РЕЗЮМЕТА
НА НАУЧНИТЕ ПУБЛИКАЦИИ
на гл.ас.д-р Ирина Николова Станева

във връзка с участието й в конкурс за заемане на академичната длъжност „Доцент” по научна специалност “Агрохимия”, професионално направление 6.1. Растениевъдство, обявен в ДВ брой 35 от 24 април 2018 г.

А. В списания с импакт фактор(IF)

1. Sciubba F., Avanzato D., Vaccaro A.Capuani G., Spagnoli M., Di Cocco M. E., **Nikolova Tzareva I.,** Delfini M.,"Monitoring of pistachio (Pistacia Vera) ripening by high field nuclear magnetic resonance spectroscopy", Natural Product Research Vol.31, Iss.7, 2017, pp765-772, DOI:10.1080/14786419.2016.1242003, **IF 1.828**

Absract

The metabolic profiling of pistachio (*Pistacia vera*) aqueous extracts from two different cultivars, namely ‘Bianca’ and ‘Gloria’, was monitored over the months from May to September employing high field NMR spectroscopy. A large number of water-soluble metabolites were assigned by means of 1D and 2D NMR experiments. The change in the metabolic profiles monitored over time allowed the pistachio development to be investigated. Specific temporal trends of amino acids, sugars, organic acids and other metabolites were observed and analysed by multivariate Partial Least Squares (PLS) analysis. Statistical analysis showed that while in the period from May to September there were few differences between the two cultivars, the ripening rate was different.

Б. В международни научни списания с импакт ранг (SCOPUS)

2. Manolow I., D. Antonov, G. Stoiliv, **I. Tsareva**, M. Baev (2005). Jordan zeolitic tuff as a raw material for the preparation of substrates used for plant growth, Journal Central Europeen Agriculture 6(4): 485-494

Abstract

One of the problems faced in front of industry for potting media is limited amount of quality row materials (mainlypeat) for unlimited production of quality substrates in the future. The using of natural minerals for production of substrates or as amendments for existing substrates is possible solution for this problem. The natural zeolites withtheir specific properties – high CEC, high content of macro and microelements are one of good alternatives to thetraditional potting media. Each zeolite deposit has unique chemical composition, physical and mechanical properties.That is why obligatory preliminary condition for their successful application in agriculture is caring out of biologicalstudy with agricultural plants for determination of the optimal parameters of chemical and physicochemical properties of the substrates.

3. Zhivondov A., D. Avanzato, **I. Tzareva** (2007). Caratterizzazione carpological e biochimica di selezioni di corniolo (*Cornus mas L*.) reperite in Bulgaria, FRutticoltura, LXIX (6): 50-52

Abstract

La Bulgaria e molto ricca di forme di corniolo (*Cornus mas L*.), una specie che si estende dappertut- to, dal livello del mare sino a 1.000 metri di altitudine, con un'elevata densita di distribuzione nelle fore-ste. Scopo del presente studio e quel- lo di rilevare i principali parametri biometrici e biochimici dei frutti delle varieta bulgare selezionate da Tsolov: Shurnenski prodalgovat("cor- niolo lungo di Shumen"), Pancha¬revski cylindrical ("corniolo cilindri- co di Pancharevo"), Kazanlashki krushoviden ("corniolo a pera di Ka- zalnak") e di una forma gialla diffusa in Bulgaria, per la prima volta ogget- to di studio. Conclusioni durante la conservazione e anche con i processi di maturazione della frutta. A sua volta, nei la frutta con- servata per 4 giorni la diminuzione degli acidi e collegata con I'aumen- to degli zuccheri totali. I frutti del le diverse se¬lezioni esaminate non si differenziano dal punto di vista chimico: sono tutti ricchi di vitamina C, acidi e tannini. Un consumo tardivo determina una ri- duzione della vitamina C e pertanto si raccomanda di consumare il corniolo alio stato fresco.

4. Koumanov, K.S., **I Tsareva**, K. Kolev, G. Kornov (2009). Fertigation of primocane-fruiting raspberry – leaf and soil nutrient content between applications. *Acta Hort*. (ISHS) 825:341-348. **SJR 0,222**

Abstract

Amongst the agrochemicals, fertilizers have been the most frequently applied through microirrigation systems (fertigation). Although the method has been developed to a high technical level, there is yet a lack of information concerning the optimum timing and the doses under multiple fertilizer applications. The subject of the present article is the fertilizers' fate in the root zone and the raspberry plants' nutritional status between the fertigation events, under three levels of drip water supply – 100%, 75%, and 50% of the estimated crop evapotranspiration. The study was based on laboratory analyses of soil, soil solution and plant samples. It was found that fertigation maintained constant and sufficient concentrations of N, P, and K in the soil providing optimum mineral nutrition for the raspberry plants. Proper irrigation and fertigation management could successfully retain the fertilizers in the root zone, thus preventing losses and eventual pollution of soil and groundwater.

5. Avanzato D., Vaccaro A., Meli M., Delfini M., Capuani G., Di Cocco M.E., Sciubba F., **Tzareva I**., Terziev I. (2011). Effect of boron treatment on 'Bianca' and Gloria' pistachio cultivars. Acta Hort. (ISHS) 912: 143-149. **SJR 0,24**

Abstract

Boron is an essential element of plant growth, involved in various physiological phases, from bud break to the fruit ripens. It influences flowering (lack can cause the drop of entire flower clusters), pollen viability and production. The aim of this research was to evaluate the effects of Boron, foliar applied, in different phenological phases on the productivity of the tree and, consequently, on fruit set and nut quality. The study was carried out in Sicily, by applying the element on □Bianca□ cv and □Gloria□ selection. During flowering time (25-50% flowers bloomed), the trees of □Bianca□ were sprayed with Boron solved in water only or in sucrose solution (to favorite the pollens receptivity on the stigma). On the selection □Gloria□, the effect of Boron applied once in May, June or July was evaluated. On Bianca□ trees, the application of Boron caused an increase of fruit set and a qualitative improvement of the in shell nut and of the kernel (both fresh and dry weight). The effect was particularly evident in

the trees treated with Boron which was solved in sucrose solution. Also the carpological parameters were influenced: the fruits showed statistically significant size values (width and thickness) when compared to the control, and without affecting the yield rate of kernel. Average production was increased of 37% in □Bianca□trees treated with Boron solved in water solution. Dry leaf weight increased as well and nut splits percentage had significant reduction. On □Gloria□ selection, the treatments with Boron increased the fruit splits. Treatment applied in July caused a notable increase of production and significant increase in dry leaf weight.

6. Delfini M., Capuani G., Di Cocco M.E., Sciubba F., Avanzato D., Vaccaro A., Meli M., **Tzareva I**., Terziev I. 2011. NMR-based metabolomic analysis for the evaluation of different treatments on two pistachio cultivars. Acta Hort. (ISHS) 912: 203-210. **SJR 0,24**

Abstract

Nuclear Magnetic Resonance (NMR) spectroscopy is a sophisticated nondestructive, multinuclear and multipara metric technique that has been widely employed over the last two decades to characterize plant systems. In fact, NMR spectroscopy is able to identify the low molecular weight metabolites yielding a "metabolic profile" of the biological system under analysis. Very recently, the application of multivariate statistical analysis to high-throughput detection methods, like NMR spectroscopy, led to a new discipline named metabolomics, that allows analysis of metabolic profiles in a quantitative way and the acquisition of complex information that cannot be drawn directly from the spectra. Metabolomic analysis is applied to discriminate populations and describe the time trajectories of biological samples on the basis of their peculiar metabolic features. In the present study, the metabolic profiles of two pistachio cultivars, namely 'Bianca' and 'Gloria' selection, have been characterized by NMR spectroscopy, and their evolutions have been followed over time and as a function of different treatments. Metabolomic analysis has proven effective in analyzing metabolic changes occurred in the pistachios over the ripening period, and to detect the influence of different treatments on a metabolic basis.

7. K.S. Koumanov **, I.N. Staneva**, G.D. Kornov and D.R. Germanova, 2016, Sweet cherry fruit quality under fertigation, Acta Horticulturae 1139: 95; 551-558. **SJR 0,180**

Abstract

It is generally accepted that nitrogen fertilization must be ceased a month before the cherry fruit ripening because of the negative effects of nitrogen on the fruitquality. On the other hand, fertigation, an indispensable element of the intensive cherry production, requires frequent fertilizer applications and any breach of the regimes of nutrient supply may become limiting to both growth and yield of cherry trees. The objective of this study is to investigate the effect of fertigation on fruit quality under both continuous and interrupted fertilizer supply during the month prior to fruit harvest. For this purpose an experiment was carried out with 'Burlat'/Mazzard and 'Lapins'/'Gisela5' combination (12th and 13th leaf) under the onditions of fertigation, respectively through microsprinkling and drip irrigation. Fertigation was ceased one month before fruit harvesting. Results were compared to ones from a drip-irrigated ontrol where the fertigation (including nitrogen) was continuous. Fruit quality was estimated based on measurements of mass, height,width, thickness and firmness, as well as by analyzing fruit flesh content of N, P, K, Ca,Mg, Fe, sugars, acids, vitamin C, juice pH, and dry mass. Before the secondexperimental vegetation the trees of the 'Lapins'/'Gisela5' combination were severelypruned in order to provide proper leaf-to-fruit balance. According to the obtained results, there were no significant differences between the variants, both with and without nterruption of the nitrogen supply before fruit harvest. Hence, fertigation, especially with nitrogen, may be applied continuously without negative effects on the cherry fruit quality.

В. В реферирани и индексирани в световни вторични литературни източници (Google Scholar):

8. Koumanov K.S., K. Kolev, Z. Rankova, S. Milusheva, Z. Rusalimov, **I. Tsareva** (2005). Yield and growth of "Lyulin" raspberry variety under lowland conditions and regulated-deficit drip irrigation, *Journal of Mountain Agriculture on the Balkans*, 8(1): 83-94

Absract

Experimental work was carried out in the period 2002-2004 on the territory of the Fruit Growing Institute in Plovdiv in a 400-m2 raspberry plantation of the floricanefruiting "Lyulin" variety. Seven irrigation treatments were studied in four replications. During the main phenophases - intensive growth, blossom, and fruiting - water was applied in amounts of 100 %, 75 % and 50 % of the raspberry crop evapotranspiration (ETC). Fertilizers were applied through the irrigation water, the fertilization rate being equal for all treatments. The annual yield obtained in the studied irrigation variants, averaged over the three experimental years, was in the range 1001—1472 kg/da. Compared to the control (100 % of ETC), yield was lowered significantly only in the variants with maximum reduction of water application rates - V2-50 and V3-50 (P 0.001). For the period 2004- 2004, the average mass of one fruit was 2.5—2.7 g. Only the maximum reduction of application rates in variant V3-50 diminished fruit significantly (P 0.001). Raspberry fruit was largest at first harvestings of each season, when the average fruit mass used to reach 3.0—3.4 g. Regulated Deficit Irrigation (RDI) suppressed significantly the growth only in the variants with lowest application rates V2-50 and V3-50. Obtained high yield and good quality of fruit proved drip irrigation and fertigation as prerequisite and guarantee for successful raspberry production, especially in lowland conditions with relatively high temperatures and low atmospheric humidity. With "Lyulin" variety, application rates can be reduced by 75 % without negative impact on yield and fruit quality. In the phase of intensive growth the reduction may be even by 50 %.

9. **Tsareva I**., K. Kolev, V. Dzhuvinov, K. Koumanov (2007). Dynamics of nitrogen, phosphorus and potassium content in sweet cherry leaves of different cultivar/rootstock combinations. *Journal of Mountain Agriculture on the Balkans*, 10(6):1082-1092

Abstract

The experimental work was carried out in an intensive sweet cherry plantation (3^{rd} and 4^{th} vegetation) in the period 2005-2006 on the territory of the Fruit-Growing Institute – Plovdiv. Subject of investigation was the content of N, P and K in the leaves of Bigarreau Burlat and Regina cultivars grafted on the seedling rootstocks Prunus mahaleb and Wild Cherry, and on the vegetative rootstock Gisela 5. The results obtained showed that nitrogen was absorbed at equal rates by all the three rootstocks. Concerning the other two elements, the highest potassium content was established in Bigarreau Burlat on Wild cherry, followed by G5 and Mahaleb rootstocks. The highest phosphorus content was found in G5 for both cultivars.

10. **Tsareva, I.,** Kuman Kumanov, Kolyo Kolev, 2009, Dynamics of shoot and fruit growth in some cultivar-rootstock combinations of sweet cherry under drip irrigation and fertigation, *Journal of Mountain Agriculture on the Balkans*, 12(6), 1607-1615

Abstract

Knowledge about the beginning and duration of the phenological stages of fruit tree development during vegetation are important for all the activities related to orchard

management. In sweet cherry, overlapping and alternating of the periods of intensive shoot growth and fruit enlargement enable growth regulation and water saving by applying the so-called regulated deficit irrigation. However, the beginning and the duration of the phenological stages depend greatly on the cultivar-rootstock combination. An object of study in the present paper was the dynamics of shoot and fruit growth in 'Bigarreau Burlat' and 'Regina' cultivars on 'Gisela 5', 'Camil' and *Prunus avium* rootstocks in a dense plantation and fertigation. It was established that growth on the 'Camil' clonal rootstock was comparable to that on the *Prunus avium* seedling rootstock, while growth on the 'Gisela 5' clonal rootstock was significantly poorer. In the earlier ripening 'Bigarreau Burlat' cultivar, fruits were continuously growing, while in the later 'Regina' cultivar fruits were growing fast in the last week or two before the harvest. Before that, however, irrigation could be reduced when the more vigorously growing *Prunus avium* and 'Camil'rootstocks were used.

11. Kornov, G., K. Koumanov, S. Milusheva, K. Kolev, Z. Rankova, **I Tsareva** 2009, Regulated deficit drip irrigation impact on the yield of the "Lyulin" primocane-fruiting raspberry cultivar, *Journal of Mountain Agriculture on the Balkans*, 12(6), 1553-1565

Abstract

The problem of water scarcity increases all over the world, the agriculture accounting for more than 70 % of the total consumption. The use of irrigation water can be decreased applying more efficient methods (microirrigation) and technologies (Regulated Deficit Irrigation, RDI). Both approaches were subjected to a nine-year investigation together with the 'Lyulin' primocane-fruiting cultivar. The raspberry crop was chosen because of its good positions on the international market and the short time for the investments pay-back. The water application rates during the main phenophases – intensive growth, blossom, and fruit ripening – equaled 100 %, 75 % and 50 % of the crop evapotranspiration. The yield varied considerably according to both the meteorological conditions during the vegetation and the health status of the plantation. The average yield for the nine-year study period was in the range of 8575-11218 kg ha^{-1}, depending on the degree of the application rates reduction; the maximum of 16429 kg ha^{-1} was recorded in the fourth vegetation. From the seventh to the tenth vegetation, a significant yield decline was observed due to progressing virus infections. Compared to the control, the yield was significantly lower only in the variants of maximum reduction of irrigation. In most variants and years, one cubic meter of water was used for the production of about 2.0 kg of raspberry fruit.

12. Kornov, G., K. Koumanov, K. Kolev, Z. Rankova, S. Milusheva and **I Tsareva** (2010). Regulated deficit drip irrigation impact on the growth of the 'Lyulin' primocane-fruiting raspberry cultivar. *Journal of Mountain Agriculture on the Balkans* 5: 1374-1384.

Abstract

Проблемът с недостига на вода се задълбочава в световен мащаб като над 70 % от общата консумация се пада на селското стопанство. Разходът на поливна вода може да бъде намален чрез внедряването на ефективни методи (микронапояване) и технологии (напояване с регулиран воден дефицит, RDI). Двата подхода са обект на деветгодишно изследване при ремонтантния малинов сорт "Люлин". Малиновата култура е избрана поради добрите условия на международния пазар и бързото възвръщане на инвестициите. През основните фенофази – интензивен растеж, цъфтеж и узряване на плодовете – са подавани поливни норми, възлизащи съответно на 100 %, 75 % и 50 % от евапотранспирацията на културата. Като цяло напояването с регулиран воден дефицит не е повлияло съществено растежа на малиновите храсти. Резултатите дават основание да се предположи, че причините за наблюдаваните различия между отделните вегетации са най-вече климатични. Не трябва да се изключват и фактори

като възрастта на насаждението и разпространението на вирусни инфекции, вече коментирани във връзка с резултатите за добива. При сорта "Люлин" поливните норми могат да бъдат намалени до 75% без неблагоприятно въздействие върху растежа, добива и качеството на плодовете, а през фазата на интензивен растеж дори до 50%. В условията на остър воден недостиг напояването може да се извършва с половината от изчислителните поливни норми през цялата вегетация, но след съответната икономическа обосновка.

13. Kornov, G., K. Koumanov and **I Tsareva** (2011). Regulated deficit drip irrigation impact on the fruit chemical composition of the 'Lyulin' primocane-fruiting raspberry cultivar. *Journal of Mountain Agriculture on the Balkans* 6: 1319-1330

Abstract

The problem of water scarcity deepens all over the world, the agriculture accounting for more than 70% of the total consumption. The use of irrigation water can be decreased with the introduction of more efficient methods (microirrigation) and technologies (Regulated Deficit Irrigation, RDI). Both approaches were subjected to an eight-year investigation together with the 'Lyulin' primocane-fruiting cultivar.The raspberry crop was chosen because of its good positions on the international market and the short time for the investments to pay-back. The water application rates during the main henophases – intensive growth, blossom, and fruit ripening – equaled 100%, 75% and 50% of the crop evapotranspiration. The regulated deficit irrigation did not affect, generally and negatively inparticular, the fruit chemical composition of the 'Lyulin' primocane-fruiting cultivar. Raspberry crops supply with priority *Rubus idaeus*, water and nutrients to their reproductive organs even under adverse abiotic and biotic factors, including plantation age and the spread of viral infections. Based on the results, there is a good reason to conclude that drip irrigation and fertigation are prerequisites and guarantee for a successful raspberryfruit production, especially in lowland onditions under relatively high temperatures and low air humidity.

14. G. Kornov, K. Koumanov, **I. Tsareva** (2013), Content of mineral elements in the leaves of the "Lyulin" primocane-fruiting raspberry cultivar under regulated deficit drip irrigation and fertigation, *Journal of Mountain Agriculture on the Balkans*, 16(4): 1009-1019

Abstract

Irrigation is an indispensable element of the raspberry-growing technology in lowlands. When micro-irrigation is in use, it is a common practice to introduce fertilizers into the tree zone with the irrigation water (fertigation). In Bulgaria, the information on the raspberry-crop water and nutritional regime is scarce and there is yet lack of knowledge concerning the fertigation. The present paper's objective is the microirrigation and fertigation impact on the raspberry mineral nutrition, assessed by leaf diagnostics. The water application rates during the main phenophases – intensive growth, blossom, and fruit ripening – equaled 100%, 75% and 50% of the crop evapotranspiration. Complex fertilizers of the "Kristalon" (YARA) and "Labin" (MACASA) series were applied with the irrigation water, the fertilization doses being equal in all variants. According to the results obtained, the regulated deficit irrigation did not affect, generally and negatively in particular, the leaf mineral content. When managed properly, fertigation maintains constant and sufficient N, P, K, Ca, Mg and Fe concentrations in the leaves, i.e. it provides optimal mineral nutrition for the raspberry plants.

15. **Staneva I.** , K. Koumanov, G. Kornov, Growth rate of fruit and shoots in seven sweet-cherrycultivar/rootstock combinations, Journal of Mountain Agriculture on the Balkans, 2016, vol. 19, 4, (164-174)

Abstract

With the intensification of the sweet cherry production, questions arise concerning the growth and the fruiting. To obtain maximum effect of the management practices they have to be in conformity with the biological rhythm of the trees. The present work is aimed to tracing out the growth rate of fruit and
shoots in seven sweet-cherry cultivar/rootstock combinations. The subject of this study are three cultivars ('Bigareau Burlat', 'Regina', 'Lapins') on three rootstocks (*Prunus avium*, 'Camil' and 'Gisela 5'). As the trees grow older, the traditional management on the dwarfing rootstock results in up pressed shoot growth and smaller fruit. However, the provision of appropriate water and nutritional regimes through microirrigation and fertigation combined with proper winter pruning appear capable to maintain average shoot growth of 43 cm and average fruit size of 28 mm rrespectively of the tree age.

16. K Koumanov, **I. Staneva**, G.Kornov, Distribution on uniformity of dissolved in the irrigation water substances under drip irrigation, *Journal of Mountain Agriculture on the Balkans*, vol. 19, 1, 2016, (148-157)

Abstract

The distribution uniformity of the agrochemicals applied with the irrigation water through a micro irrigation system is decisive for this mode of their usage known as chemigation. The uniformity was evaluated in an experiment carried out in a 0.55 ha drip-irrigated cherry orchard. For the purpose, the dripper's discharge, the concentrations and the quantities of the injected fertilizers [nitrate ($N\text{-}NO_3^-$) and ammonium ($N\text{-}NH_4^+$) nitrogen, phosphorus (PO_4^{3-}) and potassium (K^+)], as well as the irrigation water pH were estimated/measured in 30 locations, uniformly distributed over the irrigation system territory. An additional sample was taken from the ground water in a point before the fertilization tank. The distribution uniformity was evaluated using the Christiansen's uniformity coefficient (CU). A second experiment studied the time necessary for the dissolved substances to travel from the entrance to the most distant points of the drip system, as well as their concentrations' change in these points at both the start and the cessation of chemigation. In that case samples were taken at the entrance and at the two symmetrical most distant points of the system, at time intervals of five minutes for periods of 30 minutes following the start and the cessation of chemigation. The results show a very good distribution uniformity (UC = 80÷90%), which corresponds to the chemigation requirements.

17. Kornov G., K. Koumanov and **I. Staneva**, A state of raspberry productionand prospects for its development in lowland conditions, 2016, Journal of Mountain Agriculture on the Balkans, vol. 19, 5, 159-169

Abstract

There is an increasing interest in the raspberry crop because of the good international market conditions and the quick pay back of investments.

In Bulgaria, the occupied areas increase steadily, expanding to regions without traditions in raspberry production. However, the indispensable qualitative breakthrough can be achieved only by intensification of raspberry production, which necessitates introducing of state of the art equipment and crop management approaches. In order to meet these requirements, a technology for growing of the 'Lyulin' primocane-fruiting raspberry cultivar was developed at the Fruit Growing Institute in Plovdiv. It is environmentally friendly and provides high yields and fruit quality, fast pay back of the investments and very good profitability.

This is a technology, which requires modern equipment, grower education, awareness, access to technological resources, and adherence to strict scheduling of each operation. Microirrigation, fertigation and process mechanization are indispensable elements of that technology. It is applicable to other primocane-fruiting raspberry cultivars as well.

18. **Staneva I.,** Z. Rankova, 2017, "Competition for mineral nutrients between cultural plants and weeds in a nursery", Journal of Mountain Agriculture on the Balkans, 2017, 20 (4), 299-307

Abstract

The investigations were conducted during 2014 and 2015 with the vegetative cherry candidate rootstock 20-192 in one- and two-year old nursery at the Fruit Growing Institute – Plovdiv. The content of the major mineral elements in weed species, represented in the weed association of the nursery, as well as in the leaves of the rootstocks from all the variants (herbicide-treated and the untreated control) was observed during the vegetation season. The presence of the following weed species was detected: purslane (*Portulaca oleraceae* L.), crabgrass (*Digitaria sanguinalis* L.), redroot pigweed (*Amaranthus retroflexus* L.), green foxtail (*Setaria viridis* L.), common sowthistle (*Sonchus oleraceus* L.) and Bermuda grass (*Cynodon dactylon* L.). The separate weed species accumulated different rates of the mineral elements. The percentage of potassium, calcium and magnesium in some weed species was higher than that in the leaves of the cultural plants. The highest levels of potassium and magnesium were accumulated by purslane (*Portulaca oleraceae* L.), almost twice higher than those in the other weed species.

Г. ***В български научни списания***

19. Карагеоргиев Д. и **И. Царева** (2007). "Нов поглед върху съдържанието на минералните хранителни вещества в листата на ябълката", Селскостопанска наука XL,:№ 4: 24-30

Abstract

On the basis of the data reflecting the dynamics of the mineral nutrient substances in apple leaves obtained in two vegetation periods, linear regression models about the development tendencies of five nutrient elements were constructed. It was established that when mineral and organic fertilization was not applied in the experimental plantation, slight variation in the nitrogen, calcium and magnesium content and different changes in the phosphorus and potassium content were observed but it happened only at the end of both vegetation periods.

20. **И. Царева** (2007) "Характеристика на методи за определяне на минерални елементи в растителен материал II. Принос към микродифузионното определяне на азот в растителен материал", Селскостопанска наука, год. XL, №2, 18-21

Резюме

Извършени са лабораторни изследвания свързани с микродифузионното определяне на азот в растителен материал с цел въвеждане на последния като алтернативен метод за количествен анализ. Показани са параметрите на разпределение на представителна аналитична извадка целящи, да докажат пригодността на метода за масови определения в растителни образци. При N=10: Стандартно отклонение ±0.045%, Коефициент на вариране 3.08%.Извършени са сравнителни анализи за съдържанието на азот по двата метода: дестилационен и микродифузионен.

21. **И. Царева**, И. Терзиев, К. Куманов, К. Колев, 2009, Съдържание на минерални хранителни вещества в листата на черешата при някой сортоподложкови комбинации в интензивни насаждения, Растениевъдни науки, vol. XLVI, №2, 116-120

Резюме

Обект на настоящето изследване е влиянието на три различни по растежна сила подложки – семенната Дива череша и клоновите Гизела 5 и Камил – върху съдържанието на основните хранителни елементи в листата на черешовите сортове Бигаро Бюрла и Регина по време на вегетацията. Дърветата са снабдявани с вода чрез система за капково напояване, която е използвана и за внасяне на торове. Листните

проби са вземани ежемесечно през вегетационния период на 2006 и 2007 г. и са анализирани за съдържание на N, P, K, Ca, Mg и Fe. Получените резултати показват характерната за повечето дървесни овощни видове тенденция към намаляване на N, P и K, и увеличаване на Ca и Mg в листата с напредването на вегетацията. Извличането на минерални хранителни вещества се влияе по-скоро от комбинацията между сорт и подложка, отколкото от подложката или сорта поотделно. Бигаро Бюрла х Камил се откроява със слабо извличане на почти всички от изследваните елементи, което би могло да се разглежда като индикация за физиологична несъвместимост между сорта и подложката.

22. М. Господинова, К. Колев, **И. Царева**, 2009, Влияние на напояването върху някои биологични прояви на череши присадени на подложки с различна сила на растеж, Растениевъдни науки, vol. XLVI, №2, 121-125

Резюме:

Изследването беше проведено в суперинтензивно черешово насаждение в Института по овощарство –Пловдив при разстояния на засаждане 5x3m. Сортовете Бигаро Бюрла,Регина и Бинг бяха присадени на четири вегетативни подложки – Gisela 5, GM79, GM61/1 I GM9. Изпитвани бяха два поливни режима. Първият реализирахме с поливната норма равняваща се на 100% от разчетената евапотранспирация (ET), а вторият поливен режим с регулиран воден дефицит – 50% от ET. Изследвано е влиянието на поливните режими върху биологичните прояви във вегетативната сфера, напречно сечение на стъблото, сумарния едногодишен прираст, структурата на прираста и обема на короните. Дърветата присадени на подложката Gisela 5 реагират най-отчетливо на изпитваните поливни режими и при трите изследвани сорта. Приложението на регулиран воден дефицит води до редуциране на напречното сечение на стъблата и обема на короните на дърветата в сравнение с поливния режим, възстановяващ пълния водоразход на културата. При останалите три подложки не се наблюдават определени тенденции, свързани с влиянието на изследваните поливни режими върху силата на растежните процеси.

23. Живондов А., С.Малчев, **И.Царева**, 2011, Сензорен Профил и Химични Компоненти на Плодове от Черешови Сортове и Елити, Растениевъдни науки, XLVIII, 24-30

Резюме:

С узряването на черешите практически започва сезона на плодовото производство. При определяне качествените характеристики на плодовата продукция решаваща е ролята на показателите, формиращи сензорния профил на плодовете. Повечето от тях са силно зависими от количеството на основни химични компоненти – захари, киселини и съотношението между тях. През 2006, 2007 и 2009г. се проведоха проучвания върху основни химични компоненти и зависещите пряко от тях вкусови качества на плодовете от 9 черешови сорта, в т.ч. и новите сортове Косара, Розита и Розалина и 8 елити, всички създадени в резултат от селекционната програма на Института по овощарство – Пловдив. Установи се, че съдържанието на сухо вещество, общи захари и органични киселини е в оптимални граници. Количеството на инвертна захар е приблизително равностойно на съдържанието на общи захари, а захарозата е в малки количества. Най-добър е сензорния профил на плодовете от сортовете Косара и Розалина, както и тези на елитите 17-90, 17-92 и 3-99.

24. Гандев, С., И. Нанев, **И. Станева**, П. Савов, Е. Исуф, Д. Сербезова (2016). Вегетативни и репродуктивни прояви на ябълковия сорт Грени Смит върху подложка

М9, формиран по системите Стройно вретено, Солен и Вертикална ос. Екология и бъдеще, XV, No. 1–2, 62-65

Abstract

The experimental plantation was established in the territory of the Fruit-Growing Institute in Plovdiv, with geographic coordinates of 42° 9' N latitude, 24° 45' E longitude and 160 meters altitude. The study was carried out during the period 2013 – 2015, i.e. third-fifth vegetation of the trees, covering the first three fruiting seasons. The aim of the present study was to investigate the effect of the training systems Slender Spindle, Solen and Vertical Axis on growth and fruiting characteristics of the apple cultivar 'Granny Smith', grafted on M 9 rootstock and grown under the conditions of Bulgaria. The results obtained show that the average and cumulative yields per ha were higher when Vertical

Axis training method was used compared to Slender Spindle and Solen training systems. That was due to the better reproductive habits of trees in that variant, as well as to the larger number of trees per ha. Under the conditions of our country, tree training to Vertical Axis method is recommended for 'Granny Smith' apple cultivar grafted on M 9 rootstocks.

Д. В сборници от международни научни форуми

25. Kumanov K., Kolev K.,Rankova Z., Milusheva S., Rusalimov Z., Tsareva I. (2006) Regulated deficit drip irrigation and water use efficiency of raspberry (Rubus idaeus L.) primogane – fruting cultivar, *7-th International Mikro Irrigation Congress Kuala Lumpur, PWTC, 1-7*

Abstract

Experimental was carried out during 2002-2004 on 400 m2 raspberry plantation of the primocane-fruiting "Lyulin" variety. Seven irrigation treatments were studied in four replications under relatively high temperatures and low air humidity. During the main phenophases – 1) intensive growth; 2) blossom; and 3) fruiting; water was applied in amounts equaled to 100%, 75% and 50% of ETc respectively. Fertilizers were applied through the irrigation system, the

fertilization rate being equal for all treatments. The annual yield, averaged over the three experimental years, was in the range 10010—14720 kg/ha. Compared to the control (100% ETc), yield was significantly lower only in the most severe variants V2-50 and V3-50. For the experimental period, the average mass of one fruit was 2.5—2.7 g. Only in V3-50 fruit diminished significantly. Raspberry fruit was largest at first harvestings of each season, 3.0—3.4 g. Regulated Deficit Irrigation (RDI) suppressed significantly the growth only in variants

V2-50 and V3-50. In most variants, water use efficiency (WUE) was about 2.0 kg/m3. V3-50 resulted in slight increase in WUE – 2.1 kg/m3, while in V2-50 WUE was only 1.7 kg/m3. Hence, with "Lyulin" cultivar, application rates can be reduced by 75% without negative impact on yield and fruit quality. Because of the frequent rainfalls in the spring, during the phase of intensive growth irrigation may be even reduced to 50% ETc.

Е. Доклади на международни форуми, публикувани в резюме

26. Kumanov K., Kolev K.,Rankova Z., Milusheva S., Rusalimov Z., **Tsareva I.** Water Use Efficiency of Raspberry (*Rubus Ideus L.)* in Lowland Conditions under Regulated Deficit Drip Irrigation. *Inderdrought II, the Second International Conference on Integrated Approaches to Sustain and Improve Plant Production under Drought Stress*. 24-28 September 2005, Rome (abstract).

Experimental work was carried out in the period 2002-2004 in 400 m2 raspberry plantation of the floricanefruiting "Lewlin" variety. In the lowland conditions of the Plovdiv region in Bulgaria, with relatively high temperatures and low air humidity, seven irrigation treatments were studied in four replications. During the main phenophases – 1) intensive growth; 2)

blossom; and 3) fruiting – water was applied in amounts of 100, 75 and 50% of ETc. Fertilizers were applied through the irrigation water, the fertilization rate being equal for all treatments. The annual yield, averaged over the three experimental years, was in the range 1001-1472 kg/da. Compared to the control (100% ETc), yield decreased significantly only in most severe variants V2-50 and V3-50. For the period 2004-2004, the average mass of one fruit was 2.5-2.7 g. Only in variant V3-50 fruit diminished significantly. Raspberry fruit was largest at first harvestings of each season, 3.0-3.4 g. Regulated Deficit Irrigation (RDI) suppressed significantly growth only in variants V2-50 and V3-50. In most variants, water use efficiency (WUE) was about 2.0 kg/m3. V3-50 resulted in slight increase in WUE – 2.1 kg/m3, while in V2-50 WUE was only 1.7 kg/m3. Hence, with "Lewlin" cultivar application rates can be reduced by 75% without negative impact on yield and fruit quality. Because of the frequent rainfalls in the spring, in the phase of intensive growth the reduction may be even 50%.

Ж. В сборници от национални научни форуми

27. И. Царева (2005). ”Характеристика на методи за определяне на минерални елементи в растителен материал I . Минерализиране на растителен материал”, Научни трудове на Аграрен университет - Пловдив, т.L, кн. 1, 231-236

Резюме

Направена е сравнителна характеристика на аналитичните подходи за определянето на азот, фосфор, калий, калций, магнезий, желязо и манган в представителни проби при три сорта ябълки.

Акцентирано е върху усъвършенстван метод за минерализиране на растителния материал чрез “мокро изгаряне”.

Установени са параметрите на разпределение при сравнителното изпитване на методите. Доказана е пригодността на подхода за масови анализи.

28. И. Царева (2005). ”Изменение на някой минерални хранителни вещества в листа при три сорта ябълки” , Scientific Researches of the Union of Scientists, Series C. Technics and Technologies, vol. 5: 531-534

Abstract

The dynamics of nitrogen, calcium and magnesium content in the leaves of three apple cultivars of different period of ripening – Early Geneva, Melrose and Jersey red, has been studied.

The aim of the study was to establish the eventual effect of the period of harvesting on the content of nutrients in the leaves.

Linear regression equations have been worked out, with which the content of the elements during the whole vegetation period could be forecasted.

29. И. Царева (2006). “Съдържание на някои хранителни елементи в листата на ябълка – сезонни промени”, Сборник от Първи международен симпозиум екологични подходи при производството на безопасни храни, 157-162

Abstract

The seasonal changes of phosphorus, potassium and iron contents were followed up in three apple cultivars differing significantly by the period of reaching harvest maturity (Early Geneva, Melrose, Jersey red). The study was carried out in a plantation under the conditions of total absence of mineral and organic fertilization.

Regression equations have been derived, expressing the interdependence between the content of nutrient elements and the time of collecting the leaf samples.

30. М. Господинова, К. Колев, **И. Царева**, (2010). Съдържание на общи феноли антирадикалова активност и антоциани на череши (сорт Бигаро Бюрла) присадени на четири вегетативни подложки, сборник Екология и здраве, 285-290

Abstract

The effect of rootstocks (GM9, GM61/1, GM 79 and Gisela 5) and irrigation regimes (1,0ET and 0,5 ET) on total phenols contents, antiradical activity and anthocyanins of "Burlat" sweet cherry was investigated. The anthocyanins and total phenols were characterized and quantified by means of HPLC – UV 9200 spectrophotometry. Phenolic components were extracted with pure methanol without addition of acid and water. There are significant variations in the phenolic compound and anthocyanins among sweet cherry fruits grown on threes grafted on different vegetative rootstocks.

Общ IF на научните публикации във връзка с конкурса за избор на академичната длъжност „ Доцент" – 2,71

Списания с инпакт фактор (Web Science):

Natural Product Research DOI:10.1080/14786419.2016.1242003 (2016)
IF 1.828

Списания с инпакт ранг(SCOPUS):

1. Acta Horticulturae: (2009) Scopus SJR 0.222

2. Acta Horticulturae: (2011) Scopus SJR 0.24

3. Acta Horticulturae: (2011) Scopus SJR 0.24

4. Acta Horticulturae: (2016) Scopus SJR 0.180

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