

РЕЗЮМЕТА

на научните публикации и трудове, представени за участие в конкурс за заемане на академичната длъжност - **“Доцент”** по област на висше образование

6. Аграрни науки и ветеринарна медицина, Професионално направление: 6.1 Растениевъдство, Научна специалност-“Агрохимия”

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I. ТРУДОВЕ ПО ПРОФЕСИОНАЛНО НАПРАВЛЕНИЕ, С КОИТО УЧАСТВА В НАСТОЯЩИЯ КОНКУРС

I. Б.3. Хабилизационен труд – научни публикации (не по-малко от 10) в издания, които са реферирани и индексирани в световноизвестни бази данни с научна информация

1. **Almaliev M.**, K. Trendafilov, S. Todorova, 2015. Influence of liming with $\text{Ca}(\text{OH})_2$ on the calcium and magnesium content in the grape of wine grape varieties, The International Conference of the University of Agronomic Sciences and Veterinary Medicine of Bucharest "Agriculture for Life, Life for Agriculture" June 4 - 6, 2015, Bucharest, Romania. **Scientific Papers. Series A. Agronomy**, Vol. LVIII, 2015. **ISSN Online 2285-5807**, pp. 15-19.

Abstract

In condition of combined field experiment was studied the influence of liming with $\text{Ca}(\text{OH})_2$ at rates of 1.0, 2.5 and 5.0 t/ha on the input of calcium and magnesium in the grapes of fertility vines from varieties Sauvignon Blanc, Chardonnay, Cabernet Sauvignon and Merlot planted on Chromic luvisol. Samples were collected in two consecutive years. In the first year of the study was not found statistically proven variation of the Ca content in the composition of the fresh grape mass. The available Ca amount in grapes in ameliorative lime rate of 5.0 t/ha was lower compared to that what was found for the lower ameliorative lime doses. About magnesium was found statistically proven exceed at the variants with liming, compared to the variants without liming. Overall white varieties during the first year assimilated more Ca amount compared to the red varieties. According to Mg this difference was insignificant. The differences between limed varieties and the control variant in the second year of the study according to the Ca content in the grape were statistically proven at level of probability 95%.

Key words: liming, calcium, magnesium, wine grape varieties.

2. Илиева Р., Е. Филчева, И. Илиев, М. Тодорова, Р. Попова, В. Вълчева, **М. Алмалиев**, К. Трендафилов, 2015. Химични и инструментални методи за определяне на органичната съставна част на почвите. Юбилейна научна конференция "70 години Аграрен университет - Пловдив", 29-31 октомври 2015г. **Научни трудове**, т. LIX, кн. 5, 2015г., ISSN 1312-6318 (Print) **ISSN 2367-5845** (Online) DOI: 10.22620/sciworks.2015.05.038, стр. 331-337.

Abstract

The aim of the investigation is to present the possibility to study the humus system by applying chemical, optical and spectral methods. To get a precise and detailed information about the content, composition, properties and distribution of organic matter along the profile depth, the main soils of Bulgaria are studied by means of chemical, spectral (visible and infrared spectroscopy), and micromorphological methods. The obtained data extend and enrich the information about the organic matter as an important diagnostic feature of the soil properties and processes, the evaluation of their intensity and the position of the processes in the soil profile. Depending on the purposes, the scientist could prefer either one or a combination of methods. Results for Bulgarian soils on the basis of the above mentioned methods are used in soil classification, soil evaluation, etc., which is valuable information for farmers.

Key words: chemical, method, optical, organic matter, spectral.

3. Almaliev M., K. Trendafilov, V. Valcheva, N. Yordanova, N. Minev, 2016. Potential of the land in Archar village for creation of vines for high-quality wine grape varieties. Soil speciality of the terroir. The International Conference of the University of Agronomic Sciences and Veterinary Medicine of Bucharest "Agriculture for Life, Life for Agriculture" June 9 - 11, 2016, Bucharest, Romania, **Scientific Papers, Series A. Agronomy**, Vol. LIX, 2016, **ISSN Online 2285-5807**, pp. 21-26.

Abstract

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.

Key words: soil, vines, terroir, wine grape varieties.

4. Trendafilov K., V. Valcheva, **M. Almaliev**, 2016. Potential of the land in Archar village for creation of vines for quality wine grape varieties. Climatic and geographic speciality of the terroir. The International Conference of the University of Agronomic Sciences and Veterinary Medicine of Bucharest "Agriculture for Life, Life for Agriculture" June 9 - 11, 2016, Bucharest, Romania, **Scientific Papers, Series A. Agronomy**, Vol. LIX, 2016, **ISSN Online 2285-5807**, pp. 159-164.

Abstract

The most important factors, defining the concept of "terroir" for a great wine are soil and climate. The climate allows the vine to adapt to the given location and under specific conditions. In this sense, interest in our study was part of land in Archar village in North terroir "Danubian Plain", characterized by its specific climate. The influence of the light over the vine plant estimate by the values of the helios-thermos coefficient. The average value for the base station was 4.22 and in terms of the brightness determined the studied object as suitable for the cultivation of all vine varieties. The radiation conditions in the studied area were suitable for growth of vine and did not impose restrictions on the choice of formations, planting distance and orientation of the rows of the plantation. The data for the average monthly air temperature for the warmest month of the year shown, that the area was suitable for the production of vine intended for relatively large set of guidelines for realization - for champagne wine, white and red quality wines, white and red table wine, dessert wines, as well as for the production of dessert grapes. During the period of grapes ripening - August and September were found relatively high values of the average temperature amplitudes. The stated values ensure optimal conditions for the process of photosynthesis and respiration and provides a normal and harmonious accumulation of sugars and acids in the grapes. The vegetation period was 200 days. The stated value was sufficient and provides a normal vegetation period for most varieties.

Key words: vine, terroir, wine, grape.

5. Trendafilov K., V. Valcheva, **M. Almaliev**, 2019. Ameliorative, technical and operational solution of vineyard in the conditions of a various soil cover and complex relief. The International Conference of the University of Agronomic Sciences and Veterinary Medicine of Bucharest "Agriculture for Life, Life for Agriculture" June,

2019, Bucharest, Romania, **Scientific Papers. Series A. Agronomy**, Vol. LXII, №1, 2019, **ISSN Online 2285-5807**, pp. 205-212.

Abstract

The aim of the study was to propose a method for systematization of a results of exploration of the relief, hydrology and soil cover for the development of a land-cultivating and ameliorative solution of vineyard terroir under conditions of complex erosion-accumulation landscape. A grouping of the relief and hydrology was carried out. The soil cover was investigated by the large-scale mapping method. The established soil differences were mapped and their distribution was compared with the data for the relief and the runoff. As a result, on the terrain were detached sections with different degrees of suitability for vineyards growth. In the terrains with limited suitability were detached zones, requiring a ameliorative effect on one or more of the three components of the landscape-relief, hydrology and soil.

Key words: *terroir, vineyards, water runoff, landscape, erosion.*

6. Kostadinov K., S. Filipov, V. Kuneva, **M. Almaliev**, T. Shopova, R. Radev, 2019. Influence of seedling quality on the biological manifestations and productivity of greenhouse salad. The International Conference of the University of Agronomic Sciences and Veterinary Medicine of Bucharest "Agriculture for Life, Life for Agriculture" June, 2019, Bucharest, Romania, **Scientific Papers. Series A. Agronomy**, Vol. LXIII, №1, 2019, **ISSN Online 2286-1580**, pp 285-290.

Abstract

The characteristics of seedlings to a great extent determine the quality and describe the success of production after planting. In an experiment carried out with winter-spring planting in an unheated glasshouse the influence of seedlings mixture on the main characteristics and the productivity of leaf lettuce variety Malvine. Four variants of nurseries grown with different seedlings mixtures have been set up as follow: 1. Peat -100% (control); 2. Peat 88% + Perlite 12%; 3. Peat 80% + Perlite 10% + Pine shavings Peat 79.85% + Perlite 10.52% + Pine shavings 10.53%. The aggregated results show that Peat 79.85% + Perlite 10.52% + Pine shavings 10.53% is with the highest vegetative growth and development, as exceeded the control for all indicators: 2% - 3% for the whole plant, 8% for the leaves, and 1% -2 % by diameter of the rosette. This study gives us reason to recommend as a hopeful for salad planting winter-spring season in unheated glasshouse mixture: Peat 79.85% + Perlite 10.52% + Pine shavings 10.53%.

Key words: *correlations, greenhouse, growth and productivity, nurseries mixture, salad (lettuce).*

7. Minev N., N. Yordanova, M. Dimitrova, **M. Almaliev**, 2019. Agrochemical study on maize (zea mays l.) grown under different variants of nitrogen fertilization. The International Conference of the University of Agronomic Sciences and Veterinary Medicine of Bucharest "Agriculture for Life, Life for Agriculture" June, 2019, Bucharest, Romania, **Scientific Papers. Series A. Agronomy**, Vol. LXII, №2, 2019, **ISSN Online 2285-5807**, pp. 99-103.

Abstract

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.

Key words: *maize, nitrogen fertilization, climatic conditions.*

8. N. Yordanova, Ts. Moskova, **M. Almaliev**, V. Delibaltova, V. Valcheva and M. Tityanov, 2022. Effects of some products for foliar application on the productivity and essential oil content in lavender (*Lavandula angustifolia* Mill.) ***Bulgarian Journal of Agricultural Science***, 28 (No1) 2022, ISSN 1310-0351 - print **ISSN 2534-983X** - online pp. 96–102. **Q3, SJR; 0,25**

Abstract

The experiment was conducted in the period 2018-2020 in the region of Razgrad, the land of Osenets village, Northeastern Bulgaria on soil type Chernozem and an experimental area of 500 m² in four replications with lavender variety Sevtopolis. The following foliar fertilizers and biostimulators were included in the study at the respective rates: Variant 1 – Fertigrain foliar – 1.5 l/ha, Variant 2 – Amalgerol – 3.5 l/ha, Variant 3 – Fertileader vital – 3 l/ha, Variant 4 – Siapton – 3 l/ha. They were applied at the end of buttoning and the beginning of flowering stage. In order to follow out the effect of those products on the elements of productivity, essential oil content, inflorescences and essential oil yield, the variants were compared to an untreated control (Variant 5). The experiment was carried out following the adopted cultivation technology. The following characteristics were reported: number of tuft inflorescences, length of flowering stem, number of flower nodes, weight of tuft inflorescences, yield of fresh inflorescences – kg/ha, essential oil content – % and yield of essential oil – kg/ha. Data obtained for the values of the structural elements, the yield and the essential oil content were statistically processed by the method of dispersion and correlation analyses. The results showed: the structural elements of the yield – number of tuft inflorescences, length of flowering stem, number of flower nodes and weight of tuft inflorescences in the treated variants exceed the untreated control up to 8.9%, 11.3%, 19.34% and 13.6% respectively. The increase in flower yield in the products used for foliar application was in the range from 69 to 580 kg/ha compared to the control variant. The highest yield was reported in the variant treated with the preparation Siapton 3 l/ha – 6280 kg/ha. Compared to the untreated control in foliar fertilization with the tested products was reported an increase in the content of essential oil, and the highest values were when used the product Fertileader vital 3 l/ha – 1.69% to 1.51% for the control variant. The yield of essential oil was with the highest values when used the products Fertileader vital 3 l/ha and Siapton 3 l/ha and exceed the control variant by 18.2%.

Key words: biostimulants; essential oil %; essential oil yield; foliar fertilizer; inflorescences yield; lavender

9. Minev N., A. Matev, N. Yordanova, I. Milanov, M. Sabeva, **M. Almaliev**, 2022. Effect of foliar products on the inflorescence yield of lavender and essential oil. *Agronomy Research* 20(3), 660–671, 2022 <https://doi.org/10.15159/AR.22.033>, **ISSN 1406-894X**, <https://www.scopus.com/sourceid/21100201050>, pp 660–671. **Q3, SJR; 0,29**

Abstract

The topic of the effect of foliar fertilization on the productivity and oil content of lavender is relevant, but not sufficiently studied. The present study aims to establish the effect of foliar products on the growth, development and productivity of lavender. The field experiment was carried out at the Agricultural University - Plovdiv with lavender of 'Jubileina' variety during 2019–2020. The following variants were included in the study: 1. Untreated control; 2. Treatment with Fertileader Gold (FG) - 3 L ha⁻¹; 3. Treatment with Fertigrain Trium + Fertileader Vital (FT + FVital) - 1.5 + 1.5 L ha⁻¹; 4. Treatment with Fertileader Viti (FViti) - 3 L ha⁻¹; 5. Treatment with Fertileader Vital (FV) - 3 L ha⁻¹; 6. Treatment with Fertileader Alpha (FA) - 3 L ha⁻¹. Those preparations are bio stimulants for foliar application. The treatments were made in two consecutive lavender vegetation seasons. The first application was carried out in the second growing season (2019) and the second in the next, third growing season (2020). The foliar application of all tested products increased the photosynthetic activity, but it was better expressed when using the plant nutrition products FV, FViti and FT + FVital. A positive effect was also observed in the height and diameter of the bush, but during the third vegetation period. The number of flowering stems increased by 62.9%; 59.4%; 53.3% and 8.4%, respectively, when applying the fertilizers FG, FT + FVital, FViti and FV. The application of FG and FT + FVital increased the yield of fresh inflorescences by 6.1% and 3.7%. The application of the different products affected the oil yield in different ways; the application of FG, FT + FVital and FViti increased it, while FV and FA decreased it by 27 kg ha⁻¹ and 16 kg ha⁻¹, respectively, for the first vegetation and by 43.4 kg ha⁻¹ and 33.1 kg ha⁻¹ for the second vegetation. The boron containing products FG, FT + FVital and FViti led to a significant increase in the essential oil yield, while the application of the foliar fertilizers FV and FA reduced it. Based on those results, the first three products are recommended.

Key words: medicinal crops, *Lavandula angustifolia*, foliar fertilization, flower yield, oil yield, oil content

10. Trendafilov K., V. Valcheva, M. **Almaliev**, N. Yordanova, 2023. Spatial distribution of phosphorus on the soil catena of chromic cambisols complex. **Scientific Papers. Series A. Agronomy**, Vol. LXVI, No. 1, 2023, ISSN 2285-5785; ISSN CD-ROM 2285-5793; ISSN Online 2285-5807; ISSN-L 2285-5785, pp. 180-189.

Abstract

The present study aims to establish the influence of the processes of secondary pedogenesis on the content and distribution of mobile forms of phosphorus in Chromic cambisols complex formed on a silicate base. Phosphorus is not a major nutrient in pedogenesis and is not clear its natural redistribution in the range of soils with general geological origin of terrigenous materials, but located differently in terms of their eluvial-deluvial transfer within a common long soil catena. The size of the total sample is 15 soil sampling points, and at each point samples are taken from the layer 0-25 and 25-50 cm. The sampling points are selected in the middle of a characteristic slope, without manifestation of local linear erosion forms or accumulation zones. Based on the study, it was found that the content of P₂O₅ in the top soil layer did not depend on the location, and the deeper horizon should be considered as diagnostic one in terms of its distribution.

Key words: soil catena, phosphorus, topographic factors, variogram.

II. Г.6. Публикувана книга на базата на защитен дисертационен труд за присъждане на образователна и научна степен "доктор"

1. Алмалиев, М., 2022. **Агрохимична оценка на някои генотипи твърда пшеница**. Интел Ентранс ООД, **ISBN:978-619-7554-93-9**, с.170

Анотация:

Изследването е проведено на експерименталното поле в ИПК- Чирпан през периода 2010-2013г. Схема на опит 1: Фактор А - Азотно торене: норми 0, 6, 12, 18 kg N/da. Фактор Б - Сорт: Прогрес, Възход, Виктория, Предел, Деяна, Звездица, Елбрус. Фактор В - Година. Схема на опит 2: Фактор А - системи на торене при сорт Прогрес: N0P0; 2. N0P8; 3. N0P12; 4. N0P16; 5. N12P8; 6. N12P12; 7. N12P16. Фактор Б - Година. Целта на настоящата дисертационна разработка е да се проучат български сортове твърда пшеница в зависимост от азотното и фосфорно торене и да бъдат оценени по основни агрономически параметри и индекси на ефективност. Установено е, че за получаване на високи и устойчиви добиви на зърно от твърда пшеница през години с различаващи се метеорологични условия може да се препоръча новият сорт Елбрус. Стандартният сорт Прогрес се отличава с високи физични и технологични качества. Сортът формира зърно с най-висока хектолитрова маса и маса на 1000 зърна, висока стъкловидност, протеин и мокър глутен и е най-подходящ за производство на грухана пшеница и здравословни пълноценни храни. За реализиране на високи добиви оптимално ниво на торене е 12 kg N/da. Използването на азотна торова норма 18 kg/da понижава значително рентабилността на производството и не е ефективна агротехническа дейност. Самостоятелното фосфорно торене не влияе съществено върху продуктивността и качеството на зърното от твърдата пшеница, а за постигане на максимални резултати и с цел запазване на почвеното плодородие е задължително комбинирането му с азот в системата на торене. Утвърдените в практиката сортове Прогрес и Възход изнасят по-малко азот спрямо новите генотипи.

III. Г.7. Статии и доклади, публикувани в научни издания, реферирани и индексирани в световноизвестни бази данни с научна информация

1. **Almaliev, M., S. Kostadinova, G., Panayotova**, 2014. Effect of fertilizing systems on the phosphorus efficiency indicators at durum wheat, "**Agriculture & Forestry**", Vol. 60 Issue 4: ISSN 0554-5579 (Printed), **ISSN 1800-9492** (Online), DOI:10.17707/AgricultForest, COBIS.CG-ID: 3758082 pp. 127-134.

Abstract

The main agronomic indicators of effectiveness for phosphorus fertilizing alone or combined with nitrogen fertilization N120 in durum wheat grown in conditions of long term fertilizing experiment in two field crops rotation cotton – durum wheat under rain conditions for the period of three vegetations including years 2011 – 2013 were studied. The Latin square method as experimental design with trial plot size 50m² in four replications was used. The examined fertilizing systems were as follows: N0P0; N0P80; N0P120; N0P160; N120P80; N120P120; N120P160. Nitrogen fertilization as NH₄NO₃ was applied early spring. The phosphorus fertilization was applied before sowing as triple superphosphate. The soil type of experimental field was Eutric vertisols. Weather conditions during the studied period 2011 – 2013 were different as a temperature and rainfall each year. Indexes partial factor productivity (PFP), agronomic efficiency (AE), apparent crop recovery (RE), partial nutrient balance (PNB), and physiological efficiency of applied phosphorus (PE) were studied. It was established that fertilizing systems of durum wheat strongly affect the indicators of phosphorus efficiency. The partial factor productivity of phosphorus changed from 13.4 to 51.8 kg grain per kg P₂O₅ applied in dependence of the fertilizing system. The average agronomic efficiency was varied in range 1.6-28.1 kg grain and 0.20-4.58 kg grain protein for the experimental period. Apparent crop recovery efficiency of applied phosphorus (kg increase in P uptake per kg P applied) was very low 0.11-0.15 kg.kg⁻¹ when wheat was grown with no nitrogen fertilization. Recovery efficiency and physiological efficiency of applied P (kg yield increase per kg increase in P uptake from fertilizer) did not depend of the quantity of applied phosphorus P80-P160 in systems without nitrogen. Alone phosphorus fertilizing in rates 80-160 kg P₂O₅.ha⁻¹ demonstrated lower efficiency of phosphorus expressed as calculated indicators partial factor productivity, agronomic efficiency, apparent crop recovery, partial nutrient balance, and physiological efficiency. Systematic fertilization of durum wheat in rates N120P80 was the most effective in average for the experimental period.

Keywords: phosphorus efficiency indicators, durum wheat.

2. Todorova S., K. Trendafilov, **M. Almaliev**, 2015. Phosphorus fractions in alluvial-meadow soil after long-term organic-mineral fertilization. Юбилейна научна конференция "20 години Тракийски университет", 19-20 май 2015г. Стара Загора, International Scientific Journal "**Agricultural Science and Technology**", Vol. 7, № 4, 2015, **ISSN 1313-8820**, pp. 431-435.

Abstract.

The aim of our study was to investigate phosphorus fractions, their content and distribution in alluvial meadow soil after continuous fertilization. Our research was focused on a long-term field experiment with different variants of fertilization set in 1959 in the Experimental field of Agricultural University of Plovdiv. Since 2006 the fertilization has been discontinued. In 2011, we collected soil samples from two depths (0 – 30 and 30 – 40 cm) and from the following variants: variant 1 (control, without fertilization), variant 2 (N P K), variant 3 (N P K + 6t/da manure), variant 4 (N P K). The studied soil is characterized by 50 30 20 25 15 0 50 0 20 relatively good natural phosphate regime. The amount of available phosphates determined by the Egner-Rheem method is high – average 16.76% of the total phosphorus. Over 50% of the mineral phosphates in the soil are in available (in varying degree) form. Relatively high is the amount of organic phosphates, which during the mineralization can also be involved in the plant nutrition. The amount of available phosphates (according to Egner-Rheem) is determined to the highest degree by the total phosphorus in soil, which in turn is highly correlated with the content of hardly soluble calcium phosphates.

Keywords: alluvial meadow soils, phosphorus fractions

3. Valcheva V., K. Trendafilov, **M. Almaliev**, 2015. Nitrogen mineralization potential of alluvial-meadow soil after long-term fertilization. Юбилейна научна конференция "20 години Тракийски университет", 19-20 май 2015г. Стара Загора, International Scientific Journal "**Agricultural Science and Technology**", Vol. 7, № 4, 2015, **ISSN 1313-8820**, pp. 476-480.

Abstract

The aim of this study was to investigate the nitrogen mineralization potential of alluvial meadow soil after continuous fertilization. Our research was focused on a long-term field experiment with different variants of fertilization set in 1959 in the Experimental field of Agricultural University-Plovdiv. Since 2006 the fertilization has been discontinued. In 2010 and 2011, we collected soil samples from depth 0 – 30cm and from the following variants: 1 – control, 2 – N P K, 3 – N P K + 6

t/da manure, 4 – N P K . In accordance with relatively high content of total nitrogen, the nitrogen mineralization potential of the soil is 50 30 20 25 15 0 50 0 20 high. The maximum amount of nitrogen, susceptible to mineralization at optimum temperature and humidity ranges from 233.21 to 350.90 mg N/kg soil. The proportion of potentially mineralizable nitrogen from the total nitrogen in soil is low – average 17%. The reason for this is the humic type of soil organic matter. Also in its composition dominated black humic acids, which are bonded with Ca and resistant to decomposition. Sufficient amount of clay particles and micropores provide physical protection of organic matter from microbial activity. The mean value of mineralization rate constant (k), 0.041, denotes that at optimal conditions the mineralizable N fraction is released at an average rate of 4,1% per week, based on the quantity of mineralizable N remaining after each succeeding week of incubation.

Keywords: soils, nitrogen, mineralization rate constant

4. Вълчева В., М. Алмалиев, К. Трендафилов, 2015. Проучване на пригодността на ерозионни терени за създаване на овощни насаждения. Юбилейна научна конференция "70 години Аграрен университет - Пловдив", 29-31 октомври 2015г. **Научни трудове**, т. LIX, кн. 5, 2015г., ISSN 1312-6318 (Print) **ISSN 2367-5845** (Online), DOI: 10.22620/sciworks.2015.05.041, стр. 359-368.

Abstract The aim of the study was to make soil-climatic characteristics of the terrains located in the area of Elena, belonging to the European-continental climatic region and to assess their suitability for the creation of orchards. The structure of the harmful acidity and the degree of soil saturation with bases were determined based on the obtained results from the study, as well as a plan was proposed for the melioration of the areas and recommended fertilization rates reported. The terrain is erosively dangerous, which requires implementation of an appropriate system for tree-planting to reduce the intensity of the erosion process. The content of organic matter in the studied objects cannot meet the requirements of the crops. The established values of the pH indicator in the studied plots presented a significant limitation for the growth of the morello cherries and plums.

Key words: soil, orchards, erosion, melioration.

5. Trendafilov K., M. Almaliev, 2015. Influence of liming with Ca(OH)₂ and stockpiling fertilization on the nitrogen, phosphorus and potassium content in the grape of wine grape varieties. The International Conference of the University of Agronomic Sciences and Veterinary Medicine of Bucharest "Agriculture for Life, Life for Agriculture" June 4 - 6, 2015, Bucharest, Romania. **Scientific Papers. Series A. Agronomy**, Vol. LVIII, 2015. **ISSN Online 2285-5807**, pp. 113-116.

Abstract

In condition of combined field experiment was studied the influence of liming with Ca(OH)₂ at rates of 1.0, 2.5 and 5.0 t/ha on the input of nitrogen, phosphorus and potassium in the grapes of fertility vines from varieties Sauvignon Blanc, Chardonnay, Cabernet Sauvignon and Merlot planted on Chromic luvisol. Samples were collected in two consecutive years. At the variants with liming rates of 2.5 and 5.0 t/ha hydrated lime was found the average higher nitrogen content compared to the control variant, but the excess was more significant only at the rate of 2.5 t/ha, average for all participating varieties. Highest nitrogen content was found in the grapes of the varieties Chardonnay and Merlot, and the lowest - in Cabernet Sauvignon. Differences between the varieties for red and white wines were statistically proven regarding to the nitrogen content in the grapes. In the red wine varieties was found average about 70% of the nitrogen content in the white varieties. Liming with rates of 1.0 and 2.5 t/ha leads to logical and proven toward variation in the repeats increase in the concentration of potassium in the foliage - respectively to 0.238% average for the rate of 1.0 t/ha and 0.275% for the rate of 2.5 t/ha. When applied the rate of 5.0 t/ha lime material was found reduction of the potassium content and below the level of the control variant - up to 0.200%. The grapes in the white varieties contain proven more potassium compared to the red varieties, as the highest was average amount of potassium in the grapes of variety Sauvignon Blanc.

Key words: liming, nitrogen, phosphorus, potassium, wine grape varieties.

6. Алмалиев М., 2015. Проучване на почвено-климатичните особености за отглеждане на череши в землището на град Айтос. Юбилейна научна конференция "70 години Аграрен университет - Пловдив", 29-31 октомври 2015г. **Научни трудове**, т. LIX, кн. 5, 2015г., ISSN 1312-6318 (Print) **ISSN 2367-5845** (Online) DOI: 10.22620/sciworks.2015.05.043, стр. 381-390.

Abstract A characteristic feature of the climate in the region are the strong northern and north-eastern winds, which blow during the cold part of the year and blow away the snow cover. The strong winds cause significant wind erosion of the soil. The extremely low temperatures during the vegetation period can cause damages to the blossoms, the young blossom buds and the cherry fruits. The established values of the physical clay showed that the soil texture was a significant limitation for the growth of the cherries. The pH established by the analysis was not a restriction for the growth of the cherries. The content of the active Ca generally increased in the depth of the profile and was not a limitation for the choice of the pad for planting.

Key words: soil, climate, cherry-trees.

7. Panayotova G., M. Almaliev, S. Kostadinova, 2017. Nitrogen uptake and expense in durum wheat depending on genotype and nitrogen fertilization. International Scientific Journal "**Agricultural Science and Technology**", Vol. 9, № 1, 2017, **ISSN 1314-412X (online)**, 1313-8820 (print), pp. 26-34.

Abstract

Nitrogen uptake and expense of durum wheat were studied under the conditions of fertilized field experiment on soil type Pellic vertisol. The seven genotypes - Progress, Vazhod, Victoria, Predel, Deana, Zvezdica and Elbrus selected at the Institute of Field Crops – Chirpan, Bulgaria, were grown in two field crops rotation of cotton and durum wheat under rainfed conditions for a period of three vegetations in years 2011-2013. The spring treatments of nitrogen as NH NO were as follows: N , N , N and N . The total N uptake in the above ground biomass of durum wheat increased with the amount of applied nitrogen 4 3 0 60 120 180 and during climatically favorable years reached 220 kg N.ha⁻¹. A tendency was found that the new genotypes uptook more N, compared to varieties Progress and Vazhod. The N expense of the new cultivars Predel and Zvezdica showed the highest amount of N per 1 ton of grain, 40.7 and 41.1 kg, respectively. Strong positive correlation was found between N fertilization and N uptake and expense for 1 ton of grain. The regression model indicated that N uptake with the grain and straw and N expense depending on N fertilization occurred with delay. With N fertilization of durum wheat at rates of up to 180 kg N.ha⁻¹ each kilogram of applied N fertilizer increased the average expected N uptake with 7 kg.ha⁻¹ and N expense with 0.66 kg.ton⁻¹ grain.

Keywords: durum wheat, genotype, nitrogen, uptake, expense

8. Almaliev M., 2022. Research the variation of exchange calcium along the depth of the soil profile after the application of ameliorants. **Scientific Papers, Series A. Agronomy**, University of Agronomic Sciences and Veterinary Medicine of Bucharest "Agriculture for Life, Life for Agriculture", Bucharest, Vol. LXV, No. 1, 2022 ISSN 2285-5785; ISSN CD-ROM 2285-5793; **ISSN Online 2285-5807**; ISSN-L 2285-5785, pp. 25-29.

Abstract

The effectiveness of ameliorants applied into acidic soils depends on their neutralizing power, which is determined by the calcium carbonate content and their fineness. The choice of ameliorant is a complex task, because it must be found this one which has a high neutralizing effect on easily mobile exchange aluminium, as in parallel to penetrate deeper in the soil. The use of a precipitate, as both a slow-release phosphorus fertilizer and a chemical ameliorant to neutralize acidity was theoretically and practically justified in soils with slightly to moderately acidic reaction and temperate deficiency in terms of easily mobile exchange bases in the soil. The use of hydrated lime as a chemical ameliorant in acid soils led to a relatively fast, long lasting and effective neutralization of exchange acid positions in the soil.

Key words: acid soils, calcium, hydrated lime, precipitate.

IV. Г.8. Научни публикации в нереферирани списания с научно рецензиране или в редактирани колективни томове

1. Panayotova, G., S. Kostadinova, **M. Almaliev**, 2013. Agronomic efficiency of fertilization at durum wheat under contrast climate conditions, IV International Symposium „Agrosym 2013“, October 3-6, 2013, Jahorina, **Book of Proceedings** of Fourth International Scientific Symposium "Agrosym 2013", **ISBN 978-99955-751-3-7**, COBISS.BH-ID 3919640, 10.7251/AGSY1303114P, pp. 114-118.

Abstract

The agronomic efficiency for nitrogen and phosphorus fertilization at durum wheat varieties „Progress” was studied in a long-term fertilizing experiment in Institute of field crops – Chirpan, Bulgaria. The investigation was established in two field crops rotation cotton – durum wheat under rain conditions for the period 2005 – 2011. The studied fertilizing systems were: single nitrogen (N) and single phosphorus (P2O5) fertilization in rates 0; 40; 80; 120 and 160 kg N or P2O5 per hectare, and combined nitrogen-phosphorus fertilization in rates: 1). N80P80; N120P80; N160P80; 2). N80P120; N120P120; N160P120; 3). N80P160; N120P160; N160P160. Nitrogen fertilization in the form of NH4NO3 was applied before sowing (1/3 of the rate) and at early spring (2/3 of the rate). The phosphorus fertilization was done before sowing in the form of triple superphosphate. According hydrothermal conditions during the wheat vegetation three of the experimental years (2005, 2007 and 2009) were classified as dry and hot. The hydrothermal conditions of the three other experimental years were close to the long term average norms of temperature and rainfall for the region. It was established that climate conditions during the growing season were the key determinant factor for the agronomic efficiency for nitrogen in wheat. Maximum value of 27.6 kg grain kg N-1 was obtained when nitrogen N80 was combined with P80. Agronomic efficiency for phosphorus was significantly lower than AEN. Applying of phosphorus alone in rates higher than 80 kg P2O5 ha-1 was inefficient at durum wheat, apart from the low content of available phosphates in the soil.

Key words: agronomic efficiency, fertilizing, durum wheat

2. **Almaliev, M.**, G., Panayotova, S. Kostadinova, 2014. Uptake and utilization efficiency of nitrogen and phosphorus in durum wheat, Fifth International Scientific Agricultural Symposium „Agrosym 2014“, Jahorina, Bosnia and Herzegovina, October 23-26, 2014, **Book of Proceedings**, Original scientific paper 10.7251/AGSY 1404118A, pp. 118-122. **ISBN 978-99955-751-9-9**, COBISS.RS-ID 4641816.

Abstract

The uptake and utilization efficiency of nitrogen and phosphorus in durum wheat was studied under conditions of long term fertilizing experiment. The standard variety „Progress”, selected in Institute of field crops – Chirpan town, Bulgaria was grown in two field crops rotation cotton – durum wheat under rain conditions for the period of three vegetations including years 2011 – 2013. The experimental design was the method of Latin square with trial plot size 50m2 in four replications. The treatments were as follows: N0P0; N0P80; N0P120; N0P160; N120P80; N120P120; N120P160. Nitrogen fertilization as NH4NO3 was applied early spring. The phosphorus fertilization was applied before sowing as triple superphosphate. The soil type of experimental field was Eutric vertisols. Weather conditions during the studied period 2011 – 2013 were different as a temperature and rainfall each year. It was established that productivity of aboveground biomass and grain was two-fold higher in fertilizing systems with applied N120 and phosphorus rates of 80 - 120 kg P2O5.ha-1, compared to the systems with no phosphorus fertilizing. Uptake efficiency of nitrogen and phosphorus or total uptake of these nutrients in aboveground dry mass at maturity, similar to wheat productivity, was higher in systems fertilized with nitrogen. The uptake of nitrogen was in the range 52.5 – 166 kg N.ha-1, and phosphorus uptake – 22.5 - 77.4 kg P2O5.ha-1, in average for the period. The highest expense of nitrogen for 100 kg grain formation was established in fertilizing system N120P120 – 3.84 kg N. The expense of phosphorus for 100 kg grain formation increased in parallel with applied phosphorus rate and did not depend of nitrogen fertilizing. The highest value was observed in systems with applied high phosphorus rate of P160. Nitrogen utilization efficiency for biomass and grain production in durum wheat was the lowest in fertilizing system N120P120, and the lowest phosphorus utilization efficiency was obtained in fertilizing treatment N120P160.

Key words: durum wheat, nitrogen, phosphorus, efficiency

3. Yordanova N., N. Minev, **M. Almaliev**, K. Trendafilov, V. Valcheva, S. Todorova, 2015. Research the suitability of the land for growth of berries and medical plants. Recommendable fertilization rates. Sixth International Scientific Agricultural Symposium „**Agrosym 2015**“, Jahorina, Bosnia and Herzegovina, October 15-18, 2015, **ISBN 978-99976-632-2-1**, Original scientific paper 10.7251/AGSY1505148Y, pp. 148-155.

Abstract

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.

Key words: soil, fertilization rates, berries, medical plants

4. Трендафилов К., В. Вълчева, Р. Попова, С. Тодорова, **М. Алмалиев**, 2015. Динамика на придвижване на микронизирания варовик, използван като химичен мелиорант за неутрализиране на вредната киселинност по профила на делувиялни почви, Международна конференция 2015, Почвата и агротехнологиите в променящия се свят, Институт по почвознание, агротехнологии и защита на растенията „Никола Пушкиров“ 11-15 Май, София, електронен **сборник научни доклади**, 2015, **ISBN: 978-619-90560-0-4**, стр. 250-256.

Abstract

In the terms of production experiment was studied the influence of micronized limestone applied in rates 3,0, 4,0 and 7,5 t/ha on the forms, the content and the distribution of calcium in the profile of Eutric fluvisols. Samples were collected in two consecutive years.

The studied meliorant had fast effect on harmful soil acidity, which occurs entirely even in the first year of meliorative period of a depth to 40 cm. When applied roughly partial meliorants the period for neutralization of the soil acidity in the subsoil horizons were three years.

The micronized limestone is slightly hygroscopic, mealy and is applicable for mixing both centrifugal and band transport sprinklers.

Key words: micronized limestone, acidity, calcium, Eutric fluvisols

5. Филчева Е., Р. Илиева, К. Чакалов, Т. Попова, В. Савов, М. Христова, **М. Алмалиев**, 2015. Характеристика на хумусни системи на естествени и изкуствени подобрители на почвата, Международна конференция 2015, Почвата и агротехнологиите в променящия се свят, Институт по почвознание, агротехнологии и защита на растенията „Никола Пушкиров“ 11-15 Май, София, електронен **сборник научни доклади**, 2015, **ISBN: 978-619-90560-0-4**, стр. 337-343.

Abstract

The aim of the study is to characterize humus system of natural and artificial products. There are compared humus systems from: Leonardite, produced in a factory, Izmir, Turkey, and biotransformed with Trichoderma sp. Lignite (Plantagra) and composts from Bulgaria. Humic systems are characterized with Kononova-Belchikova's method, heavy metals content – AAS. Humic acids from the IHSS collection are used as standards for humus substances quality of compared products.

Data obtained for Leonardite indicate that studied substances from factory, Izmir, Turkey contain humic acids over 94 %, compared to the standard. Heavy metals content in these materials

demonstrate high amounts. Organic carbon content in the composts is very low compared to the Leonardite materials and collection, where the heavy metals content is lower. Biotransformed Lignite is characterized with lower content of organic carbon, but humic acids are with high degree of humification.

Results, characterized studied humus systems, may use in agriculture based on the high humic acids content. It is recommendable measuring heavy metals content before applying the materials.

Key words: compost, humic acid, Leonardite, Lignite, Sewage Sludge

6. Вълчева В., К. Трендафилов, С. Тодорова, М. Алмалиев, 2015. Влияние на варуването с различни форми на калция върху съдържанието на калций и магнезий в листата на винени сортове лози, Международна конференция 2015, Почвата и агротехнологиите в променящия се свят, Институт по почвознание, агротехнологии и защита на растенията „Никола Пушкарров“ 11-15 Май, София, електронен **сборник научни доклади**, 2015, **ISBN: 978-619-90560-0-4**, стр. 257-263.

Abstract

In the terms of combined field experiment was studied the influence of liming with at rates of 1,0, 2,5 and 5,0 t/ha on the input of calcium and magnesium in the foliage of fertility vines from varieties Sauvignon Blanc, Chardonnay, Cabernet Sauvignon and Merlot planted on Chromic luvisol. Samples were collected in two consecutive years. The liming causes intense absorption of calcium and magnesium in the foliage of the vines. During the first year after the applying of the chemical meliorants the increase of the extent, in which absorb Ca in the foliage was proportional to the amount of the applied meliorant, while in subsequent years the data varied, as preserved the overall excess of absorbed by foliage calcium of the variants with liming compared to the variants without liming. The applying of calcium containing meliorants in the soil causes increased absorption of magnesium in the foliage of the vines, although, this element was not applied as meliorant.

Key words: liming, calcium, magnesium, foliage, wine grape varieties

7. Trendafilov K., V. Valcheva, M. Almaliev, N. Yordanova, N. Minev, S. Todorova, 2015. Adjustment of low productive terrains for establishment of vineyard terroir in Bulgaria. **International Journal of Research in Agriculture and Forestry**, Volume 2, Issue 4, April 2015, **ISSN 2394-5915** (online), pp. 40-49.

Abstract

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, determines 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 Openhaim 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.

Key words: soil properties, vineyard, terroir, wine varieties

8. Almaliev M., K. Trendafilov, V. Valcheva, S. Todorova, N. Minev, N. Yordanova, 2015. Research of soil-climatic conditions of land located near Kavarna town and assessment of their suitability for vines culture. International Scientific Events. International conference, Elenite, Bulgaria, 1-5 June 2015, Journal of International Scientific Publications **Agriculture & Food**, **ISSN 1314-8591**, Vol. 3, 2015, pp. 296-309.

Abstract

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 determinate 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

9. Trendafilov K., M. Almaliev, 2016. Effect of liming of the contents of total sugars, titratable acids and pH in different wine grape varieties. VII International Scientific Agricultural Symposium „**Agrosym 2016**“, Jahorina, Bosnia and Herzegovina, October 6-9, 2016, Original scientific paper 10.7251/AGRENG1607007, **ISBN 978-99976-632-7-6**, COBISS.RS-ID 6216984 pp. 84-88.

Abstract

In a two-year field experiment, the effect of liming with Ca(OH)₂ was studied at rates of 1; 2,5 and 5 t/ha on the content of total sugars, titratable acidity and pH in the grapes of varieties Sauvignon Blanc, Chardonnay, Cabernet Sauvignon and Merlot, planted on Chromic luvisols in the land of Mezek village, Svilengrad municipality, Bulgaria. The grapes of all varieties were studied immediately after harvest in technological maturity, simultaneously with the mass harvesting of the variety in the vineyards, where was the lime experiment. Generally in the white varieties, liming causes increase in the level of total sugars. Relatively stable is the tendency to reduce the content of titratable acids, simultaneously with increase of the lime rate. During the second year, increase in the content of total sugars and reduction of the level of titratable acids in the white varieties was found only in the highest applied ameliorative lime rate of 5 t/ha. Liming affects technological indicators of the grapes mainly in the white studied varieties and causes an increase in the content of total sugars and reduce the titratable acidity.

Key words: Liming, Wine grape varieties, Sugars, Titratable acids

10. Almaliev M., K. Trendafilov, 2016. Effects of liming with hydrated lime on the content of iron and manganese in the grapes. 4th International Scientific Events. International conference, Elenite, Bulgaria, 20-24 June 2016, Journal of International Scientific Publications **Agriculture & Food**, **ISSN 1314-8591**, Vol. 4, 2016, pp. 590-595.

Abstract

The effect of liming with Ca(OH)₂ in tree increasing rates of 1; 2,5 and 5 t/ha on the content of iron and manganese was studied in a two-year field experiment in the grapes of varieties Sauvignon Blanc, Chardonnay, Cabernet Sauvignon and Merlot, planted on Chromic luvisols. Immediately after harvest was studied the grapes of all varieties. The content of iron in the fresh grapes was 3,28mg/kg, average of all variations and repetitions of the experiment. The highest content of iron was found in the grapes of Cabernet Sauvignon, and the lowest – in Sauvignon Blanc. Proven differences between red and white varieties on the content of iron were not found. Liming as a single factor did not cause increasing modification of the content of iron in the fresh grapes, although established significant statistical differences between the variants limed with different rates.

Key words: liming, wine grape varieties, iron, manganese

11. Almaliev M., V. Valcheva, K. Trendafilov, 2016. Principle ameliorative solutions for adoption of degraded terrains and their transformation into specific wine terroir. 4th International Scientific Events. International conference, Elenite, Bulgaria, 20-24 June 2016, Journal of International Scientific Publications ***Agriculture & Food***, **ISSN 1314-8591**, Vol. 4, 2016, pp. 596-605.

Abstract

In terms of its geomorphology, the area outlines the southern border of the Upper Thracian Plain. The whole area of the studied objects belongs to the erosion part, and the accumulation is partly manifested only in some lower forms of the micro relief. The morphological peculiarities of the terrain – soil texture and physical properties of the soil, content of total and alkaline earth carbonates, the content of active calcium, humus, water-soluble salts, the indicators characterize the harmful acidity and the content of nutrient macro elements were studied. The presence of gley spots and nodules warrants predicting unfavorable water and air regime at strong compaction of the subsoil horizons. The texture coefficient 1,83 was a restriction on the suitability of the soil for vineyards. The established pH was a major restriction for the growth of the vine, especially in the period from planting to fruitage. The presented work was an attempt to systematize the complex study on the suitability of one complicated in terms of the erosion conditions terrain in regard to its suitability for transformation into wine terroir.

Key words: degraded terrains, wine terroir, erosion

12. Алмалиев М., К. Трендафилов, В. Вълчева, 2016. Проучване на почвено-климатичните условия за създаване на овощни насаждения в землището на гр. Радомир. Научно - техническа конференция „Екология и здраве” 2016, Дом на науката и техниката - Пловдив, 9-10 юни 2016г., **Сборник доклади**, <http://hst.bg/bulgarian/conference.htm>, **ISSN 2367-9530**, 2016, стр. 105-112.

Abstract: *The studied terrains are located in the area of Radomir town and in climatic terms belong to the European - continental climatic region. The established values of physical clay shown, that the soil texture was not a restriction on the suitability of the soil for growth of orchards. The established pH was not a restriction for the growth of cherries and sour cherries. The content of carbonates was a significant restriction and suggests fertilization with soil micro fertilizers, containing iron in the form of chelates. The content of active calcium in the soil requires selection of resistant pad on carbonates and active Ca. The content of water-soluble salts in the soil was very low and did not exceed the limit of harmfulness (0,25%) and was not a restriction for the growth of cherries and sour cherries. The investigation of the terrain in the area of Radomir town, shown some significant limitations in terms of its suitability for the growth of orchards. The limitations came from the following: The limited depth of the soil profile and the high content of Ca and Mg carbonates.*

Key words: orchards, climate, soil

13. Алмалиев М., 2016. Бонитировъчна оценка на почвено-климатичните условия в комплекс от частично ерозирани почви за създаване на лозарски тероар. Научно - техническа конференция „Екология и здраве” 2016, Дом на науката и техниката - Пловдив, 9-10 юни 2016г., **Сборник доклади** <http://hst.bg/bulgarian/conference.htm>, **ISSN 2367-9530**, 2016, стр. 113-120.

Abstract: *The studied terrain is located south of Chirpan town in partial erosion and partially accumulated relatively leveled relief. The soil texture found in this study was heavier than the optimal for the growth of vines. The content of physical clay was the main reason for reduce the estimated assessment and the soil category of suitability for the growth of vines. Content of CaCO₃ was about 45% in some limited patches of highly eroded Vertisols in the higher parts of the terrain. Relatively higher concentrations of active Ca was found in the lower and highly eroded parts of the terrain. The content of water-soluble salts was low. The most significant restrictions, which the factor "climate" imposed regarding the suitability of the land for growth of vines were the danger of extreme low temperatures in January and drought of the area in the second half of the summer.*

Key words: vineyard, terroir, climate, eroded soils

14. Вълчева В., К. Трендафилов, М. Алмалиев, 2016. Изследване динамиката на десорбция и насищане на сорбционните позиции с калций и магнезий в условията на съдов опит. Научно - техническа конференция „Екология и здраве“ 2016, Дом на науката и техниката - Пловдив, 9-10 юни 2016г., **Сборник доклади**, <http://hst.bg/bulgarian/conference.htm>, **ISSN 2367-9530**, 2016, стр. 137-140.

Abstract: *The aim of this study was to research consistently, the dynamics of desorption and saturation of sorption positions with calcium and magnesium in terms of dish experiment with genetically acidic soil, based on the results to determine the rates of liming, to achieve a excess of Ca²⁺ in the soil in the form of CaCO₃. The average lime rate was 3,7 t/ha. The results shown, that all rates reduce the content of easily mobile exchangeable Al and H, respectively to increase the content of bases in the soil and to neutralize soil acidity, expressed by integrating indicator V3. The exceeding of the lime rate was reason for fully neutralization of the acidic exchangeable positions. Its implementation increases calcium reserve, stabilize acid-alkaline balance in the soil and possibly suppresses the exchange of micro elements - metals between the soil and root sorption positions.*

Key words: calcium, magnesium, soil

15. Трендафилов К., В. Вълчева, М. Алмалиев, 2016. Влияние на варуването върху показателите характеризиращи киселинно-алкалното равновесие в комплекса от генетично кисели почви. Научно - техническа конференция „Екология и здраве“ 2016, Дом на науката и техниката - Пловдив, 9-10 юни 2016г., **Сборник доклади**, <http://hst.bg/bulgarian/conference.htm>, **ISSN 2367-9530**, 2016, стр. 121-128.

Abstract: *The aim of this study was to determine the effects of soluble calcium containing meliorants (micronized limestone) on soil acidity in different crops (wheat, potatoes, Kazanlak roses, lavender and fruitbearing vines). The aim is determined in terms of production field experiment within two years, by developing variants with different rates of lime for different crops grown on genetically acidic soils. The variation of the indicators of harmful acidity in the soil was found in all fields regardless of the crops, grown on them. In all fields of study was found an increase in the pH value, measured in water and potassium chloride, as well as the content of easily mobile Al³⁺, H⁺, Mn²⁺, Ca²⁺ and Mg²⁺. As a result of liming, pH (H₂O) increased on average for all depths and soil from 5.21 to 5.83, as the total difference between the values of the indicator was statistically significant at the standard level of probability 95%. Liming of deluvial soils increased the concentration of easily mobile exchangeable bases. An average increase of Ca²⁺ for all studied horizons increased in the content of easily mobile exchangeable Ca nearly 1 meq, which, given the low sorption activity represents about 25% of the content of this element in easily mobile exchangeable form.*

Key words: liming, wine grape varieties, iron, manganese

16. Trendafilov K., V. Valcheva, M. Almaliev, 2016. Particularities of the complex of forest soils of Sungurlare valley defining the unique specificity of the area for growth of wine grape varieties. 18 th DKMT Euroregion Conference on Environment and Health, Novi Sad, Serbia, 2-4 June 2016, Novi Sad, Serbia, **Book of Proceedings**, **ISBN 978-86-6253-060-8**, pp. 118-126.

Abstract

Within the complex of forest soils in Sungurlare area can separate soil differences, formed as a result of specific for the region soil formation process, in which are formed the red soils with different profile differentiation. Some of them are formed by dry conditions and taxonomic concern to Cambisols, others formed by wet conditions in areas without drainage concern to Luvisols. The suitability of this soil differences for vineyards is limited. This is due to various factors, arising from the particularities of the soil profile or landscape and the degree of drained. Chromic Luvisols in the studied area were with very low organic matter content. Relatively with higher humus content were eroded Chromic Luvisols. This is explained by the process of the remove of part of the humus to illuvial-metamorphic horizon. In non eroded and slightly eroded soil profiles, pH was average in range from 4,8 to 5,6 and gradually increase in the deeper profile horizons. With the increase of erosion degree of of the terrains, pH was neutral to slightly alkaline. With the available data could estimate, that the acidity was not a limiting factor of the suitability of Chromi-eutric Cambisols for the growth of vineyards in Sungurlare area.

Key words: forest soils, wine grape varieties, vineyards

17. Trendafilov K., V. Valcheva, M. Almaliev, 2017. Principally meliorative method for complex anti-erosion protection of a terrain with perennial crops. 7th International Symposium on Environmental and Material Flow Management – EMFM 2017, Bor, Serbia, 3-5 November 2017, **Book of Proceedings**, ISBN 978-86-6305-071-6, pp. 135-145.

Abstract: The aim of the project was to suggest a method for complex anti-erosion protection of a terrain, where on the natural grassy vegetation was planted vineyard. The cultivation of vineyards on the terrain was successful in the technological aspect, but several years exploitation of the plants caused an active erosion process. The study was based on an analysis of the soil, climatic and topographical conditions of the terrain in Chelnik village, Bulgaria and aims to offer a complex system for anti-erosion protection of the terrain. The soil within the boundaries of the terrain is Pellic Vertisols.

Keywords: erosion, Pellic Vertisols, terrain, vineyard

18. Алмалиев М., 2020. Влияние на процесите на деградация върху комплекса от канелени горски почви в Източнородопския почвен район. 27ма Международна научна конференция KNOWLEDGE FOR SUSTAINABILITY (21-23.08.2020) - С. Македония, **KNOWLEDGE International Journal Scientific Papers** Vol. 41.4, 2020, ISSN Online 1857-923X, стр. 789-794.

Резюме: Настоящата разработка има за цел да установи влиянието на процесите на деградация, свързани с нарушаването на почвената функционалност. Установено е влиянието, което почвено-ерозионните процеси са оказали върху пригодността на разглежданите почвени различия за отглеждане на лозя. Основното почвено различие в границите на обекта са лесивираните канелени горски почви с различно диференциран профил. На базата на направеното проучване може да се каже, че установеното съдържание на активен Са е относително ниско, независимо от процесите на ерозия, довели до значителна редуция на повърхностните хоризонти. Налице е обща тенденция за увеличаване на Са по дълбочина на профила. Установените ограничения, като тежък механичен състав, висока стойност на текстурния коефициент и кисела реакция на почвения разтвор за някои от почвените различия се компенсират с прилагане на подходящи агротехнически и химико-мелиоративни мероприятия.

Ключови думи: канелени горски почви, ерозия, лозя, деградация на почвата

19. Алмалиев М., 2020. Проучване съдържанието и разпределението на активен калций по почвения профил на безкарбонатни почви в Казанлъшката котловина. 27ма Международна научна конференция KNOWLEDGE FOR SUSTAINABILITY (21-23.08.2020) - С. Македония, **KNOWLEDGE International Journal Scientific Papers** Vol. 41.4, 2020, ISSN Online 1857-923X, стр. 801-806.

Резюме: Съдържанието и формите на свързване на калция в почвите е комплексна характеристика на режимите на минерално хранене на растенията, почвената буферност, състоянието и капацитета на сорбционния комплекс, степента на развитие на почвения профил и на някои стопански характеристики, свързани с общата функционалност и пригодността на почвата за земеделие. Всяко от тези калциеви състояния на почвата се установява с различни методи за изследване, а те от своя страна се свързват с модели на интерпретацията относно ролята на Са в съответния аспект – генезис и развитие на почвения профил, физико-химична характеристика на киселинно-алкалното равновесие, състояние и устойчивост на органоминералния поглъщателен комплекс, условия на минерално хранене на растенията и т.н. При голяма част от изследваните генетично кисели почви се установява, че структурата на вредната почвена киселинност е основана както на повишени нива на лесноподвижните алуминий водород и манган, така и на силно редуциране в нивата на лесноподвижните обменни бази. За да се неутрализира вредната киселинност и да се покрият разходните нива в баланса на обменния калций и в крайна сметка да се постигне увеличаване на добива, трябва да бъде изчислена балансова норма, водеща не до пълно неутрализиране на постоянните сорбционни позиции, а до намаляване на токсичното действие на подвижните алуминий, водород и манган.

Ключови думи: буферност, калций, киселинност, почви

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