

AGRICULTURE. PLANT CULTIVATION

Kalens'ka S. M., Novyts'ka N. V., Dzhesyuk O. V. Formation of leaf surface under the influence of soybean inoculation and feed // *News of Poltava State Agrarian Academy*. – 2016. – № 3. – P. 6–10.

The effects of inoculation seed, top dressing fertilizers, and multi-chelate complex of colloidal solution of metal nanoparticles on a background of mineral fertilizers on the dynamics of the formation of leaf surface of sowing soybean varieties are presented. Field research was conducted in typical black soil of Forest-Steppe zone of Ukraine at the Department of Plant in separate unit of the National University of Life and Environmental Sciences of Ukraine «Agronomic Research Station». Options for research include inoculation of seed by bacterial drug «HayKot Super» + «HayKot Super Extender», sustained by budding complex fertilizers «VuksalKombi Plus» (2 l/ha) and «Sprout Bean» (2 l/ha), and patented royal colloidal solution complex (Fe, Mn, Mo, Co, Cu, Zn, Ag) nanoparticles of metals (240 mg/l l/ha).

We established that the largest area of leaves found in ultraearly sort «Legend» and early ripening varieties «Horol» which in the variant with seed inoculation was 23,0 and 27,7 thousand m²/ha corresponding figure of 22,8 and 25,5 thousand m²/ha in the version without inoculation. The use of complex metal nanoparticles at a concentration of 240 mg/l for spraying soybeans in early budding increases leaf area at flowering stage to 22,9 for ultraearly and 28,1 thousand m²/ha – for early ripening varieties of soy. Maximum leaf surface in the experiment: 24,4 thousand m²/ha for sort «Legend» and 30,9 thousand m²/ha – for sort «Horol» formed by the combination of seed inoculation «HayKot Super» + «HayKot Super Extender», and foliar feeding complex micronutrients «Sprout Bean».

Masliyov S. V. The effect of the plant density on the yield of flint corn in conditions of the Eastern part of the Steppe of Ukraine // *News of Poltava State Agrarian Academy*. – 2016. – № 3. – P. 11–14.

The results of field experiments of the plant density effect on the yield of flint corn grain in conditions of the Eastern part of the Steppe of Ukraine have been given. Comparative data on the dynamics of flint corn growth depending on the sowing term and plant density have been presented. The growing season of plants and the elements of the yield structure have been analyzed. The data on the yield of flint corn grain depending on the plant density have been given. The optimum plant density for middle-early hybrid Kremin' 200 SV in

conditions of the Eastern part of the Steppe of Ukraine has been recommended.

Strygun A. A., Suddenko Yu. M. Species composition of harmful entomofauna of agrobiocenosis of winter wheat in the Right-Bank of Forest-Steppe of Ukraine // *News of Poltava State Agrarian Academy*. – 2016. – № 3. – P. 15–18.

We clarified the species composition of insects-phytophagous of winter wheat agrobiocenosis in the Right-Bank of Forest-Steppe of Ukraine. According to the results of monitoring of wheat entomocomplex we found 55 species of harmful insects from 19 families that in one way or another can damage the crop. The order Coleoptera was characterized by the highest species diversity. The results of the study found that the main and most dangerous pests that cause significant damage in the Right-Bank of Forest-Steppe is a complex of pests ears: aphids, wheat bugs, wheat chafers, thrips, cereal ground beetle.

Kalens'ka S. M., Shutyi A. I. Formation of productivity and quality of durum spring wheat depending on a mineral nutrition in the Right-Bank Forest-Steppe of Ukraine // *News of Poltava State Agrarian Academy*. – 2016. – № 3. – P. 19–24.

The influence of variety features of mineral feed of the durum spring wheat in Right-Bank Forest-Steppe of Ukraine. It has been established that the use of foliar top-dressing on the background of the main fertilizer has a positive effect on performance and quality of the investigated varieties. We substantiated the role of plant nutrition system that allows you to manage the formation of grain productivity crop of durum spring wheat. We optimized power mode which provides a more complete disclosure of the resource potential of the plants thereby crop yield increases.

Tanchyk S. P., Odarchenko O. M. Influence of No-till and conventional tillage on the number of earthworms in crops of spring barley of the Right-Bank Forest-Steppe of Ukraine // *News of Poltava State Agrarian Academy*. – 2016. – № 3. – P. 25–27.

The effect of No-till and conventional tillage on the number of earthworms in the plow layer of typical black earth in spring barley of Right-Bank Forest-Steppe was researched. It was established that the absence of tillage and crop residues accumulation on soil surface under «direct» sowing had a positive influence on the population of earthworms, which led to increase in their number by 2,6 times compared to plow. In plowing variant the amount of earthworms was reducing from sowing to harvesting of spring barley more than 9 times, while in case of No-till it decreased in 2,2 times.

Skrypnichenko S. V., Skyba G. V. Transformation of hydrophysical properties of drained peat soils under the influence of anthropogenic factors // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 28–31.

The process of transformation in the dynamics of hydrophysical properties of drained peat soils under the influence of long-term intensive agricultural use is analyzed. Transformation of the structure parameters of the peat soil determines the orientation of the evolutionary process in the dynamics of hydrophysical constants. The most effective parameters of the peat soil structure and hydrophysical properties are formed when introducing single-cropping of perennial grass, herb-cultivated, and corn-herb-cultivated crop rotation. The complexity of rational use of the drained peat soils is in transformation of their potential fertility into effective.

Kucher M. F., Postolenko L. V. Growth and development of black currant depending on the use of mulching and irrigation // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 32–36.

The results of estimation of total one-year plants' increase of sorts of black currant are resulted and estimation of their productivity is conducted at mulching of stripes near bushes and use of irrigation. It is set as a result of researches, that at all explored sorts of the use of mulching materials in stripes near bushes bars was instrumental in the substantial increase of total one-year increase both in variants with the use of tiny irrigation and without irrigation on a background of control variant – black pair. The greatest productivity of planting of black currant provides the compatible use of tiny irrigation and mulching materials.

Kulyk M. I., Pasichnichenko A. N. Potential and economic efficiency of the use of remains crops of Ukraine // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 37–40.

The article contains the level of productivity of primary products (grain, seeds) and the potential (common and power) of plant crop residues was calculated. The economic efficiency of production by-products – plant remains (straw and stalks) of winter wheat, corn, sorghum and sunflower were presented. The results confirm their high return and profitability as raw materials for biofuel.

Shavanova K., Starodub N., Taran M. Biological effect of some metal oxides nanocomposites on *saccharomyces cerevisiae* // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 41–45.

The effect of three types of nanostructured metal-containing saponite clays on brewer's yeast,

Saccharomyces cerevisiae, was investigated. The experimental data show that the studied materials, even though they possess nanometre-sized particles, do not have any inhibitory effect on organisms. In these study a significant increase in the number of cells for *S. cerevisiae* was demonstrated. The largest concentration of cells has been recorded under the influence of a niobium-containing clay, prepared from niobium pentaethoxide at a concentration of 2 mg ml⁻¹. Under these conditions the number of cells was increased up to 5 times in comparison to the control. According to the MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) test, the best results were obtained for both the proton-exchanged and niobium-containing saponite solids at a concentration of 0,5 mg ml⁻¹. They are relatively controlled stimulate mitochondrial reductase activity of yeast cells.

Gonchar L. N., Scherbakova O. M. Influence of seed processing of chickpeas preplant in field similarities and stand density of plant // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 46–49.

Studies in stationary experiment EP «Agronomic Research Station» during 2012–2014 years in typical black soil found that treating seeds by nodule bacteria and molybdenum solution is an effective reception for improving chickpea seed germination by redox processes in the seeds. We established that survival chickpea plants during the growing season considerably depend on weather conditions of growing and preplant processing of seeds. Inoculation of seed and its processing by molybdenum colloidal solution improves plant resistance to stress and survival of plants during the growing season culture in 6,5–10,5 %, inoculation without the use of colloidal solution of molybdenum – by only 1,9–2,5 %.

Pozdnyakov V. V., Kharchenko Yu. V., Kharchenko L. Ya., Antsyferova O. V. Creation of maize hybrids of excess sugar with high level of anti-oxidant activity using the test system based on stable radical DPPH // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 50–56.

Hybrids of excess sugar maize are good raw material for the production of functional food products, including baby food and diet. Important indicators of high quality of these products are high protein content and a valuable oil, a small amount of poorly digestible maize starch and a high content of anti-oxidants, and also excellent taste qualities. The paper presents data on the evaluation of the antioxidant activity of a large group of promising new hybrids of excess sugar maize of mid-group created in order to obtain valuable raw materials for the can-

ANNOTATIONS

ning industry. Index value of total antioxidant activity varied over a wide range (from 31,8 % to 60,4 %, 568,4–1,008 mg/g of seed), which indicates on promising use of this important parameter in the breeding of biochemical excess sugar maize on quality.

Moroz M. S. The optimized nourishing environment for cultivation of *Podisus maculiventris* Say. (Heteroptera: Pentatomidae) // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 57–62.

It is set that an optimized nourishing environment for cultivation of *Podisus maculiventris* Say. provides the high level of development of population. The offered nourishing environment provides a survival at certain high level, a reduction to duration of post-embryonic development, an increase of indexes of mass of imago, amount of the set aside eggs. The predatory bedbugs grown on a nourishing environment are able to find and destroy for a day on 27,91 and 41,86 percents more eggs of the Colorado potato beetle comparatively with a control variant.

Lukashuk V. P. Influence of fertilizers and soil treatment on the balance of nutrients in the crop rotation // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 63–65.

The results of the impact study of organic, mineral and organic-mineral systems of fertilizers compared with control without systems and different tillage systems on balance of nutrients while growing of crops in rotation. We found that use only organic fertilizer system, as well as the mineral is not enough to achieve an entailing no deficit balance of nitrogen, phosphorus and potassium while the vast majority of crops' growing. Application of organic-mineral system of fertilization on meadow drained soils can achieve an entailing no deficit balance of nitrogen, phosphorus, and potassium for the vast majority of growing crops. Regarding the impact of tillage systems, the studies showed that it had little impact on the balance of nitrogen, phosphorus, and potassium in rotation.

AGRICULTURE. ANIMAL BREEDING

Shevchenko T. S. Biochemical parameters of blood serum of young cattle with trichurosis invasion // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 66–68.

The paper presents data of biochemical parameters of blood serum of cattle 6-12 months of age with tryhurosis invasion. We established that the parasites pathogens leads to changes in the biochemical parameters in animals, including: in pa-

tients of young cattle with tryhurosis, compared with clinically healthy animals, in serum of blood significantly reduced amount of albumin (32,7 %, $P < 0,01$), urea nitrogen (23,8 %, $P < 0,05$), creatinine (44,1 %, $P < 0,05$), calcium (28,6 %, $P < 0,001$), and carotene (32,4 %, $P < 0,05$). At the same time we established a significant increase of AST (in 2,7 times, $P < 0,001$) and index de Ritis (in 2,4 times, $P < 0,001$).

VETERINARY MEDICINE

Panikar I. I., Skrypka M. V., Kolomak I. O. Patho-morphological changes in kidneys of pigeons in case of spontaneous colibacillosis // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 69–71.

The results of epizootic situation monitoring, held in the town of Poltava concerning wild pigeons' diseases, have been presented in the article. The spreading of colibacillosis causal agent, *E. Coli*, among pigeons has been studied. Based on the held patho-morphological examinations, the peculiarities of changes in kidneys in case of spontaneous colibacillosis, have been revealed. The changes have been characterized by the signs of focal interstitial purulent inflammation, granular degeneration, and the formation of hemosiderin. In case of chronic course of disease, patho-morphological changes have been accompanied by the formation of granulomas and proliferation of connecting tissue.

Kovpak V. V. Phenotypic and morphological changes of pancreas cells culture of rats during

cultivation // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 72–77.

The research of primary culture of rat's pancreas cells showed that it is morphologically heterogeneous, inter the dominant fibroblast-like cells we observed a small amount of polygonal. Starting from the second passage culture became the homogeneous by fibroblast-like cells. Immunophenotyping population of cell culture is derived from rat pancreas, revealed a high level of expression of CD38, moderate level – CD66e, CD95, CD326, low level – CD227, lack of expression – CD10, CD34, CD45, CD48, CD54, CD56, pan-keratin.

Kolych N. B. Features of pathological changes in the associative flow of mycoplasmosis // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 78–80.

Mycoplasmosis pneumonia of pigs is a chronic infectious disease of pigs of all age groups, characterized by exudative-proliferative inflammation of the lungs, intermittent fever, cough and delayed

ANNOTATIONS

growth and development of piglets, and complications – progressive weight loss. Mycoplasmosis increases the susceptibility of pigs to secondary infections, making it more difficult and often leads to death of animal.

We conducted a comprehensive laboratory study of the use of bacteriological, serological and coprologic research methods of pigs 1,5 and 3 months of age. The studies were conducted in the conditions of farms for growing and fattening of pigs in Poltava region.

Characteristic of all cases of animals' death was uneven redness and slight thickening of the skin in the abdomen. The increase and uneven coloration of submandibular, tracheal, inguinal lymph nodes.

Lungs with signs of catarrhal pneumonia with lesions predominantly cranial lobes. Some areas of dark red color with a bluish tint, more dense consistency, fall on a common surface, in the lumen of the bronchial – mucous mass. The other part of the body gets mild tuberosity at the age of 1,5 months and more intelligible – at the age of 3 months. In all cases of death of pigs – the pericardium and the pleura

with hemorrhage. The spleen is diffusely dark red. The buds are light brown with areas of bluish color. At the age of 1,5 months on the mucosa of a thick intestine there were rounded multiple small formations, protruding into the lumen of the intestine.

Mel'nychuk V. V., Stepaniuk V. K. Age dynamics of strongylatoses of sheep's digestive system in the territory of Poltava region // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 81–83.

In the work we present data about the level of infestation of different age groups of sheep by strongylates of gastrointestinal tract in conditions of farms in Zin'kiv, Shyshaky, Kobeliaky district of Poltava region. As a result of scotoscopic researches we established wide spread of strongylatosis pathogens in sheep (EI – 54,60 %) and proved their associative course with monieziosis, eimeriosis, trichuriasis, strongyloidosis. The highest extensiveness and intensity of strongylatotic infestation (EI – 69,66 %, II – 295,51 ± 26,02 eggs in 1 g of feces) was recorded in young sheep aged from one to two years.

TECHNICAL SCIENCES

Levi L. I., Petrovs'kyi A. N. Method of singular spectrum analysis with the interval uncertainty for the prediction of agro-climatic conditions // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 84–88.

The paper offers a mathematical model for the analysis and prediction of agro-climatic data by singular spectrum analysis (SSA) with the interval uncertainty. The mathematical model is designed to determine the optimal weather conditions at sowing

wheat seed which is previously stimulated by electromagnetic field of high frequency. It was shown that pre-sowing seed stimulation leads to an increase of water uptake, nutrients and therefore requires optimum conditions for germination and subsequent plant growth. Mathematical modeling made it possible to predict the required optimum agro-climatic conditions in terms of humidity and soil temperature.

THE YOUNG SCIENTIST'S PAGE

Pylypenko V. S. The formation and symbiotic activity of nodule bacteria of pea plants mustache in the Forest-Steppe of Ukraine // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 89–93.

The basic results of research conducted in the northern part of Right-Bank of Forest-Steppe zone of Ukraine for 2014–2016 years on typical black earth are presented. We established that the varietal characteristics of culture, preplant treatment of seeds and fertilizer had a positive impact on the formation of the quantity and mass of nodules in pea plants. The most favorable conditions for the formation of symbiotic system are created by the combination of sowing seed inoculation with fertilizer in version $K_1 + +N_{10P10} BBCH_{13-19} + N_{10P10} BBCH_{55-59} + N_{10P10} BBCH_{61-65}$. Against the background of mineral fertilizers $N_{30}P_{90}K_{90}$ the formation and performance of the device symbiotic pea plants amplified. The

indicated level of mineral nutrition is effective and for the sowing seeds that are not subject to inoculation. The high level of mineral nitrogen negatively affects on the symbiotic relation between pea plants and nodule bacteria.

Ts'ova Yu. A. The discriminant analysis of agroecological influence of ways of machining of soil // News of Poltava State Agrarian Academy. – 2016. – № 3. – P. 94–100.

The article presents the results of discriminant analysis on the state of soil on edaphic parameters of the system, which are formed as a result of different methods of machining. Two initial discriminant axes is enough for discrimination of results of chisel cultivation, subsurface cultivation, minimum tillage, and also «no till». Canonical axes 1 discriminates ways of machining with high depth of ploughing and ways with small depth or zero processing. Ca-

ANNOTATIONS

nonical axes 2 discriminates each of the first groups on subgroups with smaller depth of ploughing in each pair. Deeper variants of a ploughed land differ by the big levels of nutrients (nitrogen, phosphorus,

potassium) in soil. Values of canonical variables are considered as markers of axes of space in which limits variability of edaphic indicators is reflected.

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

Формат 60x90/8. *158 Ум. друк. арк. 17,3. Тираж 100 пр. Зам. № 156.
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