

AGRICULTURE. PLANT CULTIVATION

Rozhkov A. O., Bobro M. A., Ryzhyk T. V. Formation of the wheat productivity of an ear of winter wheat plants depending on the time of planting and seeding rate // *News of Poltava State Agrarian Academy*. – 2016. – № 1–2. – P. 6–11.

The article presents the results of studies conducted during 2007–2009, 2014 in the experimental field of KhNAU named after V. V. Dokuchayev regarding the impact of the application of different sowing date and seeding rates on the variability of ear productivity indicators of different systems of soft winter wheat stalks of variety Astat. Formation of the highest levels of ear productivity of main and side stems of the average for the year of studies was provided on 15–17 September with the sowing seed rate 5,0 million grains/ha. The effectiveness of the seeding rate by years of research was more stable compared to the timing of sowing, the impact of which is significantly dependent on the weather conditions of the growing season of a particular year.

Prymak I. D., Panchenko O. B. The structural condition and structure of the arable layer of typical black earth in various systems of the basic processing and fertilizers in specialized seed rotary of crop rotation of central Forest-Steppe of Ukraine // *News of Poltava State Agrarian Academy*. – 2016. – № 1–2. – P. 12–17.

We have investigated the influence of longitude effect of different systems of the main processing of soil and different fertilization levels on changes of agrophysical and agrochemical properties of typical black earth and productivity of specialized grass and grain plowed crop rotation. We can observe higher indexes of soil productivity of arable layer of soil of typical black earth in Forest-Steppe of Ukraine after its three-year use in the duration of shallow treatment compared to subsurface tillage and longitude surface tillage. We recommend deep (25–27 cm) tillage on one part and a shallow one (10–12 cm) on the rest parts in a five-part crop rotation.

Marenych M. M., Yurchenko S. O. Sowing properties of seed of agricultural cultures depending on application of growth stimulant // *News of Poltava State Agrarian Academy*. – 2016. – № 1–2. – P. 18–21.

The results of researches of sowing properties of seed which was treated by new humic preparations (which are made by a company «Soil Biotics», USA) are presented in the article. In laboratory terms we probed stimulant effect on germination energy, laboratory germination, intensity of growth of organic mass and flowing of growth processes. We found that treatment of seed by preparation

«Seed treatment» favors to more rapid growth of organic mass, activating of water absorption ability of seed and intensifies growing processes. We noted the positive influence of preparation on the growth processes on condition of treatment exposure 45 days. Application of preparation «Foliar concentrate» also strengthened growth processes and stimulates the growth of sprouts root mass.

Skrypnychenko S. V., Kotsyuba I. G. Transformation of peat during drying and long-term agricultural use // *News of Poltava State Agrarian Academy*. – 2016. – № 1–2. – P. 22–24.

The results of years research and development impact of drainage on soil formation peat soils and environmentally friendly measures are presented, we offered their rational and effective use. It was determined that the rate of destruction linen is intensive in cultivated rotation. Drainage and long-term development of peat soils occur with significant changes in their properties: increasing the density of soil and ash, and the total moisture content decreases.

Kharchenko Yu. V., Kharchenko L. Ya., Klimova O. Ye. Biological and economic evaluation of new samples of sweet corn on Ustymivka Experimental Station of Plant Production // *News of Poltava State Agrarian Academy*. – 2016. – № 1–2. – P. 25–29.

We clarified the potential of inbred lines of sweet corn by productivity and its components (number of grains on the cob, the number of rows of grain on the cob, ear length, weight of 1000 grains) in conditions of Forest-Steppe zone of Ukraine. We revealed samples with varying degrees of environmental adaptation, that allows the execution to create an environmentally-oriented hybrid programs. According to the results of research we highlighted valuable genotypes for practical breeding and we offered the ways of their future use in heterosis breeding of this subspecies of corn.

Kulyk M. I. The productivity of switchgrass variety of fifth year of vegetation, depending on the biometric plants' indicators // *News of Poltava State Agrarian Academy*. – 2016. – № 1–2. – P. 30–35.

We investigated variability of biometric (quantitative) indicators of switchgrass by variety of different groups ripeness. We determined the level of the yield of aboveground vegetative mass culture, installed correlations between quantitative indicators of plants and yield of dry biomass of switchgrass of fifth year of vegetation. It was established that the yield of dry switchgrass phytomass is determined by studied dry matter of content in the phytomass, the

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number of stems, flag leaf's length and moisture content in plants.

Marchenko A. B. Decorative floral plants in the urban flora structure of the Forest-Steppe zone of Ukraine // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 36–43.

According to the results of monitoring of the floristic diversity of ornamental floral plants in the structure of urban ecosystems' greenery of Forest-Steppe zone of Ukraine we have clarified their taxonomic composition. Decorative floral plants in the structure of urban flora are presented by 118 species from 58 genera 31 families 16 orders of 2 classes. *Dicotyledones* class dominates in terms of quantity, representing 66,1 %, and the *Liliopsida* class represents 33,9 % of species. *Dicotyledones* class numbers 14 orders, in which *Asterales* order occupies a dominant place on the number of species (34 % of species), other orders of *Saxifragales* Dumort are represented by 13 %, *Brassicales*

Bromhead – by 8,9 %, *Ericales* – by 7,6 %, *Lamiales* Bromhead, *Rosales* – by 6,4 %. Other orders are represented by 1–2 species. *Liliopsida* class is represented by two orders, among which *Asparagales* Bromhead dominates in terms of the number of species (70 %). According to the classification by I. G. Serebryakov, decorative floral plants are represented by herbal terrestrial plants (98,8 %), tree life forms (1,2 %), which are represented by monocarpic (71 %) and polycarpic herbs (27,8 %), shrubs (1,2 %). According to the classification by H. Raunkiyyer, decorative floral crops are represented by the following forms: therophytes (71 %), cryptophytes (27,8 %), tall aerial plants (1,2 %). According to all environmental indicators, in terms of moisture, all terrestrial plants are divided into mesophytes (52 %), xeromesophytes (24 %), xerophytes (21 %), mesohygrophytes (3 %); in terms of light intensity – heliophytes (81 %), sciophytes (19 %).

VETERINARY MEDICINE

Berdnyk V. P., Bublyk O. O., Berdnyk I. Yu., Scherbak V. I., Marchenko T. N., Sugak O. V. The results of research concerning preparations based on solution of Poltava Bishofit conducted on broiler chickens // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 44–47.

The results of the study concern clinical and physiological parameters of 4 to 43 days old broilers' health state, who were given Poltava Bishofit solutions along with food and water in 4 different solution versions. During the period, chickens had a satisfactory clinical condition. As an exception, there were three 14 to 20 days old chickens, who could not walk due to joint disease. One chicken recovered. Two of them of 28 and 29 days old chickens died due to peritonitis and heat stroke, respectively.

When comparing our broilers with the control research sample (6 females and 4 males), increased levels of hematopoiesis and hemoglobin in the blood and average body-weight growth of 43 days old chickens were found in hens at 303,93 g (7 broilers) and roosters at 271,25 g (4 broilers) after the

application of only one of four tested Bishofit solutions. This is the reason to recommend it for the test in farms, in 1 or 2 daily doses of magnesium-rich Bishofit as a supplement in the diet of broiler chickens.

Shatohin P. P., Kravchenko S. A., Kanivets N. S., Karysheva L. P. The influence of acetylsalicylic acid on a condition of hepatocytes of pigs suffering from gastroenteritis // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 48–50.

The publication presents data on the effect of acetylsalicylic acid («Aspirin») on the condition of hepatocytes in the treatment of pigs suffering from gastroenteritis. The activity of aspartate and alaninaminotransferaza of serum of weaned piglets, which are informative enzymes of metabolism in the liver, namely amino acid metabolism. It was found that the use of water-soluble «Aspirin» with therapeutic purposes for animals has not hepatotoxic action, unlike «Asglyukol», in the case of which application there is the destruction of hepatocytes, that is evidenced by hyperenzymemia AST and ALT.

ECONOMICS

Pysarenko V. P. Introduction of participatory budget // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 51–54.

The article is devoted to the introduction of participatory budget developed and approved with the participation of the public, the financial plan, the overall control realized by citizens and local authorities. We formed definition, determined

participants and target groups. Foreign experience in implementing participatory budgeting is given. We formed conclusions concerning the formation of high-level intellectual reasonableness of solutions through broad participation of the masses in the process of their adoption.

Karpenko N. G. The basic requirements for tax reporting by budget institutions // News of Poltava

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State Agrarian Academy. – 2016. – № 1–2. – P. 55–57.

The procedure of preparation and presentation of the tax reporting by budget institutions, the organizational stages of formation of the tax reporting are studied in the article. The sources of information for determination of the amount of payments, fees and preparation of tax reporting are outlined in the article. We identify important information on mandatory of tax reporting and details of filling in the reporting forms. According to the research results the attention is focused on the responsibility of officials for timely payment of paying and taxes, formation and presentation of reporting of budgetary institutions.

Kompaniets V. A., Kulyk A. O., Kohan A. V.

The economic efficiency of the use of methods of basic tillage in technology of sunflower growing // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 58–61.

The economic evaluation of results of experimental researches on determination of efficiency of different methods of basic soil tillage in technology of sunflower growing in soil and climatic conditions of northern Steppe of Ukraine was made. The researches were conducted on the basis of the State enterprise of experimental farm «Dnipro» of Institute of cereals cultures of NAAS. According to results of comprehensive evaluation we formulated recommendations for improving productivity and profitability of production of sunflower seeds on the basis of the most effective methods of basic tillage.

TECHNICAL SCIENCES

Kostenko H. M. Combinatorial synthesis of optimal plans of multifactor experiment // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 62–71.

The problem of constructing an optimal plan may be solved by a software and reference-catalog of typical solutions. For this it is advisable to develop a system of automation of scientific and technical experiments that will enable the cut-timing of the experimental studies and reduce costs for them, release experimenter from routine operations and perform complex experiments. A composite method of construction plans of multifactor experiment close to optimal for a number of factors (10 or more), based on multi-track local-optimal plans of MFE. We considered decisions of by-stage tasks method, there are examples of building of MFE plans using the best local MFE plans. Over-application of the offered method will help to simplify the process of building of close to the optimum MFE plans for a large number of factors.

Goryk A. V., Brykun A. M., Chernyak R. E. Choice of optimum parameters of technology of shot blasting of internal surfaces of oversize elements of motor-car technique // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 72–76.

On the basis of results of last known researches of theory of shock cooperation of particulate matters (pellets) with resiliently plastic half-space concerning shot-blast cleaning of cavities of cylinder capacities, as bodies of rotation. We generalized technological criteria of such process, as final options for creation of some technical equipments of automation preparing of surfaces to coverage by a non-metal protective layer. Determination for the most important descriptions

of motion of imprint of abrasive torch on the processed curvilinear internal surface of product on condition of the even and high-quality cleaning was given.

Dmytrykov V. P., Nazarenko A. A., Zaporozhets M. I. Modified production line of expanded production of animal feed // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 77–80.

The problems that have developed in the production of grain feed were found. The structure and layout of the flexible production lines for the processing of agricultural raw materials was considered. The factors of influence on the processes of extrusion processing of crop production were analyzed. A modified technology of animal feed production line expanded for various purposes was recommended.

Storozhenko D. A., Bunyakina N. V., Dryuchko A. G., Ivanyts'ka I. A., Hrynchyshyn N. M. Influence of alkali metal cation on the formation of double salts in a system $MCl-Nd(Gd)Cl_3-H_2O$ ($M-Li, Na, K, Rb, Cs$) at 25–100 °C // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 81–84.

We investigated phase equilibrium in aqueous systems chloride salt and alkali metal, and rare earth elements (neodymium, gadolinium) at 25–100 °C by isothermal solubility in the article. Temperature and concentration limits of crystallization of initial salts and double compounds $MCl \cdot NdCl_3 \cdot 5H_2O$ ($M-K, Rb, Cs$), $3RbCl \cdot NdCl_3 \cdot 2H_2O$, $2CsCl \cdot NdCl_3 \cdot 10H_2O$, $3CsCl \cdot NdCl_3 \cdot H_2O$, $RbCl \cdot GdCl_3 \cdot 2H_2O$, $2CsCl \cdot GdCl_3 \cdot 7H_2O$, $3CsCl \cdot GdCl_3 \cdot 5H_2O$, $3CsCl \cdot GdCl_3 \cdot 2H_2O$ are established. We identified double chlorides which were synthesized and identified by physical and chemical methods of analysis.

Kuznetsova T. Yu., Kiva O. V., Grybinichenko V. V. The study of the ultrasonic method of applying of emitter on the electrodes of gas-discharge lamps // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 85–86.

We have developed a method of applying of emitter on the electrodes of gas-discharge lamps, which differs that before and during immersion and exposition of electrodes in suspension the last one is irradiated by ultrasound which is turned off before electrodes would be taken out from suspension. We have conducted experimental researches on the electrodes of DRL-250 lamps concerning influencing an ultrasound on the increase of emitter mass which is inflicted on an electrode, and on the degree of filling of internal cavities of electrode by emitter. On the basis of these researches we suggested a technology of the ultrasonic applying of emitter on the electrodes of gas-discharge lamps. In the article the results of the conducted experimental tests and comparative descriptions are given for the methods of applying of emitter on the electrodes of gas-discharge lamps using the known technology and using ultrasound.

Prykhod'ko R. P. Time-temperature approach to assess of the longevity of critical structural elements // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 87–92.

An analysis of results of the extrapolation of stress rupture curves is performed using the modified base diagram method. The efficiency of the offered algorithms for predicting the creep rupture longevity with the prediction order equal to two or more on the logarithmic time scale is shown. The application areas of the known parametric methods for predicting the stress-rupture strength of materials are specified based on the experimental investigations. It is shown that these methods allow

extrapolating the time destruction to the values that exceed the available experimental data by no more than a factor of 10 times with accuracy sufficient for engineering purposes. To extend the prediction capabilities to 300 thousand hours or more on the basis of the test results of limited duration, a modified base diagram method is offered. A linear dependence is offered to approximate the residual function in terms of the base diagram method. In the case where it is impossible to reduce the stress-rupture curves to a common curve, the residual function parameters are determined from the experimental data for one isotherm. In this case, its parameters are the functions of temperature. The advantages of this parameters' approach according to Larson-Miller, Orr-Sherby-Dorn, Manson-Succop, Trunin and other are shown during the extrapolation of stress-rupture strength to big longevity.

Stepova O. V., Roma V. V. Estimation of biogenic contamination of surface reservoirs of Poltava region // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 93–97.

The ecological estimation of the state of river waters is described in the article. The analysis of the last researches and publications consisting of the ecological state of the river systems of Poltava region is given in the article. We investigated dynamics of maintenance of biogenic elements in the surface objects of Poltava region. We did the analysis of problems of eutrophication of surface reservoirs at regional level. We have suggested a list of basic measures in relation to limitation of the use of cleansers, timely control of cleansing equipment, its modernization, and orientation on the European quality norms which will allow to regulate and control the hit of phosphates with flow waters to the surface reservoirs.

THE YOUNG SCIENTIST'S PAGE

Папка О. С. Hierarchical analysis of soil cultivation systems efficiency as agrotechnological method of destruction of weeds and milkweed (*Asclepias syriaca* L.) // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 98–106.

In work on the basis of experimental data by means of hierarchical procedures of statistical analysis of optimum modes of soil mechanical cultivation as agrotechnical approach of the control of weeds community as a whole and milkweed abundance have been established. Disposable mechanical destruction of weeds by ploughing or discing leads to augmentation of the general contamination of not treated earths at 22,30 % (ploughed land) and 26,65 % (discing). Cultivation

which was spent after a ploughed land led to decrease on 37,42 % of an aggregate number of weeds, and cultivation after discing to decrease of number of weeds on 44,58 %. Carrying out of the second cultivation after a ploughed land provided destruction of 70,1 % of weeds in comparison with the control and 52,2 % in comparison with the first cultivation. Carrying out ploughing after discing and cultivations leads to decrease of total weeds on 73,69 % compared with the control and on 52,52 % compared with consecutive discing and cultivation. Disposable cultivation essential does not influence on a lobe which occupies milkweed in assemblage of weeds. Cultivation after a ploughed land reduces a lobe milkweed on 19,20 %, and after discing on

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13,03 %. The third cultivation of bedrock does not render influence on selective destruction of milkweed.

Vintskovs'ka Ju. Yu. Effect of the foliar application of biological preparations in apple (*malus domestica borkh.*) orchards on the formation of the fruits quality indications // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 107–112.

The author presents the results of studying (2013–2015) the effects of the biological preparations «Atonik Plus» and «Vapor Gard» foliar application in apple orchards on the formation of fruits quality indicators (the content of dry soluble substances, organic titrate acids and sugars). The object of the research was the summer variety Yamba. The usage of «Atonik Plus» before the second wave of the ovary abscission and harvesting the crop increased the content of dry soluble substances and sugars, and reduced the accumulation of titrated organic acids in fruits. This application improved their taste. The best variant of the antitranspirant «Vapor Gard» was spraying at the first wave of the ovary abscission and before harvesting, namely: the sugar content in fruits increased as it is compared to the control.

Hanaba D. V. The intensity of transpiration of trees in period of drought in different ecological zones of Khmelnytskyi // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 113–117.

One of the important factors of influencing on the operation of physiological processes and optimize the productivity of trees is the water regime. In the article we analyzed the intensity of transpiration of trees in conditions of unfavorable factors of natural and anthropogenic origin. The results showed the difference between the levels of water evaporation in the leaves of trees growing in the park area and along the streets of Khmelnytskyi. *Aesculus hippo-*

castanum, *Acer platanoides* are the most vulnerable to drought and adverse factors of natural and anthropogenic loads. *Picea abies*, *Populus pyramidalis* Roz, *Tilia cordata* are the most resistant plants.

Manoilo Yu. B. Efficiency of modern preparations at spontaneous oesophagostomosis of pigs // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 118–120.

In the article we presented the results of scientific researches on studying efficiency of modern preparations from the spontaneous oesophagostomosis of pigs that can improve extensefficiency and intensefficiency of anthelmintics using probiotics and prebiotics. It is established that the use of feed additives in combination with anti-parasitic preparations improves therapeutic efficiency of «Brovermectin» 2 % water-soluble at oesophagostomosis invasion of pigs. We proved that the enzyme-probiotic preparations contribute to the increase average of daily weight gain and increases affect of the preservation of piglets.

Kovnir D. A. Mechanism of administrative decision making by a state higher educational institution on the basis of analysis results // News of Poltava State Agrarian Academy. – 2016. – № 1–2. – P. 121–125.

The author's own definition of the concept «managerial decision» is offered in the article, the model of decision making through analyzing the levels of performance indicators of the financial mechanism of state higher institution has been created and the complex system of typical model administrative decision making by a state higher educational institution on the basis of analysis results has been developed. The recommendations on administrative decision making according to the analysis results of economic activity have been provided.