Summary

Vozhegova R.A. The scientific basis of forming farming systems on irrigated land taking into account local and regional conditions of Southern Steppe Ukraine // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 5-10.

In the article results of researches on organization and management by innovative development of the irrigated land-reclamations in the conditions of South Steppe of Ukraine.

The purpose The task was to research the scientific substantiation expands irrigation areas and optimization technologies of growing crops on under conditions of arid climate.

Methods. In studies used analytical approaches that form the basis of knowledge bases in irrigated agriculture aimed at optimization of decision-making in growing crops, improve strategic planning and operational management of growing technology based natural and economic-economic factors.

Results. It is set, that the scientific ground and optimization of the systems of the irrigated agriculture allow to get higher productivity of agricultural cultures in 3-5 times, it is comparative with unwatering terms. Resource saving technologies of irrigation, which take into account biological features and genetic potential of modern varieties and hybrids of domestic and foreign selection, allow saving 15-40% watering water, fertilizers and other resources actually without the losses of harvest. Progress of the modern and perspective irrigated agriculture unthinkable without creation of energy saving and nature protection technologies in the agricultures, which are based on the rational use of natural resources (climate, soils) and artificial energy as facilities of agrochemistry, irrigation, machines. The effective conduct of agriculture on the irrigated earths on a background growth of economic and ecological crisis induces the searches of new approaches to organization of production of goods plant-grower on the irrigated earths, planning and operative management by the modes of irrigation.

Conclusions. For the decision of problems of the irrigated agriculture in Ukraine it is necessary to concentrate on implementation of such strategic directions to develop and inculcate measures on the improvement of the water supply sowing of agricultural crops.

Key words: irrigation, climate, technologies of growing, water supply, weather terms, productivity of irrigation.

Gurbanov M.F. Aridity Impact Reduction and Management Assessment in the Azerbaijan Republic // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 10-12.

It is of a special importance to devise an advanced management system capable of reducing and managing the impact of aridity, an act of nature typical for and constantly reoccurring in the Caucasus. This natural phenomenon has been inflicting a serious damage both to economy and population recently.

If the government and local organizations fail to take preliminary actions towards reducing the impact of aridity, in that case elimination of the damage caused by this act of nature may lead to consumption of considerable resources.

The amount of the damage caused to the agricultural sector only by the drought in the territories of Central Asia and Caucasus during 2000-2001 is equal to USD 800 mln.

The objective of the survey is to develop a strategy to reduce the negative impacts of aridity based on the analysis of its origination.

Key words: Drought, meteorological aridity, hydrological aridity, humidity, rainfall, water resources, temperature.

Vozhehova R.A., Maliarchuk M.P., Markovska O.Y., Biliayeva i.m. Environmental, economic and energy efficiency of soil tillage systems in crop rotation under irrigation // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 12-15.

The aim of research is to determine the total energy consumption and gross energy output using the cultivation technologies based on different methods and depths of soil tillage for the crops in rotation.

The research was conducted in the four field crop rotation under irrigation in the experimental field of the Institute of Irrigated Agriculture of NAAS in the area of the Ingulets irrigation system with the water duty of 0.35 – 0.4 l/s/ha during 2011-2013.

As a result of the calculations it was found out that the highest coefficient of energy efficiency was provided by the cultivation technology in the system of differentiated primary soil tillage, when one ploughing to the depth of 28-10 cm for maize for silage making in the crop rotation alternated with boardless loosening (twice) to the depth of 14-16 cm for winter rape and barley and surface tillage (6-8cm) for winter wheat.

On the basis of the use in experience of instruments with the different type of construction of working organs the less energy expense methods of basic treatment of soil are educed under agricultural cultures in the irrigated crop rotation.

Keywords: crop rotation, method and systems of basic treatment of soil, power-hungryness, recoupment of technologies.

Solonenko S.V., Homina V.Ya. Influence of growth regulators rehoplant on productivity and technological quality indicators of safflower seeds in terms of Western forest-steppes // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 15-18.

It is shown the results of the research productivity dependence of different varieties safflower on how to apply growth regulator rehoplant in terms of Western forest-steppes. Research has established that the use of growth regulator rehoplant in phase of stemming plants provides excess of yield of safflower varieties: Soniachny - by 28,7% and Lagidny - by 21,3% with a significant improvement of process quality indicators of seeds: weight of 1000 and husk.

Keywords: safflower, growth regulators, seed treatment, spraying of crops, yield, weight of 1000, husk.

Cherenkov A.V., Pryadko Y.N. Yield of winter wheat depending on seeding dates, the level of mineral nutrition and the use of sideral crops in the conditions of the northern Steppe of Ukraine // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 18-20.

Purpose. To set parameters of formation of grain efficiency of winter wheat depending on seeding dates and norms of background mineral fertilizer at cultivation on different predecessors.

Methods. Scientific methods of the analysis and synthesis: field, experiment, laboratory, comparative, hypotheses, modeling, statistical and settlement methods.

Results of researches. The quantity of productive stalks and mass of grain from an ear of winter wheat were defined by influence of predecessors, seeding date and level of mineral food. On different predecessors the greatest number of productive stalks of a plant was formed when sowing on 25 September, minimum – on 5 October. At cultivation on black fallow the maximum sizes of this indicator noted on sites of experience with introduction of $N_{60}P_{60}K_{60}$. Crops of wheat formed the maximum mass of grain from an ear on the options providing introduction of the background fertilizer $N_{90}P_{60}K_{60}$, minimum – on option without fertilizers.

Wheat formed the maximum productivity when sowing on 25 September. When sowing in this time, on average for years of researches, at cultivation on black fallow winter wheat formed the highest productivity (6,44 t per ha) at introduction of the background mineral fertilizer $N_{60}P_{60}K_{60}$. At placement of wheat winter after winter rape on siderat, mustard winter on siderat and winter vika on siderat the highest productivity was provided by norm of the background fertilizer $N_{30}P_{30}K_{30}$. Productivity of wheat on the specified options when sowing made on 25 September 6,27; 6,06 and 6,31 t per ha respectively.

Conclusions. The greatest number of productive stalks of a plant of winter wheat was formed when sowing on 25 September. On black fallow – at norm of the fertilizer $N_{60}P_{60}K_{60}$, on predecessors winter rape on siderat, winter mustard on siderat and winter vika on siderat – $N_{30}P_{30}K_{30}$. The maximum mass of grain from an ear of a plant was formed at introduction of the background mineral fertilizer $N_{90}P_{60}K_{60}$. Winter wheat on black fallow (6,44 t per ha) formed the maximum productivity when sowing on 25 September and norms of the background fertilizer $N_{60}P_{60}K_{60}$, after winter rape on siderat (6,27 t per ha), winter mustard on siderat (6,06 t per ha) and winter vika on siderat (6,31 t per ha) – at norm of the background fertilizer $N_{30}P_{30}K_{30}$.

Key words: winter wheat, seeding date, background of mineral fertilizers, number of productive stems, mass of grain from ear, harvest.

Zayets' S.A., Fundirat K.S. Productivity of sorts of triticale winter-annual depending on application of bioactive preparations in the conditions of irrigation // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 21-23.

Purpose. To define efficiency of application in the period of vegetation of triticale winter-annual microfertilizers with the stimulant action of Humifild, Nanomix and Nanovit micro.

Methods. Researches were conducted on the irrigated lands of Institute of Irrigated Agriculture of NAAS after methodical recommendations on carrying out the field tests in the conditions of irrigation. Soil of the experienced field is a dark-chestnut, heavily loamy, saltmarsh with content of humus - 2,3 %.

Results. It is set that additional fertilizing by preparation of Nanovit micro sorts of triticale winter-annual of Bogodarsky, Raritet and Buket increases of harvest of grain accordingly on 0,73, 0,56 and 0,58 т/ha. The less increases of harvest of grain are got at the use of preparations of Humifild and Nanomix: on the sort of Bogodarsky - 0,46 and 0,56 т/ha, Raritet - 0,33 and 0,23 т/ha and Buket - 0,24 and 0,15 т/ha, accordingly. At application of microfertilizers of expense rose though, however as a result of higher harvest, for them the higher indexes of economic efficiency are got. **Conclusions.** By the most effective microfertilizer on the sorts of triticale winter-annual there is Nanovit micro. At the use of him at the end of bushing out of plants on the sorts of triticale winter-annual Bogodarsky, Raritet and Buket rise harvest of grain accordingly on 0,73, 0,56 and 0,58 т/ha, that substantially increases the level of profitability of production without bringing in of considerable additional funds. Refs. 8 names.

Keywords: triticale winter-annual, sort, microfertilizer, productivity, economic efficiency.

Granovska L.N., Zhuzha P.V. Ecological audit of irrigated lands in the context of their sustainable use // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 24-27.

The article is showing the results of studies the ecological audit on agricultural lands which are irrigated within the closed check irrigation system.

Purpose. There are investigated the dynamics of indicators that characterize the physic-mechanical and ecological indicators of irrigated soils in the conditions of the closed check irrigation system through environmental audit and developed measures to improve the ecological and ameliorative indicators of soils within rice irrigation systems.

Methods. The studies are included an analysis of the operation the pumping station on the closed check irrigation system with a repeated cycle of water use to determine the effect of its work on the ecological state of soils; salt measurements by sampling soil samples in the salt point in the closed check irrigation system and assessed the ecological state of soils.

Results. It is established that rice cultivation on saline soils is possible only under condition of providing a washing water regime and arrangement of a drainage network for carrying salts out of agricultural lands. The peculiarity of the formation of salt composition of soils with working drainage is the presence of soil a normal soda. The further development of this process can lead the most negative consequences. There is a violation of the balance between calcium and sodium, which leads to the formation of soda, and there is a process of moving salts around the salt profile, which is the basis for predicting the processes of secondary salinity in rice field soils.

Conclusions. On the basis of the results of ecological and energy audits, it established the need to ensure the operation of horizontal drainage in order to maintain the calculated drainage rate at the beginning of the growing season in the current conditions of operation within the closed check irrigation system. It's necessary to

create a flow regime to eliminate stagnant phenomena in the zone of saturation of the first water-bearing layer of the soil from the surface. There are resume the work of the drainage pumping station and ensure the implementation of energy-saving measures at pumping stations. These actions will lead to an improvement in the ecological condition of soils, reduce the threat of secondary salinity and alkalinization and improve ecological and ameliorative conditions.

Key words: the closed check irrigation system; irrigation; ecological audit; drainage pumping stations; energy audit; ecological condition of lands.

Vozhegova R.A., Chekamova O.L. Economic efficiency of the use of microbial preparations and microfertilizers on different millet varieties in the conditions of the Southern Steppe of Ukraine // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 27-30.

Goal. Determine the economic effectiveness of the use of different microbial preparations and microfertilizers, taking into account the biological characteristics of new millet varieties in conditions of natural moistening of the Southern Steppe.

Methods. The methodological basis of scientific research is the methods of research: field, laboratory, statistical.

Results. The article presents the results of the economic evaluation of the cultivation of different varieties of millet on dark chestnut soils under conditions of natural moistening, depending on microbial preparations and microfertilizers

Conclusions. As a result of the economic evaluation, it can be concluded that seeding millet Denvikske with seed treatment with microbial preparation Diazophyte and plants with microfertilizers Nanovit Super and Ecolist multicomponent provides the greatest profit, with the highest level of profitability of millet grain production - 42%.

Key words: variety, millet, microbial preparations, microfertilizers, cost price, net profit, profitability.

Lymar A.O., Lymar V.A., Naumov A.A. The influence of soil mulching on water consumption, yield and economic efficiency of growing sweet pepper // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 30-33.

The article reflects the results of studies on the influence of mulching soil on the productivity of sweet pepper, depending on the level of pre-damp soil moisture in the conditions of the south of Ukraine

Goal. To study the influence of soil mulching on water consumption, yield and economic efficiency of growing sweet pepper in the conditions of the south of Ukraine.

Methods. Field experiments were laid by the method of the randomized split sites. The repetition of the experiment is fourfold. The area of the site is 20 m². During the experiment, options were considered for mulching black polyethylene film of sweet pepper, for control served options without mulch in combination with support levels before irrigation soil moisture.

Results. Analysis of the levels of pre-soil moisture content on the water consumption factor of sweet pepper made it possible to conclude that water is more rationally used while maintaining the level of 80-80-80% MW (68.25 m³/t), compared to the level of 85-75-75% MW (71,35 m³/t). The yield of sweet pepper changed depending on the elements of technology. So, the use of mulching that screen in comparison with the control (on the average of the options), made it possible to increase the yield from 60.40 to 67.25 t/ha. The main criteria for economic efficiency are profitability of production. The highest level of profitability in the cultivation of sweet pepper - 53.7%, was recorded during interaction with soil mulching by black polyethylene film with maintaining the predetermined soil moisture level of 80-80-80% MW.

Conclusions. To reduce water consumption in combination with increased yield and economic efficiency when growing sweet peppers, it is recommended to use black polyethylene film as a mulch material. When watering with drip irrigation to optimize the water regime, it is necessary to maintain the level of pre-damp soil moisture when growing sweet pepper - 80-80-80% MW.

Key words: sweet pepper, mulch material, plants, water consumption, yield.

Pisarenko P.V, Maliarchuk A.S., Kuts G.M., Biliaeva I.N., Mishukova L.S. Influence of the aquatic mode of soil and methods and depth of treatment on the productivity of corn on grain // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 33-36.

Purpose: to Define conformities to law of forming of the productivity of corn on grain in the conditions of application of the different modes of irrigation and systems of treatment of soil.

Method. Field experience with the complex of the laboratory-field researches.

Results. Experimental researches testify that the best terms for flowing of processes of products are created at pouring of corn on grain of hybrid of Maisodur 447 on the chart of 80-80-80% NV in a 0,5 m layer of soil (defence of soil mode of irrigation) at the ploughing on a depth a 25-27 cm of soil in a crop rotation and provided the receipt of harvest of grain at the level of 14,9 т/ha.

Realization of watering on the chart of 70-70-70% NV and 70-80-70% NV on the average on a factor and, resulted in the decline of harvest on 0,5 and 0,8 т/ha accordingly.

The protracted application of the shallow (12-14 cm) onedeep disk loosening reduced the productivity to 10,7 т/ha or 28,2%.

The most (414 м^3/t) of the used moisture on forming of unit of harvest is spent at setting of watering on the chart of 70-70-70% NV (confessedly mode of irrigation). Some less than required moistures on forming of one ton of grain (387 and 383 м^3/t, accordingly) in variants with save water and defence of soil the modes of irrigation.

Among methods and depth of treatment of soil the most size (466 м3/т) of this index is got at application of shallow defence of soil treatment. The deep chisel loosening decreased her amount on 22,1 and plouging on 23,8%.

Conclusion: the most harvest (14,9 т/ha) at the least coefficient of water consumption (342 м^3/t), got at the save water mode of irrigation and plouging on 25-27 cm dump treatment of soil

Keywords: corn on grain, productivity, mode of irrigation, method and depth of treatment of soil.

Vozhegova R.A., Reznichenko N.D. Economic and energy efficiency of production technologies of

winter barley in the rotation for irrigation // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 37-39.

The article presents the results of the evaluation of the economic and energy efficiency technologies of winter barley on irrigation. The best options for applying different methods of basic soil tillage and sowing in untreated soil using No-till technology were identified. These options were determined on the basis of applying doses of mineral fertilizers in growing zoned winter barley varieties in the rotation for irrigation.

Field, laboratory, statistical, and comparative methods were used for the research.

Keywords: soil tillage, No-till technology, winter barley, indicators of economic efficiency, energy intensity of harvest, energy consumption, energy coefficient

Goloborodko S.P., Shepel' A.V., Pogynayko E.A. Scientific Basis of Agricultural landscapes Degradet of Southern Steppe of Ukraine // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue 67. – P. 40-47.

Purpose. The selection of drought-resistant species of legumes and cereal grasses and legume-grass polimanykinds binary and grass mixtures, which in terms of regional climate change provide maximum fee of feed units and digestible protein.

Research Methods: Field – to determine the impact of weather conditions and agrotechnological factors; measurement and weight – to account for forage productivity; morphological – to analyze the vertical structure of aboveground mass of perennial grasses in establishing their agronomic characteristics; Laboratory – to determine the species of the botanical and chemical composition of herbage; settlement and comparative – for economic and energy evaluation of growing perennial grass for fodder purposes; mathematical and statistical – to assess the reliability of the research results.

Results. Absolutely dry matter yield single-species crops of wheat grass medium significantly dependent on the species of the botanical composition agrophytocenoses that year and studied their use and for the first year was 3,24 t/ha, the second – 2,70 and third 1,86 t/ha, respectively, alfalfa – 3,30; 2,48 and 1,67 t/ha and sandy sainfoin – 3,39; 2,73 and 1,65 t/ha. Collecting food units single-species crops of wheat grass medium, regardless of year of use mixtures, reached 1,18-2,14 t/ha, digestible protein – 0,18-0,41 t/ha, gross energy – 33,8-59,0 GJ/ha and exchange energy – 19,0-33,8 GJ/ha. The maximum fee digestible protein throughout the years using perennial grasses obtained from single-species crops of alfalfa – 0,30-0,62 t/ha; sandy sainfoin – 0,24-0,58 and alfalfa-grass – 0,30-0,59 and sainfoin grass-grass mixtures – 0,25-0,55 t/ha, which greatly depended on participation in the species composition of legume botanical components – lucerne and sainfoin sandy. The content of alfalfa crops in the first year of single-species made using 79,7%; second 87,35 – and third 13.50%, respectively, sainfoin sandy – 91,15%; 82,00 and 8,30%.

Accumulation of symbiotic nitrogen, regardless of foliar feeding by Plantafol 30.10.10, the first year of use of alfalfa reached 84-87 kg/ha, the second – 55-70, and the third – 84-104 kg/ha, respectively, sainfoin sandy – 87-110 kg/ha, 67-87 i 93-116 kg/ha.

Conclusions. High performance perennial grasses – 1,67-2,70 t/ha of forage units and 0,30-0,64 t/ha digestible protein in terms of unirrigated agriculture of southern part Steppe zone is achieved by using drought-resistant grass species that are most adapted to climatic conditions of zone: the piraens average (variety Vitas), alfalfa (variety Unitro) and sandy sainfoin (variety Ingulsky) and their binary and polyspecies grassmixes.

Keywords: agricultural, alfalfa, sainfoin, wheat grass median, productivity, moisture availability.

Malyarchuk N.P., Markovskaya O.E., Lopata N.P. Productivity of maize with different methods of basic soil cultivation and doses of mineral fertilizers in the crop rotation on the irrigation of the south of Ukraine // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 47-51.

The article presents the results of studying the influence of different methods of basic processing, sowing in preliminary untreated soil and doses of mineral fertilization on agrophysical properties, the water regime of the cornified layer, the growth and development of maize plants and the formation of grain crops in crop rotation on irrigation.

Field, laboratory, statistical and calculation-comparative methods were used for the research.

Key words: basic tillage, No-till technology, fertilizer doses, corn, build density, porosity, total water consumption, productivity.

Zayets S.A., Netis V.I. Water consumption by soybean crops under irrigation depending on the variety and background food // Irrigated agriculture: interdepartmental thematic scientific collection. – 2017. – Issue 67. – P.51-53.

Purpose. To study the total and average daily water consumption of soybean varieties Aratta and Sofia on different backgrounds food, water consumption per 1 ton of seeds and to establish techniques that ensure the most efficient use of water.

Methods of research: field, laboratory, analytical.

Results. In the article results of researches of water consumption and efficiency of water use different varieties of soybeans, depending on the background food in conditions of irrigation. It is established that on the irrigated lands of southern Ukraine total water consumption medium early varieties of soybeans Aratta and Sofia is 4831-5194 m^3/ha. From sowing to flowering in per day spent 36,4-39,0 m^3/ha of water. From flowering to pod formation the average daily water consumption increased to 42,8 m^3/ha. During the period of ripening of seed daily water consumption was reduced to 17,4-25,3 m^3/ha.

On the formation of 1 ton of soybean seeds spent an average of 1612-1914 m^3/ha of water. Variety Sofia uses water more efficiently than Aratta. On the formation of 1 ton of seeds he spent water on 127-299 m^3 or 6.7-15.6% less. One of the techniques that contribute to economical use of water by the soybean plants, is the optimization of background food. The Inoculation of seed variety Sofia in combination with optimum dose of fertilizers reduces the consumption of water on 141 m^3/tone or 8%.

Key words: soybean, water consumption, variety, background food, the use of water.

Vozhegova R.A., Morozov A.V., Averchev A.V., Benina I.A. Current state and prospects of cultivation of grapes in conditions of irrigation of the South of Ukraine // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 54-60.

Goal. The goal is to assess the current state of the cultivation of grapes plantings in terms of irrigation of South of Ukraine (on the example of Kherson region).

Methods: analytical, computational and comparative, statistical and graphical.

Results. According to the Main Department of statistics in Kherson region on irrigated lands (as of 2015) there are 2868,06 hectares of vineyards, including 2609,17 hectares of fertile age, which is 91% of the total vineyard area. For 2008-2015 years of research in the Kherson region, a slight tendency to reduction of the area of vineyards and harvest of grapes on irrigated land. The average yield of grapes on irrigated land is 101,9 kg/ha, with a maximum of 122,2 kg/ha (2008) and the minimum – 69,0 t/ha (2012). The revealed tendency to decrease of yield of grapes on irrigated land.

In modern conditions of managing of the 18 districts of the Kherson region-growing on irrigated lands involved in 11 districts: the Bilozerka, Beryslav, Henichesk, Hornostaivskyi, Hola Prystan, Kakhovka, Ivanovo, Kalanchak, Velykolepetyskyi, Tsyurupinsk and Chaplynka, as well as the cities of Kherson and Nova Kakhovka. The largest area of vineyards on irrigated lands are concentrated in the Bilozerka, Beryslav and Golopristanskiy districts of Kherson region and in the city of New Kakhovka.

Conclusions. During the period covered by the studies, 2008-2015, in the Kherson region, a slight tendency to reduction of the area of vineyards and harvest of grapes on irrigated land. The average yield of grapes on irrigated land is 101,9 kg/ha, a tendency to decrease of yield of grapes on irrigated land. The largest area of vineyards on irrigated lands are concentrated in the Bilozerka, Beryslav and Golopristanskiy districts of Kherson region and in the city of New Kakhovka.

Key words: vine planting, irrigation, area, gross harvest, yield.

Tymoshenko G.Z., Kovalenko A.M., Novokhizhniy M.V. Influence biologics on the microbiological and nourishing state soil in sowing sunflower at the different methods basic treatment soil // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 61-63.

Researches are conducted by the laboratory unwatering agriculture in Institute the irrigated agriculture NAAS in sowing sunflower on livery soils, during 2011-2013 years.

Purpose. A purpose researches is a search ways activation naturally-biological potential soil during minimization her treatment the increase the productivity cultures.

Task. Determination efficiency application microbal preparations Diazofit and Polimiksobakterin is in the droughty terms South Steppe Ukraine, in sowing sunflower at the different methods basic treatment soil.

Method. Field method - for determination the microbiological and nourishing state soil in sowing sunflower.

Result. Treatment seed sunflower Diazofitom assisted the increase general amount microorganisms at the beginning his vegetation on 13,5-29,4% comparatively with an untilled variant. In future their amount became level with the untilled sowing and was at such level to the end vegetation sunflower. At application preparation Polimiksobakterin the general quantity microorganisms at the beginning vegetation sunflower exceeded a control variant on 14,0-22,7%, but in future became level with him. Application preparation Diazofit assisted the increase maintenance nitrate nitrogen in soil already at the beginning vegetation sunflower on 8,8-16,1% comparatively with control. A most increase was observed on a background deep treatment soil. Rose also on 9,4-26,8% and maintenance mobile phosphorus. Such conformity to law was observed practically during all period vegetation sunflower.

Conclusion. For the improvement the nourishing mode soil and increase the productivity at sowing sunflower seed must be processed by microbal preparation Diazofit on condition realization under him deep ploughings, or shallow withoutbyadump treatment. Preparation Polimiksobakterin it is recommended to apply only during realization ploughings under a sunflower.

Keywords: Diazofit, Polimiksobakterin, dump treatment soil (ploughing), withoutbyadump treatment (чизельное loosening), withoutbyadump shallow treatment (disk loosening), soil microorganisms, nourishing mode soil.

Pisarenko P.V., Kozyrev V.V., Bidnina I.A. Influence of the method of basic tillage on the degree of secondary solonization under irrigation // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 63-66.

Goal. The aim of the studies was to determine the influence of the method of basic treatment of dark chestnut irrigated soil on the degree of secondary solonetzation.

Methods: field, analytical, computational comparison, mathematical statistics.

Results. The results of the studies show that mineralization of irrigation water fluctuated within the limits of 1,444-1,813 g/dm^3. The chemical composition of the water was anionic to chloride-sulfate, and by cationic – to magnesium-sodium. Due to the danger of soil alkalinization, solonetzation and toxic effect on plants, irrigation water belonged to Class II (it is limited for irrigation). In the ionic-salt composition of the soil solution, a gradual decrease in the Ca:Na ratio is observed in the case of a dump-bottom deep-till treatment of soil under soya in a 0-40 cm layer with a deepening into the lower soil layers. With differentiated processing systems, the difference in layers was insignificant with a tendency to decrease at a depth of 30-40 cm by 8% in variant 4 and 15% in variant 5 as compared to the surface layer. With no-till treatment in the soil solution, the Ca: Na ratio also did not differ significantly, but with a tendency to increase downward along the soil profile. Less than the ratio of Ca: Na in the experiment was recorded with a shallow, shallow, single-deep treatment in a 0-10 cm surface layer of soil, 0,42. The ratio of calcium cations to sodium in the soil solution in the 0-40 cm layer ranges from 0,67 to 0,47 units, which indicates the development of the active process of secondary solonization.

Conclusions. It was established that at the end of vegetation the amount of exchangeable sodium from the

sum of cations in the 0-40 cm layer of soil increased due to absorbed calcium, the content of which decreased with respect to the variant with plowing in non-waste processing methods by 2,67-3,48%, and with differentiated – by 0,42-2,97%. The ratio of calcium cations to sodium in the soil solution in the 0-40 cm layer ranges from 0,67 to 0,47 units, which indicates the development of the active process of secondary solonization. In dump and differentiated treatments, where during plow rotation rotation plowing alternates with small uncultivated loosening under crop rotation crops, a slight decrease in the process of irrigation solonetization is observed with the use of nitrogen fertilizers.

Key words: primary tillage, the amount of salts, which absorbs the complex alkalinization.

Stroyanovskyy V.S. Optimization of complex farming practices in growing of fennel in terms of Western forest-steppes // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 67-69.

In the article it is highlighted the research results of complex farming practices influence on biometric indicators and yield of fennel in terms of Western forest-steppes**.** Research has established that a change of row spacing and seeding rate and terms of sowing cause change in biometric indicators of fennel plants: plant height, number of shoots of 1st order, the weight of the seed plants. The most productive plants – with seeds weighing 1,81 grams formed on variants with a width between rows 45 cm, seeding rate of 1 million / ha for sowing in the first week of April. The highest yield of fennel seeds – 1,45 t / ha was obtained on the same variant.

Keywords: fennel, term of sowing, seeding rate, row spacing, biometric indicators, yield.

Vasylenko R.M., Zayec S.O. Productivity of corn depending on sowing time and protection from diseases those pests // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 69-72.

Goal. The determination optimal parameters of sowing time, systems protection plant's and their influence on yield and grain quality with new hybrids of maize in irrigation.

Methods. The methodological basis of the research were - 1) scientific methods: hypotheses, induction and deduction, analogy, generalization; 2) special: field, laboratory and mathematical-statistical, comparative design.

Results. The highest yield of corn hybrids formed sowing in the third decade of April: Azove 10,2-12,0 t/ha and Kakhovkiy 11,3-12,8 t/ha. In average for three years hybrid Kakhovkiy compared to a hybrid of basics provided a significant yield increase of 0.6-1.1 t/ha. The highest grain yield of the hybrid Kakhovkiy – 12,8 t/ha is established with the use of chemical protection plants during sowing in the third decade of April.

Conclusions. Economic indicators chemical plant protection was the least cost-effective (89%). The use of biological medicines in the fight against diseases and pests (gaupsyn 5 l/ha +trichoderma 3 l/ha) is the most cost-effective (100%) and appropriate in the protection of maize plants.

Keywords: hybrids, corn, yield, productivity, profitability.

Vorotyntseva L.I. The change of the physical and chemical properties of dark-chestnut soil under the influence of different ameliorative loads // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 72-76.

The purpose - to study of the physical and chemical properties of the dark-chestnut under the influence by different ameliorative loads.

Methods. Field, system analysis, analytical, statistical.

Results. On the basis of the monitoring researches of the ecology-agroameliorative state of dark-chestnut soils in the **Ingulets irrigation system the** the changes of their physical and chemical properties under **the influence of different ameliorative loads** were studied. They are manifested, mainly, in the transformation of the composition of water-soluble salts and absorbed cations.

Conclusions. On irrigation by limited to suitable water, the meliorative load on the soil increases. This leads to an increase of halochemical processes - an increase the total content of water-soluble and toxic salts and secondary salinization. The degree of these processes increases with increasing the degree of hydromorphism (groundwater level 2-3 m). On decrease the irrigation load (on removing from irrigation), there is a deceleration in the development of halochemical processes. On irrigation, the decrease in the ratio of water-soluble Ca: Na from 7.5-8.5 to 0.6-1.7 is established. With the excretion of soil from irrigation, this indicator increases to 3.7-4.5, but does not reach the level of a boharic analog during the post-irrigated period.

Keywords: Salinization, irrigation, ecology-agroamelorative condition, estuary dark chestnut soil, dark chestnut soil, alkalinity, groundwater level.

Pisarenko P.V., Andriyenko I.O. Influence of irrigation regimes and different methods of soil tillage on the density of addition at growing of maize for grain // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 76-78.

The aim of research was to elucidate the influence of different irrigation regimes and methods of primary tillage on the performance density drafting and formation of productivity of maize.

Material and methods. The results of four years of research, conducted at the research institute fields irrigated agriculture NAAS impact indicators studied factors on the formation density compilation of soil and yield of corn.

The results showed that at the beginning of the growing season when growing corn optimal ratio is drawing in soil layer 0-40 cm are for plowing at 28-30 cm at primary tillage system. Application soil to 20-22 cm not led to a significant increase in density to 1.32 g/cm3. That in turn influenced by the yield of corn.

Conclusions. As a result of observations in terms of the formation density of soil and corn yield can conclude that plowing at 28-30 cm with a recognized mode of irrigation scheme for 70% provides optimal performance density of the soil and contribute to the formation of yield in most experiments at 13.79 t/ha.

Keywords: maize, soil tillage, irrigation regimes, density, yield.

Chernichenko I., Chernichenko E, Balashova G. Efficiency of a complex of macronutrients in the cultivation of potatoes under different moistening conditions in the south of Ukraine // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 78-81.

Goal. Identify the patterns of production processes of early potato, depending on the conditions of moistening and nutrition when growing on drip irrigation in the southern Ukraine.

Tasks and methods of research. To establish indicators of water consumption of potato plants, depending on the conditions of moistening and top dressing with macro - and microelements; To establish the effectiveness of applying various irrigation norms and top dressing of potato plants to early collection; To justify the economic efficiency of elements of irrigation and potato plant nutrition technologies for obtaining early potatoes. Field experience two-factor, held in 2014-2015 at the Institute of irrigated agriculture.

Results of the research. The yield of potatoes of the early harvesting period without irrigation was 10.44 t / ha. Humidification conditions significantly influenced the yield of young tubers - irrigation with a rate of 200 m3 / ha provided 21.61 t / ha, a decrease in the irrigation rate to 100 m3 / ha reduced the yield by 1.75 t / ha. The maximum productivity of potatoes was ensured by the treatment of tubers with mineral fertilizer Plantafol and the combination of treatment of tubers and plants during shoots against the background of irrigations of 200 m3 / ha, respectively, 24.16 and 23.22 tons / ha. The most effective moisture was used when applying irrigation norm of 200 m3 / ha and cultivation of tubers with mineral fertilizer Plantafol - water consumption factor of 92 m3 / t, and irrigation water was most economically consumed when using irrigation norm 100 m3 / ha - 1 cubic meter provided 29.1 kg of tubers.

Conclusions. Drip irrigation of potatoes of an early collection period causes an increase in the tuber yield by 1.9-2.1 times, a decrease in the cost of production, an increase in the conventional net income. The maximum productivity and optimal economic indicators for early potato growing are formed when processing tubers with the complex mineral fertilizer Plantafol (10-54-10) at a rate of 1 kg / ton with the replenishment of 200 m3 / ha of water use deficit: yield 24.16 t / ha, production cost Products 1,360 thousand UAH / t, conditional net income 33,114 thousand UAH / ha, profitability 108.3%.

Key words: potatoes, drip irrigation, irrigation norm, Plantafol, yield, early harvest.

Shkoda O.A., Martynenko T.A. Nourishing mode of dark-brown soil under sowing of onions using of phosphogypsum and mineral fertilizers // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 81-85.

Purpose. Explore nourishing mode of dark-brown soil under of sowing of onions using phosphogypsum and mineral fertilizers.

Methods. The methodological basis of scientific research methods are: field, analytical, laboratory, computational and comparative, statistical.

Results. Adding fertilizer provides enhanced content of nutrients for onion plants during the growing season. The greatest use of mineral nitrogen ($N\text{-}NO_3$+$N\text{-}NH_4$) from the soil layer 0-30 cm was observed in variants with fertilizers ($N_{120}P_{90}$, the estimated dose of fertilizer – nitrogen in the form of calcium nitrate and ammonium) for the period «young growth – forming bulbs» – 51,9-57,4% of the initial amount. The intensity of the reduction of mobile phosphorus content of the soil in the irrigated variants for the period of «the beginning of the formation of bulbs – technical ripeness» was 2 times higher than in the period of the «young growth – the beginning of the formation of bulbs». The greatest number of exchangeable potassium onions used in the second half of the growing season. Bringing of mineral fertilizers on a background of drip irrigation increased the productivity of onion on 33,1-42,8% by comparison to a control variant on irrigation. At bringing of the recommended dose of mineral fertilizers the yield was 46,6 t/ha, and at a calculation - increased on 2,2-3,4 t/ha as compared to a previous variant.

Conclusions. Applying the estimated doses of mineral fertilizers (nitrogen in the form of calcium nitrate) against phosphogypsum 1,9 t/ha in planting tape provides the highest content of mineral nitrogen in the soil for the growing of onions. The number of available phosphorus and potassium exchange remained at a high level and middle, respectively, as in the other embodiments of experience. Most high productivity of bulbs is 52,2 t/ha, it is got at bringing of calculation dose of mineral fertilizers (nitrogen in form calcium nitrate) on a background phosphogypsum of 1,9 t/ha in tape sowing.

Keywords: onion, nourishing mode, dark-brown soil, drip irrigation, phosphogypsum, mineral fertilizers.

Vasylenko R.M. Productivity of sorghum depending on sowing and plant protection at different moisture conditions // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 85-87.

Goal. To determine the influence of sowing time on productivity of grain sorghum depending on moisture conditions and means of protection of plants from diseases and pests.

Methods. The methodological basis of the research were - 1) scientific methods: hypotheses, induction and deduction, analogy, generalization; 2) special: field, laboratory and mathematical-statistical, comparative design.

Results. Found that grain sorghum without irrigation formed the highest yield of 4.0-4.3 t/ha with plant protection from pests and diseases sowing dates from the third decade of April until the first decade of May. The use of biological protection (Gaupsyn + Trichoderma) on land provided the largest conventionally net profit 9545 UAH level of profitability 173% and energy factor of 3.61 for the sowing time in the first decade of May. Irrigation provided the maximum yield increase to 68% for the later sowing time – second decade of May and use of chemical protection (Bi-58 new + Abacus) from diseases and pests. **Conclusions.** For conditions without irrigation, the highest productivity of grain sorghum obtained when sown in the first decade of May and irrigated in the second decade of May. Without irrigation, from an economic point of view, it is advisable to use biological agents for protection against diseases and pests (Gaupsyn, 5 l/ha + Trichoderma, 3 l/ha) and with irrigation – chemical (Bi-58 new,1 l/ha + Abakus, 1.5 l/ha).

Keywords: sorghum, term of sowing, irrigation, feeding unit performance.

Dymov A.N. Export potential of Kherson region of agrarian: the commodity measuring // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 87-94.

Purpose. Study of modern vectors of export streams of agricultural produce from the Kherson oblast, level of their geographical and commodity diversification, dynamics of export of principal commodity items, determination of obstacles which exist on the way of output of enterprises of area to the new world markets and determination of progress of export oriented activity trends.

Methods. Combination of dialectical, economic-statistical and graphic methods is used in the process of research.

Results. The tendencies of production of agrarian enterprises of Kherson region in the cut of three basic grain-crops: wheat, barley and corn are exposed and gone into detail. Foreign economic activity of enterprises of region is investigational in the plan of export of commodities of agroindustrial complex in the last few years. The example of the successful trading of scientific establishment scientifically capacious products is resulted. Importance of deepening of products processing and creation of the finished good of food consumption with a high value-added is showed. Factors which brake the increase of export potential and the basic ways of their overcoming are certain. The row of measures which were conducted in the Kherson oblast with the purpose of assistance advancement of commodities export and services to the oversea markets is resulted. Taking into account progress of world market of products of agroindustrial complex trends, perspective directions realization of production potential of Kherson region are grounded.

Conclusions. Natural and climatic conditions, geographical position and considerable potential of agricultural production, are created by the real prospects of development of export activity of the Kherson area. The conducted analysis shows that a region has all chances to fix the positions as a leading producer and exporter of agricultural produce and to do the ponderable payment in overcoming of world food crisis.

Keywords: production, dynamics of export, regional pattern, commodity structure, obstacles, measures of assistance, perspective commodities.

Zayets' S.A., Kysil L.B. Hydrothermal terms of autumn period and their influence on initial development of plants of barley winter-annual depending on the terms of sowing // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 94-97.

Purpose. To define influence of hydrothermal terms and terms of sowing on development of plants of barley winter-annual in an autumn period of vegetation on the irrigated earths of South Steppe.

Methods. Researches were conducted on the irrigated lands of Institute of Irrigated Agriculture of NAAS after methodical recommendations on carrying out the field tests in the conditions of irrigation.

Results. It is set that there were different agricultural meteorology terms in the years of realization of researches. In autumn in 2015 effective temperatures of air at the first term of sowing of barley winter-annual accumulated on 33,0°C, for the second and third accordingly on 34,2 and 52,2°C anymore than middling long-term norm. At that time as in 2016 year, opposite, at all terms of sowing their shortage was marked - accordingly on 34,2, 38,6 and 4,3°C. Absence of productive precipitations in September in 2015 (all a 4 mm fell out) realization of the convergent watering induced after the first term of sowing (1 on October) the norm of 350 м^3/ha. At that time, as in 2016 year, a necessity for such watering fell off as a result of considerable precipitations in September (33,2 mm) and first half of October (74,3 mm). Duration of autumn period of vegetation of barley winter-annual in 2015 was on 13 days anymore, and in 2016 year on 14 days less than middling long-term norm. Warm weather with productive precipitations in October-November in 2015 favourably represented on the growth processes of plants. The prolonged and warm period of autumn vegetation allowed even at the late term of sowing (on October, 20) to enter in the winter to the plants in the phase of beginning of bushing out. In 2016 year plants were less developed, than in 2015 year, and at sowing 10 and 20 on October entered in the winter not lapped.

Conclusions. The hydrothermal terms of autumn period and terms of sowing considerably influence on the growth processes of plants of sorts of barley winter-annual. In 2015 at the warm and protracted autumn vegetation of plant of barley winter-annual well develop at sowing of October, 10, and in the cool terms of 2016 - on October, 1. At the favourable meteorological terms of 2015 better the plants of sort grow Akademichnyi, and for unfavorable - advantages of one sort above other are not present. Refs. 9 names.

Keywords: barley winter-annual, sort, temperature, fallouts, fertilizers, bushyness, amount of stems, mass of plants.

Dudchenko K.V, Petrenko T.M., Datsyuk M.M., Flinta O.I. Field salt balance in conditions of different rice growing technologies // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 98-100.

The main property of the research is to determine of field salt balance in conditions of different rice growing technologies and the main factors of its forming.

Investigations were done on rice irrigation open type system and drip irrigation system. There are meadow-chestnut medium soup, salmon meadow and dark chestnut soil types on the rice irrigation open type system. There is dark chestnut medium soup soil on the drip irrigation system.

Rice and other related crops are grown by tradition growing technologies. All observations and analyzes were done by tradition ways and current normative documents.

The highest intensity of decries salinity was on the meadow-chestnut soil type (15,11%), the less was on the salmon meadow (4,07 %), which was caused by hydrological conditions of the territory. There was increase of salinity soil to 31.86 % on the drip irrigation system, because of dip ground water level and drainage system's non-availability.

Comparison of salinity balance of different parts of the rice irrigation open type system and the drip irrigation system, showed ground water regime does the mail impact on the soil salinity balance. The highest decries of soil salinity was on the part of the rice irrigation open type system with ground water level on April 1,9 m, on October – 1.6 m.

Key words: rice irrigation system, soil, soil salinity, drip irrigation, ground water level, crops' growing technology.

Cherchel V.Y., Plotka V.V., Abelmasov A.V., Tahantsova M.M. Analytic-mathematical model duration of the period germination-flowering 50% cobs of S_6 families depending on the arguments // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 101-104.

Purpose. Identify the relationship of the attribute "duration of germination-flowering 50% of cobs" of corn inbred lines and total factor characteristics (cold resistance level, the sum of effective air temperature and rainfall) and to assess the severity of their connection with changes in the values of the past.

Methods. Statistically Mathematics and plural-regression analysis.

Results. According to the calculation, during germination-flowering 50% of cobs S_6 family has been found that a multiple regression coefficients of determination and high, respectively, (0.97) and (0.94), which indicates a relationship between factorial signs.

Conclusions. A mathematical model of duration period of germination-flowering 50% the cobs families S_6 generation. We get the high coefficients of plural-regression and determination, 0.97 and 0.94 respectively, indicating that the close connection between the duration of germination-flowering 50% the cobs and studied factors (sum of effective air temperature, a sum rainfall) and makes it possible to high accuracy to predict the response parameters of this index family S_6 generation. The lack of influence and close connection between the cold resistance level duration of germination-flowering 50% the cobs proves the possibility of genotypes with a combination of features high level cold resistance and of early ripening.

Keywords: modeling, maize, early ripening, cold resistance, the sum of effective air temperatures, sum rainfall.

Fedko N.N. Optimization of the structure of breeding maize nurseries (*Zea Mays* L.) // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 104-109.

Efficiency of work in the breeding nursery depends primarily on a clear structure and optimal organization of all types of work during the year, especially during periods of peak load - sowing, pollination, harvesting and the like.

The aim of our acticle was to analyze and improve the breeding nursery optimal structure in terms of the genetic composition of the starting material, and its structural organization to speed up work and increase their efficiency.

Methods of research. The research was carried out at the Institute of Grain Crops of the NAAS of Ukraine during 2011-2015. Studies were carried out to optimize the work in the breeding nursery, introduce new methodological, organizational and technical approaches to breeding practice in the creation of maize inbred lines. A number of selection groups were used and their organization, structure and source material were optimized. In the work, the original genetic material was used as the most common heterotic groups in the world - Iodent, Lancaster (Mo17 and Oh43), BSSS, and original germplasm Dobrudzhanka, Minsepusti, T22, Shen.

Results. When obtaining new inbred lines in our studies, the share of simple hybrids in the total volume of the initial material reached 66.0%, three-lines - 9.0%, and four-lines and complex hybrids - 10.0%. The largest share of the initial material - 66.0%, was at the level of S_3-S_6, which is associated with a wider study of phenotype and combining ability. This distribution is an indication of the high rates of processing of the initial material and the level of rejection. Despite some problems with weather conditions, thanks to the proposed principles of nursery organization, the scope of work increases every year. The number of inbred families increased in 2015 compared to 2011 by 15.5% of families, and the received testcrosses by 35.3%.

Conclusions and offers. The proposed approaches to the planning and organization of the breeding nursery allow to achieve: rapid updating of the initial material through 6-7 seasons, increase the efficiency of plant testers' use by 20-25%, increase the efficiency of work during pollination to 25%, reduce fatigue and improve the efficiency of scientific- Technical staff, to achieve stable pollination rates of lines and testers regardless of the conditions of the year.

Key words: corn, initial material, selection, inbred line, breeding nursery, inbred families.

Vozhegova R., Melnichenko A. Evaluation of breeding material productivity and lodging resistance of rice varieties to create (review) // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 109-111.

Goal. To study and assess the raw material productivity and lodging resistance of rice varieties to create.

Results and discussion. Lodging of crops of rice causes great losses, so providing breeders starting material is an urgent problem in the selection of a given culture. Objective research suggests allocate trading rice seed samples and the performance of resistance to lodging for bringing them in breeding programs as a starting material. Lodging of grain crops, including rice, is quite common. The negative consequences of lodging a significant and varied: plant dead diseased, overgrown weeds of crops, the increasing complexity of conditions of mechanized harvesting, non-simultaneous ripening grain, reducing yield and quality.

Conclusions. Plant height greatly affects not only the resistance to lodging, but also the performance of the rice crop. The main element of success in growing rice variety that is resistant to lodging, high-performance and is suitable for intensive cultivation technology. Therefore, finding ways to prevent the lodging of crops of rice further successful solution of this problem.

Keywords: rice, productivity, resistance to lodging, sortozrazok collection.

Vasilkovskyi S.P., Mazur Z.O., Beh N.S. Getting polypoid forms for winter rye Verhnyatskiy development – breeding station // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 112-116.

Goal. Identify the impact of various mass fraction of colchicine on the development of plants of winter rye. Explore a variety of genetic determination of genotypes of winter rye on this basis and on the basis of a polyploid

forms of winter rye.

Methods. Field, laboratory, cytological, analytical and statistical.

Results. The lowest observed similarities in versions of colchicine concentration of 0.05%, which was 61-67% and 64-68% - from 0.025%. But in the version of colchicine concentration of 0.001% - 87-90%, the highest similarity observed control - 91-96%.

The greatest influence on the basis of "the number of germinal roots" action was 0.025% solution of colchicine had a significant difference in versions with a sort Verhnyatske 12 hybrid combinations of the X-98 / palladium and cancer / U and varied feature within 5,4-5,6sht.

It was observed effect concentration of colchicine for the length of the primary root in zernivtsi coleoptile and length. The most effective solution colchicine concentration was 0.025 mg / liter for all investigated genotypes.

By this concentration marked the longest embryonic root, which was an average of 5.3 to 5.9 cm.

The best sign of the impact on "coleoptile length" was the action of colchicine 0,01-0,025% solution in versions with a sort Yavorovetske compared with control and makes 0.3 and 0.8, with a hybrid combination of CN / Y (0.7 and 0.5), respectively.

Conclusions. The dependence of the source material solution concentration, the greater the mass fraction, the lower seed germination compared to the control.

The biggest impact on growth and root development and coleoptile length found with the sort Verhnyatske 12 and the hybrid combination of X-98 / Pallas mass fraction of 0.025% colchicine and sort Yavorovetske - 0.01%, which were significantly higher performance compared with the control. With the concentration of 0.05% was lower variability varieties or level control (within NIR $_{0,5-1}$).

Key words: winter rye, colchicine, polyploidy, germination, germ roots, coleoptile.

Zaplitnyy Y., Mykulyak I., Linska M., Karp T., Kozak G. Cluster analysis of inbred maize lines of alternative germplasm according to the main selection criteria // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 116-120.

Goal. By using of cluster analysis to determine the level of affinity in alternative maize inbred lines germplasm and conduct division into groups (clusters) between the lines within each germplasm.

Methods. Research conducted in accordance with conventional methods. Cluster analysis of the results of research performed on a PC using the software package «Statistica 6.0».

Results. The paper presents the results of a cluster analysis of self-pollinated corn lines of the germplasm Iodent, Lacaune and Mixed according to the main selection features in the Western Forest-Steppe of Ukraine.

According to the analysis, the lines of the germplasm Iodent are divided into four clusters. Their inter-linear genetic distances varied at a distance D = 15.0-53.0. More lines are assigned to the third cluster (DK 274, DK 275, DK 257-7, DK 250).

The analysis made it possible to divide the La-caune plasma lines into three clusters, evenly three samples each. However, the genetic distance between the first and second clusters (D = 27.0) is 2.4 times smaller than their distance to the third cluster (D = 66.0), that is, the lines of the third cluster showed significant genetic remoteness to the rest of the La-caune plasma lines.

Clustering of the germplasm lines of the Mixed plasma made it possible to divide this genetic material into four clusters. Among the investigated plasma, the variation of the interlinear genetic distance in the plasma lines of the Mixed was the greatest (D = 7.5-63.5).

Keywords: corn, inbred line, germplasm, cluster analysis, genetic distance, relationship.

Lyutaya Yu.A., Kobylina NA Structure of correlation links of tomato productivity features // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 120-122.

The aim of this work is to establish correlations between quantitative traits of tomato. Using correlation analysis, the objective was to determine which characteristics and to what extent will change when you change base selectum, and on what grounds, asparagine with the principal, should conduct the selection without changing the value of the last.

Methods. In order to establish the relationship between the features sometimes it is enough some cases, and sometimes necessary mathematical calculations. To determine the relationship between the quantitative productivity characteristics of tomato used method of correlation analysis, determining the correlation coefficient.

The results of the research. The length of the vegetation period on an authentic level has a positive effect on overall productivity. (r = + 0,512). Correlation average. Correlation between length of vegetation period and simultaneous ripening of the fruits (r = + 0,259), the duration of the growing period and marketability (r = + 0.250 kg),duration of vegetation period and dry matter content (r = + 0,355) average. The low negative correlation observed between the duration of the vegetative period and fruit weight (r = 0,213),

The total yield is weakly correlated with the simultaneous ripening of the fruits (r = + 0,093) and fruit weight (r = + 0,230). The average correlation (r = + 0,469) between total yield and marketability of fruits, close (r = + 0,740) with dry matter content.

In the module "the friendliness of maturation – the marketability of fruits" significantly positive weak correlation (r = + 0,292). The friendliness of maturation and dry matter content slobo correlated (r = + 0,209). Significantly negative correlation between the simultaneous ripening and fruit weight (r = 0,372).

The average coefficient of phenotypic correlation between the marketability of fruits and dry matter content (r = + 0,489). Negative correlation observed between the marketability of fruits and fruit weight (r = - 0,408), fruit weight and dry matter content (r = 0,199),

Conclusions. The level of conformity of quantitative traits largely depends on the genotype selection model. A high correlation between total yield and dry matter content; the average between the length of the growing season and total yield, length of vegetation period and dry matter content, total yield and fruit marketability, marketability of fruits and dry matter content; weak between the duration of vegetation period and simultaneous ripening, duration of the

growing period and marketability tpadv, total yield and maturation druzhnost total yield and fruit weight, simultaneous ripening and marketability of fruits, simultaneous ripening and dry matter content. The value of the vegetative period, marketability adversely affect fetal weight. Negative correlation observed between the duration of the vegetative period and fruit weight, the marketability of fruits and fruit weight, fruit weight and dry matter content.

Key words: tomato, breeding, correlation, correlation coefficient, quantitative traits.

Borovyk V.O., Kuzmych V.I., Klubuk V.V., Rubtsov D.K., Golovash L. Characteristics of new samples of soybean morphological and biological and economic characteristics // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 122-126.

Purpose – to explore new introduced soybean designs and highlight the best in economically valuable attributes to apply them in the selection process.

Methods – field, laboratory.

Results. The results of the study of new soybean samples received from Kazakhstan and Ustymivsky crop research station. As a result of the introduction of soybean collection of Institute of Irrigated Agriculture of NAAS has added new sources of economic, biological characteristics of domestic and foreign origin in quantities of 17 pieces selected 8 samples, standards on five grounds. Increased volumes of collections of genetic diversity in soybean 2016 6 domestic and 27 foreign models.

Conclusions. Based on three years of research dedicated sources of features, samples, standards. Attracting new models to breeding programs will expand the genetic basis of economic traits thus increase the level and stability of their display in established varieties.

Key words: soybean, breeding, gene pool, designs, sources of features, samples, standards.

Lyuta Yu.O. Kosenko N.P. Productivity and quality of seed of beet root at the different methods of growing on the south of Ukraine // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 127-130.

The purpose. To set the productivity and quality of seed of beetroot at the different methods of growing on south of Ukraine is the purpose of researches.

Methods. Experiment in the field, laboratory, mathematic and statistical analysis.

Results. It is established that at the transplanting method of seed production of planting scheme landing doesn't influence on the seed productivity of beetroot of sort of Bordeaux Kharkov. The application of calculation norm of fertilizers of N120P90K60 assists the increase of seed production on 26,1%. Increase of density of standing of seed plants from 28 to 42 thus./ ha gives the increase to the productivity of seed on 16,1%. At the direct method the productivity of seed at sowing in the first ten-day period of September was in 1,9 time more than at sowing in the second ten-day period of September. At shelter of plants a straw the productivity makes 0,72 t/ha, by mulching agrofiber – 0,73 t/ha, that in three times more than without shelter.

The comparative estimation of sowing quality of seed showed at the different methods of seed production, that mass 1000 of seed was practically at one level of a 19,58-19,60 g, germination of seed – 93,26–93,30 %. The value of index of energy of germination of seed at the transplanting method was more on 6,2 % than at the direct method of seed growing (65,7%). For maintenance of optimal density of standing of plants and forming of high harvests of seed it is necessary to cover plants on a winter.

Conclusions. Weather conditions of south of Ukraine are friendly to growing of beetroot seed by the transplanting and the direct methods. Value of the productivity of seed at the transplanting method on the average for three years was 1,24– 2,05 т/ha, at direct method – 1,0–1,19 т/ha. At the transplanting method the seed productivity of one plant made from 43 to 64 g, at the direct method – 24–35 g. The elements of technology don't render substantial influence on quality of seed. Bibliogr: 13 titles.

Keywords: beetroot, seed, scheme of planting, term of sowing, fertilizers, plant density, quality of seed.

Kokovikhin S.V., Kovalenko A.M., Nikishov A.A. Shevchenko T.V. Photosynthetic activity and seed productivity of winter wheat varieties depending on the protection of plants and microfertilizers in the conditions of the South of Ukraine // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 131-134.

Goal. To establish the dynamics of photosynthetic activity and the yield of seeds of winter wheat varieties, depending on the protection of plants and microfertilizers.

Methods. The studies were carried out using the generally accepted methods of plant growing and seed production.

Results. The photosynthetic productivity of seed sowings of winter wheat depended significantly on the phases of plant development, variety composition, protection schemes against pathogens and microfertilizers. The largest area of the leaf surface 42.5 thousand m^2/ha was on the variant with the Konka variety with the joint protection of plants with Trichodermine + Haupsin preparations and the introduction of microfertilizer Avatar, and on the grade Khersonskaya 99 with chemical protection and without the introduction of microfertilizers - this indicator decreased by 38.3%.

The use of microelements ensured an increase in the seed productivity of the crop under study from 3.08 t/ha in the control version to 3.35-3.82 t/ha - in areas with the application of Riverme, Nanovit Micro and Avatar. Thus, the use of these preparations contributed to a significant increase in the yield of seeds by 8.7-24.1%. Among the micronutrients studied, the Avatar had an advantage, which allowed obtaining 7.3-14.2% more seeds than with the Riverme and Nanovit Micro preparations.

Dispersion analysis proved that, on average, over three years of research, the influence of varietal composition, the introduction of microfertilizers and plant protection products on the formation of the crop yield of the seeds of the culture under study was not the same. It is proved that the share of influence of microelements in the formation of the harvest was 58.0%, the variety composition - 20.0%.

Conclusions. The average daily growth in the area of the leaf surface reached its maximum during the interphase period of "renewal of vegetation - forming into the tube". The yield of seeds reflected trends as well

Chaban V.O. Dynamics of soil nutrient regime in the cultivation of the Salvia sclarea L. under drip irrigation in the Southern Steppe of Ukraine

The task is to establish the dynamics of soil nutrient regime during the cultivation of nutmeg under drip irrigation in the conditions of the Southern Steppe of Ukraine

Methods. Field research to improve the technology of growing the *Salvia sclarea L.* by using the drip irrigation system was conducted on the lands of PE "Diola" Beryslav district of Kherson region from 2011 to 2017 according to the methodology of the research case.

Results. According to the results of research it is proved that the content of total nitrogen in plant samples of the *Salvia sclarea L.,* depending on the factors studied in the first year of use in the version without fertilizers at the onset of the vegetation restoration phase, this figure in plant samples was 0.38%, in the version with fertilizers at a dose of N60P60 its growth to 0,48% is noted. In subsequent phases of plant development (budding phase), the content of total nitrogen in plants in variant $N_{60}P_{90}$ increased to 1.10% compared to the control. In the flowering phase, the studied indicator in the variant with the application of fertilizers at a dose of N60P90 increased to 1.13% compared with the previous phase of development of the *Salvia sclarea L.*

Conclusions. It was determined that the amount of nitrates in the soil in the variants with fertilizer application remained 0.53–0.56 mg higher than in the control. The lowest amount of mobile phosphorus was determined for the fourth year of use of plants in the flowering phase - 0.35 mg/kg. The lowest content of mobile phosphorus was observed in the variant without fertilizers. The main amount of phosphorus is absorbed by plants from the soil in the first period of life, creating its stock, which is then recycled. When taking soil samples in the germination phase in the variant with the main tillage of 28–30 cm and application of mineral fertilizers according to $N_{60}P_{60}$, the content of mobile phosphorus was 0.41 mg/kg of soil, and in the fertilized variant it increased by 0.2 mg/ kg of soil. The maximum amount of nitrates was observed in the soil in the variant with the application of fertilizers at a dose of $N_{60}P_{90}$ - 0.54 mg/kg. In the socket phase, their content decreases in all variants of the experiment, which is associated with the removal of soil nitrogen by plants.

Key words: *Salvia sclarea L.,* drip irrigation, fertilizer, nitrogen, phosphorus, removal of nutrients.

Balashova H.S., Boiarkina L.V. Seed productivity of potatoes for spring planting and early harvest depending on different soil moisture and fertilization conditions.

The purpose of the article is to present the results of research on the influence of the use of a complex of macro- and microelements in different conditions of soil moisture on the formation of seed productivity of potatoes under early harvesting. **Tasks and research methods**. To establish the effectiveness of the application of different irrigation norms and fertilization of potato plants in the cultivation of seed potatoes during spring planting and early harvest. A two-factor field experiment conducted in 2014–2015 at the Institute of Irrigated Agriculture of NAAS. **Research results**. The yield of conditioned seed potatoes of early harvest without irrigation was 9.2 t/ha. Humidification conditions significantly affected the yield of conditioned seed potatoes – watering at a rate of 200 m³/ha provided 21.0 t/ha, reducing the watering rate to 100 m³/ha reduced the yield by 1.9 t/ha. The application of irrigation contributed to a significant increase in the coefficients of reproduction by quantity and weight, namely: compared with the control at replenishment of 100 m³/ha and 200 m³/ha of water consumption deficit, the value of the coefficient increased by 0.7 (13.0%) and 1.0 (18.5%), by weight - by 2.7 (90.0%) and 3.2 (107.0%). **Conclusions**. Drip irrigation of potatoes during spring planting and early harvesting helps to increase the yield of conditioned seed potatoes by replenishing 100 and 200 m³/ha of water consumption deficit by 9.5 (99.0 %) and 11.4 t/ha (119.0 %) in accordance. Maximum yield – 24.2 t/ha, yield of conditioned seed potatoes – 23.4 t/ha, maximum values of reproduction coefficients by quantity (6.8) and by mass (6.9) were obtained as a result of treatment of potato tubers with Plantafol $N_{10}P_{54}K_{10}$ norm of 1 kg/t with a consumption of working solution of 20 l/t and when replenishing the deficit of water consumption by 200 m³/ha.

Key words: conditioned seed potatoes, drip irrigation, preparation Plantafol, reproduction coefficient, early harvest

Vozhegova R.A., Kotelnikov D.I., Maliarchuk V.M. Biological activity of soil on soybean crops under different systems of basic cultivation and fertilizer on irrigated lands of the south of Ukraine.

The aim of the research was to establish the influence of different systems of basic cultivation and fertilization on the indicators of biological activity of soil microorganisms and its further influence on soybean yield indicators in irrigated conditions of the south of Ukraine.

Methods. During the experiment, field, quantitative-weight, visual, laboratory, calculation-comparative, mathematical-statistical methods and generally accepted in Ukraine methods and methodical recommendations were used. The research was conducted during 2009-2016 in the research fields of the Askanian SARS IIA of NAAS of Ukraine. **Results.** Studies have shown that the lowest density at the beginning of soybean vegetation in the soil layer 0-40 cm 1.19 g / cm^3 was formed during chisel tillage by 28-30 cm in the system of shelfless shallow tillage in crop rotation. Replacement of chisel tillage with plowing by 28-30 cm in the system of differentiated tillage increased the density by 0.02 g / cm^3, or 1.6%. The use of chisel tillage by 12-14 cm increased the density to 1.26 g / cm^3, which is actually higher by 4.1%, while the maximum indicators in the experiment were the option of zero tillage 1.31 g / cm^3, where the figures were higher by 8 , 2% compared to control. The largest number of nitrifying and oligonitrophilic bacteria was noted for the use of the system of shelfless different depth treatment of 8.74 and 2.15 thousand pieces. in 1 g of absolutely dry soil, respectively, the use of differentiated cultivation in crop rotation led to a slight decrease in their number of 8.28 and 2.10 thousand pieces. in 1 g of absolutely dry soil. At the same time, the use of shallow tillage in crop rotation and sowing in directly uncultivated soil led to the smallest accumulation in the experiment of 8.21 and 1.74 thousand pieces. in 1 g of absolutely dry soil.

Conclusion. Replacement of plowing with deep chisel tillage by 28-30 cm led to a slight increase in yield by 0.12 t/ha at LSD_{05} 0.14 t/ha. At the same time, the application of disk tillage at 12-14 cm was marked by the highest yield in the experiment, at the level of 3.93 t/ha, which is on average 4.5% more than the control. The lowest indicators of soybean productivity in relation to 3.41 t/ha were recorded under the conditions of sowing the crop in previously uncultivated soil, which is on average 10.3% lower than differentiated tillage.

Key words: stocking density, biological activity, irrigation, tillage, yield, soybean.

as grain. The Konka variety formed 3.59 t/ha, which is 8.2% higher than the grade Khersonskaya 99. The use of chemical and biological protection of uneven extent affected the seed productivity of the crop, the most effective being the joint use of the biochemicals Trichodermine and Haupsin. Among the micronutrients studied, the Avatar had an advantage, which allowed obtaining 7.3-14.2% more seeds than with the Riverme and Nanovit Micro preparations.

Key words: winter wheat, seeds, variety, microelements, plant protection, leaf area, yield, strength of influence.

Lavrinenko Y.A., Vlaschyk A.N., Prischepo N.N., Zheltova A.G., Shapar L.V., The article presents the estimation of the energy efficiency of cultivating winter rape varieties depending on the sowing time and seeding rate under the conditions of the Ukrainian Southern Steppe // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 134-138.

The effect of the studied factors on the energy efficiency of winter rape grown for seeds has been established. The maximum amount of energy (49.95 GJ/ha) has been obtained with the *Antaria* winter rape variety sown during the first ten-day period of September, the seeding rate being 1.1 million pcs/ha.

The highest energy increase (12.04 GJ/ha) has been obtained by sowing during the first ten-day period of September. The highest energy efficiency factor (1.32 GJ/ha) has been achieved using the *Antaria* variety.

Proceeding from the analysis made, it has been established that the *Antaria* winter rape variety is the best for the Ukrainian southern steppe conditions if sown during the first ten-day period of September, the seeding rate being 1.1 million pcs/ha.

Key words: winter rape, sowing time, variety, seeding rate, energy efficiency, factor.

Lavrinenko Yu.A., Kokovikhin S.V., Dovbush E.S. Harvest properties and sowing qualities of seeds of rice varieties depending on the fractional composition // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 138-145.

This article reports on the results of field research and laboratory analyzes on the regularities and formation of productivity of new varieties of rice, as well as its seed qualities depending on the fractional composition. The issue of optimizing the formation of conditional rice seeds is also disclosed.

Purpose and methodology of research. Determine the effect of seed magnitude on the yield and quality of rice varieties. The research was conducted in field and laboratory conditions during 2011-2013 in rice crop rotation at the Rice Institute of the National Academy of Sciences of Ukraine. The subject of our research was the varieties of Premium rice, Vicontand Ontario. The object of research is the processes of forming the rice crop and its qualitative indicators depending on the size of rice seeds. Seeds were separated on a seed-cutting machine SM-0.15 using three gratings with different hole diameters: 2.0 mm x 20.0 mm (fine fraction); 2.2 mm x 20.0 mm (average); 2.5 mm x 20.0 mm (large). The sowing area of the experimental sites is 25 m^2, the plot is 20 m^2. Repeat experiment four-time.

Research results. The dispersion analysis has proved the maximum percentage of the influence of varietal composition on the formation of seed yield. Seed of the seed by a fine fraction leads to irrational use of seed material, crop leaniness and as a result of reduced yield, which in turn leads to the receipt of low-quality seeds. The correlation-regression dependences of the 1000-seed mass indexes with germination energy and seed yield have a different orientation of statistical relationships and indicate the importance of the variety, the size of the fraction in terms of the formation of individual elements of productivity and seed yields of rice seeds.

Conclusions It has been established that in order to obtain stable yields of rice with high crop properties, it is necessary to use high-quality seeds, namely, seeds of large and medium fractions.

Keywords: rice, seeds, variety, crop, unfiled grains, productive tillering.

Petkevich Z., Bondarenko K. Biological and economical estimation of new rice samples // Irrigated agriculture: interagency thematic scientific collection. – 2017. – Issue. 67. – P. 145-149.

Purpose. To analyze of studying biometric characteristics of new rice samples and identify valuable characters in the material and select the best varieties of various geographic origin.

Methods: field, laboratory, statistical evaluation.

Experiments were laid using conventional techniques in the application of standard techniques of rice cultivation.

Results. As a results of 3-year experiments (2014-2016) of new rice samples in the conditions of southern part of Ukraine. 17 samples of rice (***Oryza sativa* L.)** of different geographic origin belonging to 9 varieties are studied. The vegetative period of experimental samples depending om its biological peculiarities lasted 109-146 days. It is established that yield ingability mainly depended on grain number per panicle. The sources of economic-valuable traits of rice: early-maturing – 5 samples, high grain weight in panicle and high quantity of grain in panicle – 8, high mass of 1000 grain – 3, high levels indicators of quality of grain – 5 and high resistance to lodging – 8 samples were separated in the result of the conducted investigations. The variety-samples УІР 4970, Каприз, Ак-Урук, УІР 7195, УкрНДС 8419, УІР 5849, Искандер were chosen for optimal combination of two-three valuable traits and are promising source material for use in selection programs.

Keywords: rice, samples, yield, sources of valuable features, grain, economic-valuable traits.