

AGRICULTURE. PLANT CULTIVATION

Kramarev S. M., Kramarev O. S., Khrystenko A. O., Tokmakova L. M., Zhuchenko S. I., Syrovatko V. A., Tseva Yu. A., Syrovatko K. V. A change of maintenance of mobile phosphorus in the genetic horizons of ordinary black-earth // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 13–28.

Ordinary black-earthes on the loess type of heavy composition of North Steppe of Ukraine contain the promoted amount of apatites compounds. As a result the use of any acid methods (as GOST 26204-91 (Chirikov's method)) has as a result the substantial artificial overstating of estimation of the phosphatic state of soils (on 40–80 mg of P₂O₅/kg of soil). For diagnostics of the phosphatic state of these soils, in obedience to the requirements of normative documents of Ukraine, it follows to use the followings standards: DSTU 4114 (Machigin's method), DSTU 4727 (method of Karpinskyi-Zam'yatina) and DSTU ISO 11263 (Olsen' method). For the receipt of high harvests with high quality on ordinary black-earthes of North Steppe of Ukraine it is necessary to bring in not less phosphoric fertilizers, than on other soils of country based on information of the ground diagnostics.

Kharytonov M. M., Lazareva O. M., Lemishko S. M. Ecological assessment of the nitrates content variability in vegetable and fruit crops in the Dnipropetrovsk region // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 29–31.

The aim of this work is the ecological assessment of quantitative determination of nitrate in vegetable and fruit production after conducting field experiments in Dnipropetrovsk region. The results of the determination of nitrates in vegetables, fruits and berries, which are most often used in the human diet are presented. Control of nitrate content was carried out by potentiometric method using an ion-selective electrode. The results of the research showed the greatest exceedance in such vegetables: radishes, beets, carrots and pumpkin – in 6 samples 5 exceed MPC. In the determination of nitrate content in potato 12 samples from 46 exceed the MCL, in cabbage – 2 samples of 12, and pepper – in 2 samples from 9 exceed the MPC. The fruits and berries studied in our work on the nitrate concentration belong to the group of low concentration (up to 100 mg/kg). The lowest nitrate content was found in green peas.

Pysarenko P. V., Khlebnikova Ya. Many-years changes of yield and «yield waves» in Poltava region // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 32–39.

The paper deals with research of many-years

changes of crop yield in Poltava region. Analysis of crop yield changes is carried out at the research period from 1966 to 2012 including. Average graph curves of crop yield are presented. Three periods of crop yield changes with two evident minimum of yield are found out. Average period of «yield wave» for all of crops is given. The role of geliogeophysical factors and moon-earth influences in formation and changes of crop yield is also analyzed.

Shevnikov M. Ya., Galitsh O. P., Lotysh I. I., Milenko O. G. Some parameters of economic-valuable signs of sort of soy in terms of left-bank Forest-Steppe zone of Ukraine // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 40–43.

As a result of study of sorts of soy the most productive sorts which in the conditions of left-bank Forest-Steppe zone combine the short period of vegetation and basic components of the productivity are selected. The weather terms of vegetation period substantially influenced on duration of interphase periods. The productivity of seed from one plant depended on the height of main stem, amount of the fertile knots, bobs and seed on a plant. Late-ripened sorts had negative influence of height of attachment of lower bobs that showed up on the seed productivity.

Rozhkov A. A., Chernobay S. V. Influence of seeding rates and foliar application on the effectiveness of cultivation of spring barley variety Dokuchaevskiy 15 // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 44–49.

The article presents the results of studies conducted during 2012–2014 years on the experimental field of KhNAU named after V. V. Dokuchayev about the impact of the application of different options for seeding rates and foliar application on the variability of grain yield of spring barley varieties Dokuchaevskiy 15. It was set high economic and bioenergetic efficiency of foliar application crops. The highest productivity of grain and the best indicators of economic and bioenergetic efficiency of cultivation were obtained on options for crop seeding rate of 5,0 million seeds/ha. It was also found that the optimization of seeding rate provides the increase of effectiveness of foliar application.

Lykholat Yu. V., Rossykhina-Galycha G. S. Redox-reaction of Orzhytza 237MV corn seeds to herbicides // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 50–53.

The paper deals with the effect of herbicidal agents on accumulation of TBA-active products,

ANNOTATIONS

lipid hydroperoxides and activity of superoxide dismutase (SOD) and peroxidase (PO) in seeds of Orzhytza 237MV hybrid corn. In the ripening corn seeds treated with herbicides, intensification of the course of reactions of lipid oxidation of the varying degree and functioning of antioxidant protection components (SOD, PO) has been revealed. Slowed accumulation of peroxidation products recorded in ripe seeds is connected with high activity of superoxide dismutase, and stable functioning of catalase and peroxidase. The above leads to the conclusion that the action of herbicides on seeds of plants of Orzhytza 237MV hybrid corn in their ripening process promotes the ability to proper activation of studied enzymatic protection systems and functioning thereof at the level which would ensure the restoration and maintenance of homeostasis. It is found that Harness, Meister and Adengo herbicides have the least negative impact.

Yarchuk I. I., Bozhko V. Y., Moroz O. O. Winter barley cold-resistance and productivity depending on sowing terms and rates // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 54–57.

This article presents the results of three-year field studies on the reaction of winter barley varieties for terms of sowing and seed rate in the Northern Steppe of Ukraine. The highest level of development in the autumn period have plants of early sowing. The article is mostly dedicated to the main disadvantage of winter barley – its poor resistance to low temperatures. Particularities of growth, winter-resistance forming and productivity are viewed in the light of hydrothermal conditions of a research year.

Masliyov S. V. Influence of biologics on growth, development and yield of popcorn // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 58–61.

The results of the field experiments of the influence of seed inoculation by biologics on growth, development and yield of popcorn hybrids have been given. The possibility of yield increase

and product quality by seed treatment with microbial preparations as Diazofit, CL-9, Fosfoenteryn + Diazofit has been identified. The data on consumption of minerals and water have been presented. The rules of the use of biologics have been recommended. The yield of popcorn grain has been shown. The dynamics of deviation depending on the used preparation has been analyzed.

Kulyk M. I. Influence of width of spaces between rows on formation of yield of switchgrass' varieties // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 62–65.

The quantitative indexes of vegetative aboveground mass of switchgrass varieties: Cave-in-Rock, Carthage and Foresburg with different width of spaces between rows were determined. Increase of plant nutrition areas causes shortening plants but the number of stems has a tendency to increase when the plants were grown with wider spaces between rows during the third and fourth vegetation years. Established yield value of dry phytomass of switchgrass varieties of the third and the fourth vegetation years with different areas of plant nutrition have been determined.

Cherednichenko I. V. The contents of mobile organic substance by different fertilizer system in organic farming // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 66–69.

The study of the effect of various fertilization on the content of moving of typical chernozem organic matter under in conditions of organic farming was presented in the article. We established that typical chernozem under natural vegetation (layland) helps significantly increase the share of organic substances moving within the total humus. The positive impact of the share of mobile organic substance in general is the use of organic and green manure fertilizing systems and the introduction perennial grasses in crop rotation. The use of mineral fertilizer system causes depletion of soil moving organic substance.

AGRICULTURE. ANIMAL HUSBANDRY

Shamro M. O., Shamro L. P., Soloviova T. M. Influence of ways of stockpiling feed for bees' growing during autumn rotation of their generations // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 70–72.

On the basis of experimental research in the Forest-Steppe zone of Ukraine a comparative analysis of bees' preparation to wintering on natural forage and using of feed was done. Despite the fact

that during the replenishment of stocks of feed for winter feeding by sugar syrup through the period from the beginning of the reduction to the end of upbringing brood increased by 17,8 %, but the number of bred brood during this period – by 9,8 %, the amount of feed on a single hive of bees and the strength of families at the beginning of winter is decreased by 4,7 % and 16,4 %.

VETERINARY MEDICINE

Borysevych B. V., Kozlovska G. V., Skybitskiy V. G., Kozlovska A. V. Histomorphological changes in organs and tissues of guinea pigs infected with enterotoxigenic strains of *Y. Enterocolitica* // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 73–83.

The results of the study of histomorphological changes in organs and tissues of guinea pigs infected with enterotoxigenic strains of *Y. enterocolitica* were presented. We established, in particular, the most affected in small intestine, where superficial necrotic enteritis was determined. Toxins are causative agent, getting into the bloodstream cause degenerative changes in the liver and pancreas. And also serous ecstracapillary glomerulonephritis and degenerated changes of epithelial tubules of the kidneys and serous myocarditis were caused. The infecting of guinea pigs leads significant activation of immune organs: thymus, spleen, somatic and visceral lymph nodes.

Berdnik V. P., Bublyk O. A., Berdnik I. Yu., Scherbak V. I. Means and methods of specific prevention of pigs' mycoplasmosis // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 84–88.

The article is devoted to the study of specific prevention methods of pigs' mycoplasmosis in Ukraine. The results of numerous studies show that in farms of Ukraine *M. hyorhinis*, *M. arginini*, *M. hyosynoviae* i, rarely, *M. hyopneumoniae* and *Acholeplasma (A.) laidlawii* are the most frequently exciter of pigs' mycoplasmosis (PM). It turns out that the vaccine must be prepared using strains of these species of mycoplasma and aholeplasma. The use of inactivated vaccines of exciter has much lower efficiency compared to not inactivated vaccines that are injected into the respiratory ways.

Lokes P. I., Kravchenko S. A. Characteristics of selected factors of splenomegaly in domestic dogs // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 89–92.

Results of scientific research for the study of etiological factors, clinical symptoms, laboratory values and changes of ultrasonographic features for splenomegaly in dogs are presented in this work. We established that the etiological factors of splenomegaly is pathologies which is accompanied by blood circulation disorders, haematopoiesis and a pigmentary metabolism. Clinical symptoms of splenomegaly is increasing the size of spleen, as determined by palpation and ultrasonography. The basic provisions for implementing splenomegaly classification in animals with determination of an

isolated and systemic form are stated.

Yatsenko I. V., Kyrychenko V. M. Bacterial indices of broiler chicken slaughter products when ration is enriched by nanomicroelement feed additive «Microstimulin» in veterinary and sanitary inspection aspect // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 93–99.

The bacterial contamination of broiler chicken slaughter products (white and red muscles, heart, liver, muscular stomach) by conditionally pathogenic and pathogenic microorganisms when the ration of the chickens was enriched by nanomicroelement feed additive (NMFA) «Microstimulin» for four days of storage at 0–4 °C has been analyzed. It has been found out that the lowest level of MAFAnM, BGIR, bacteria *Proteus* in all slaughter products under investigation was registered in the 3rd experimental group the broiler chickens of which were given 20 cm³/dm³ NMFA «Microstimulin» with water. The highest level of MAFAnM, BGIR, bacteria *Proteus* was registered in the control group the broiler chickens which were not given NMFA «Microstimulin» with water. The dependence between the dose of NMFA «Microstimulin» and the number of microorganisms in the products of slaughtering has been proved.

Kone M. S., Corchan L. N., Zabyiaka O. A. The effectiveness of the treatment and prevention of canine in condition of veterinary clinics by LLC «Biocenter» in town Poltava // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 100–102.

Studied the age and pedigree sensitivity, seasonal occurrence and dynamics of display canine distemper in veterinary clinics by LLC «Biotcenter» in Poltava. We established that enzootic of canine distemper is often seen in the spring and summer are more likely to be infected dog breed of German shepherd. According to canine distemper we developed and proposed treatment regimen intestinal form which is much more effective than the conventional basic method. The importance of the use of chemotherapeutic agents at some stages of infection. We established that for the prevention of plague in dogs proved most effective vaccine «Nobivak DHPPI».

Shatohin P. P., Suprunenko K. V., Karysheva L. P. Pharmacological effectiveness of peritol and soluble aspirin in the treatment of piglets, suffering from gastroenteritis // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 103–108.

We dealt with a subject of piglets' gastroenteritis treatment. The aim of our study was

ANNOTATIONS

to use in the treatment of patients piglets preparations, namely serotonin antagonist – peritol and drugs from the group of salicylates – water soluble form of aspirin. It was established that the drugs we used exhibit diverse effects on the pigs, in particular, on the performance of erythropoiesis, some indicators of antioxidant system and thyroid concentration of hormones. According to the results of experiments determined the therapeutic efficacy of our proposed treatment regimens.

Didok Yu. V. Microenvironment of organizations in the field of veterinary medicine // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 109–112.

The article discusses the features of external environment of organizations in the field of veterinary medicine. The group of factors of direct influence were allocated and characterized. The definition of the notion «Microenvironment of establishments of veterinary medicine» was formulated and its essence was disclosed. Microenvironment of establishments of veterinary medicine should be understood as a complex of factors of direct impact, which directly affect the functioning of the organization in the field of veteri-

nary medicine and they are exposed to their influence, they are able to determine the strategic decisions and to form a system of relations (connections) between the organization and its suppliers, competitors, consumers of veterinary goods and services, human resources, financial institutions, governmental authorities, civil society organizations and the media.

Melnychuk V. V. Desinvasive efficiency of «Bi-des» and «Brovades-plus» relatively to eggs of *Trichuris suis*. // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 113–115.

The results of the study of desinvasive properties of domestic disinfectants «Bi-des» and «Brovades-plus» relatively to eggs of trichurises isolated from the gonads of female worms are presented. It was found that the used preparations had a satisfactory level of desinvasive efficiency (71,73–89,13 %) relatively to not invasion eggs of pigs' trichurises. However, the most effective was the preparation «Bi-des» at 2 % concentration at 60 min exposure (DE – 89,13 %). «Brovades-plus» in the same concentration and exposure showed lower rates of desinvasive efficacy relatively to eggs of *Trichuris suis* (DE – 79,34 %).

ECONOMICS

Ridei N. M., Kucherenko Yu. A., Telizhynska T. V. Evaluation of socio-economic development of villages Ivanivka and Tsvizhyn of Ivanivka village council of Vinnytsia district of Vinnytsia region // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 116–123.

We carried out socio-economic evaluation of basic and aggregate indicators – protection of living standards, demographic and infrastructure indicators, providing human and intellectual resources,

income, housing and transport provision and the level of unemployment. Types of rural settlements are established by the number of inhabitants. Indexes are determined for the integrated (basic) and aggregate indicators of social and economic development of rural settlements Ivanivka village council of Vinnytsia district of Vinnytsia region, and the level and conditions of socio-economic development of rural areas during 2012–2014 are set.

TECHNICAL SCIENCES

Kostenko O. M. Optimization of plans of experiments in conditions of limited material and time resources // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 124–131.

The article is devoted of solving scientific and technical problems of reduce material and time costs in implementing experimental research through the development and implementation of methods for the synthesis of optimal plans experiments in conditions of limited material and time resources. The developed methodology includes optimization techniques for cost and time-consuming experiment plans: based on the use of standard serial sequences of plans of multifactorial experiment, composite construction method of plans which are close to optimal, building a catalog of typical plans, iterative

experiments planning, serial planning experiments, identification of dynamic objects on the basis of iterative planning. The methodology has been tested in the study of some technological processes, devices and systems.

Dryuchko A. G., Storozhenko D. A., Bunyakina N. V., Ivanitskaya I. A., Golub'atnikov D. V., Kitaygora K. O. Transformations in the systems of nitrate precursors at the preparatory stages of the formation of the rare-earth elements-containing oxide functional materials // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 132–143.

Using the complex of physical chemistry methods the authors studied nature and special features of chemical interaction, thermal transformation (25–

ANNOTATIONS

1000 °C) of structural components in the system of nitrates of neodymium and potassium as model of the systems of nitrates of rare-earth elements and elements IA of the group of periodic system, ammonium, which are now widely used in the syntheses, the technological regulations of the creation of the functional materials of different designation with the assigned complex of structurally sensitive characteristics. A number of special features and regularities in their joint behavior was discovered.

Kharak R. N., Levchuk V. I., Lykhvenko S. P. Experimental research of dirigibility and hauling indexes of the 14 KH class tractor on the ploughing // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 144–149.

The results of experimental research of dirigibility, hauling and economic indexes of arable aggregate in composition the tractor of MTZ-50 with the plough of PN 3-35B on stubble with the differential and blocked interwheeled drive of back bridge are presented. As a result of analysis of research results worsening of dirigibility of tractor is set at the blocked drive comparatively with a differential. At the same time, the considerable diminishing of skidding and increase of aggregate hauling efficiency

(about 10 %) at the blocked drive were noticed. Researches of tractor are conducted also by hauling recommendation at motion in a furrow depth 30 cm (right wheels) and on stubble (left wheels) on III, IV and the V transmissions. The results allow to draw a conclusion about the substantial improvement of hauling indexes of tractor with the blocked interwheeled drive.

Lyashenko S. V. Technology of deep loosening of soil on small holdings // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 150–154.

The known scientific researches confirmed the necessity of destruction close-settled soils. Existent agrotechnical technologies of treatment soil are inapplicable for the terms of subsidiary areas. Technical solution problems is offered by the use fuel-efficient power machines. The recommended chart is resulted for implementation of technological process of the deep loosening of soil on subsidiary areas. Technical solution is offered – deep loosening of soil for diminishing of influencing of subsurface layer of soil which appears on the small holdings as a result of permanent reiteration of methods of his till on physico-mechanical properties of soil and productivity of agricultural cultures.

THE YOUNG SCIENTIST'S PAGE

Minkova O. H. The evolution of notion of ecological compatibility of economic activities in agricultural production // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 155–162.

In the article the basic preconditions of origin of ecological farms have been defined, directions of ecological orientation in agricultural production have been generalized. Stages of formation of notion of ecological compatibility of economic activities in national and foreign theory and practice have been analyzed. There was reviewed the literature of their essence and the scientific and theoretical trend of development. The approaches to the classification of agro-ecological production models and their differences have been showed. The existing alternative methods of agricultural activity have been considered.

Kozelskiy O. M. Features of plants' development of different sorts of winter wheat during the autumn growing season, depending on the pre-sowing treatment in the conditions of northern Steppe // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 163–170.

The results of the survey indicate that the effectiveness of pre-sowing treatment of winter wheat by disinfectants and microfertilizer during its cultivation on the fallow, after pea and sunflower was high. Seed pre-treatment preparation of Celest Top 312.5 FS (1,5 l/t), which was used in full and reduced

dose, together with microfertilizer Reakom-plus-grain contributed to a more rapid emergence of the plants of winter wheat. At the time of termination of autumn vegetation maximum values of the coefficient of tillering were observed on these experimental variants. Compared with control, the difference in tillering sorts Pysanka, Skarbnytsia and Apogej Luganskiy during its cultivation on a fallow was 15,4; 14,8; 16,0 % after pea and sunflower – 17,0; 17,4; 19,6 % and 18,6; 18,6; 19,5 % respectively. Germination and weight of 100 absolutely dry plants were also highest in these cases of the experience. On average for the years of research the highest yield of pre-sowing seed was provided by disinfectants Celest Top 312.5 FS (1,5 l/t) and microfertilizer Reakom-plus-grain. During cultivation on fallow of sort Pysanka it was 6,40 tons per ha, of sort Skarbnytsia – 6,69 tons per ha, of sort Apogej Luganskiy – 6,20 tons per ha. Placing these sorts after sunflower and pea grain yield was 3,74; 3,50; 3,42 tons per ha and 4,43; 4,13; 3,94 tons per ha respectively.

Nozdrina N. L. Productivity and grain quality of winter wheat depending on nitric top-dressings after summer barley // *News of Poltava State Agrarian Academy*. – 2015. – №3. – P. 171–174.

The productivity and quality of grain (nature, content of protein and gluten, index of gluten deformation) of new varieties of winter wheat after barley summer are

ANNOTATIONS

considered. It was established, that the greatest productivity of all varieties had been received in favorable on moistening 2013 and 2014 years, smaller – in droughty 2012 year. The influence of nitric top-dressing on formation of indicators of productivity and quality of grain of winter wheat was established. The greatest content of protein and gluten in grain was marked at variety Sonechko and in a variant, in which combined the application of ammonium nitrate early in the spring on thawed frozen ground and at the end of tillering stage locally.

Abuznaid Kareem R. S. Dynamics of linear morphometrical parameters of ventral surface of hoco-cerebral part of cattle skull depending on age and sex // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 175–181.

Linear morphometric parameters of the ventral surface of the hoco-cerebral part of the skull of both males and females of cattle trustworthily increased from birth to 10-year age. Two periods were registered in the dynamics of morphometrical parameters of the ventral surface of the hoco-cerebral part of the skull: pre-boundary and post-boundary ones. The identified age regularities of metric parameters of the ventral surface of the hoco-cerebral part of the skull in the cattle have been used as a basis of the method to determine animal age and sex by informative morphometrical parameters.

Vusyk D. A. Improvement of diagnostic methods of female cats with pyometra with the help of sonography // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 182–185.

During 2008–2014 years 221 cats were investigated with the help of sonographic method in Sumy veterinary center «Health». Primarily the ultrasound characteristic of morphological condition of the uterus of clinical healthy female cats during anoestrus was determined by the sonographic method. Echogram of healthy uterus is characterized by equal and uniform walls, lack of visualization of cavities, medium or slightly reduced relative to the surrounding tissue

echogenicity. The ovaries of healthy cats at sonographic research were not visualized. Sonogram of the uterus with pyometra is characterized by enlargement of uterine horns, thickening or enlargement of the uterus. The maximum diameter of the body and uterine horns made pursuant 2,4–5,8 cm. Expanding uterus was noted in all experimental animals with pyometra. This animal uterus width was 1,22±0,35 cm. Contents of uterus were hypoechoic or anechoic display, in some cases hypoechoic moderate graininess was marked.

Chirva I. V. Sugar beet cultivation in the economy of agricultural enterprises // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 186–190.

Modern conditions of development of sugar beet production on farms of Poltava region and Ukraine have been given in the article. The problems of reduction of sowing areas, productivity increase, fluctuation of level of income and profitability have been found out. The dynamics of costs for production of sugar beets at agricultural enterprises has been analyzed. The recommendations concerning management of costs for sugar beet growing in the region on account of purchase of domestic seeds and machines have been brought. Propositions for the increase of industry efficiency have been offered.

Tkachenko R. N. Study of technological properties of a separation object and functionality of the working bodies of separating equipment // News of Poltava State Agrarian Academy. – 2015. – №3. – P. 191–194.

The work is devoted to the study of the movement of inoculum under the action of gravity in sowing system, namely metering system – sow automated – dialects device – undertenon space dovetail ploughshare – switchgear. The impact resistance when the flow of inoculum on the example of winter wheat was theoretically described. Which is considered with regard to the form of the profile of its convenient shape flow in sow automate, provided mechanical feeder that is able to assume and theoretically describe the general scheme of the movement of seed in sowing system.

Літературний редактор: *Вікторія Жукова*
Відповідальний редактор: *Оксана Колеснікова*
Комп'ютерна верстка та дизайн: *Інна Щенко*
Переклад англійською: *Вікторія Жукова*

Формат 60x90/8. *158 Ум. друк. арк. 17,3. Тираж 100 пр. Зам. № 165.
Видавець і виготовлювач: Полтавська державна аграрна академія.
Адреса: 36003, м. Полтава, вул. Григорія Сковороди, 1/3.
Свідоцтво суб'єкта видавничої справи ДК №2174 від 26.04.2005