; yields (yields 160–250 kg/ha) include: Manchzhurian, Melitopol'sky

Early and control specimen Sibiryak Baikalova. As a result of research in the conditions of the south of Central Siberia, a number of promising apricot varieties had been identified by a set of indicators that can be recommended for widespread use in amateur gardening and for industrial use: Manchzhurian, Royal, Krasnoschyoky, Melitopol'sky Early, Serafim.

Key words: apricot, productivity, sorts, south zone of gardening, the study of sorts, agronomic and biological features, Krasnoyarsky Krai.

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EFFECT OF VARIETY AND SOWING DATE ON YIELD ONION

This article indicates the impact of varieties and planting dates of the seed-onion on the yield and bulb onion's quality. Objectives: to determine the optimal timing of the bulb onion's seed-onion's planting. The aims of the research were to study the influence of the seed-onion's planting time on the bulb onion's growth, progress and yield. The studies were conducted in the open grounds of the Udmurt Republic according to the «Methodology of field experience» and «Fundamentals of scientific research in agronomy». For study there had been chosen varieties (Factor A): Stuttgarter Riesen (k), Sturon, Penguin, and planting time for the seed-onion (Factor B): 04.05.2018, 10.05.2018 (k), 15.05.2018. Onions were cultivated according to the recognized zonal technology. In the course of research phenological observations, morphometric studies in the main phases of development, accounting yields were carried out. After harvesting, a qualitative assessment of the products was carried out with the determination of biochemical parameters: the content of dry matter, vitamin C, water-soluble sugars, and nitrates. Studies conducted have revealed that the onion Stuttgarter Riesen is characterized by more rapid development. The early planting period contributed to the mass increase and production of bulb onions with an average weight of 138 g, a diameter of 6.9 cm and a bulb height of 4.6 cm. It has also been revealed that in the open ground the highest yield was formed when growing onion varieties of Penguin in the early planting period – 55,3 t/ha. As for the contents of the Vitamin C in the bulb, it has ranged from 5.4 to 9.6 mg/100 g. The bulb onion should be planted out at the earlier dates, say, on May 4, since this date has proved the highest yield of all other varieties: Stuttgarter Riesen – 47,6, Sturon – 42.0, and Penguin 55,3 t/ha, respectively.

Key words: bulb onion, variety, planting date, yield.

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INFLUENCE OF THE COMPOSITION OF THE SOIL SUBSTRATE ON THE SURVIVAL AND GROWTH OF PISTACHIO SEEDLINGS IN CONTAINERS

The article presents the results of using in-container growing grafted planting material of pistachios natural. The composition of the soil substrate for filling containers has a significant effect on the germination, growth and development of pistachio seedlings. When selecting the composition, one should take into account not only the nutritional properties of the substrate, or its physical properties but also the simplicity and affordability of its preparation in a forestry and other enterprises where planting material would be nursed. The aim of the article is to study the effect of the composition of the substrate on the growth of pistachio seedlings natural. The effects of four substrate compositions were studied, namely: 1 – manure 15 %, soil 85 %, 2 – manure 30 %, soil 70 %, 3 – manure 45 %, soil 55 %; 4 – soil 100 % (control). The experiment was carried out in triplicate, the number of plants in the repetition of 24 pieces. The survival rate of plants had shown 98.61 %. An analysis of the experiments showed that the best indicators for height and diameter were obtained using a substrate containing 30% manure and 70 % soil. In this embodiment, the average height indicator exceeded the control by 3.4 for the Student's coefficient, and with diameter by 6.0. When using a substrate containing 15 % manure and 85 % soil, the excess in height was 1.5, and in diameter 3.7. With a further increase in the concentration of manure to 45 % and soil to 55 %, a decrease was observed in height up to 0.4, and in diameter up to 3.9. This reaction of pistachio plants to an increased content of manure in the substrate can be explained by an excess of nitrogen. Based on the above experimental results, we can conclude that the most suitable for growing pistachio seedlings in containers is a substrate containing 30 % manure and 70 % soil.

Key words: pistachio, soil composition, seedlings, container, survival rate, seedling height, barrel diameter.

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ORNAMENTAL WOODY PLANTS IN THE SPA AREA, FOR EXAMPLE, THE SANATORIUM "METALLURG", IZHEVSK

In resort areas, the important role belongs to artistic gardening devices as an essential aesthetic and wellness medical factors. Green spaces, both in terms of architectural and biological, are part of the healing process and relaxation. 86 species of wood and shrub vegetation, which belong to 49 genera from 20 families, are used in landscaping of the sanatorium «Metallurg»'s recreation area. Native woody vegetation makes 30 % of the total species composition, introducents – 70 %. In the study of the species composition of planted recreation area of the sanatorium has revealed 54 species of decorative wood introducents. The enrichment of the species composition of ornamental exotic species mainly is provided with shrubs – 35 species. The role of decorative exotics is determined, the characteristic of geographical origin is given. The most ornamental of the exotic species identified in the North America are 21. A special place in landscape compositions of the sanatorium «Metallurg» presents flowering woody plants – 41 species. They are predominantly shrubs – 34 species. As for flowering trees – 7 species have been related. While working on the improvement of sleeping territories for resting it is necessary to deal not with the whole landscape but with the part of it, i.e. a landscape format. Using exotics in the resort leads to creating an emotionally unlike scenery. From 2013 until 2018, the species composition of the Park of the sanatorium «Metallurg» had been enriched by 24 species of trees and also shrub vegetation. Many of them are classified as rare exotics: Juglans nigra L., J. Cinerea L., J. Regia L., J. Mandshurica Maxim., Acer saccharum Marshall, Aesculus hippocastanum L., Robinia Pseudoacacia L., Quercus rubra L., Forsythia europaea Vahl, Corylus colurna L., Aesculus × carnea, etc. Of great help to enrich the species diversity of the Park in Sanatorium «Metallurg» there was a Department of introduction and acclimatization of plants, UdmFIC Ural Branch of RAS.

Key words: decorative introducents, resort area, species composition, landscape, emotional impact.

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INFLUENCE OF THE VACCINATION METHOD ON THE PARTICULARITIES OF THE SPIDER MITE'S DAMAGE OF *TRIGOSANTHES CUCUMERINA L.* PLANTS

The article presents data on the impact of Trichosanthes cucumerina L. plants' damage by the spider mite. All experiments were laid according to the method described by V. A. Razdobourdin. In the conditions of protected ground there were used recommendations by I. V. Andreyeva et al.

In the run of observations, the optimum temperature and humidity had been recorded, at which

there was an intensive reproduction of the spider mite. The effect of vaccination and the type of stock on the expansion and the degree of damage of Trichosanthes cucumerina L. by a spider mite had been revealed. An adverse effect of the studied stocks on the prevalence and degree of damage by spider mites had bee also found.

It should be noted the damage showed up especially severe on root plants. Accounting for leaf damage was carried out during the period of intensive reproduction of the pest. In the course of research, it was noticed that root-affected variants are most affected. It should be noted that the grafted plants were less damaged. It was found that almost all Trichosanthes cucumerina L. plants are populated by a spider mite, but the prevalence and degree of damage to plants is dependend on the type of stock used.

Referring to the works of scientists, it can be assumed how the affected plants protect themselves and restore after being damaged by the spider mite. The effect of vaccination and the type of stock on the prevalence and degree of damage of Trichosanthes cucumerina L. by an ordinary spider mite (Tetranychusurticae Koch.) had been revealed. Inoculation of Trichosanthes cucumerina L. on rootstock species had been reducing the pest damage.

To reduce the damage of Trichosanthes cucumerina L. plants by a spider mite, the stock Lagenaria siceraria (Molina) Standl proved to be the most effectiveone.

Key words: *s*pider mite, Trichosanthes cucumerina L., graft-rootstock combination, apiary, vaccination method.

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BIOCHEMICAL INDICATORS OF CHINESE ROD (LOBO) VARIETIES WHEN GROWING UNDER CONDITIONS OF THE UDMURT REPUBLIC

Vegetables play an extremely important role in human nutrition. The assortment of vegetables grown and eaten is important as a nutrition for the population and ultimately affects health. Currently, «Asian» plant species, widely cultivated in Southeast Asia, account for a large proportion of the vegetable crops introduced into the culture. One of these new, very valuable cultures for Russia is the Chinese radish. At the same time, the nutritional and dietary value of vegetables depends on their biochemical composition.

The article presents the results of biochemical indicators of new varieties of Chinese radish (LOBA) when grown in open grounds in the Udmurt Republic. In 2019, a one-factor experience was laid in the Uvinsky district of the Udmurt Republic. We studied the varieties of Chinese radish (LOBA) included into the State Register for the Russian Federation: Start, Misato Pink, Esmeralda,

Starbers and Khozyaushka (st.) as a standard sample. Placement of options had been followed by the method of complete randomization, in four repetitions. The square area of the accounting plot was 2×2 m. The sowing date – June 20. Layout of plants 20×30 cm.

As a result of the studies conducted, it had been found out, that the best quality indicators of root crops were shown by Start, Esmeralda and Starbers varieties, which had exceeded the standard Khozyaushka variety by dry matter 3.9, 3.0 and 4.3 %, by vitamin C by 11.1, and 10.9 and 11.0 mg/100 g, respectively. By the content of sugars, Start – 8.5 % and Starbers – 9.0 % exceeded the Hostess standard – 7.5 %. At the same time, the Start and Esmeralda varieties had showen a reduced nitrate content of 757.0 and 347.3 mg/kg, respectively, compared to the Khozyaushka standard – 1042.3 mg/kg. The high nitrate content in root crops, with the excess of MPC, was distinguishing for the Misato Pink variety – 1536 mg/kg, and also significantly inferior to the Khozyaushka standard in dry matter content – 8.0 % and sugars – 6.4 %.

Key words: Chinese radish (LOB), Misato Pink, Starbers, ascorbic acid, nitrates.

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THE INFLUENCE OF GROWTH STIMULATORS ON THE ROOTING OF GREEN CUTTINGS OF CLONAL ROOTSTOCKS OF APPLE

Today, when the production of high-quality agricultural products begins to occupy an important place in the Russian economy and well-being of the population increases, there comes an understanding of the need for the prompt revival of one of the most important branches of agriculture which is gardening. Today, we experience a shortage of quality planting material of apple trees. There are no modern nurseries that meet high quality requirements for planting material in the Udmurt republic. This necessitates to bookmark the queen cells capable of laying down productive gardens on intensive technologies at agricultural enterprises, as well as in KFKh and peasant farming. The experiment in studying the effectiveness of growth stimulants and the type of cuttings on the rooting of green cuttings had been laid down on the territory of the educational botanical garden of the Udmurt State University, in 2019. Recently, semi-dwarf apple varieties have become particularly popular. Due to this, the busied area is lessened, and fruit harvesting becomes much easier. However, caring for such trees shows up some particular qualities of their own. Object of research - clonal stocks of apple trees 54-118 and 60-164. Rooting was carried out inside a film-coated greenhouse with an artificial fogging unit. Substrate – a mixture of sand and peat (1:1). The scheme of planting cuttings 5×5 cm. The ex-periment was tripled and followed by systematic placing. As a regulator of root formation, het-eroauxin, zircon were used, water engaged as control. The beginning of rooting had been observed on July 8. The weather conditions for the growing season May-September 2019 had adversely affected the rooting of green cuttings of the apple tree's

clonal rootstocks. The rooting rate of clonal stocks varied from 2.5 to 23 %. The best results were obtained with cuttings treated with hetero-auxin with half of the top leaf left untouched.

Key words: green cutting, clonal stock, apple tree, root formation stimulator.

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