SUMMARY

Vozhegova R.A., Naidenova V.A. Biological activity of the soil and productivity of soybean in the rotation on irrigation // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 5-8.

The aim. Research is the definition of highly effective methods and establish the optimal depth of primary tillage that improve nitrogen regime of the soil in the background of the inoculation of soybean seed strain of bacteria ABM. In conducting experimental studies we have used the common in Ukraine methods: a field - to define the agrophysical soil properties, the number of weed plants, yield; laboratory - determination of elements of mineral nutrition, quantity and species composition of microorganisms; statistical - conducting variance analysis and regression analysis; settlement and comparative - to determine the economic and energy efficiency of production technologies. The investigated factors had an impact on the number ammonification and nitrification soil microorganisms. **The results** of analytical studies of determination the number ammonification and nitrification microorganisms at the beginning of the growing season soybean in soil layer 0-40 cm indicate that the most favorable conditions for their development was created by ploughing tillage in different soil layer and differentiated systems of primary tillage in crop rotation during rotation. High soil biological activity in these cropping systems contributed to the formation of significantly higher nitrate content in the topsoil that improved nutrition of soybean and contributed to a more complete realization of the productive potential of the varieties of soybean Danae which reached on average for three years in a variant of the disk processing with Slovenian 4.0 t/ha in the system of differentiated -1 cultivation during rotation.

Key words: soybean, the method and depth of tillage, inoculant, biological activity, productivity.

Malyarchuk N.P., Pisarenko P.V., Kotelnikov D.I. Productivity of maize end irrigated lands in depend basic soil ways and doses of nitrogen fertilizers in south of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 8-10.

The aim was to elucidate the influence of different depths and basic tillage method and doses of nitrogen fertilizers on soil water properties and yield of corn. **Material and methods.** The results of three-year study of total water consumption and evaporation coefficient depending on the different methods and depth of tillage and nitrogen fertilizer standards and yields. Used field, biometrics, laboratory and statistical methods. **Results** corn crop accounting for variations experiment with ways of the basic soil and doses of nitrogen fertilizers show that on average three years the highest yield in variants riznohlybynnyh formed and differentiated systems of basic soil tillage to a depth of 20-22 cm and 28-30. significant difference in the level of productivity is not revealed he was within 13,73-14,10 t/ha, that difference does not exceed 2,6% 2,8. Lower yields over years of research and different doses of nitrogen fertilizer formed by shallow cultivation chisel 12-14 cm long on the background of its use in crop rotation. In this embodiment, the highest yield an average of three years (11.31 t / ha) was at doses of nitrogen fertilizer N_{180}, which is lower than the control by the same dose of fertilizer by 17.8% compared with plowing to 20 22 cm-1 differentiated system of cultivation - by 19.8%. Increasing doses of nitrogen fertilizers from N_{120} to N_{150} on average by a factor ensures an increase in yield at 1.12 t / ha, and from N150 to N180 - to 0.97 t / ha. **Conclusions**. According to the research we can conclude that plowing at 20-22 cm in the system of differential-1 primary tillage system with one to a depth of 38-40 cm and for the rotation of nitrogen fertilizer dose N_{180} best satisfy the biological requirements of maize and contributes to the fullest implementation genetically determined levels of productivity.

Key words: corn, tillage, yield, total water consumption, water consumption rate.

Vozhegova R., Granovska L., Goloborodko S. The impact of global climate change on indicators of soil fertility of Southern Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 10-12.

Aim. The aim of research is the creation of environmentally sustainable agricultural landscapes by restoring the fertility of irrigated soils. **Methods.** Methodological basis of scientific investigation is made up of the modern methods of research: historical; systematic; statistical analysis. **Results.** The agricultural companies can receive stable and relatively high crop yields, high quality agricultural products, to maintain soil fertility and non-deficit balance of humus in them, meet evidence-based standards. Basic requirements for providing of self-supporting balance of humus and its content at the level of 2.5-3.5% under the conditions of irrigation is: observance of standards of optimal crops correlation in rotation, maintenance of stock-raising; bringing of manure in with amount 3-7 tons per hectare, introduction of the resource-saving irrigation schedules and use of modern overhead irrigation technique with optimal intensity of sprinkling. **Conclusions.**The experience of the State Enterprise “Research Farm “Askaniyske” is indicated an improvement in the state of agricultural landscapes by restoring soil fertility of irrigated land and adaptation of agriculture to the negative effects of climate change on food security.

Key words: soil, fertility, agricultural landscape, irrigation, adaptation, agriculture, climate.

Horishko S.A. Productivity of winter wheat depending on sowing time and level of mineral nutrition when sown after stubble predecessor in the Northern Steppe of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 12-15.

Winter wheat is the main crop in the Steppe zone of Ukraine. It ranks first among other grain crops by the yield and gross collection of food grains, providing not only the stable development of all agricultural production but also

food security of the country. In the Steppe zone, a major problem that remains unsolved to this day is the development of technologies for growing winter wheat that would ensure stable and high gross grain harvests regardless of weather conditions. Field experiments within the study of sowing times and the level of mineral nutrition of winter wheat after spring barley were carried out in 2008-2011 at the fields of research farm "Dnipro" of the State Institute of Agriculture of the Steppe Zone of the NAAS of Ukraine (Dnipropetrovsk region). Lytanivka winter wheat variety was sown for 5 times (5.09, 15.09, 25.09, 5.10 and 15.10) with the rate of sowing of 5 million pieces of similar seeds/ha (with seed drill CH-16) using a continuous drilling method for depth of 5 to 6 cm. The system of fertilizer application included background distribution of $N_{60}P_{60}K_{30}$ before sowing winter wheat, application of N_{30} in early spring over the half-thawed ground (HTG) and local dozing of nitrogen in N_{30}, N_{60} and N_{90} in the full tillering phase. The amount of productive stems per unit area is one of the major elements of the yield formula. This value depends on the plant stand density and number of productive stems in one plant in the phase of full grain ripeness. The stand density of plants in our experiments, in its turn, depended on the field germination ability and survival of plants throughout the growing season and it significantly changed under the influence of sowing time and level of mineral nutrition. In the northern steppe of Ukraine, the effect of sowing time and level of mineral nutrition on productivity of winter wheat grain placed after the stubble predecessor has been studied. We have determined the optimum sowing time and level of mineral nutrition which give a yield of winter wheat at the level of 4–5 t/ha in the specific soil and climatic conditions of the region.

Key words: winter wheat, sowing time, mineral nutrition, yield.

Averchev O.V. Progamming of cereal yields under conditions of agro-meliorational field of rice crop rotation // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 15-18.

The buckwheat yield of the summer growing season was much higher than the yield of the traditional spring season – 16,7 against 13,0 c/ha.

For instance, in the variant where the tillage for sowing buckwheat was studied, the average indexes of the yields didn't differ much and were 14,0 c/ha on the plots with shallow tillage and 16,2 c/ha – with dipper tillage, but there were differences depending on the factor "growing season". In the spring season the yield of the variant with disking was 12,1 c/ha, whereas in the summer season – 16,0, and in the variant with ploughing – 14,9 and 17,6 c/ha respectively. On the whole the individual part of the influence of the factor "tillage" was only 4,79%. The regression coefficient shows that the increase of the sum of effective temperatures for the critical period by 1ºC increases the buckwheat yield by 2,5 kg/ha, the depth of the basic tillage by 1 cm – by 14,3, and the norm of applying mineral fertilizers for 1 kg/ha of the active substance – by 4,1. The correlation links of millet differed considerably from the analogous ones obtained for buckwheat. The weak force of the correlation link of the millet yield was with X_1 – the sum of effective temperatures for the critical period and X_2 – the depth of the basic tillage – 0,260 i 0,292 respectively. The strong connection was only with X_3 – the norm of applying mineral fertilizers – 0,894, and also the multiple correlation coefficient of all the determination factors – 0,976. **Conclusions.** According to the data of correlation and regression analysis the connections of the determination factors are not linear and it is necessary to set nonlinear relations from the variables and the yield in order to solve the problems connected with forecasting yields in production. The obtained equations show that the coefficient of determination for buckwheat is 0,987 and for millet – 0,952, which is the evidence of a possible use of the model in production.

Key words: buckwheat, millet, forecast, cereals, agro-meliorational field, rice crop rotation, determination coefficient, correlation and regression analysis.

Vozhehova R.A., Kovalenko A.M., Chekamova O.L. Different varieties of millet drought conditions in the southern desert // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 18-20.

Purpose. The aim of the research is scientific justification of the formation of millet grain yield and its quality indicators for different agro-climatic conditions of southern Ukraine and application of microbial agents and microfertilizers for different varieties. **Methods.** Harvest data and research results, that will be obtained in the experiments will be subject to the methods of variation statistics. Environmental, economic and bioenergy efficiency is calculated by conventional methods. Harvest data and research results are processed using methods of mathematical statistics, graphical, comparative, theoretical generalization. **Results.** During dry conditions prevailing in 2014, different varieties of millet yields unequal formed. The most productive varieties proved Denvikske and Jubilee - 2.1 - 2.2 t / ha. Moreover, these varieties need to form their crop 691m^3 and 724m^3 only water. Most water needed to form their crop varieties and Golden Cossack - 1169 m^3. The most adapted varieties of millet to dry conditions and who need to form their harvest least moisture and varieties, that need the maximum of moisture for the crop formation. The application of microfertilizers in the background makrofertelizes and seed inoculation with microbial drugs agro-climatic conditions in 2014 the positive impact not found. **Conclusions.** During dry conditions gave the greatest yield varieties such as,: Ubileynoe and Denvikske. Identified varieties, that cannot give high yields - Zolotiste, Kozacke. To increase the yield of millet for dry conditions necessary to continue research to identify activities that most contribute to the adaptation of different varieties to climate change.

Key words: millet, microbial agents, varieties, yield, drought, rain.

Chetverik O.O., Kozachenko M.R. The level of winter bread wheat varieties combining ability // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 20-23.

The aim of investigation. The aim was to study combining ability winter bread wheat varieties in the system of top-crosses and diallel crosses. **Materials and methods of investigation.** The general (GSA) and specific (SCA) combining ability of winter bread wheat varieties in methods dispersion and genetic analysis have been established. **Results of investigation.** It has been established that in the top-crosses and diallel crosses the varieties by plant quantitative traits high or low GSA and

SCA was found, that it is important when are used in the combined selection. Different levels of the variances of GSA and SCA as to plant trais in varieties from F_1 in top-crosses and diallel crosses have been stated. Manifestation of different additive or non-additive effects of genes with inheritance of traits in the hybrids from cultivars crosses with different genomes has been shown on-this base. **Conclusions**. Features of combination ability in variatives of winter bread wheat in top-crosses and diallel crosses have been established. A different level of the GSA and SCA and them variances with different genomes as to elements of plant productive traits has been shown.

Key words: Winter bread wheat, variety, trait, F1, top-crosses, diallel crosses, combining ability, level and variances of GSA and SCA.

Lavrynenko Yu.O., Hlushko T.V., Marchenko T.Yu. Adaptive potential of maize hybrids of FAO groups 190-500 in the Southern of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 24-28.

Purpose. Determine the impact of optimal doses of fertilizers and irrigation on yield formation and grain quality maize hybrids of FAO groups (190-500) of the Southern Ukraine. **Methods**. The field method was used to study the interaction of the investigated object and both experimental and environmental factors via the registration of the yield volume and biometric measurements; the laboratory method was used to determine soil humidity, humidity content in grain and quality indices of grain; the statistical method was used to estimate the reliability of the results obtained; and the computational method was used in economic and energetic estimation of the employed cultivation techniques. **Results.** we determined the impact of irrigation and fertilizers on yield formation of maize hybrids of different maturity groups and economic efficiency of cultivation. **Conclusions.** The following hybrids are recommended for cultivation on condition of irrigation of dark-chestnut soils of the southern steppe of Ukraine: early-ripening Tendra, middle-early – Orzhytsia 237 MB, mid-ripening – Krasyliv 357 MB, and middle-late – Bystrytsia 400 MB, with the introduction of the estimated dose of the mineral fertilizers, defined by the difference between the amount of nutritious elements, required for the formation of productivity of the desired level and their content in the soil of a specific plot.

Key words: maize hybrids, FAO groups, profitability, irrigation, yield and quality of grain, economic efficiency.

Khokhlov O., Sechnyak V., Nagulyak O. Ecological and geographical differences in adaptability and breeding traits among winter barley varieties // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 28-32.

The main aim of Genetic resources laboratory at Plant Breeding and Genetics Institute - National Center for Seeds and Cultivars Investigation (PBGI-NCSCI) is constant enriching of genetic pool of crops by introduced accessions and regular revealing of potential donors for breeding. Newly introduced samples are primarily tested in quarantine nursery of PBGI-NCSCI, Odesa. Results of two-year investigation of foreign winter barley varieties grown in the region are presented. Individual and group specific of them and also relations between key breeding traits were studied by means of descriptive statistics, correlations, cluster and graphic analysis. Combining of acceptable level of winter hardiness with different plant height and length of vegetative period was found as feasible. In spite of functional dependence of lodging from stem length the breeding of resistant cultivars is possible by involving genes of stem strength. Geographic differences were relatively moderate. Some sorts from Syria were found to be carriers of desirable traits combination. Group differences found by cluster analysis were generally more profound comparing to regional ones. Therefore, the cluster analysis may serve as efficient tool for revealing of planned combinations. The recommendations for breeding are proposed. In general the results give additional support to widely accepted thesis: regular, systematic, and profound searching of new genes combinations within alien accessions is principal pre-condition of further advance of breeding.

Key words: winter barley, collections, ecological variety investigating, adaptability, winter hardiness, lodging resistance, breeding.

Sheludko O.D., Markovska O.E., Bilayeva I.M., Kaminska M.O. Efficiency of the protectant Celest top 312.5 fs in irrigated winter wheat treatment against cereal flies in various sowing periods // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 32-34.

The research objective is to optimize the phytosanitary state of the irrigated winter wheat crops under different seeding dates and chemical protection means. The research was done in the experimental field of the Institute of Irrigated Farming of NAAS using the winter wheat variety Ovidii under irrigation in 2010-2012. When conducting research, we made use of generally accepted methods of entomological study. The insecticides' efficiency was studied according to the guidelines of the Institute of Plant Protection. Results and conclusions. The effective methods of reducing the number and harmfulness of cereal flies on irrigated winter wheat crops in the southern Steppe of Ukraine include the rational application of complex agrotechnical and chemical measures, including adherence to scientifically based rotation, deep plowing, optimum seeding dates and intoxication of shoots by means of presowing seed treatment with the protectant of complex action Celest Top 312.5 FS with the consumption rate of 2.0 l per ton of seeds. This protection system optimizes phytosanitary condition of winter wheat in the autumn and preserves the environment from pesticide pollution.

Key words: winter wheat, irrigation, protectant, protection efficiency.

Zayets S.A., Nezhegolenko V.M. Productivity of winter wheat depending on the methods of basic treatment of soil and norms of mineral fertilizers in the conditions of irrigation // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P35-38 .

Purpose. To define a method and depth of basic till of soil, optimal norms of bringing of mineral fertilizers and their influence on a harvest and quality of grain of wheat winter-annual at irrigation. **Methods.**Researches were conducted on the irrigated earths of Askaniyski of the state agricultural experimental station on the methods of Dospyehov B.A. and methodical recommendations on

carrying out the field tests in the conditions of irrigation of Institute of the irrigated agriculture. . Soil of the experienced field is a livery, heavily loamy, salt-marsh with content of humus - 2,3%, by a closeness - 1,3 g/cm², by fading humidity - 9,8%, by the least moisture-capacity - 22,4%. **Results.** It is set that on the irrigated earths of south of Ukraine after soy application of without a dump treatment of soil on a depth a 12-14 cm and on a 23-25 cm at bringing of mineral fertilizers of $N_{120}P_{40}$ is provided practically the identical productivity which accordingly presented 6,27 and 6,32 т/ha, and sowing of winter wheat in preliminary untilled soil on a background $N_{120}P_{40}$ results in the decline of the productivity on 0,83-0,88 т/ha. At without a dump treatments of soil and bringing of $N_{120}P_{40}$ the cleaned grain behaves to the 3 class, here maintenance of albumen makes 11,3-11,37%, gluten - 21,6-22,87% and natures of grain - 763-765 g/l, and at the use of technology of No-till - grain was 4 class with maintenance of albumen of 10,9%, gluten - 22,47% and nature - 751 g/l. **Conclusions.**A most economic effect is a conditional income 5685 hrn/ha and profitability of 66,7% at the least prime price of 1 т grain - 1083 hryvnyas are got at the use of without a dump treatment of soil on a depth a 12-14 cm and bringing of mineral fertilizers the norm of $N_{120}P_{40}$.Bibliogr.:9 titles.

Key words: irrigation, winter wheat, till of soil, No-till, fertilizer, productivity, quality, economic efficiency

Fedorchuk M.I., Kokovikhin S.V., Fedorchuk V.G., Filipova I.M., Filipov E.G. Productivity and biochemical composition of the *Silybum marianum* depending on differentiation of elements of the technology growing under the conditions of irrigation of the South Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 38-41.

The task of researches was to study influence of basic agrotechnical factors (systems of soil tillage, space-rowing, terms of sowing and background of mineral feeding) on productivity of plants of *Silybum marianum* at its growing under the conditions of irrigation in the South of Ukraine. The field and laboratory researches were conducted during 2010-2012 in the Institute of Rice NAAN of Ukraine. Experimental areas were laid using the method of split areas in according to existent methods of experimentalism. By the biochemical analyses considerable differentiation of organic acids is proved in the butter of seeds of the *Silybum marianum* linoleic acid (56.45%) spotted with advantage and, opposite, by minimum maintenance of pentadecanoic (0.03%) and linolenove (0.04%) acids. The presence of 2.3-degidrosilibinum, maintenance of which from the common amount of dominant flavolignan is 2.5-3.0%, is exposed in the gardenstuffs of plants of *Silybum marianum*. On biochemical composition the Yugoslav variety is perspective for the industrial growing. The results of researches of *Silybum marianum* grown on the irrigated lands of south of Ukraine are given in the article. The optimal values of depth of soil treatment, sowing terms, row-spacing and doses of mineral fertilizers influencing the productivity of the investigated crop are defined. Through the usage of dispersible and cross-correlation-regressive analysis equity participation of factors on the indices of the productivity is set and the optimal range of width of row-spacing and doses of nitric fertilizers is found.

Key words: *Silybum marianum*, soil tillage, row-spacing, terms of sowing, mineral fertilizers, productivity.

Chernichenko I., Balashova G., Chernichenko O. Weather conditions vegetation period by the potato crop in southern Ukraine under irrigation // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 41-44.

The Aim. To study the reaction of potato varieties and hybrids of domestic breeding on the meteorological conditions at the growing competition and environmental tests under irrigation in southern Ukraine. **Methods.** The study was based on the integrated use of field, laboratory, mathematical-statistical, computational and comparative methods and systems analysis. **The Results.** In the competitive and environmental testing for fourteen years studied the reaction of domestic varieties and hybrids on the growing conditions in the southern region of Ukraine. On average for the years of research early harvest numbers are not inferior to Middle-- respectively 20,67 and 20,36 t/ha. The close correlation between the temperature of the air at the time of budding and tuber yield: for the early numbers r = -0,76 + 0,22, for Middle r = -0,82 + 0,17. Hydrothermal coefficient (SCC) for the same period affects the potato crop is almost the same as the temperature r = 0,79 + 0,21 and 0,74 + 0,24, respectively, for the early and Medium early varieties and hybrids. **Conclusions.** For maximum yield of potatoes should pay special attention to the creation of optimal growing conditions during the period from the beginning of budding to flowering. Improving technology plant care should be aimed at identifying ways to improve the heat resistance of plants, improving conditions and irrigation methods, which ultimately lead to the optimization of the conditions of growing potatoes.

Key words: potatoes, groups of ripeness, temperature, precipitation, HTC, harvest, crop structure.

Dudchenko V.V., Dudchenko T.V., Tsilynko L.M., Falkovskiy I.V. The appearance of herbicide resistance in weeds of rice fields // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 44-46.

The aim of our study was to determine the reasons for the decline of the effectiveness of herbicide Citadel 25 OD while using it on the rice crops against a complex of grain and wetland weeds. To determine the reasons for the decrease in the effectiveness of the herbicide a number of studies on various conditions was conducted, such as duration of the use. The result of the studies has established that long-term and permanent use of herbicide Citadel, 25 OD on crops of rice has reduced its efficiency due to the formation of stable populations of barnyard grass.

Key words: herbicide, resistance, rice, efficiency, sustainability, weeds.

Vasylenko R.M., Goloborod'ko S.P., Stepanova I.M. Influence of moisture and fertilizer takeaway main nutrients harvest of spring grass mixtures // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 46-48.

The purpose. Determine the removal of main nutrients on yield formation of spring units with use grass mixtures foxtail with spring vetch and amaranth depending on moisture conditions and standards of fertilizers in

growing the green mass. **Methods.** Experiments using embedded split plots according to the method of field experiments to study agricultural practices of growing crops. The estimated rate of fertilizer for determined depending on the contents of batteries in the soil on the planned harvest of green mass in natural moisturizing - 30 t/ha under irrigation - 45 t/ha, which was to land without irrigation on average for three years N_{92} and irrigated - N_{143}. **Result.** The results show that the cost of nitrogen and potassium on yield formation units in no irrigated and irrigated conditions are more enhanced when making settlement rules fertilizers and also the most while growing foxtail mixtures of amaranth and phosphorus - foxtail mixtures with use spring vetch. In terms of South Steppe of Ukraine irrigation on background without fertilizers increased compared to no irrigated option, total nitrogen removal of aboveground mass planting foxtail by 38.3%, with use mixtures foxtail with spring vetch at 55.3 and mixtures with amaranth by 71.7% and phosphorus and potassium, respectively, 39.5; 68.5 and 64.1% and 49.4; 64.5 and 68.1%. Apply recommended fertilizer $N_{60}P_{60}K_{60}$ rules under irrigation increased compared without fertilizers option nitrogen removal of aboveground mass sowing foxtail at to 41.0%, with use mixtures spring vetch 33.0% and mixed with amaranth by 38.6%, and the estimated N_{143} respectively 75.1; 50.4 and 61.2%. In terms of irrigation recommended fertilizer rate increased compared without fertilizers option, phosphorus removal of aboveground mass planting foxtail by 51.3%, consistent with use spring vetch 32.7 and 71.3% for amaranth and calculated according to 65, 9; 34.6 and 67.8%. **Conclusions**. Irrigation most severely increased costs of nitrogen and potassium on yield formation unit mixtures with foxtail amaranth (respectively 5.2 and 6.4 kg/t), phosphorus - its mixtures with use spring vetch (1.2 kg/t) calculated by the rules N_{143}. The estimated rate of fertilizer to a greater extent increases the total nitrogen in aboveground weight than recommended $N_{60}P_{60}K_{60}$.

Key words: moisture conditions, irrigation, grass mixture, the total removal, mineral fertilizers.

Kovalenko A.M., Timoshenko G.Z., Novohizhniy M.V., Kuth G.M. Influence of microbal preparations on the productivity of sunflower in the conditions of the natural moistening at the different methods of till of soil // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 48-51.

Researches are conducted in Institute of the irrigated agriculture on darkly-chestnut soils during 2011-2013 years. **Purpose.** A search of ways of increase of the productivity of seed of sunflower is during minimization of the systems of till of soil in a crop rotation. One of them there can be application of modern microbal preparations. The task of our researches was determination of efficiency of application of microbal preparations in the droughty terms of South Steppe of Ukraine at the different systems of basic till of soil. **Method.** Field method - for determination of features of height and productivity, and laboratory - for determination of basic elements of feed and amount of microorganisms in soil. **Result.** In the article results over of researches are brought on application of microbal preparations of Diazofit and Polimiksobakterin for treatment of seed of sunflower on a background the different systems of till of soil. The greatest productivity - 2,65 t/ga formed in a variant, where conducted ploughing a plough on a depth a 28-30 cm and preseed treatment of seed by microbal preparation of Diazofit, and the least - 1,96 t/ga in a variant with shallow without ploughing till of soil on a depth a 12-14 cm without application of microbal preparations. Increase of harvest of sunflower of 0,28 t/ga depending on application of microbal preparations was the greatest also in a variant, where conducted ploughing and preseed treatment of seed a plough (28-30 cm) microbal preparation of Diazofit, while on a variant from bezotvalnay by deep till of soil on the same depth (28-30 cm) at application of microbal preparation of Diazofit of increase of harvest it was not practically. The calculation of economic efficiency of application of microbal preparations showed for preseed treatment of seed of sunflower, that most profitable was a method of growing with realization бактерізації preparation of Diazofit. A maximal income from application of this preparation laid down 860,95 hrn./ga on a background ploughing. **Conclusion.** In the droughty terms of South Steppe of Ukraine the system of till of soil in a crop rotation largely influences on forming of her aquatic and nourishing modes. Application of microbal preparation of Diazofit for treatment of seed of sunflower improves the nitric mode of soil and promotes his productivity on 0,08 - 0,28t/ga.

Key words: microbal preparations, Diazofit, Polimiksobakterin, sunflower, productivity.

Shkoda O.A., Pilyarskaya O.O. Bearing-out of elements of feed winter-rape in dependence the method of treatment of soil and fertilizers // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 51-54.

Aim of research. The aim of researches was determination of influence of influence the method of treatment of soil and fertilizers bearing-out elements of feed winter-rape and forming of unit of harvest of culture.

Research methods. Researches conducted in an experience field of Institute of irrigable agriculture of NAAS, that is located in South Steppe of Ukraine in the zone of Ingulec of irrigatory array, during 2009-2011 years. The calculation dose of mineral fertilizers was determined on the method of optimal parameters on the pre-arranged productivity of seed of winter-rape to 3,0 t/ha. **Research results.** It is certain that bringing of $N_{60}P_{60}K_{30}$ increased the consumption of nitrogen to winter-rape on forming of unit of harvest, relatively controls on 24,6-30,3%, and at bringing of $N_{90}P_{90}K_{30} + N_{30}$ - on 48,2% (ploughing) and 44,7% (subsurface tillage). At the same time the increase of dose of nitrogen was accompanied by the insignificant height of charges of phosphorus. At bringing of nitric fertilizer 60 kg/ha of operating substance of his expense made 22,7-23,7 kg/t, and 120 kg/ha - loosened the holds of phosphorus on 11,8-12,3%. The expenses of potassium on forming of unit of harvest with the increase of dose of nitrogen increased. Maximal they were in the variants of bringing of calculation dose of fertilizers are 83,3-88,3 kg/t, that in 1,9-2,0 time more control variants. **Conclusions.** A bearing-out of elements of feed winter-rape was most at bringing on the background of straw of winter-wheat of calculation dose of mineral fertilizers: nitrogen are 238,2 kg/ha, phosphorus - 85,6, potassium are 284,3 kg/ha on the ploughing and 206,9; 74,5; 248,3 kg/ha - to the subsurface tillage accordingly. Thus there was direct dependence of this index on the dose of nitric fertilizer.

On forming of one ton of harvest the unfertilized the winter-rape used: nitrogen are 42,3 kg/t, phosphorus - 18,7, potassium are 44,5 kg/t (ploughing) and 42,7; 19,2; 43,8 kg/t (subsurface tillage); bringing of $N_{90}P_{90}K_{30}$ + N_{30} - 62,7; 26,5; 74,8 and 61,8; 25,5; 67,9 kg/t, and application on the background of straw of winter-wheat calculation dose of mineral fertilizers - 74,0; 26,6; 88,3 and 69,4; 25,0; 83,3 kg/t accordingly.

Key words: winter-rape, fertilizers, the method of treatment of soil, bearing-out of elements of feed.

Stratichuk N.V. Adaptive planning environmentally sound irrigation to farmers // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 54-58.

Purpose. Given today's environmental and economic problems of irrigation aim is to study economic mechanisms driving irrigated agriculture. **Methods.** For the purpose of the study was used graphical and statistical method - the analysis of contemporary economic and ecological conditions in the area of irrigation; abstract logical when forming the original principles and conclusions, mathematical methods - the development of economic and mathematical models (structures). **Results.** Determination of the irrigation water is a major economic factor in planning environmentally sound irrigation. Payment for irrigation water was expressed as a function, in addition to its economic machine was introduced K. Due to the graphic construction of such a machine the connection between economic result output macro irrigated agriculture and its parameters input. **Conclusion.** Economic action automaton K should encourage reduction or stability relative costs, regionally-system (or area-system) set of farms on irrigation water through differentiated pay for it.

Key words: irrigated agriculture, irrigation systems, economic stimulant ecologically production rates for irrigation water.

Lavrinenko Yu.O., Hozh O.A. Effect of growth stimulators and micronutrient fertilizers on the grain yield of corn hybrids under irrigated conditions of south Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 58-61.

The purpose. Scientific basis in the effect of the application of growth stimulators and micronutrient fertilizers on the grain yield of new maize hybrids of different maturity groups under irrigation conditions of south Ukraine. **Material and methods.** The results of two years of research the impact of growth-stimulating drugs on the maize hybrids in irrigated conditions the Institute, which is located in southern steppe of Ukraine, the soil is dark chestnut weakly solonetsous medium loamy. Used the general scientific, special and calculated-comparative research methods. **The results of researches** with the hybrids of corn at growing in the irrigation conditions are resulted in the article. It is proved that growth stimulators and micronutrient fertilizers contribute to significantly the growth of grain yield of hybrids of different maturity groups.The highest grain yield of 14.00 and 13.38 t/ha under the influence of investigated drugs was in the middle-late hybrids Arabat and DN Hetera in the combined use of growth stimulators - seed treatment Sizam Nano and spraying in the phase of 7-8 leaves of corn Greynaktiv-C.

Key words: growth stimulators, micronutrient fertilizers, maize hybrids, irrigation, grain yield.

Kozyrev V.V., Bidnina I.A., Tomnitsky A.V., Vlaschuk O.S. Efficiency of soybean production under different moisture conditions, primary tillage methods and timing of the introduction of meliorant // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 61-64.

The purpose. Determination of the effectiveness of soybean production under different moisture conditions, primary tillage methods and timing of the introduction of meliorant in Southern Ukraine. **Methods:** field; analytical, computational and comparative, mathematical statistics. **The Results.** In irrigated conditions of the south of Ukraine for the dark brown soil to obtain stable yields of soybeans, while maintaining soil fertility is an effective application of phosphogypsum in the spring on the surface of frozen-thawed soil, maintaining preirrigation threshold soil moisture during the critical period of development of plants at 70-70-70% HB and carrying out plowing. **Conclusions.** In irrigated conditions of the south of Ukraine for the dark brown soil to obtain stable yields of soybeans, while maintaining soil fertility is an effective application of phosphogypsum in the spring on the surface-freezing thawed soil, maintaining preirrigation threshold soil moisture during the critical period of development of plants at 70-70-70% HB and carrying out plowing.

Key words: soy, moisture conditions, the basic tillage, phosphogypsum, productivity, profit, profitability.

Zayets S., Fundirat K. Development of triticale winter in clean crops and in compatible crops with winter rape and with winter vetch on irrigated grounds in the autumn // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 64-67.

Purpose. Define the parameters of autumn winter triticale plants in crops and clean it with the mixed winter rape, and use of winter under irrigation. **Methods.** Field research under irrigation in liver-colored, medium suhlynkovomu soil. Experiments were laid against the background of fertilizer at the rate $N_{60}P_{60}$. Seeded winter triticale - sort Bohodarskyy, winter rape - winter vetch and Dembo - Panonska. Seeding of winter triticale in mixtures with rape, and use to correspond to 75% and 50% of normal sowing crops in net - 4 million pcs., canola seeding rate 1.25 million units., winter vetch - 0.9 million pcs. Field experiments and related research carried out by the method Dospyehova BO and guidance on conducting field experiments under irrigation Institute of irrigated agriculture**. Results**. The duration of "sowing-ladder" in 2013 in triticale was 10 days in rape - 13 and wikis - 17 days and 2014 respectively - 7,16 and 10 days. Duration autumn growing season was 69 days. Terms onset of phenological phases autumn period triticale in joint crops did not differ from one species. Plants triticale front of winter were in the phase of tillering, winter vetch in the phase formation of lateral shoots, rape plants had 4-5 leaves, and in 2014 the development of winter rape was slightly worse, the plants have 3-4 leaves. In average years of research in winter triticale plants pure crops had the best biometric performance than in mixtures. In mixed crops with use of winter triticale winter plants were more resistant to winter conditions, as shaped more stems and

bushiness and characterized by the accumulation of the best indicators of vegetative mass. **Conclusions.** When irrigation in southern Ukraine winter triticale in pure crops for autumn vegetation accumulates vegetative mass 662 g / m^2, forms 1991 pcs / m^2 kuschystosti stems at 5.9, and in mixtures with winter rape and winter respectively vetch - 339-567 g / m^2, 1074-1818 units / m^2 and 5,8-6,9. Thus some advantage in the development of plants in mixed crops of triticale little with use of winter than the winter rape. Byblyohr.: 9 titles.

Key words: winter triticale, winter rape, winter vetch, mixtures, irrigation, autumn growing season.

Zhuravlev A.V. Formation of zones of humidifying at drip irrigation of onions on loam soils // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 67-73.

The purpose of determining the size of areas under different moisture regimes drip irrigation onion on dark chestnut soils loam. **Methods**: field, analytical, computational and comparative. Contours moisture build Statistika using the least squares method. **The Results**. It was found that the formation of zones of moisture and soil moisture dynamics in layers when growing onions under drip irrigation depends on preirrigation soil moisture and irrigation rates. Before watering seen a steady increase in soil moisture from 60 to 90-95 % field capacity (FC) with decreasing depth from the surface layer up to 50 cm. After watering the humidity is distributed differently. On the next day after the cessation of irrigation estimated soil moisture to embodiment 70, 80 and 90% FC respectively was 94.2; 97.5 and 89.5 % FC. **Conclusions.** Proved the dependence of formation of zones of moisture from the soil moisture preirrigation. While maintaining the humidity of 70 % FC in the dark chestnut easy-loam soil moisture redistribution observed beyond physiologically active branches of the root system. According to the research found that the moisture content of 20-30 cm soil layer reflects the state of the estimated soil moisture.

Key words: dark-chestnut soil, area of moistening, drip irrigation, onions.

Tarasiuk V.A. Quality seeds of milk thistle depending on technological factors // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 73-76.

The aim of our study was to identify the best sowing time and the optimum ratio of row spacing and seeding depth that would allow crops to form a thistle with maximum yield and high levels of quality seeds.

Determining the mass of 1000 seeds was carried out on existing methodologies State Standard GOST 3484-96 (GOST 170-81-97); chemical composition of seeds - for indicators: fat content, flavolihnans, proteins, vitamins, using the methods of biological studies of plants and soils. The article presents the results of research on the effects of technological factors on quality indicators seeds of milk thistle. Determined mass of 1000 seeds of milk thistle depending on sowing, row spacing and seeding depth. It shows the dependence of the chemical composition of milk thistle seeds, including fat content of the studied factors. The results show the superiority of early sowing (1 decade of April) with wide-crop seeding 2-3 cm of the accumulation of fat, the indicator was within 26,7-29,8%. Analysis of protein content showed that sowing decade of April 1 in a continuous manner and with a string of seeding 2-3 cm maximum values were - within 24,7-27,4%. The results determine the flavolihnans content (the main active ingredient is milk thistle) between variants depending on the row spacing and seeding depth is within the margin of error. As for sowing, flavolihnans content in seeds decreased with a wire later sowing, the largest flavolihnans content found in the seeds that formed at sowing in the first ten days of April, the rate was within 2.76-2.81%. Analysis of the chemical composition of the seeds of milk thistle showed that compared with a control variant and all variants in relation to each other, the highest content of vitamins, carotene – 8,9-9,0 mg/kg, D – 5,2-5,3 IU, E – 7,3-7,4 mg/kg, B1 – 6.0-6.3 mg/kg, B2 – 5,1-5,3 mg/kg, B3 – 16.8-17.0 mg/kg, B4 – 2056-2061 mg/kg, B5 – 51.3-51.8 mg/kg, B6 – 8.0-8.1 mg/kg, B12 – 0.8 mg/kg characterized by wide-crop seeds with seeding depth of 2-3 cm of first term of sowing.

Key words: milk thistle, term of sowing, row spacing, depth of seeding, quality indicators.

Tishchenko A.V., Luzhanskiy I.Y. Influence of moisture conditions on the photosynthetic activity of crops of alfalfa seed // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 76-79.

The purpose. Reveal the influence of moisture conditions on the photosynthetic activity of seed sowings of alfalfa varieties Unitro and Zoryana. **Methods.** The studies were conducted at the Institute of irrigated agriculture (2011-2013 years) in the three-factor experiment with varieties of alfalfa Unitro and Zoryana under drip irrigation and natural moisture. **The Results.** The research resulted in revealed an increase in the area of assimilation surface of the phase shooting before flowering, in which alfalfa plants formed the maximum leaf area (26.20 thousand m^2/ha under drip irrigation and 17.15 thousand m^2/ha without irrigation), and after flowering phase is decreased. The photosynthetic potential increased from interphase "shooting-budding" to "flowering-seed ripening," where he was the highest and was in a natural moisturizing 0.90 million m^2×days/ha in grades Zoryana, cultivar Unitro - 0.79 million m^2×days/ha. Irrigation contributed to the increase in the variety of photosynthetic capacity Unitro to 1.26. million m^2×days/ha, grade Zoryana – 1.27 million m^2×days/ha. Maximum performance of 4.39 for irrigation and 3.59 g/m^2 per day in a natural moisturizing net photosynthetic productivity reached in the interphase "shooting-budding." **Conclusions.** Assimilation surface area dependent on moisture conditions, so over the years of research in terms of natural moisture leaf area was less than under drip irrigation.

Key words: alfalfa, variety, moisture conditions, assimilation surface area, photosynthetic potential, pure productivity of photosynthesis

Malyarchuk A.S. Influence of basic treatment of soil and doses of the nitric additional fertilizing on the productivity of rape winter // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 79-82.

The Aim. Establishment of the most effective ways of the basic soil treatment and doses of nitrogen fertilizer in early spring feeding for growing winter rape in crop rotation on irrigated southern Ukraine.

Methods. For research use field, laboratory, statistical and computational and comparative methods. **The results** of experimental studies. Various methods and depth of primary tillage, doses of nitrogen fertilizer in early spring feeding on the background of long-term use of dump, boardless and differential treatment systems in the rotation affect the structural performance and productivity. **Conclusions.** In the field rotations links to dark brown soils of the southern region for irrigation the most favorable conditions for the growth, development and yield formation of winter rape created when pelagic systems dump and differential systems with plowing to 25-27 cm or chisel loosening to 14-16 cm in the background a deep slotting for crop rotation and to make early spring feeding dose $N_{100-130}$ on the background making $N_{30}P_{60}$ fall.

Key words: rape winter, method and depth of treatment of soil, doses of nitric fertilizers, structural elements.

Tishchenko A.V. Influence of growth conditions on sowing quality alfalfa seeds of different varieties of alfalfa// Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 82-84.

The Aim. Elaborate and justify the use of scientific agrotechnical methods to improve the quality of cultivated alfalfa seeds of different varieties. **Methods.** Investigations were carried out at the Institute of irrigated agriculture (2011-2013 years) in the three-factor experiment on alfalfa varieties Unitro, Zoryana under drip irrigation and dry land conditions of with the use of growth regulator Plantofol 30 in different periods of growth and development of culture. **The Results.** The High weight of 1000 seeds were characterized varieties of alfalfa under drip irrigation - 2.07g, without irrigation, the numbers were lower – 1.95-1.97 In conditions of natural water supply and application Plantofola 30 contributed to increasing the mass of 1000 seeds on 1.5-3.1%. Drip irrigation, and growth regulator was increased seed weight compared with the control variants to 1.0-3.4%. Higher indicators germination energy and laboratory seed germination are marked in conditions drip irrigation 75-78% vs. 70% and 73 without irrigation after three months after the harvest, and they improve with increasing duration of storage (6 months, 1 year). Application Plantofola 30 Increase sowing quality of alfalfa seeds. **Conclusions.** Alfalfa seeds grown under drip irrigation, characterized by high levels of mass 1000 and the best indicators germination energy and laboratory germination. Three months after harvesting in rainfed conditions, germination energy was 70%, laboratory germination – 73%, with drip irrigation – 75 and 78%, respectively. After 6 months under irrigation, these figures were 85 and 87%, without irrigation – 84 and 85%. A year later sowing seed quality improved.

Key words: alfalfa, drip irrigation, natural moisturizing, growth regulator, sowing seed quality.

Nesterchuk V.V. Directions of optimization elements of the growing technology of the sunflower hybrids in the conditions of South Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 84-86.

Aim. Analysis of literary sources are resulted on the features of technology of growing of sunflower. **The results.** It is set, that the issue of the day is the increase of productivity of plants and providing of growing necessities of processing industry in high-quality seeds. It is proved, that conducting of researches on determination of the best hybrids of culture, optimization of the density on standing of plants and application of the scientific-grounded system of fertilizer is needed. Sunflower growing in recent decades in different soil and climatic zones of Ukraine had its advantages and disadvantages. In the southern and eastern regions of the sunflower is allowed to get the greatest return on agricultural producers. The area under this crop is rapidly increasing, at the production level is not conducted scientific basis of crop rotation, resulting in a risk of deterioration of soil fertility due to oversaturation of sunflower during its seeding in monoculture. Sunflower prices remained consistently high, even with yields of 12 c/ha provided a high profitability. However, at the production level of existing technologies sunflower growing often do not provide a planned level of harvest. At present and in the future the actual problem is to increase the productivity of sunflower plants and meet growing demand for high quality seeds by choosing a hybrid structure, optimize plant density and the use of evidence-based fertilizer system, including, for the effectiveness of foliar feeding of complex fertilizers with trace elements. The solution of scientific and practical problems of optimization technology sunflower growing in Southern Ukraine requires relevant research in this direction.

Key words: sunflower, hybrids, technology of growing, density of standing of plants, complex fertilizers.

Kiriyak Y.P., Kovalenko A.M. Changes and vibrations climate in more south - to the steppe area Ukraine and him possible consequences grainproduction // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 86-89.

Purpose. Determination of intercommunication is between the level of harvest of wheat winter-annual and precipitations in a different period of her vegetation. **Method.** The field stationary experiments are with realization of modern supervisions and analyses. **Results.** Got results of perennial researches in the stationary field experiments from forming of harvest of wheat winter-annual in different crop rotations during the last 45 years. The analysis of amount of annual sum of atmospheric precipitations is done for this period. The conducted estimation of influence of both annual sum of precipitations and their amount is in separate periods of height and development of wheat winter-annual on the harvest of her grain. It is set that in 2010 was not observed clear orientation of changes of annual amount of precipitations, but in the last four years she diminished on 37,2%. Thus in separate time of change domains were more considerable. In April the sum of precipitations for the last 14 years diminished on 62,4%, and in August for the last 6 years - on 55,1%. Such diminishing to the amount of precipitations in these periods worsens the terms of receipt of stair of wheat winter-annual and her further development. **Conclusion.** Intercommunication of the productivity of wheat winter-annual for 45 years of researches with the annual sum of precipitations and their amount in separate periods of her development appeared not high. About that in separate periods of the investigated time, for example 1971 - 1980, he was meaningful.

Key words: intercommunication, climate, coefficient of correlation, precipitations, wheat winter-annual, productivity.

Pilyarskyy V.G., Pisarenko P.V., Bilyaeva I.M., Pilyarska O.O. Effect of irrigation and fertilizer on the growth processes of sugar beet in Southern Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 89-92.

Purpose. Studying the effects of moisture and mineral nutrition of plants for production processes sugar beets in the south of Ukraine. To achieve the objectives in the laboratory of the Institute of Agriculture Irrigation southern region of Agrarian Sciences for 2004-2008 pp. were conducted field and laboratory research on sugar beets, which were laid by randomization split plots with four-repetition. Area sown plots of the second order was 110 m², accounting - 50 m². **Methods.** Bookmark experiments, phonological and biometric metering, establishment of leaf surface and dynamics of plant biomass accumulation of sugar beet was performed according to conventional methods. **Results.** The article describes the results of research to study the performance of the production process sugar beet plants (accumulation dynamics of aboveground and root weight, average daily gain), depending on the effects of moisture and background and mineral fertilizers. **Conclusions.** Main fertilization, and subsequently feeding with early growing season had a positive effect on the accumulation of masses of leaves and roots. In the first half of the growing season fertilizer more effectively influenced the increase in weight of the leaves, and the second, by contrast, root. The increase in weight of root, unlike the leaves, observed throughout the growing season, regardless of fertilizer system.

Key words: sugar beet, irrigation, fertilization, leaf surface area, average daily gain.

Kerimov A.N., Donets A.A. Productivity and economic efficiency of growing of winter rape depending on of high quality composition, norms of sowing and fertilizer // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 92-94.

Among the technological approaches aimed at increasing the feed and seed production of winter rape in the arid conditions of the South Ukraine, the leading place belongs to the zone selection adapted varieties and hybrids, clarifying their seeding rates and optimize the mineral nutrition. In addition, in the present circumstances, there are problems obtaining stable programmed level of productivity, cost optimization agro-resources, maximize profits, and the development of energy technologies for growing ecology-saving this promising culture. The main current issues on the technology of cultivation of rape in the Southern Region is to increase the hardiness of varieties and hybrids, increasing the level of productivity of spring form, the development of the optimum ratio of growing technology elements that take into account the biology of crop, refinement seeding rates, the application of integrated plant protection, differentiated fertilization systems and tillage as well as increasing economic efficiency of cultivation. In field experiments established that the maximum yield of winter rapeseed was on a hybrid version with logo. Seeding rate had variable effects on the studied parameters, because when growing varieties Champion of Ukraine and Oksana maximum yield obtained by seeding rate of 8.10 kg/ha, while the version with hybrid emblems – at rates of 4 and 6 kg/ha. The highest level of seed yield of 18.5 c/ha to ensure payment of the estimated dose of fertilizer is compatible with Rostkontsentrat. Analysis of variance demonstrated that the maximum power of influence accounts for fertilizers (57.9%) and graded composition (29.3%). It was found that the maximum net profit of 4217-4482 UAH/ha can be obtained by growing hybrid Emblems at seeding rate of 4-6 kg/ha. At grades Champion of Ukraine and Oksana, the decline was greatest at seeding rates of 8-10 kg/ha. Adding fertilizer to the maximum extent affected the profitability of production of rapeseed and this figure has increased in 1.9-4.1 times.

Key words: winter rape, of high quality, and norms of sowing, fertilizer, additional fertilizing, productivity, economic indicators.

Kokovikhin S.V., Piliarskyi V.G., Piliarska E.A. Growth and development of corn plants in areas under irrigation hybridization Southern Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 95-97.

The purpose. Establish the effect of irrigation, plant density and fertilizer on the growth processes of corn plants at sites of hybridization. **Methods.** When research is used generally accepted methods and methodological recommendations of the Institute of irrigated agriculture. **Results.** It was found that the growth and development of plants in the most affected by weather conditions and irrigation regimes. The plant density and fertilizer application unimportant (1-3 days) increased this ratio with the advantage of using a plant population of 80 thousand/ha and the introduction of high doses of fertilizers. **Conclusion.** The maximum height of corn more than 260 cm formed when plant density of 80 thousand per hectares and fertilization calculation method.

Key words: corn, land hybridization, irrigation regime, fertilizer, plant density, periods of development, plant height

Lavrinenko Y., Klubuk V., Kuzmich V. Effectiveness of selection for increasing of soybean productivity in conditions of irrigation // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 98-100.

Purpose. Installing the correlation between the main indicator productivity - seed weight per plant and other quantitative traits of soybean; study the effectiveness of selection on one of the selective traits in hybrids F3-F5 of soybeans. **Material and methods research**. The study was conducted in hybrid and breeding nurseries of soybean of Institute of irrigated agriculture NAAS for 2007-2009., growing technology is common for irrigation conditions of southern Ukraine. The generalization of correlation coefficients quantitative traits was performed by the method of J. William Snedekor; bonding force was determined by B. Dospyehov. **Results and discussions.** We have analyze a correlations between weight of seeds per plant (the basic index of productiveness) and other quantitative trait of soybean; selection effectiveness for productivity of soybean hybrid populations F_3-F_5 by number of productive nodes from plant. There are the characteristics of new soybean varieties that had made by improved method of selection in the article. We have received the positive average correlation between weight of seeds per plant and stem thickness, stem bottom thickness, quantity of branches on the plant and number of

productive nodes on a main stem. We have obtained strong correlation between weight of seeds per plant and number of productive nodes on branches, productive nodes on a plant, bean's quantity per plant, quantity of seeds per plant, plant weight and weight of beans. **Conclusions.** Signs that had a strong positive correlation with seed weight per plant, we can assume factorial and apply in the selection to improve productivity of soybean. Selection on the number of productive nodes on the plant are most effective for increasing seed mass per plant.

Key words: soy, hybrids, selection, correlation, seed weight.

Usik L.A., Bazaliy G.G., Kolesnikova N.D. Eological tests of winter wheat varieties of breeding of the Institute of irrigated agriculture of Ukrainian National Academy of Agrarian Sciences in Turkey // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 104-109.

The purpose. The marketing strategy of the Institute of irrigated agriculture NAAS is aimed to expanse the seeds of new highly productive varieties, that have advantages over existing ones in the production, provide effective publicity in advancement of the innovative products with an emphasis on its competitiveness. **Methods.** The research methods both in Ukraine and Turkey meet the requirements of the International Union of UPOV. **Results.** The Exporter Union Seed and Research Company (ITAS) during 2011-2013 tested winter wheat varieties of the Institute of irrigated agriculture NAAS compared to local varieties registered in Turkey in four areas of the Central Plateau of Turkey: Ankara (Akyurt), Zorum (Alaca), Zankərə (Ilgaz) and Konya (Zumra). **Conclusions.** In a current year, according to the results of tests in 2011-2013 the Exporter Union Seed and Research Company (ITAS) identified the variety Kohana candidate for the state registration in Turkey. The registration process of this variety continues in the Turkish progeny tests and the Central board of Registration. It is expected the realisation of the innovative product (original seeds of winter wheat) in Ukraine, and also entitlement to use intellectual property (the winter wheat varieties) due to licensing agreements. The quality of the product being sold, will be supported by relevant documents (the certificate for seeds and the quarantine certificate). The Institute of irrigated agriculture NAAS continue to create new varieties of winter wheat, which expansion is growing in Ukraine after state testing and they can be transferred to other countries for further tests for the introduction and subsequent expansion.

Key words: wheat, variety, yielding capacity, quality, adaptability, stability.

Tishchenko E.D., Borovik V.A., Tishchenko A.V. The gene pool of perennial species of the subgenus alfalfa *Falcago* (Rchb.) Grossh, characteristic of their main signs // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 109-112.

The purpose. The main goal of our research - identify existing at the Institute of irrigated agriculture alfalfa gene pool of the main features and properties to create a base and is indicative of the collection. Allocate the best samples for further selection work. **Methods.** Investigations were carried out in the 2008-2014 years with fodder and seed use, given the nature of nodule bacteria formation in sand culture: the total number of nodules bacteria, including on fractions, the location of the root system, color and form nodules bacteria. **The Results**. The analysis of years of research allows existing gene pool of alfalfa from different countries, according to the classification P.A. Lubentsa attributed to the species that formed in the process of natural evolution and breeding. Basically, it is alfalfa (60.9%), less variability (26.2%), yellow (7.4%), blue (1.2%) and 1.1% of other species: wheatgrass, colorful, adhesive, the tien-shanica. Dedicated samples combine high forage and seed production plant with an intense process of nodulation. The connection between the above-ground mass, the power of the root system with the number of nodules bacteria. **The conclusions.** Based on the evaluation of the collection of the material using the classification of alfalfa subgenus *Falcago* Grossh. created by: attributive and basic collection passed to NCGRPU. By the results of research are highlighted sources of high forage productivity, as well as an intensive process of nodulation bacteria. Of particular value is synthetic population UJ0700149, which combines rapid regrowth of after cutting, high forage and seed production. Population: UJ0700001, UJ0700139, UJ0700159, UJ0700065, which 73,3-86,7% of nodules bacteria were larger than 1 mm. Of interest are samples UJ0700001, UJ0700082, UJ0700065, UJ0700159, UJ0700162, which 22,7-33,3% nodules bacteria located on the main root.

Key words: alfalfa, collection centers of origin, population, forage productivity, the formation of nodules bacteria.

Borovik V.A., Klubuk V.V., Mikhailov V.A., Osiniy M.L., Kutz G.M. Classification of new samples of soybean on the morphological and biological and economic features // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 112-115.

The purpose: to explore new samples of soybeans, their classification by morphological and biological and economic characteristics and the selection of donors and genetic sources of basic biological and agronomic characters for use in the selection process. **Methods**: the laboratory, field, statistical. **Results.** The article presents the results of the collection of soy, the study sample introduced in 2014 and new received Institute of irrigated agriculture to study on irrigation from other academic institutions during the 2011 – 2014. The paper presents the results of scientific work with a collection of soybean research samples, introduced in 2014 and the new received Institute of irrigated agriculture to study on irrigation during 2011 - 2013 with academic institutions in other regions: Poltava, Institute of oilseeds, Institute of forages (Vinnitsa). Soybean gene pool consists of 484-x samples, ie. The thirty-three lines introduced from Kazakhstan in 2014 and 19 new rooms of domestic breeding. Consequently, the study of exotic specimens numbers allocated on the basis of „short growing season ladder - full ripeness" (3 pcs.); „average height of the stem" (9 pcs.); resistance to lodging and cracking beans (33 pcs.) „high weight of 1000 seeds" (1 sample); „high seed yield of plot" (1 sample). The best of the new varieties, for economically valuable traits in the study under irrigation south of Ukraine, is – 00668 Хуторяночка, 00084 Шарм, 00665 Аметист, 00081 Алмаз 00089 Десна, 00681 Спритна, 00108 Мальвина, 00682

Естафета, 00083 Монада, in vol. h. among a group of precocious varieties group - 00668 Хуторяночка, 00083 Монада, is mid - 00110 Русса, 00627 Георгина and 00986 Маша, which exceeded the yield on a standard mathematically confirmed. The three-year study of new varieties possible to distinguish the source of very short growing season (6 pcs.) high oil content in grain (1 pcs.); high grain yield (4 sample). **Conclusions**. It should further explore exotic samples for selection and donor sources of evidence for use in the selection process for creating high-performance soybean varieties with good grain quality indicators, adapted to irrigated conditions of South Steppe of Ukraine.

Key words: soybean, collection, growing season, earliness, sources of evidence, the gene pool.

Brytik O.A. Priorities in the selection of melons southern Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 115-117.

The aim. Show results 45 years of breeding work with melons on South State Agricultural Experimental Station of the Institute of Water Problems and Land Reclamation. **Methods.** Selection. Intraspecific and interspecific hybridization, individual and mass selection. Heterosis breeding watermelon table. Introduction. **The results.** Main lines of breeding with melons in southern Ukraine. It is the creation of high-yielding, transportable varieties and hybrids with different periods sozrevaniyai fruits, high taste, disease resistance, environmental sustainability and have the ability to generate environmentally friendly products. Breeding work carried out with five crops: watermelon, melon, pumpkin, zucchini, squash. One of the direction of treatment and prevention - is the creation of varieties of watermelons with a high content of pectin in the fruit, which in turn have the ability to bind and remove from the human body ions of heavy metals, toxins. In heterosis breeding usovershenstovan method of creating hybrids of watermelon table based on the fertile and zoned 3 hybrid. In seleketsii melon was taken direction to yield, resistance to powdery Russia, different ripening time, pridatnost to storage and transportation, high palatability and adaptability. When creating varieties of zucchini squash and set goals for the high-yielding, resistant to negative biotic and abiotic factors, recyclable. **Conclusions.** As a result, scientists breeding station created and zoned more than 60 varieties and hybrids of melons: watermelon - 31 types, including 3 hybrid melon - 11 pumpkin - 11 squash - 4 squash - 3.

Key words: melons, selection, variety, hybrid, powdery Ross, productivity, pectin.

Litvinenko N.A., Solomonov R.V., Shcherbina Z.V. The biological and grain yeld formation in winter wheat lines from spring-winter hybrids // Irrigated agriculture: interdepartmental thematic scientific collection. – 2015. – Issue 63. – P. 118-124.

Aim. The breeding value of spring wheat samples of different origin for affect them on the biological and grain yield formations in recombinant winter lines from S x W crossing were studied. **Methods**. The field experiment methods and laboratorial studies. **Results.** The dynamic of accumulation of dry substance most important factors traits and features effected yield formation were established. **Conclusion.** The genetic pools of spring wheat samples as moat effective genetic sources of valuable traits and features for winter wheat breeding in the south Ukraine region were estimated.

Key words: wheat, lines, S×W crossing, biological and grain yield.

Balashova H.S., Boiarkina L.V. Formation of economically valuable traits of the potato elite of summer planting with freshly harvested tubers when grown in the south of Ukraine.

According to the results of the elite three-year studies, the average yield of conditioned seed potatoes of the mid-season Yavir variety was 95.3%. The weight of conditioned seed tubers averaged 77.1 g according to the experiment. The number of conditioned seed tubers formed by one bush did not differ significantly in terms of the depth of soil moisture. While maintaining soil moisture of 80% HB in a layer of 0.3 m, a very close correlation (R^2 = 0.970; r = 0.985) was determined between the studied factors and the yield of conditioned seed potatoes. When increasing the calculated soil layer to 0.6 m, the strongest correlation (R^2 = 0.968; r = 0.984) was determined between the studied factors and the formation of the number of conditioned seed tubers in one bush. When moistening the differentiated soil layer (0.2–0.4–0.6 m), a very strong correlation was determined - close to one, between the studied factors and the formation of the number of conditioned seed tubers by one bush (R^2 = 0.992; r = -0.995) and their masses (R^2 = 0.990; r = 0.995). Conclusions. When applying the calculated moisture depth of 0.3 m and additional treatment of seed material with Maxim 025 FS the maximum yield of the elite of conditional seed potatoes of the mid-season Yavir variety was ensured at the level 16.2 t/ha (98.9%). When using the calculated moisture depth of 0.3 m and additional treatment of seed material with the drug Tirana, the maximum weight of conditioned seed tuber (131.7 g) was formed, which is 59.9 g (45.5%) more than in the control. The use for pre-planting additional treatment of freshly harvested seed tubers with the drug Maxim 025 FS when moistening the differentiated layer of soil (0.2-0.4-0.6 m) provided the formation of the maximum number of conditioned seed tubers – 7.5 pieces/bush.

Key words: irrigation regime, calculated soil layer, conditioned seed potatoes, potato seed processing, yield.

Vozhehova R. A., Maliarchuk A. S., Kotelnikov D. I. . Productivity of winter wheat at the different systems of soil basic tillage and fertilizer

The article presents the results of research on the influence of different methods and depth of basic tillage in crop rotation and fertilizers on agrophysical properties of soil and further influence of variable factors on the productivity of winter wheat in grain-row crop rotation on irrigation in southern Ukraine. The research was carried out during 2009-2014 on the experimental fields of the Askaniya State Agricultural Research Station of the Institute of Irrigated Agriculture of NAAS of Ukraine, which is located in the area of Kakhovka irrigation system in four-field grain-row crop rotation with the following alternation of crops: corn, barley, barley winter wheat. The use of a shelfless multi-depth system of basic tillage formed the lowest density in the experiment of 1.23 g/cm³, which was less than the control by 0.04 g/cm³. The same density at the beginning of the growing season was formed by a differentiated and shallow single-depth system of basic cultivation of 1.27 and 1.28 g/cm³, respectively. The option of zero tillage in crop rotation of 1.34 g/cm^3, which was more than the control by 0.07 g/cm³ at NIR_{05} = 0.02 g / cm^3, was noted by the highest indicators of density of addition. At the end of the growing season, the lowest density indices in the experiment of 1.20 g / cm^2 were observed in the soil layer of 0-40 cm without a shelf-free different-depth system of main cultivation, which was 9.1% less than the control. The use of a shelfless shallow single-depth main tillage system increased the density to 1.35 g / cm³, which was 0.04 g / cm³ higher than the control. The highest indicators of the density of addition were marked by the variant of zero treatment of 1.40 g / cm³, which was more than the control by 0.09 g / cm³. The same level of yield was obtained for disk cultivation of 12-14 cm in the system of differentiated and shallow single-depth cultivation and chisel for 23-25 cm in the system of different-depth tillage 4.64, 4.52 and 4.62 t / ha. The lowest level of yield in the experiment was observed at zero tillage of 3.87 t / ha, which is less by 0.77 t / ha or 19.8% compared to the control.

Key words: corn, productivity, tillage, fertilizer system, density, water permeability.