РЕЗЮМЕТА

на научните публикации и трудове на **Доц. д-р Валерия Стефанова Иванова** от ***катедра "Градинарство"*** **при** ***Аграрния университет*** **– Пловдив**, които не повтарят представените за придобиване на ОНС „доктор" и академичната длъжност „доцент", покриващи националните минимални наукометрични изисквания за придобиване на академичната длъжност "професор" във връзка с участие в

конкурс за академичната длъжност „Професор" в област на висше образование 6. Аграрни науки и ветеринарна медицина, професионално направление 6.1. Растениевъдство, научна специалност „Декоративни Растения", **обявен в ДВ бр. 62 / 21.07.2023 година.**

В. ХАБИЛИТАЦИОНЕН ТРУД – МОНОГРАФИЯ

1. **Иванова, В**. Производство на отрязан цвят от хризантема (***Chrysanthemum indicum L.***), Монография, (2022) Академично издателство на Аграрен Университет – Пловдив., 212 с. Език-български ISBN-978-954-517-314-1COBISS.BG-ID – 55445768.

In the presented monograph "Production of cut flowers from chrysanthemum (***Chrysanthemum indicum L.***)" a comprehensive review of the historical data, origin and distribution of this culture, as well as its botanical features and decorative characteristics, was made. Special attention is paid to the requirements of the culture to the environmental conditions and the generally accepted garden classification. Cultivation technology is also examined, with emphasis on the main points in the various directions of cultivation, namely - for the production of cut flowers, as a pot culture and for landscaping parks and gardens. A separate part has been developed, referring to the most widespread diseases and enemies of the chrysanthemum in Bulgaria and ways to combat them. An overview of the most important varieties suitable for growing in our country has been made. In addition to the modern achievements in the field of using the chrysanthemum as a decorative crop on a global scale, the developments in our country, in particular in the field of plant load and mineral fertilization, are emphasized. The monograph would be useful to students, researchers, teachers, producers of decorative products.

Г. НАУЧНА ПУБЛИКАЦИЯ В ИЗДАНИЯ, КОИТО СА РЕФЕРИРАНИ И ИНДЕКСИРАНИ В СВЕТОВНОИЗВЕСТНИ БАЗИ ДАННИ С НАУЧНА ИНФОРМАЦИЯ

1. Panchev, V. , **V. Ivanova**, N. Panayotov (2021) Comparative study of species of the genus ***Lupinus*** on the sowing qualities of seeds during their treatment with ultrasound. Scientific Papers, Series B, Horticulture. Vol. LXV, No. 1, Print ISSN 2285-5653, CD-ROM ISSN 2285-5661, Online ISSN 2286-1580, ISSN-L 2285-5653.

Abstract
The main purpose of the present study was to determine the effect of ultrasound treatment of seeds of different lupine species of the genus Lupinus on their sowing qualities. The experiments were carried out with seeds of two species of lupine (***Lupinus polyphyllus Lindl.)*** and tarwi (***Lupinus mutabilis Sweet.)***. The treatment of the seeds was performed with ultrasound, testing the following sound durations: 3, 6 and 9 minutes. Germination energy, germination, mean germination time and uniformity of germination, length of hypocotyls and embryo root, fresh and dry matter of seedlings were studied. Sonication with a duration of 6 minutes causes the highest increase of germination. As a result of treatment, the fresh weight of seedlings also increases. Polynomial regressions with high coefficients of determination about the effect of ultrasound on germination energy and germination were found. A higher effect was observed in the species ***Lupinus polyphyllus Lindl***. It is recommended to improve the sowing qualities of lupine seeds to apply the sonication of 6 minutes.

2. Dimitrova, N., Nacheva, L., **Ivanova, V.**, Medkov, A. (2021) Improvement of in vitro growth and rooting of ***Magnolia grandiflora L.*** and **Magnolia × soulangeana Soul.-Bod.** Acta Horticulturae Volume 1327, Pages 349 - 360. ISSN 05677572.

Abstract
Magnolias are valuable ornamental plants for their showy flowers and foliage. They are also grown for their timber and potential applications as pharmaceuticals. Vegetative propagation could face some difficulties in root formation, transplanting and overwintering of the cuttings. Micropropagation could be a solution for these problems and could give the opportunity for mass production of good quality true-to-type plants. The success of in vitro cultivation of magnolias is highly genotype dependent and problems with low multiplication rate and weak rooting still remain

unresolved in magnolia tissue culture. The objective of this study was to improve in vitro propagation of Magnolia. The influence of two cultural media based on both MS (Murashige and Skoog, 1962) or DKW (Driver and Kuniyuki, 1984), supplemented with cytokinin *meta* -topolin (mT) (0-8.5 μM) on multiplication of two ***Magnoli****a* species - ***Magnolia grandiflora L***. and ***Magnolia* × *soulangeana*** **Soul.-Bod**. was evaluated. The effect of the auxin indole-3-butyric acid (IBA) and the biostimulator Charkor on the rooting of microshoots of both species was tested. The best multiplication rate for both ***Magnolia*** species was achieved by enriching the nutrient medium with 7 μM mT. For ***Magnolia grandiflora L.*** DKW basal medium was more efficient, while for ***Magnolia* × *soulangeana Soul.-Bod.*** MS nutrient medium was better. Charkor biostimulator, added to the liquid MS nutrient medium, was highly efficient for the rooting of ***Magnolia grandiflora L.*** and ***Magnolia* × *soulangeana Soul.-Bod.***, as at a concentration of 1 mL L^{-1} 100% of rooting was achieved, regardless of the cytokinin (BAP or mT) used in the multiplication stage.

3. **Ivanova, V.,** L. Nacheva, V. Panchev (2021). Possibilities for application of ***in vitro*** techniques in propagation of species of the genus ***Tilia*** **sp**. Bulgarian Journal of Agricultural Science, 27 (Suppl. 1), 103–110.

Abstract

The propagation of the three types of linden used in the landscaping in Bulgaria is carried out mainly by seeds and cuttings, but both methods have a number of disadvantages. Alternative possibilities in this regard are provided by *in vitro* propagation, but studies on the types of explants, methods of surface disinfection, media composition, conditions for adaptation from *in vitro* to *ex vitro* growth are very limited. Having in mind that lindens are one of the most preferred and most widely used deciduous species in European and world ornamental horticulture, the clarification of these issues becomes particularly relevant. The aim of the present study was to develop an effective protocol for *in vitro* micropropagation of linden. Apical buds and stem cuttings from the top of mature cuttings or actively growing annual shoots of adult trees, apical and nodal segments of actively growing seedlings were used as initial explants. Two surface disinfection methods were studied – with 5% solution of calcium hypochlorite [$Ca(OCl)_2$] and 2% silver nitrate ($AgNO_3$). In the studies, nutrient media for multiplication based on MS (Murashige & Skoog, 1962), DKW (Driver & Kuniyuki, 1984) and WPM (McCown woody plant medium, 1980) were used. The effect of cytokinins 6-benzylaminopurine (BAP), Kinetin (6-furfurylaminopurine), *meta*-topolin (mT, [6-(3-hydroxybenzylamino) purine]), 2-iP (6-γ-γ- (dimethylalylamino) -purine) at an

equimolar concentration of 5μM on the multiplication of large-leaved linden (***Tilia platyphyllos*** **Scop.**) was studied. The best disinfection procedure was found by sequential application of $Ca(OCl_2)$ and $AgNO_3$ to explants from actively growing shoots, with the best results obtained with ***Tilia cordata*** **Mill.** In the multiplication of ***Tilia platyphyllos*** **Scop.** the maximum number of lateral shoots (2.93) was reported on the medium with *meta*-topolin, followed by those with BAP (1.73). The highest rooting rate (84.61%) of large-leaved linden (***Tilia platyphyllos*** **Scop.**) was achieved on MS medium with half strength macronutrient content enriched with 0.3 mg l-1 indolyl-3- butyric acid (IBA).

4. Nacheva, L., N. Dimitrova, **V. Ivanova**, F. Cao, Z. Zhu (2020). Micropropagation of ***Camptotheca acuminata Decne (Nyssaceae)*** – endangered ornamental and medicinal tree. Acta Universitatis Agriculturae Et Silviculturae Mendelianae Brunensis, Volume 68 (4), 679- 686, ISSN 12118516.

Abstract

Camptotheca acuminata Decne (Nyssaceae) (happy tree, tree of life, cancer tree) is a rapidly growing deciduous and endangered tree endemic to east Tibet and southern China (Liu *et al.*, 2002). ***C. acuminata*** is an ornamental tree with monopodial growth, beautiful leaves and shade- and cold- tolerant in their natural environment. Recently, its demand has grown rapidly due to secondary metabolites production like Camptothecin and its derivatives with anti cancer and antivirus activity. The aim of the present study was to develop an efficient protocol for *in vitro* micropropagation of this valuable plant. Different cultural media based on both MS (Murashige and Skoog, 1962) or DKW (Driver and Kuniyuki, 1984) formulations with different cytokinins (6-benzylaminopurine, BAP or 2-isopentenyladenine, 2iP or *meta*-topolin, mT) have been involved. The aromatic cytokinin *meta*- topolin stimulated plant growth. The optimum multiplication rate of ***Camptotheca*** shoots occurred on the DKW basal medium, supplemented with 2.5 μM *meta*-topolin, grown under mixed LED light. The highest number of roots per plantlets was recorded on the rooting medium with 0.3 mgl-1 NAA.

5. **Ivanova, V.**, N. Valchev (2020). Study of the influence of different sowing periods on the phenological and decorative characteristics of ***Verbascum thapsus L.*** Scientific papers. Series B, Horticulture. vol. lxiv, no. 1, print ISSN 2285-5653, cd-rom ISSN 2285-5661, online ISSN 2286-1580, ISSN-l 2285-5653.

Abstract

Verbascum thapsus L. is a wild plant in Bulgaria and has very good decorative qualities. The purpose of this study was to explore the possibility of usin Verbascum thapsus as an ornamental plant. The investigation was conducted during the period 2017-2019. Seeds of wild plants were collected in the area of Plovdiv. The seeds were sown on 4 dates – the beginning of June, July, August and September. Vitality, germination and germination energy of the seeds were studied. The phenological and ornamental characteristics were recorded. The plants with the sowing of seeds in the beginning of July have the best decorative behaviour - the largest flowers, the largest number of flowers and the longest flowering period.

6. **Ivanova, V.,** N. Zaprjanova **(**2020) Study on phenological behaviours of ***Dahlia variabilis hort.*** in overwintering of tuberousroots in the soil. Scientific Papers. Series B, Horticulture. Vol. LXIV, No. 1, Print ISSN 2285-5653, CD-ROM ISSN 2285-5661, Online ISSN 2286-1580, ISSN-L 2285-5653 58.

Abstract

Dahlia is used for landscaping parks and gardens as well as cut flower. Because the dahlia comes from Central America (Mexico), it does not tolerate the cold temperatures of the winter. That is why the tuberous roots are planted in April, and removed in October. The tuberous roots are stored for 6 months in a dark and ventilated place where the temperature does not fall below 0^0C. Recent changes in the agro-climatic environment and preliminary studies have naturally led to the conclusion that it is possible the tuberous roots of to be left without removal and storage. The purpose of this study is to identify damage or lack thereof in overwintering the tuberous roots in the soil. Three cultivars were used -'Vitus', 'White Ball', 'Dark Red'. In overwintering plant the sprouting started with 5-7 days earlier. The growth rate was faster with overwintering plants, the most pronounced being that of the Dark Red cultivar. The wintering plants enter the phenophase beginning and mass flowering 11 to 14 days earlier. Flowering of the individual flower and the whole plant is 38-45% longer in wintering plants.

7. Panchev, V, **V. Ivanova**, N. Panayotov (2020). Evaluation of vegetative development and decorative behaviors of some gladiolus (***Gladiolus hybrida L.***) varieties under bulgarian conditions. Scientific papers. Series B, Horticulture. vol. LXIV, no. 1, Print ISSN 2285-5653, cd-rom ISSN 2285-5661, online ISSN 2286-1580, ISSN-l 2285-5653.

Abstract

The main goal of the present study was to establish the most appropriate gladiolus variety for growing under Bulgarian conditions. The experiment carried out in the Experimental fields of Agricultural University - Plovdiv with five gladiolus varieties: Purple flora, Priscilla, Plum tart, Oscar and Green star. The corms were planted in March. The phenological phases of sprouting, the appearance of the inflorescence stalk, beginning and end of flowering were observed. During the vegetation, the most important vegetative behaviours of the plant as high of plant, the diameter of the stem, number of leaves, length of inflorescence stalk and numbers of fully developed flowers and undeveloped flowers per plant were established. The colour of the flowers was also registered. A Green star and Purple flora varieties have the strongest vegetative development, resulting in the formation of the highest plants, with the largest diameter and number of leaves. The highest decorative value of all tested genotypes, under the conditions of Bulgaria, indicated the Purple flora variety. Positive correlations are established between the height of the plant and the number of leaves and also for the length of inflorescences stalk and the number of developed flowers.

8. Nacheva, L., P. Gercheva, **V. Ivanova**, O. Ibrahim **(**2017**).** Meta-topolin improves lateral bud proliferation in micropropagation of ***Ginkgo biloba L.*** Acta Horticulturae, 1155, pp. 355-359.ISBN: 9789462611ISSN 05677572

Abstract
In vitro shoot tip culture of ***Ginkgo biloba L***. so far is not adequate relative to its medicinal and ornamental importance. The aim of the present study was to develop methods for *in vitro* micropropagation of this fossil plant. Different cultural media with different plant growth regulators have been involved in serial experiments. Meta-topolin improves lateral bud proliferation of shoot tip culture of ***Ginkgo biloba*.**

9. **Ivanova, V.** Influence of foliar fertilizer Panamin Agro on the growth and decorative characteristics of ***Tagetes*** species in leaf application. Agricultural Sciences/Agrarni Nauki. Special Issue 30 – Jubilee scientific international conference "Perspectives in agricultural science and innovations for sustainable food systems", 26-28 November 2020, Plovdiv, 94-105. ISSN 1313-6577 (Print), ISSN 2367-5772 (Online)

Abstract
Species of the genus ***Tagetes*** are some of the most common plants in gardening practice in Bulgaria. One of the key problems in the production of planting material

of these species is the slow growth of seedlings in the beginning of their cultivating. The application of foliar fertilizers is one way to solve this problem. This study examines the impact of foliar fertilizer Panamin Agro on growth processes and biometric characteristics of three species of tagetes: **T. erecta L.; T. patula L.. and T. signata Bartl.** Foliar fertilizer Panamin Agro was used in 3 different concentrations: 0.5%; 1.0% and 1.5%. The treatment started with the formation of the first true leaf in 90% of the cultivated plants and was applied every 14 days three times until the seedlings were taken outdoors and planted in a permanent place. It was found that the growth characteristics of the treated plants exceed substantially those of the untreated control plants. With the highest and thickest stems of plants, the highest number and size of leaves and flowers and accelerated, enhanced and prolonged the period of photosynthesis are three species of tagetes treated with 1.0% PanaminAgro. Treatment with a concentration of 1.5% does not always have a positive effect on the growth characteristics of the treated plants. The effect of leaf treatment with PanaminAgro on the biometric characteristics of the root system is insignificant. We offer the use of PanaminAgro in the nursery practice in the production of planting material of african marigold in a concentration of 1.0%.

10. **Ivanova, V.,** N. Zapryanova **(**2020**)** The change in the biometric and physiological parameters of aster (***Callistephus chinensis***), helichrysum (***Helichrysum bracteatum***) and echinacea (***Echinaceae purpurea***) under conditions of induced water deficit Agricultural Sciences/Agrarni Nauki. Special Issue 30 – Jubilee scientific international conference "Perspectives in agricultural science and innovations for sustainable food systems", 26-28 November 2020, Plovdiv, 6-12.
ISSN 1313-6577 (Print), ISSN 2367-5772 (Online)
DOI: 10.22620/agrisci.2021.30.001

Abstract
The global climate models predict changed precipitation patterns with frequent episodes of drought. Scarcity of water is a severe environmental constraint to plant productivity. Plants display a variety of physiological and biochemical responses at cellular and whole-organism levels towards prevailing drought stress. This study included container experiments with three flower crops aster (*Callistephus **chinensis***), helichrysum (***Helichrysum bracteatum***) and echinacea (***Echinaceae purpurea***). Drought was simulated by reducing the number of watering's to field capacity from 25–30 to 85–90 %. Three levels of watering were studied - three times, twice and once a week. The results showed that the cultivation of ornamental plants in containers under reduced watering conditions (twice or once a week) for a period of 3 months led to considerable inhibition of growth and even to plants

death. The relative water content and the level of electrolyte leakage vary depending on the weekly number of waterings. The highest values of electrolyte leakage were reported in a single watering for aster -5107.1μS / g, for helichrysum -8314.9 μS / g and for echinacea -3722.8 μS / g. The high rates of conductivity, especially with one-time weekly watering, are evidence of the damage caused by the simulated water stress. This corresponds to the reported low percentages of *RWC* % and the low values for the height and diameter of the plants. The relative water content in plant tissues decreases depending on the irrigation regime. The lowest values for aster, helichrysum and echinacea were again observed in the variant with a single weekly watering, respectively 15%, 11.5% and 15.8%.

11. Panchev, V., K. Kouzmova, ***V. Ivanova***, N. Panayotov (2019) Phenological behaviors of large-leaved linden (***Tilia plathyphyllos Scop.***) seedlings in depending on environmental conditions Scientific papers. Series B, Horticulture. vol. LXIII, no. 1521-527. Print ISSN 2285-5653, cd-rom ISSN 2285-5661, online ISSN 2286-1580, ISSN-l 2285-5653.

Abstract
The main aim of the present study was to establish the phenological development of seedlings of the widely spread linden species in Bulgaria - ***Tilia plathyphyllos Scop.*** in dependence on the environmental conditions. The seeds on 75 and 90 days after flowering were applied for propagation. The beginning and mass appearance following phenological stage as sprouting, cotyledons, first true leaf and third true leaf were recordered. The average daily temperature and sum of rainfall during the vegetation period were calculated. The relations between phenological behaviours and investigated elements of climatic conditions were determinate. The correlations between the average daily temperature on one hand and periods between different stages of seedling development on the other hand were calculated. The regressions analysis between duration of different phenophases and average daily temperature were also done. The significance of the environmental conditions on the phenological development, especially for sprouting and appearing first true leaf was established.

12. **Ivanova, V.,** L. Nacheva, D. Genova (2019) Improvement of seed germination of ***Magnolia grandiflora L.***Bulgarian Journal of Crop Science, 2019, **56**(5) 12-18. ISSN/ISBN0568-465X (print); 2534-9848 (online)

Abstract
The distribution of genus ***Magnolia*** is limited due to difficulties in breeding and production of propagating material. The aim of present investigation is to increase

the germination of ***Magnolia grandiflora L.*** seeds. The seeds were collected in September 2017, from a 15-year-old tree in Plovdiv region. After 2 months they were divided into 2 groups - half of them remained dry at room temperature and the other half was disinfected following the standard procedure for the Laboratory of "Plant Biotechnology". The disinfected seeds were divided into 2 subgroups in sterile glass jars with sterile wet perlite in variants at temperatures of 4 °C and 22 °C in the dark for 70 days. Gibberellic acid (GA_3), Biolan and Agrostimulin were tested for germination stimulation. It was found that stratification at low positive temperature is a sine qua non for seed germination of studied magnolia. The results showed that treatment of seeds of ***Magnolia grandiflora L.*** with growth regulators does not increase seed germination under the specific conditions, but affects the further development of seedlings. Seeds stored at room temperature did not germinate under the conditions of the study, regardless of treatment with growth regulators. Plants obtained from 0.02% Biolan-treated seeds had higher fresh leaf weight and larger leaf area than the other variants. Treatment of the seeds after stratification with 0.005% Agrostimulin had positive influence on the development of the root system.

13. Grozeva, M., **V. Ivanova,** V. Naidenova (2019) Modern tendencies in the use of ornamental trees and shrubs as sound – barrier. Bulgarian Journal of Crop Science, 2019, **56**(6), 53-57. ISSN/ISBN0568-465X (print); 2534-9848 (online).

Abstract

Transport networks are vital element in the nowadays European infrastructure. They connect people, boost economic activity and provide access to key services, but they also introduce barriers between natural areas as their use emits pollutants and introduces non-local species to ecosystems. Strong policy measures and a network of green spaces can help preserve and protect Europe's natural wealth.

Sofia city is connected to the rest of the country by an extensive transport network, comprising motorways, roads, rail tracks, cycle paths and flight routes. In addition to bringing goods and services to people, transport networks shape and impact the environment around them. When the city has reached a certain level of connectivity, additional transport infrastructure does not provide additional benefits. It can, however, generate substantial environmental impacts. Transport networks can also facilitate the spread of urban areas and other built-up areas into relatively sparsely populated parts of Sofia city, exerting pressure on natural habitats. For example, connecting remote Vitosha Mountain to the transport system of Sofia city could attract more tourists to the area, resulting, for example, in a boost to accommodation and food-catering services. However, increased economic activity also often comes with the negative impacts on human settlements

- more wastewater, more solid waste etc. Transport also leads to releases of pollutants, which can spread beyond the reach of transport networks. The pollutants can contribute to background concentrations of particulate matter, ozone and nitrogen dioxide, affecting people, plants and animals. The present work offers examination and overview on the methods for identifying the noise pollution in city areas and the tendency to introduce ornamental trees and shrubs as green sound barriers.

14. **Ivanova, V.,** N. Zaprianova, B. Atanasova, V. Panchev (2018). The response of Bulgarian spray-carnation (***D. caryophyllus f. spray, Hort.***) cv.'Rusalka' to drought-in vitro induced by different PEG concentrations. Scientific Papers-Series B, Horticulture, (62), 585-589.Print ISSN 2285-5653, CD-ROM ISSN 2285-5661, Online ISSN 2286-1580, ISSN-L 2285-5653.

Abstract
In our study, to simulate water deficit induced by osmotic stress, different concentrations of polyethylene glycol (PEG-6000) were used: 10%, 20%, 30% and 40% at different durations of treatment (1, 3 and 6 days) in vitro conditions. The model plant was Bulgarian spray-carnation (***D. caryophyllus f. spray, Hort.***) flowers, cv. Rusalka. The response to drought stress was studied based on the following end-points: plant growth reactions, relative water content (RWC %), and electrolyte leakage (conductivity). The water deficit varied from 16% (control) to 75% (40% PEG-6 days). The growth of the explants proportionally decreased with the increase of polyethylene glycol concentration from 10% to 40% and the fresh weight was below 50% vs. the control at 30% and 40% PEG. The relative water content of the plant tissues decreased depending on PEG quantity, the lowest values - 25.16 ± 2.06% being reported at 40% PEG concentration on the 6th day. The highest values of electrolyte leakage up to 1712 μS/g fresh weight were reported on the 6th day at 40% PEG concentration.

15. Nacheva, L. R., **V.S. Ivanova** (2017) Silver nitrate and chlorhexidine gluconate – effective surface sterilization agents in disinfection procedures at the initiation of woody shoot tip and embryo culture. Journal of BioScience and Biotechnology, 6(3), 187-190. ISSN 1314-6246.

Abstract
The surface sterilization of explants in chemical solutions is an important step to remove contaminants with minimal damage to plant cells. Woody and mature plants growing in the open field are known to harbor a large amount of microflora

and are very difficult to sterilize. The routinely used surface sterilization procedures with the solution of $Ca(OCl)_2$ had proven to be relatively unsuccessful with ***Taxus baccata*** and some other woody fruit and ornamental species. The objective of the present study was to propose and to verify new procedures of surface-sterilization of ***Ginkgo*** and plum shoot tip explants from old trees as well as sweet cherry embryos employing silver nitrate or chlorhexidine gluconate in different concentration and periods of exposure. According to the results obtained in the present experiments we could recommend silver nitrate and chlorhexidine gluconate as effective surface sterilization agents in disinfection procedures at the initiation of woody shoot tip and embryo culture.

НАУЧНА ПУБЛИКАЦИЯ В НЕРЕФЕРИРАНИ СПИСАНИЯ С НАУЧНО РЕЦЕНЗИРАНЕ ИЛИ В РЕДАКТИРАНИ КОЛЕКТИВНИ ТОМОВЕ

1**. Ivanova, V.**, Miteva, N., Murdzhev, I. (2014).Effect of pre-sowing treatment with GA3 of ***Ginkgo biloba*** **s**eeds on some growth of behavior of seedlings. Plant Science (Bulgaria). Volume: 51, Issue: 6, pp. 29-32 . ISSN : 0568-465X.

Abstract

Ginkgo biloba is not well known ornamental plant for various applications. Foliage and fruits are used for the production of plant substances used in the formulation of various medicines and nutritional supplements. Plant itself, with its beautiful symmetrical crown, interesting shapes and color of leaves is preferred for Solitaire in landscape sites. The still limited distribution and use of this species requires the development of new technology and improvement of previously applied methods for seed propagation. The aim of the studies was to investigate the influence of pre-sowing treatment of seeds of Ginkgo biloba with various concentrations of GA3. The following variants were tested - soaked in water, soaked respectively in 1000, 1500, 2000, 2500 ppm GA3. The duration of treatment was for 24 h at temperature 22–23°C, after which the seeds were dried for 1–2 hours and immediately planted outdoors. Recorded were indicators related to propagation characteristics of the seed and also for vegetative behavior of seedlings. It was found that germination of treated seeds increases up to 83.6%. There was also a positive correlation between the treatment with different concentrations of GA3 and the vegetative growth of the plants: the plant with the highest stem (18.99 cm), the largest number of leaves (6.34 pcs) and the largest leaf area (5.49 cm2) were treated with GA3 concentration of 2500 ppm.

2. **Иванова, В.**, В. Панчев, Т. Табашка (2014). Влияние на срока на събиране на семена от Липа (***Tilia sp***.) върху вегетативните прояви на семеначетата. Научни трудове на Съюз на учените в България –Пловдив, Серия В. Техника и технологии, т. XII, 315-318. ISSN; 1311-9419.

Abstract
Species of the genus Tilia are among the most widely used decorative trees in the landscape objects. Production of planting material was difficult for the following reasons: first - in vegetative method of propagation byoffshoot obtained plants retaining the ability to form shoots and creating problems in maintaining the landscape objects and the second - in the propagation by seeds the seeds germinate difficult and need specific sowing treatment. One way to enhance germination of seeds and producing a large number of seedlings is by harvesting and sowing before the complete maturation of the seed.In the present study investigated the vegetative behaviours of seedlings of 3 species of lime - T. cordata Mill., T. platyphyllos Scop., T. tomentosa Moench.In 5 terms of harvesting of seeds.It was found that the most rapid growth rate have seedlings of T. cordata, T. platyphyllos, T. tomentosa, grown from seeds harvested respectively 1.08 .; 1.09. and 15.08. The greatest height of the stem have seedlings of species - T. cordata - 4.7 cm, and the largest diameter of the stem of the T. tomentosa.

3. Панайотов, Н., **Иванова, В.**, Николова, Б. (2014). Преценка на декоративните прояви при различни образци пипер (***Capsicum annum L.)*** Научни трудове на Съюза на учените в България–Пловдив Серия В. Техника и технологии, том XII., 310-314. ISSN 1311-9419.

The main goal of the present study was to establish the decorative behaviours in different samples of pepper from gender Capsicum. The experiments were carried out in Experimental fields of Agricultural University-Plovdiv, Bulgaria with five pepper patterns belonged to different species of Capcicum: C. annuum L., C. frutiscnes L.and Capsisum baccatum L. The morphological characteristics such as high of stem; number of branches; number and weight ofleafs; number, shape, weight, colouring and position of fruits were established. The plant from Capsisum baccatum L. were with highest stem, number of brunches and fruit. These plants however are not suitable for planting in group, but are very appropriate for solitary growing or cultivate in pots.

4. Начева, Л., **Иванова, В.** , Герчева, П., Томова, Т. (2014). Влияние на гранулираните торове с контролирано освобождаване Osmocote върху растежа и развитието на микроразмножени растения от ***Magnolia***. Научни трудове на Съюз на учените в България –Пловдив, Серия В. Техника и технологии, т. XII, 294-297.ISSN 1311-9419.

Abstract
In addition to their great decorative value, species of the Magnolia genus are known for their valuable wood and medicinal uses. The aim of the present study was to investigate the possibilities of applying Osmocote controlled release granular fertilizers to stimulate the growth and development of micropropagated magnolia plants. Second, third and fourth generation Osmocote fertilizers were used in the concentrations recommended by the manufacturer. The obtained results show that the application of granular fertilizer with controlled release Osmocote in the substrate for growing in vitro propagated plants of Magnolia grandiflora L. and Magnolia x soulangianaSoul.-Bod. has a positive effect on the growth and development of growths. For Magnolia grandiflora L. the application of the 4th generation Osmocote (Exact HiEnd) is most suitable, while for Magnolia x soulangianaSoul.-Bod. the inclusion of Osmocote Pro 3-4M (2nd generation) and Osmocote Exact Standart (3rd generation) in the substrate has a better effect.

5. **Ivanova, V.** (2016). Investigations in Dendrology Park of Agricultural University-Plovdiv, Bulgaria. I Inventory of tree and shrub plants. Научни трудове на Съюза на учените–Пловдив. Серия В: Техника и технологии, 13, 245-250. ISSN 1311 -9419 (Print); ISSN 2534-9384 (Online)

Abstract
Dendrology park at the Agricultural University - Plovdiv was founded in 1955, immediately after the construction and opening of the buildings of the two faculties - Agronomy and viticulture and horticulture, and Rectorat. The main objective of the park is to improve the sanitary - hygienic environment and tracking growth and adaptation to soil - climatic conditions of the Thracian lowland over 200 tree and shrub species and ornamental forms. Since 2007, project “Project for landscaping, public works and reconstruction of the park at AU-Plovdiv” are led phenological observations in order to use the new knowledge in landscape practice. The park is 41 acres. The whole area is conditionally divided into 17 subsectors, including the main building and auxiliary buildings and adjoining lawns. The majority of the vegetation is planted in the period 1955-1970.

6. **Иванова, В.**, Панчев, В. (2020). Проучване възможностите за презимуване в почвата на грудки от ***Dahlia variabilis L.*** Научни трудове на Съюз на учените в България –Пловдив, Серия В. Техника и технологии, т. XVIII.144-147. ISSN 1311 -9419 (Print); ISSN 2534-9384 (Online).

Abstract
Dahlia belongs to the group of perennial rhizome flowers (Tafradzhiyski, O., V. Ivanova, 1999). In the soil it forms a nest of tubers, which are cylindrical, slightly pointed on both sides. Because the dahlia comes from Central America (Mexico), it does not tolerate the cold temperatures of our winter. That is why the tubers are planted in the second half of April, and removed at the end of September or after the fall of the first frosts (Nikolova, N. 1999). The tubers are stored for 6 months in a dark and ventilated place where the temperature does not fall below 0 ° C. Recent changes in the agro-climatic environment and preliminary studies have naturally led to the conclusion that it is possible that the tubers of dahlia can be left without removal and storage in the soil. The purpose of this study is to identify damage or lack thereof when overwintering soil dumplings. Three varieties were used - Vitus, White Ball, Dark Red. It was found that after wintering the number of tubers increased by 6.1 pcs. or by 107% for Dark Red. Plant height increased from 5.3 cm (White Ball variety) to 26.8 cm (Dark Red variety). All three varieties have a significant increase in the biometric characteristics of the stem and inflorescences.

7. **Ivanova, V.**, Nacheva, L., Krusteva, I. (2019). Treatment of ***Limonium*** and ***Goniolimon*** seeds with BIOLAN to increase germination. International Ornamental Plants Congress, 9-11 Oct., Bursa, Turkey, pp. 16-27, ISBN: 978-605-031-323-9.

Abstract
Limonium bulgaricumAnchev and Goniolimon dalmaticum(C. PRESL) RCHB. F. are Balkan endemic species. According to Agrobiotech (Ukraine), Biolan is a preparation of biological origin (a product from the cultivation of micromycetes isolated from ginseng roots), which is characterized by increased support of analogues of phytohormones and polyunsaturated fatty acids responsible for the synthesis of phytonutrients, phytoalexins and chelate forms of biogenic microelements. It stimulates the accelerated cell division, the root system development, the increase of the leaf surface and the chlorophyll content, reduces

the phytotoxic action of the pesticides, has an anti-mutagenic effect, improves the quality of the production. Seeds from 11 genotypes- Limonium(L) and Gonolimonium (G) were used as experimental material. Calibrated by size seeds were sterilized and divided into two groups. One group of seeds was placed in plates and moistened well (but not soaked in much liquid at the manufacturer's recommendation) with 2 ml of 0.01% Biolan for 12 hours. Another group (control) was presoaked in 2 ml distilled water. Then both groups of seeds are placed in Petri dish (10 cm) on moistened filter paper and covered with the cover of the plate and white paper (diffused light) at room temperature (about 22° C). Growth measurements for the seeds included measurement of germinated seed at day 7; 14 and 21; length of stem and roots on day 21; fresh and dry weights of the 21-days plants. The highest seed germination rate is genotype number 8 from Limonium-63.3% at 7th and 70% at 14th day. Stem is highest in genotype 8, Biolan-10.6 mm treated, and the root is the longest in the control variant of the same genotype. For most of the genotypes, roots in the control variant are not observed. In Gonolimon germination at 7 and 14 is very good, in most cases between 80 and 100%.The values of stem height and root length in control and trial variants are almost the same, with the exception of genotype G5 where the stem height is 42.46 mm.

8. Ivanova, V., Zaprjanova, N. (2019). Influence of growth regulators on the vegetative prpagation of ***Lonicera nitida WILS.*** International Ornamental Plants Congress, 9-11 Oct, Bursa, Turkey, pp. 7-15, ISBN: 978-605-031-323-9.

Abstract

Lonicera nitida Wils.is native originally to China where it reaches around 3-4 metres with a 3 metre spread.Lonicera nitidahedging provides year-round interest with delicate, fragrant, creamy flowers appearing in spring, followed by bluish-purple berries in the autumn. The dark foliage is densely packedon the supple branches of Lonicerahedging, providing an attractive hedging screen. This evergreen hedging is ideal for both shaded and sunny spots. A shrubby honeysuckle hedge is useful for its dense, lasting foliage and fast growth rate and makes a great privacy screen and noise muffler. Lonicera nitida Wils.could be propagated by seeds, cuttings, grafting and as in vitro culture. The present study aimed to determine a proper rooting hormonal application by which a high rooting percentage of stem cuttings of Lonicera nitidacould be attained. Since previous investigations concentrated on comparing different auxins, our study managed to assay the possibility of using GA3comparing with IBA or their combination at different levels.Stem cuttings taken from 1-2 year old twigs were collected from some plants of Lonicera nitida Wils. in the Dendrology Park, Agricultural

University -Plovdiv during the end of July and Augusfor three successive seasons of 2016, 2017, 2018. Uniform cuttings 7-10 cm long were prepared and leaves were striped of the basal 4 cm portion. Cuttings were dipped at the basal end (2-3 cm basal portion) for 15-20 min in different concentration (4000, 6000, 8000, 10000 ppm) of IBA and/or GA3. Cuttings dipped in distilled water were served as a control treatment. Cuttings were immediately struck at 3-4 cm depth into frames containing a 1:1 peat:perlite (1:1) mixture. Treatments were arranged in a randomized complete block design with four replicates. Each experimental plot composed 20 cuttings. The cultures were kept under greenhouse conditions, and the relative humidity being maintained at about 70% using fogging system. Six months after cuttings were struck, rooting percentage, number of roots, mean root length, root fresh and dry matter, root volume and number of lateral shoots per cutting were taken.Amongst all the combinations between IBA and GA3investigated in the present experiment, IBA at 1000 ppm proved to be the most effective treatment inducing the highest rooting percentage and attaining the best rooting characteristic in cuttings of Lonicera nitida Wils.Our results further revealed that although GA3alone or in combination with IBA resulted in relatively lower values, it has obtained promising results.

9. Panchev, V., **Ivanova, V.**, Panayotov, N. (2019). Investigation of the different substrates for vegetative propagation with woody cuttings of spotted laurel (***Aucuba japonica Thunb.***). Научни трудове на Съюза на учените–Пловдив. Серия В: Техника и технологии, XVII, 261-264. ISSN 1311 - 9419 (Print) ISSN 2534 - 9384 (Online)

Abstract

The spotted laurel ***(Aucuba japonica Thub.***) is an ornamental plant, which is very useful for outdoor landscaping. It is very suitable for applicationin soils with high humidity and acidity, as well as in areas with high air humidity. This is a new and unconventional decorative plant for the conditions of Bulgaria. Under current climate change conditions in our climate are becoming more avorable to its development. One of the main problems with the cultivation of this species is its multiplication. The main purpose of this study was to investigate the possibility of multiplication of aura with mature cuttings in different substrates. As substrates in the study are applied peat with perlite, pearlite and sand. For each variation, fifty cuttings with 4-5 buds and a length of 7-9 cm were used. The planting depth of the cuttings was up to two buds. Optimum humidity of the substrate was maintained. At the first occurrence of a true leaves, the percentage of rooting for the cuttings

was recorded. The length of the root, the number of root branches, the number of leaves were counted. The highest rate of rooting was reported when applying a perlite substrate. The differences between the three studied substrates are small. It should be noted, however, that in a sandy substrate the development of the root system is stronger.

10. Panchev, V., **Ivanova, V.** (2017). Influence of the term of seeds harvesting on the phenological behaviours of the seedlings of linden (***Tilia ssp***.). Journal of International Scientific Publications: Agriculture & Food, 5(1000023), 252-257. ISSN 1314-8591 (online)

Abstract

The main goal of the present study was to etablish the differences between separate species of linden on the duration of several phenological stages of seedling, depends on the term of seeds harvesting. The experiments were carried out with seeds of three different species of linden ***Tilia platyphyllos Scop., Tilia cordata Mill. and Tilia tomentosa Moench.*** The seeds harvested at 30, 45, 60, 75 and 90 days after anthesis from mother tree from the region of Plovdiv Bulgaria. The seeds were sown immediately after harvest on the open air bed. The phenophases of flowering and seed formation of the mother tree were observed. The main phenophases of the seedling development to third true leaf were studied. In large-leaved lime (***Tilia platyphyllos Scop.***) the earliest flowering and seed maturity were established. In small-leaved lime (***Tilia cordata Mill.***) the seeds have sprouted ate the earliest, while in the seedlings of silver linden (***Tilia tomentosa Moench.***) the formation of the cotyledons, first and third true leaves were at the earliest.

11. **Ivanova, V.** (2017) Coniferous species - vitality and decorative level in green areas of Plovdiv region. Journal of International Scientific Publications: Agriculture & Food, 5(1000023), 263-268. ISSN 1314-8591 (online)

Abstract

Results of the study on the use of coniferous species in the parks and gardens of the Plovdiv region are presented. There are included eight of the largest settlements in

the region -Plovdiv, Pazardjik, Stamboliiski, Asenovgrad, Popovitsa, Hissar, Banya and Karlovo. There are 27 of the most common coniferous trees and shrubs in Bulgaria. According to a special methodology, the living and decorative level of these species was determined. Coniferous species were found to be the smaller part of the total number of plants invested in the parks and gardens of this part of the Thracian Plain. The vitality and decorativity of the majority of individuals is considered unsatisfactory. It is recommended to increase the percentage of use of conifers and shrubs using seedlings produced in nurseries in the same region. Restrict the use of the species ***Abies alba, Abies concolor, Pinus nigra, Metasequoia gliptostroboides.*** Expand the use of the species ***Cedrus, Chamaecyparis, Picea, Pinus, Cupressus, Juniperus.***

12. **Ivanova, V**., Georgiev, D., (2017). Influence of Bio-and chemical fertilizers on growth behaviour of ***Ginkgo biloba L***. seedlings. Научни трудове на Съюза на учените–Пловдив. Серия В: Техника и технологии, 14, 148-153.ISSN 1311-9419 (Print), ISSN 2534-9384 (Online).

Abstract

A pot experiment was carried out to study the effect of bio- and chemical fertilizers on the growth and development of annual seedlings of Ginko biloba L. Plants were treated with Azospirillum lipoferum (a nitrogen-fixing bacterium) and Bacillus polymyxa (a phosphorus-degrading bacterium) and a combination of them with or without the addition of complete mineral fertilization 19N: 19P2O5: 19K2O. The application of the two bacterial fertilizers and their combination showed a proven increase in the studied vegetative manifestations of Ginkgo biloba L. - plant height; number of stem branches; leaf area, dry mass of roots and shoots, when compared to the control - untreated variant with a full dose of NRK chemical fertilizers - 5 g per plant twice. The results show that the use of Azospirillum sp.+ Bacillus sp., and 5g per plant of the chemical fertilizers leads to the highest proven values of the growth parameters compared to the control. Biofertilizers, apart from their ability to increase the nutritional value of the soil mixture, have also been shown to increase the effectiveness of added chemical fertilizers (Abbas, R..,2003; Bhattacharjee, S.K., 1988; Bremner, J.M. and G.S. Mulvaney, 1982). . From the obtained results, it can be seen that half of the recommended dose of chemical fertilizers (2.5g per plant, twice applied) together with each of the studied bacteria (2 ml twice) can be used to grow Ginkgo biloba L. seeds with high quality , while protecting the environment from pollution.

13**. Ivanova V.**, V. Panchev. (2017) Investigation on ginkgolides and bilobalide content in ***Ginkgo biloba*** **L.** leaves. Jornal of International Scientific Publications, vol.5, 258-262. ISSN 1314-8591 (online).

Abstract
In the present study it was established the concentration of ginkgolides A, B, C and bilobalide in the leaves of 6 ***Ginkgo biloba*** trees, located in 6 different settlements in Bulgaria - Plovdiv, Pazardjik, Asenovgrad, Hisar, Karlovo and Kazanluk. Only female trees aged 20-30 years, with very good decorative characteristics, were selected. The material studied was the leaves collected in two weeks, from the appearing of the leaves up to the fall of the leaves. It was found that the concentration of test substances was the lowest in spring and autumn, and the highest in the early summer. The differences between the six studied trees were significant. With the highest concentration of ginkgolides A, B, C and bilobalide were the trees from Plovdiv and Hissar. Of the three types of ginkcolides - A, B and C - the highest content in the leaves is ginkcolid A, followed by ginkcolid B and finally, the lowest content is ginkcolid C.

14. **Ivanova, V**., Georgiev, D., (2017). Effect of size and type of container on the growth and development of ***Ginkgo biloba L.*** Научни трудове на Съюза на учените–Пловдив. Серия В: Техника и технологии, 14, 143-147.ISSN 1311-9419 (Print), ISSN 2534-9384 (Online)

Abstract
The aim of the present study is to investigate the growth characteristics of Ginkgo biloba L. seeds grown in conventional above-ground containers (KNK) and in pot-in-pot (PIP) containers. Plants planted in soil were used as controls. Both cultivation systems showed demonstrably higher values of the growth characteristics of Ginko biloba L. seeds compared to the control. The use of conventional 1.10 l above-ground containers is recommended.

15. Panchev, V., **Ivanova, V.**, Nacheva, L. (2017). Leaf-gaze exchange and content of total chlorophyll of the seedlings of some species of gender ***Tilia.*** Научни трудове на Съюза на учените–Пловдив. Серия В: Техника и технологии, 14, 162-165.ISSN 1311-9419 (Print), ISSN 2534-9384 (Online)

Abstract
The aim of the study was to investigate changes in leaf gas exchange and content of total chlorophyll in seedlings of three species of linden - ***T. grandifolia, T. argentea*** and ***T. parvifolia.*** The experiments were carried out with 90 daily seeds after flowering, as in the seeds of 30, 45, 60 and 75 days have not been obtained plants. The percentage of germination, survival rates compared to total sown seeds as well as to sprouting seeds, intensity of photosynthesis, transpiration, and stomatal conductance and total chlorophyll (SPAD 502) were determinate. The percentage of germination is low, but the percentage of surviving plants to the sprouting seeds was higher – between 83.69% to 99.59%. The intensity of photosynthesis and transpiration were the highest in the leaves of ***T. parvifolia***, while of the total chlorophyll was it highest value in ***T. argentea***.

16. **Ivanova, V**., Panchev, V., Ivanova, I. (2017). Application of organic liquid fertilizer Lumbricol in production of planting material from annual flowers. Journal of International Scientific Publications: Agriculture & Food, 4(1000020), 571-576. ISSN 1314-8591 (online)

Abstract
Fertilizer from californian worms Lumbricol is known as one of the most effective organic fertilizes, soil fertilizer, which is used for organic farming and revitalization of exhausted soils. The nutrients therein are water soluble and easily absorbable in the plants form due to humic acids in it. In this study we explore the use of fertilizer in the production of seedlings of annual flowers. The aim is to obtain seedlings with better biometric behaviours for a shorter period of time. The study used the following species of plants: ***Antirrhinum, Tagetes, Zinnia and Verbena.*** Fertilizer was used as a component of the substrate in which the seeds were sown. Studied were the following variants: 10%; 20% and 30% of substrate for the sowing of seeds. As a control was used a standard substrate without the addition of fertilizer. The results obtained show that in all experimental variants seeds germinated faster than control, but the acceleration is negligible, within 1-2 days. More significant differences i occur subsequently - the plants in the treated variants form a more vigorous root system, a greater number of leaves with a greater leaf area and enter 6-7 days earlier phase in budding and flowering. The use of 20 percent bio-fertilizer was suggested.

17. Ibrahim, O., Gercheva, P., Nacheva, L., **Ivanova. V.** (2011). Biotechnological approaches for propagation of ***Taxus baccata L.*** – an endangered plant with important ornamental and pharmaceutical value. Proceedings of fourth International Symposium "Ecological approaches towards the production of safety food", 9 June, Plovdiv, Bulgaria, pp. 111-116. ISSN: 1313-9819.

Abstract
Taxus is propagated by seeds and rooted cuttings though these methods are slow and can not respond to the growing demand of the planting material. The objective of our study was to refine a procedure for in vitro shoot culture of ***T. baccata L***. Explants were obtained from a mature tree and after disinfection were inoculated on media involving various basal salts and plant growth regulators. WPM nutrient medium supplemented with 6.84 μM zeatin exhibited the best initiation of shoot apices with high frequency of axillary bud induction averaged 2-3 buds/explant. WPM lacking growth regulators supported shoot elongation.

18. Ibrahim O., Gercheva, P., Nacheva, L., **Ivanova, V.** (2011). Preliminary studies on in vitro propagation of ***Ginkgo biloba*** **L.** Proceedings of forth international symposium "Ecological approuches towards the production of safety food", 9 June, 2011, Plovdiv, Bulgaria, pp. 117-123.ISSN: 1313-9819.

Abstract
In vitro shoot culture of ***Ginkgo*** so far is not adequate relative to its medicinal and ornamental importance. The aim of the present study was to develop methods for *in vitro* micropropagation of this fossil plant. Different cultural media have been involved in serial experiments. As a result in vitro shoot culture of ***Ginkgo*** was initiated and maintained from 2-bud shoot apices on MS or WPM nutrient media. Our work would be considered pioneer under lack of information with this regard.

Г. ПУБЛИКУВАНА ГЛАВА ОТ КОЛЕКТИВНА МОНОГРАФИЯ

1.Ibrahim,O., **V. Ivanova**, P. Gercheva (2016). Biotechnological and conventional propagation of trees. Approaches for propagating of Ginkgo biloba, Taxus baccata, Magnolia grandiflora, Magnolia x soulangeana. Book Details: LAP LAMBERT Academic Publishing.ISBN-13:978-3-659-85389-0
ISBN-10:3659853895 EAN:9783659853890
https://www.lap-publishing.com/catalog/details/store/gb/book/978-3-659-85389-0/biotechnological-and-conventional-propagation-of-trees?locale=gb

This book describes the results of some experiments conducted on ***Ginkgo biloba L., Taxus baccata L., Magnolia grandiflora L., Magnolia x soulangeana Soul.-Bod..*** A logical comprehensive disscusion for each point is also provided and scientific explanations, evidenses and arguments, if needed, are used to corroborate our deductions. Both conventionals (by seeds and/or cuttings) and modern propagations (by in vitro culture means) have been undertaken in the present study with respect to each of the aforementioned plant species. Hence, for better clarity and understanding, each section of the Literature review, Materials and methods, Results and discussion is subdivided into three sub-sctions namely ***Ginkgo*** experiments, ***Taxus*** experiments, ***Magnolia*** experiments. Each section comprises different experiments conducted. The monograph would be useful to scientists, teachers, farmers, ornamental plant growers.

Е. ПУБЛИКУВАНО УНИВЕРСИТЕТСКО УЧЕБНО ПОСОБИЕ ИЛИ УЧЕБНО ПОСОБИЕ, КОЕТО СЕ ИЗПОЛЗВА В УЧИЛИЩНАТА МРЕЖА

1.**Иванова, В.** (2022). Ръководство за упражнения по Цветарство. Интел Ентранс ООД. ISBN: 978-619-7703-11-5.

The purpose of this student exercise guide is to familiarize with the morphological and botanical characteristics of ornamental species grown in cultivation facilities and outdoors. For their easier study, the species are divided into groups according to the direction of their use: annual, biennial, perennial (rhizomes, bulbs and tuberous), species for cut flowers, potted flowers and potted leaf-ornamental flowers. The topics were developed on the basis of the curricula for the disciplines "Flowerculture", "Ornamental plants for outdoor cultivation", "Greenhouse flower production" and "Ornamental Horticulture". It is intended for the students of the Agricultural University - Plovdiv. It can serve as a practical book for young specialists in the field of ornamental horticulture, as well as for teaching agronomist students from other higher schools.

Подпис:
/ Доц. д-р В. Иванова/