

РЕЗЮМЕТА

на научните публикации и трудове на Гл. ас. д-р Николай Момчилов Минев *катедра “Агрехимия и Почвознание”* при *Аграрен Университет* – Пловдив, които не повтарят представените за придобиване на ОНС „доктор”

- **В3.** Хабилизационен труд - научни публикации (не по-малко от 10) в издания, които са реферирани и индексирани в световноизвестни бази данни с научна информация (показател В3 от ППЗРАСРБ).

1. Лавандула (*Lavandula angustifolia* Mill.)

Николай Минев

В настоящата монография са отразени и обобщени научни изследвания, свързани със значението, произхода, разпространението, агротехниката и факторите, оказващи влияние върху количеството и качеството при лавандулата – една от най-широко отглежданите етерично-маслени култури както у нас, така и в света.

Разработката е предназначена за използване от научни работници, специалисти, отглеждащи етерично-маслени култури и за работещи в областта на селското стопанство, като може да се използва и като учебно пособие за студенти, обучаващи се в агрономическите факултети.

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Рецензенти: Проф. д-р Светла Костадинова, Проф. д-р Недко Недков

- **Г7.** Статии и доклади, публикувани в научни издания, реферирани и индексирани в световноизвестни бази данни с научна информация (показател Г 7 от ППЗРАСРБ).

2. RESEARCH ON THE PRODUCTIVITY AND QUALITY OF FORAGE PEA VARIETIES TREATED WITH GROWTH REGULATORS

N. MINEV – HR. YANCHEVA – N. POPOV
Agricultural University – Plovdiv, Bulgaria

The aim of the study was to estimate the influence of the growth regulators RENI, RENI+boron, Bormax, Mn chelate and molybdenite on the quantity and quality of forage pea yield. The experiment was carried out from 2007 to 2009 in the Plovdiv area (Bulgaria). Two Bulgarian varieties of winter forage peas were used: MIR and VESSELA. The variants of the

experiment were: Control (untreated); Treatment with RENI at a concentration of 0.5%; RENI+boron at a concentration of 0.5%; Bormax at a concentration of 0.4%; Mn chelate at a concentration of 0.6%; Molybdenite at a concentration of 0.2%. The tested growth regulators led to changes in the grain yield. The increases in the Mir variety due to the use of RENI was 23.4%, RENI+boron – 20.9% and Bormax – 15% compared to the control sample. The response of the VESSELA variety in relation to these regulators was less pronounced, with yield increases of 8.0 and 6.2%, respectively, after treatment with Bormax and RENI + boron. The use of molybdenite and RENI+boron in the Mir variety increased the content of crude protein by 6.0 and 3.4%, respectively. The Vessela variety reacted best to treatment with Mn chelate, molybdenite and Bormax, with increases of 13.3, 7.5 and 6.7%, respectively. Differences were observed in the total content of essential amino acids. For the Mir variety, the growth regulators RENI+boron and RENI showed the greatest effect, while in the Vessela variety, RENI and Bormax were more efficient.

Key words: forage bean crops, crude protein, amino acids

Climate change: challenges and opportunities in agriculture. AGRISAFE Final Conference, 21-23 March 2011, Budapest, Hungary., ISBN 978-963-8351-37-1, p. 430-433.

3. RESEARCH THE SUITABILITY OF THE LAND FOR GROWTH OF BERRIES AND MEDICAL PLANTS: RECOMMENDABLE FERTILIZATION RATES

Nedialka YORDANOVA, Nikolay MINEV, Mladen ALMALIEV*, Krasimir TRENDAFILOV, Violeta VALCHEVA, Stefka TODOROVA

The normal growth of most crops ensures in an average annual rainfall 600-800mm. The average annual rainfall in the studied area was 830 mm (with a confidence interval 804 - 856 mm), and was sufficient to provide the necessary moisture for vegetation for the crops with deep root system. For other crops was necessary to provide irrigation. The terrain is located in the area of Elena town and was in erosive danger. Crop irrigation by gravity way can lead to the intensity of the erosion process and disinterment of the topsoil humus-elluvial layer of the rows. The established values of the indicator pH in the studied plots were significant restriction for the growth of the proposed crops for cultivation. For creation of better conditions for crops growth needs liming on the plots with identified soil acidity. The exceedances of the established concentrations of the easily mobile exchangeable aluminium and hydrogen, toward conventional limit for toxicity were minor and determine low level of acid toxicity of the soil for the plants. The average content of exchangeable manganese, found in the subsoil horizon exceeds the registered content for the cultivated layer. There is not a tendency of biological accumulation of manganese in the topsoil horizons.

Keywords: soil, fertilization rates, berries, medical plants

Agricultural Symposium "Agrosym 2015", Jahorina, Bosnia and Herzegovina, October 15-18, 2015. ISBN : 9789997663221, pp 148-155.

4. Influence of the stage of application and nitrogen forms on structural elements of maize yield

Nikolay Minev, Nedyalka Yordanova, Maya Dimitrova, Chavdar Dochev, Ivan Kostadinov,
Doycho Doychev

A study was carried out on the effect of nitrogen forms, applied in various stages of maize development, on growth and structural elements of the yield. Maize hybrid P0216 of Pioneer company was investigated, grown under irrigation conditions by the conventional technology for the country. The hybrid has a high productive potential and excellent drought tolerance. The experiment was conducted by the block method, the plot size being 21 m², and the nitrogen (240 kg N/ha) was applied in the form of NH₄NO₃ and CO(NH₂)₂ in the following variants: 1. Control variant (unfertilized); 2. NH₄NO₃ – the full rate applied before sowing; 3. NH₄NO₃ split application: ½ before sowing and ½ at 5th leaf stage; 4. NH₄NO₃ split application: 1/3 before sowing, 1/3 at 5th leaf and 1/3 at tasseling stage; 5. NH₄NO₃ split application: ¼ before sowing, ¼ at 5th leaf, ¼ at 12th leaf and ¼ at tasseling stage; 6. CO(NH₂)₂ – the full rate applied before sowing; 7. CO(NH₂)₂ split application: ½ before sowing and ½ at 10th leaf; 8. CO(NH₂)₂ ½ before sowing and NH₄NO₃ ½ at 10th leaf; 9. CO(NH₂)₂ ½ before sowing and NH₄NO₃ ½ at early tasseling stage. It was established that the time of nitrogen application and the scheme of fertilization are an important factor for the nitrogen nutrition of maize. Applying nitrogen fertilization (NH₄NO₃) following the scheme 1/3 before sowing, 1/3 at 5th leaf stage and 1/3 at early tasseling stage increased significantly cob weight, grain weight, the number of grains per cob and the total yield increased by about 4-8 t/ha.

Keywords: maize, nitrogen fertilization

52nd Croatian & 12th International Symposium on Agriculture February 12 - 17, 2017, Dubrovnik, Croatia (361-365)

5. POTENTIAL OF THE LAND IN ARCHAR VILLAGE FOR CREATION OF VINES FOR HIGH-QUALITY WINE GRAPE VARIETIES. SOIL SPECIALITY OF THE TERROIR

Mladen ALMALIEV, Krasimir TRENDAFILOV, Violeta VALCHEVA,
Nedialka YORDANOVA, **Nikolay MINEV**

The aim of this study was to make the soil characteristics of the land in Archar village and to assess their suitability for creation of new vineyards for growth of high-quality wine grape varieties. Successively were studied the characteristics of the terroir - soil texture and physical properties of the soil, determined was the soil reaction, the content of active calcium, humus, water-soluble salts and the content of nutrient macro elements. Based on the preliminary study results was determined harmful acidity and saturation degree of the soil with bases and has proposed a plan for amelioration of the problem areas and recommended fertilization rates. The presented work was an attempt to systematize of the complex study on the suitability of one complicated terrain in terms of its topography and erosion conditions with regard to its suitability for transformation into vine terroir.

Keywords: soil, vines, terroir, wine grape varieties.

Scientific Papers Series A. Agronomy, Vol. LIX, ISSN 2285-5785; ISSN Online 2285-5807, 21-26.

6. AGROCHEMICAL STUDY ON MAIZE (*Zea mays* L.) GROWN UNDER DIFFERENT VARIANTS OF NITROGEN FERTILIZATION

Nikolay MINEV, Nedialka YORDANOVA, Maya DIMITROVA, Mladen ALMALIEV

Basic agrochemical characteristics were studied in maize grown under different variants of nitrogen fertilization. The maize hybrid P0216 of Pioneer Company was studied, grown under irrigation conditions, following the conventional adopted technology in our country. The hybrid is characterized by high productivity and drought resistance. The trial was set by the block-plot method with a plot size of 21 m². Nitrogen (2.4 kg N/ha) was applied in the following variants: 1. Untreated control; 2. NH₄NO₃ - pre-sowing application of the whole rate; 3. NH₄NO₃ - split application: ½ presowing and ½ at 5th leaf; 4. NH₄NO₃ - 1/3 pre-sowing application, 1/3 - at 5th leaf and 1/3 - at tasseling stage; 5. NH₄NO₃ - ¼ pre-sowing application, ¼ - at 5th leaf, ¼ - at 12th leaf and ¼ - at tasseling stage; 6. CO(NH₂)₂ - presowing application of the whole rate; 7. CO(NH₂)₂ - ½ pre-sowing and ½ at 10th leaf; 8. CO(NH₂)₂ - ½ pre-sowing and NH₄NO₃ - ½ at 10th leaf; 9. CO(NH₂)₂ - ½ pre-sowing and NH₄NO₃ - ½ at tasseling stage. Export of nutrients and their use efficiency per production unit are important agrochemical indicators for maize. Their values vary according to the genotype, soil and climatic conditions, the predecessor and fertilization. Nitrogen export varies greatly depending on the fertilization rate and phosphorus and potassium export - depending on the genotype and climatic conditions during the year.

Keywords: maize, nitrogen fertilization, climatic conditions.

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7. EFFECT OF PLANTING DENSITY OF DIFFERENT MAIZE HYBRIDS ON CROP GROWTH AND YIELD

Maya DIMITROVA, **Nikolay MINEV**, Nedyalka YORDANOVA, Violeta VALCHEVA,
Mariyan YANEV

Three hybrids of maize of Pioneer Company (P9241, P9900 and P0023) grown at different plant densities (40000, 46000, 56000, 69000 number per ha) were studied in the experimental field of Agricultural University of Plovdiv in 2015 and 2016. The purpose of this study was to trace the influence of sowing density of maize hybrids on growth and yield. The experiments were carried out by split-plots method. The experimental areas were

fertilized with a nitrogen fertilizer rate of 240 kg/ha - $\frac{1}{2}$ CO(NH₂)₂, applied in the 5-6 leaf stage of the plant and $\frac{1}{2}$ NH₄NO₃, applied into the 10th leaf stage. A hybrid P9900 has the highest plants at the end of vegetation. There was no significant difference between variants with plant densities - from 279.4 cm (40000 plants/ha) to 284.4 cm (56000 plants/ha). Height of plants of hybrid P9241 was the smallest - 260.5 cm at a sowing density of 40000 plants/ha. The highest yield between 3 hybrids was obtained at a sowing density of 69000 plants per ha. Hybrid P9241 showed yield of 13800 kg/ha, while hybrid P9900 - 14257 kg/ha.

Keywords: maize, planting density, growth, yield.

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8. Влияние на листното торене върху добива и качеството при лавандула (*Lavandula angustifolia* Mill.)

Effect of Foliar Fertilization on the Yield and Quality of Lavender (*Lavandula angustifolia* Mill.)

Nikolay Minev

Целта на настоящото проучване е да се установи ефекта на листното торене върху някои физиологични показатели, както и върху добива на цвят, етерично масло и неговото качество при лавандула – първа и втора година на отглеждане. Важно от практическа и научно-приложна гледна точка е дали листното третиране на лавандулата би оказало влияние върху физиологичните, количествените и качествените ѝ параметри. Използваните продукти са комбинация от различни макро- и микроелементи. За целта бе заложен производствен полски опит в Аграрен Университет Пловдив с лавандула сорт Юбилейна. Опитът има четири варианта с големина на опитната парцела от 500 m² (три листни продукта + нетретирана контрола). Получените резултати показват, че някои от изпитваните листни торове оказват значителен ефект върху физиологичните и качествени показатели, както и върху добива на цвят и етерично масло при лавандулата.

Keywords: лавандула, торене на лавандула, етерично маслени култури

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9. Влияние на листно приложени регулатори на растежа върху добива на пролетен фий (*Vicia sativa* L.)

Николай Минев

Effect of Foliar Applied Growth Regulators on the Yield of Common Vetch (*Vicia sativa* L.) Nikolay Minev

Целта на проучването е да се установи ефекта върху добива на листно приложени растежни регулато-ри при пролетния фий (*Vicia sativa* L.). За изпълнението на тази цел в периода 2008-2010 година на УОББ на Аграрен Университет - Пловдив бе проведен тригодишен полски опит с два сорта пролетен фий – Добруджа и Образец 666. Опитът бе заложен по метода на дробните парцели в четири повторения и големина на опитната парцела от 10 m². Получените резултати показват, че внесените във фаза бутонизация-начало на цъфтеж растежни регулатори повлияват до голяма степен добива на зърно (Бормакс, РЕНИ Д и РЕНИ), суха вегетативна маса (Бормакс, РЕНИ Д и Мп хелат) и жътвения индекс (Бормакс) при двата сорта пролетен фий.

Ключови думи: пролетен фий, растежни регулатори, зърнено-бобови култури

Journal of Mountain Agriculture on the Balkans, 2020, 23 (3), pp. 91-107

10. Growth regulators – a biological means for stimulating photosynthetic activity, nitrogen fixation and the increase of the biological value of protein in forage peas (*Pisum arvense* L.)

N. Minev

The aim of the study was to determine the effect of foliar application of growth regulators on photosynthetic activity, nitrogen fixation and the biological value of protein in two cultivars of winter forage peas – Mir and Vesela. For achieving the aim set, a three-year field trial was carried out in the Training and Experimental Fields of the Agricultural University of Plovdiv, on a plot untreated with commercial fertilizers. The following growth regulators were used: RENI, RENI D, Bormax, Manganese Chelate and Molybdenite, applied at the phenological stage of pea plant budding. The effect of those products on the studied characteristics was compared to the untreated control. The reported three-year results show that foliar applied growth regulators had a positive effect on photosynthetic and nitrogenase activity, as well as on the characteristics of the nitrogen fixation apparatus (total number of nodules, number of active nodules and weight of the nodules) and on the biological value of the obtained protein in both cultivars of winter forage peas.

Keywords: growth regulators, organic farming, protein crops, symbiotic nitrogen fixation

AGRICULTURAL SCIENCE AND TECHNOLOGY, VOL. 12, No 3, pp 221-226, 2020

11. EFFECTS OF FOLIAR FERTILIZATION ON GROWTH, DEVELOPMENT AND PRODUCTION OF FLOWERS AND ESSENTIAL OIL ON LAVENDER (*Lavandula angustifolia* Mill.)

Nikolay MINEV

The purpose of this study was to determine the effect of foliar fertilization on the growth, development and productivity of lavender Jubileyna variety - the first and second year of cultivation. It is known that the soil and climate conditions are major factors in terms of growth and productivity in lavender. Important for science and practice is to determine the effect of different combinations of nutrients on yield and its components for this essential oil culture. They are used fertilizers with a different composition in terms of macro and micronutrients. The variants of the experiment are four (three leaf fertilizers + untreated controls) and the size of the experimental plot is 500 m². The application of leaf fertilizers is carried out in the budding phase of lavender. The results of some of the products show that foliar fertilization has a significant impact on the growth and productivity of the lavender. Some nutrients help to overcome physiological stress due to adverse weather factors. This leads to the formation of higher yields of flowers and oil of lavender.

Keywords: lavender, lavender fertilization, essential oil crops

Scientific Papers Series A. Agronomy, Vol. LXIII, № 1, 2020, pp 415-421

12. INFLUENCE OF NITROGEN FERTILIZATION RATES ON THE PRODUCTIVITY OF MAIZE UNDER NON-IRRIGATION CONDITIONS

Alexander MATEV, Nikolay MINEV

The aim of the study is to study the effect of different nitrogen fertilization rates on the productivity of maize grown under non-irrigation conditions in the Plovdiv area. The experiment was conducted in the period 2004-2007 in the AU Plovdiv on alluvial-meadow soil. The following fertilization levels N0, N8, N16 and N24 were tested. As a source of nitrogen, ammonium nitrate (NH₄NO₃) was used. The results show that as the fertilizer rate increases, the yield increases, with N8 increasing between 1 and 5% and N16 between 2 and 8%. The difference between N16 and N24 is less than 2%, with the average for the four years practically coinciding (907 and 908 kg/da, respectively). A square relationship between the fertilization rate and the yield was established at $R^2 = 0.732$. From an economic point of view, the best results are obtained at N0 and N16, which gives reason to believe that in the Plovdiv area, fertilization of maize under non-irrigation conditions is ineffective. The highest nitrogen fertilizer use efficiency (NFUE) was obtained at N16, with an average yield of 2,375 kg/da from every 1 kg/da of nitrogen. Slightly lower (5.5%) is NFUE at N8. Nitrogen fertilization rates have little impact on the 1000 seeds weight and test weight.

Keywords: maize, yield, nitrogen fertilization.

Scientific Papers Series A. Agronomy, Vol. LXIII, № 1, pp 394-401

13. EFFECT OF GROWTH REGULATORS ON THE STRUCTURAL ELEMENTS AND YIELD OF COMMON VETCH (*VICIA SATIVA* L.).

Nikolay Minev

The aim of the present study was to determine the effect of some exogenously applied growth regulators on the grain yield and its structural elements in common vetch (*Vicia sativa* L.). For achieving it, a three-year field trial was carried out in the period 2008-2010 in the Training-and-Experimental Fields of the Agricultural University – Plovdiv. The experiment was conducted with two Bulgarian common vetch cultivars – Dobrudzha and Obrazets 666, in four replications, the size of the experimental plot being 10 m². Foliar treatment with the growth regulators RENI and RENI D and the three commercial products – Bormax, Manganese chelate and Molybdenite, was performed in the stage of budding. The results of the three-year experiment clearly show the effect of RENI, RENI D and Bormax on the structural elements of the yield and on the amount of grain harvested from the two common vetch cultivars.

Keywords: common vetch, growth regulators, grain and legume crops.

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14. IMPROVING THE BIOLOGICAL VALUE OF COMMON VETCH GRAIN (*VICIASATIVA* L.) BY TREATMENT WITH GROWTH REGULATORS

Alexandar Matev*, **Nikolay Minev**

A three-year field trial was carried out with two Bulgarian common vetch cultivars – Dobrudzha and Obrazets 666. The experiment was performed in the Training and Experimental Fields of the Agricultural University – Plovdiv on alluvial-meadow soil, in four replications, the size of the experimental plot being 10 m². The studied growth regulators RENI and RENI D, as well as the commercial products Bormax, Mn chelate and Molybdenite were applied once in the season, at the budding stage of vetch. The results obtained show that treatment with the growth regulators contributed to the increase of the starch content, the effect being more pronounced in Obrazets 666 – an increase of 3,2 to 3,5% compared to the untreated variant. What is more, the application of the products increased the protein content in both studied common vetch cultivars – Dobrudzha responded better to Bormax and RENI D, while Obrazets 666 responded to three growth regulators (Bormax, RENI and RENI D). A change in the elemental and amino acid composition of the harvested grain was also reported, which is essential for the production of feed of higher biological value for the farm animals. In Dobrudzha cultivar, a 12,0% increase of the lysine content in grain was found after treatment with RENI. Obrazets 666 responded with a sharp increase in the values of the sulfur-containing amino acid methionine in the grain protein in the variants treated with RENI D and Bormax – 47,2 and 35,2% on average.

Keywords: common vetch, growth regulators, biological value of feed, cereals and legumes, protein quality

- Г8. Статии и доклади, публикувани в нереферирани списания с научно рецензиране или публикувани в редактирани колективни томове (показател Г8 от ППЗРАСРБ).

**15. ИЗСЛЕДВАНЕ НА ЕФЕКТИ ОТ ТРЕТИРАНЕ С РЕНИ ВЪРХУ
КАЧЕСТВЕНИ ПОКАЗАТЕЛИ ПРИ ЛЮЦЕРНА**

Н. Минев, Н. Попов, Хр. Янчева

**STUDY ON THE EFFECTS OF TREATMENT WITH 'RENI' ON
QUALITY CHARACTERISTICS OF ALFALFA**

N. Minev, N. Popov, Ch. Yancheva

Целта на изследването е да се проучат възможности за прилагане на препарати с регулаторни свойства (РЕНИ) при люцерна и влиянието им върху важни за качеството показатели. Изведен е полски опит в землището на гр. Павликени по стандартен блоков метод в четири повторения с големина на парцелката 15 m². За анализи е използван втори откос през втората и третата година след сеитбата. Третирането на люцерната е извършено във фаза бутонизация, а анализите – 7 дни след третирането. Установена е положителна връзка между изменящото се количество на молибден и съдържанието на цинк в изследваните проби люцерна - молибденът повишава количеството на постъпилния цинк в третираните растения. Същевременно цинкът влияе отрицателно върху постъпването на молибдена в люцерната. Тези зависимости са важни при приготвяне на комбинирани разтвори от растежни регулатори. Проучените препарати РЕНИ са ефективни за подобряване на азотния обмен при люцерната. Прибавянето на цинк към РЕНИ влияе върху количеството и качеството на белтъците - увеличава се частта на незаменимите аминокиселини, а чрез тях се подобрява биологичната стойност на белтъците. РЕНИ самостоятелно и РЕНИ с добавка на цинк влияят на първичните светлинни реакции и електрон-транспортните процеси в тилакоидите на люцерната, което се отразява положително върху ефективността на азотфиксацията и азотния обмен.

Ключови думи: люцерна, елементарен състав, растежни регулатори, РЕНИ, аминокиселини, качество на протеина.

Journal of Mountain Agriculture on the Balkans, Vol. 12,6, 2009, pp. 1354-1365.

**16. Съдържание сырого белка и аминокислот в зерне некоторых
зерновых культур выращенных в регионе Пловдива Болгария.**

Х. Кирчев, Н. Минев, Н. Йорданова

The grain crops are the most important group of crops grown all over the world. This is due to their substantial nutritional value because of the high content of carbohydrates. The purpose of this study is to establish the content of raw protein and the amino acids composition of the grain grains of some grain crops grown in the region of Plovdiv. The results show, that the quantity of the raw protein is influenced by the weather conditions during the year as more protein is likely to accumulate in years with higher temperatures during the grain formation. The highest quantity of protein was detected in the triticale followed by the oats, while the barley used in brewery was found to contain the smallest quantity of protein. The nonessential amino acids constitute the largest part of the protein in grain crops and the concentration of the essential amino acids is the highest in the protein of the triticale.

Keywords: Protein, amino acids, cereal crops

Сборник статей международнои научно-практической конференции (23-27 мая 2011 г.) часть 2, Иркутск, ISBN 978-5-91777-053-6, 65-68, pp. 65-69

17. РЕГУЛИРАНЕ НА СИМБИОТИЧНАТА АЗОТФИКСАЦИЯ, КАЧЕСТВОТО И ПРОДУКТИВНОСТТА ПРИ БОБОВИ КУЛТУРИ, ТРЕТИРАНИ С ПРЕПАРАТИТЕ РЕНИ

Н. Попов, А. Севов, **Н. Минев**, А. Дзимотудис, Хр. Янчева

REGULATION OF SYMBIOTIC NITROGEN FIXATION, QUALITY AND PRODUCTIVITY IN LEGUMINOUS CROPS, TREATED WITH RENI CHEMICALS

N. Popov, A. Sevov, **N. Minev**, A. Dzimotudis, H. Yancheva

Научната разработка представлява обобщение на ефектите на препаратите РЕНИ върху качествени и количествени показатели при фуражен и градински грах, фий и люцерна. Независимо от вида на изследваните култури, резултатите показват следните тенденции: повишава се ензимната и фотосинтетичната активност, като се доказва и тясната връзка между двата процеса; повишава се добива и се подобрява биологичната стойност на получената продукция; повишава се икономическата ефективност на производството. Проучваните култури проявяват видова и сортова разлика по отношение на въздействието на различните комбинации РЕНИ, при едностранно положително въздействие на всяка една от тях по отношение на изследваните показатели.

Ключови думи: фуражен грах, градински грах, фий, люцерна, растежни регулатори, РЕНИ, азотфиксация, нитрогеназа, глутаминсинтетаза.

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18. Adjustment of Low Productive Terrains for Establishment of Vineyard Terroir in Bulgaria

Krasimir Trendafilov, Violeta Valcheva, Mladen Almaliev, Nedialka Yordanova, **Nikolay Minev**, Stefka Todorova

The aim of this study was to propose principles technological decisions for adjustment of low productive terrains located in Chernogorovo village and their conversion into specific terroir for growth of wine varieties vineyards. Successively were studied the morphological characteristics of the terrain - mechanical composition and physical properties of the soil, determined were soil reaction, the content of total and alkaline earth carbonates, the content of active calcium, humus content, water-soluble salts, the content of easily absorbable iron, index of chlorine force and the content of nutrient macro elements. Based on the results was found, that within the studied terrain in the part occupied by Chromi-eutric cambisols and Eutric regosols, the terrain was suitable for the establishment and cultivation of vineyards in the direction of high quality red wines. The content of total carbonates and active calcium in Chromi-eutric cambisols did not limit the choice of pad. Can be used seedlings, grafted of pad Berlandieri x Riparia selection Openheim 4 (SO 4) or other suitable. The area, occupied by Eutric regosols, had higher content of total and active carbonates and it is recommended the use of sustainable pad - Chasla x Berlandieri 41B. The presented study was an attempt to systematize the complex research on the suitability of one complicated terrain in terms of erosive conditions with regard to its suitability for transformation into vineyard terroir.

Keywords: soil properties, vineyard, terroir, wine varieties

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19. RESEARCH OF SOIL-CLIMATIC CONDITIONS OF LAND LOCATED NEAR KAVARNA TOWN AND ASSESSMENT OF THEIR SUITABILITY FOR VINES CULTURE

Mladen Almaliev, Krasimir Trendafilov, Violeta Valcheva, Stefka Todorova, **Nikolay Minev**, Nedialka Yordanova

The research object belongs to the Eastern terroir "Black Sea" and in terms of climate conditions the land of the Kavarna town belongs to the Black Sea climatic sub-region and the climatic region of the northern coast. The main soil difference spread within the research object are Haplic chernozems and of limited size plots are spread following soil differences: Gleyic chernozems in the west part and Rendzinas - in the north-east and east part. In this study successively were research and described the morphological characteristics of the main soil incisions and were determined by soil characteristic - mechanical composition, soil reaction, content of total and alkaline earth carbonates, content of active calcium, humus content, content of easily absorbable iron and content of nutrient macro elements. Soil - climatic conditions of the research area are suitable for growth of vines for producing quality

wines. The established temperature conditions in the area and respectively of the research terrain allows growth of quality white wine varieties, such as Sauvignon Blanc, Chardonnay, Traminer, etc., as well as growth of medium-early varieties for quality red wines such as Cabernet Sauvignon, Merlot, Pinot Noir, etc. It is not recommended growth of late and very late vine varieties.

Keywords: soil, vineyards, chernozems, rendzinas, wine

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20. Возможности повышения качества кормовых бобовых культур.

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Цель исследования является влияния „РЕНИ“ и других стимуляторов на качество основных кормовых культур, проведены два полевых опыта. Полученные результаты содержания незаменимых аминокислот в надземной биомассе люцерны. „РЕНИ“ повышает содержание почти всех протеиногенных аминокислот (заменимых и незаменимых) в надземной массе люцерны. Добавления цинка в „РЕНИ“ влияет на количество и качество белков – увеличивается стоимость белков. Содержание фенилаланина повышается на 26,66%, валина на 21,20%, лейцина – на 13,60%.

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