Summary

Vozhegova R.A. The theoretical justification of actions of increase of fertility of irrigated soils in the conditions of the South of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 5-9

The article presents the results of research in the scientific and theoretical substantiation of measures to improve fertility, increasing the content of humus and organic matter in soils irrigated southern Ukraine.

Goal. It lies in the scientific and theoretical substantiation of methods of increase of fertility of irrigated soils, maximizing the productivity of irrigated lands.

Methods. To simulate the performance of humus were used guidelines in the field of reclamation of irrigated agriculture and information technology.

Results. It was found that the physical organization of soils determines their functional properties and modes, highlighting the need for studies on the establishment of the soil resistance to mechanical stress and artificial hydration. Violation of the soil resistance to these factors, in many cases, is a negative factor in changes in the properties and modes of irrigated soils that generally may impair the functioning of the entire ecosystem of irrigated agriculture. To build a model of humus balance in irrigated soils in some fields of crop rotations with different structure of sown areas is necessary to carry out calculations on the average size of each field crop rotation. Scientifically-based combination of crop rotation, cultivation techniques of effective, rational system of mineral and organic fertilizers ensures a positive balance of humus in the rotation and improves crop yields.

Conclusions. Creating a balanced balance of nutrients to ensure high yields on irrigated land can be achieved through science-based fertilizer system, by introducing the necessary amount of organic and mineral fertilizers. Calculation of the need of organic matter and mineral fertilizers for the planned harvest of crops is necessary to establish the balance method. Modeling parameters of humus and organic matter makes it possible to study the ecological crop production techniques on the irrigated lands.

Key words: irrigation, soil fertility, humus, organic matter, modeling.

Kruzhilin, I.P., Melikhov V.V., Ganiev M.A., Rodin K.A., Nevezhina A.B. The cultivation of rice on the drip-watering of the software different precursors, against various doses of macrofertilizer and the seed rate, affects the rice's productivity // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 9-14

As a result of studies of VNIIOZ (2014-2015) found, that rice varieties Volgogradsky had a short vegetative period at the predecessor of rice, which amounted to 101 and 105 of the day. The predecessor of soya noted the maximum number of 105 and 109 days.

The highest yield of 4.99 t/ha of grain produced for predecessor soya amid the make macrofertilizer designed for 5 t/ha and the minimum of 4.69 t/ha of grain, was the predecessor figure on the same background macrofertilizer.

The highest evapotranspiration is noted in case of soya and for 2 years was and 6106 6154 m^3/ha. In embodiments, where the predecessors were the potatoes and rice water consumption of plants decreased, respectively, in 2014, 241 and 490 in 2015 251 438 m^3/ha.

The maximum cost of irrigation water to produce one ton of grain has evolved as a predecessor of soya and the average for the two years amounted to 1018,8 m^3/t Minimum quantity per ton of grain 927,9 m^3 was used in the precursor rice.

Key words: rice, predecessors, macrofertilizer, total water consumption, yield.

Vogegova R.A., Belyaeva I.M., Kokovikhin S.V. Design of influencing of sun radiation on productivity of agricultural crops in the conditions of irrigation of South Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 14-18

The results of researches on the study of influencing of sun radiation on productivity of the irrigated lands are represented in the article, possibility of design of indexes of productivity with the use of modern methods and computer technologies is proved.

Purpose. To conduct the design of influencing of sun radiation on productivity of agricultural crops in the conditions of irrigation of South of Ukraine.

Methods. Researches are conducted with the use of the special methods of experimental business in the irrigated agriculture. The parameters of sun radiation were set on the Angstrom formula, coefficient of efficiency of the use of sun energy – on the Budiko method.

Results. Close intercommunication is set between the indexes of sun radiation that evapotranspiration sowing of the field cultures of the irrigated crop rotation. So, in July, 2015, when a sun radiation was at the greatest level – 30,3 MDg/m^2/day, the indexes of evapotranspiration were evened 6,83 mm for days, in December a sun radiation was the least – 7,2 MDg/m^2/ day. The least indexes of sun radiation in the years of conducting of researches were in the winter months of 2011 – 8.2 MDg/m2/sutki. The middle indexes of sun radiation for vegetation period of the explored cultures hesitated in scopes from 23,03 to 23,16 MDg/m^2/ day, and on the average for a year – from 19,2 to 19,4 MDg/m^2/day. It is proved, that at the use of saving recourse technologies efficiency of the use of sun radiation diminishes on 3,3-6,8%. Introduction of the offered method at production level has the important agrotechnical and ecology- melioration value.

Conclusions. The use of the Angstrom method and his introduction in composition the multifunction modern programmatic complex CROPWAT 8.0 allowed automatically and with sufficient exactness to expect the indexes of sun radiation. It is set, that the design of influencing of sun radiation on productivity of agricultural

cultures in the conditions of irrigation of south of Ukraine allows to forecast productivity.

Keywords: irrigation, design, productivity of the irrigated lands, photosynthesis-active radiation, coefficient of efficiency of the use of headlights.

Galchenko N.N. Economic and energy efficiency of cultivation of perennial grasses at different ways of use in the southern steppe of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 18-21

The basic indicators of the economic and energy efficiency of cultivation of different ages of legumes and grass perennial grasses, when used for green mass, haylage and hay. Maximum economic efficiency is achieved when using perennial grasses for green mass, harvesting of hay and haylage in binary grass mixtures alfalfa (cultivar Hope) + Wheatgrass intermediate (grade horse) and single-species crops Pirie secondary (grade horse). Growing alfalfa in binary mixtures with awnless stockroom and pyrion average, regardless of the year crops and the method of its use, contributed to the increase in energy efficiency coefficient up to 4,3-5,9, which indicates the high efficiency of cultivation of these types of perennial grasses in binary mixtures with alfalfa.

Keywords: green mass, haylage, hay, alfalfa, wheat grass medium, stokolos awnless, economic efficiency, cost, energy efficiency.

Vozhegova R.A, Balashova G.S., Boyarkina L.V. Electronic reference base, as an element of information support of the process of seed potatoes in the south of Ukraine in irrigation conditions // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 22-26

Purpose. Develop electronic-reference database to ensure the expansion of the application of new information technologies, efficiency management decision-making not only to automate data collection and processing, but also for the realization of new ideas, new ways of getting information.

Methods. The database is designed in the form of a website. Reference database provided in the form of web pages. With its design software packages used Macromedia Dreamweaver 8 Copyright © 1997-2005 Macromedia, Inc. All rights reserved; Microsoft Office Front Page © 2003 Microsoft Corporation. All rights reserved. Check of the operation of the development is carried out with the help of the most famous Internet browsers: Opera, Internet Explorer, Chrome, Mozilla Firefox.

Results. According to the tasks PNI NAAS, researchers of the Laboratory of Biotechnology and the Institute of Economics of potato irrigated agriculture NAAS base research data has been generated on the management of primary and elite seed potatoes in the south of Ukraine in irrigation conditions. All the information was analyzed, systematized and based on this conditional distributed and presented the data scheme for the formation of "Electronic information-reference database "Seed potatoes in the south of Ukraine"", which meets the modern requirements of information technology. Most of the information provided in the database is the result of research laboratories biotechnology research staff of the Institute of potato irrigated agriculture NAAS.

Conclusions. The development will enable real-time access to the specific useful information through electronic means. In the future, it can serve as a basis for the creation of calculation modules and software and information systems that allow users to optimize the choice of a set of measures on the technology of cultivation of seed potatoes under irrigation, and will enhance the efficiency of seed potatoes in the south of Ukraine and irrigated agriculture as a whole. This development will be useful for researchers, graduate students, teachers, students and professionals of agricultural production.

Keywords: information technology, database, varieties, irrigation, two crops culture, seed of potatoes.

Lavrynenko Yu.O., Hozh O.A., Marchenko T.Yu., Sova R.S., Glushko T.V., Mychalenko I.V., Shepel A.V. Productivity of corn new hybrids FAO 310-430 dependent on micronutrients and growth regulators on the irrigation of South of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 27-30

The purpose of research is scientific substantiation of influence of growth regulators and micronutrients, taking into account the biological characteristics of new maize hybrids FAO 310-430 on grain yield and economic efficiency of cultivation of maize under irrigation in South of Ukraine. **The results of the research.** The positive effect of micronutrients and growth regulators on the formation of a grain yield of corn hybrids of different maturity groups, as well as the economic viability of their cultivation. **The conclusions of the research.** Under irrigation of land south of Ukraine to obtain a yield of maize at the level of 12,5-14,0t/ha should be applied innovative growth regulators - Sizam-Nano by seed treatment and spraying in phase 7 leaves Greynaktiv-C, which increase productivity and provide a receipt net income of 16-18 thousand UAH/ha with profitability 74-84%. In this case it is advisable to grow maize hybrids of medium group – DN Hetera (FAO 420), Arabat (FAO 430).

Key words: corn hybrids, groups FAO, micro fertilizers and growth regulators, irrigation, yield grain, economic efficiency.

Zayets' S.A., Onufran L.I. Productivity of sorts of barley winter on the irrigated lands depending on a predecessor and background of nitric feed // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 31-34

Purpose. To define the most productive sorts of barley winter depending on a predecessor (after soy and corn on grain) and background of nitric feed in conditions of irrigation. **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, 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 all elements of structure of harvest were better

formed at sowing after soy, and also on a background bringing of dose of nitric fertilizers of N_{90}. Most sorts of barley winter after soy form the productivity of grain on 0,03-1,54 t/ha higher, than after a corn. All sorts of barley winter the greatest productivity of grain, after both predecessors, provide the doses of nitric fertilizers of N_{90} for bringing. The increase of dose of nitrogen to N_{120} results in outgrowing of plants, excessive densifying of sowing, worsening of book-mark of genesic organs, the lodging of crops and decline of the productivity of grain after soy - on 0,03-1,03 t/ha, after a corn - on 0,09-0,93 t/ha. **Conclusions.** The greatest productivity of grain of (6,73 t/ha) with its high quality Aboryhen provides a sort after soy and bringing of nitric fertilizers in the dose of N_{90}. Near to it productivity of (6,54-6,58 t/ha) form sorts Trudivnyk and Zymovyi. Thus a net income accordingly presented 12655 UAH/ha, 12205, 12085 UAH/ha, and profitability – 168 %, 162, 160 %. To sow all sorts of barley winter-annual after a corn on grain is less effectively, and to bring in nitric fertilizers anymore N_{90} after both predecessors not expediently. Refs. 9 names.

Keywords: barley winter, sort, fertilizers, productivity, quality of grain, economic efficiency.

Kovalenko A., Kiriyk Y. Terms wintering of winter wheat in south-steppe zone of Ukraine in the context of climate change // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 34-38

Goal. Analysis passing the winter as one of those responsible in growing winter wheat, which significantly affects its condition after spring vegetation renovation and further development of plants. **Methods**. Mathematics - statistical analysis. **Results**. The changes in thermal behavior in winter for 133 years and their value for winter wheat in the southern plains. It was established that the length of the cold period of the year for the last 100 years has decreased from 131 to 59 days of day. and now there is every reason to believe that trend to reduce winter days will continue. **Conclusions**. The average temperature during the cold period in the Southern Barrens Ukraine tends to increase. Due to increase in temperature conditions of the cold period, the duration of the autumn growing season of winter wheat increased by 12 days. The period of winter dormancy was reduced from 112 to 93 days.

Keywords: climate warming, winter, cold season, winter wheat, vegetation.

Vogeghova R.A., Muntian L.V. Development in the autumn growing season of soft winter wheat plants regardless of the rules of plant seed // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 38-42

Clarify the features of growing winter wheat in the fall in different years due to weather conditions. The effect of seeding norms on plant growth and development 267 varieties of Odessa, Kherson Bezostaya and Rosinka.

The study was carried out during 2010-2014 at the Institute of rice of NAAS.

On average for 2011, 2013, 2014 the study years, the variety Kherson Bezostaya was characterized by a higher field germination, which upon elimination of seeding rates were 94.7-95.7 per cent and compared to the variety of Odessa 267 was higher by 2.0-2.1% and 1.3-1.7% more than in the variety Rosinka.

The fullness of shoots in the variety Kherson Bezostaya was also the largest and, regardless of seeding rate, on average, for the years indicated did not exceed 93,8%, which is 1.9% more than Odesskaya 267 and by 0.8% in comparison with the cultivar Rosinka. The safety of sprouts was also observed higher in the variety; of Kherson, which was 89.3%, in the variety Rosinka she was 87,2%, and Odesskaya 267 cultivar showed the smallest safety is 85.5%.

Key words: winter wheat, variety, seeding rate, seed, evaporation, field germination.

Morozov O.V., Bidnina I.O., Kozirev V.V., Reznik V.S. Current state and prospects of growing corn for silage and green fodder under irrigation in Southern Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 42-48

Object: assessing the current state of growing corn for silage and green fodder under irrigation in the south of Ukraine (Kherson region as an example).

Methods: field, analytical, calculation-comparison, mathematical statistics.

Results. Assessment of the current state of growing corn for silage and green fodder under irrigation in the south of Ukraine (Kherson region as an example) has been performed. Irrigation efficiency ratio in growing corn for silage and fodder has been determined. It averages 2.8, the yield increase due to irrigation being on the average 13.89 t/ha. During the research period (1990 – 2015) a trend to reduce the acreage of corn for silage and green fodder on irrigated and arid lands in Kherson region has been revealed. The average yield of corn for silage and green fodder during the research period (1990-2015) was 12.39 t/ha, the average yield on irrigated lands being 22.12 t/ha, on arid lands – 7.53 t/ha.

Conclusion. There has been revealed a trend to lower yields of corn for silage and green fodder on irrigated lands. Under the current economic conditions only 9 out of 18 districts in Kherson region grow corn for silage and green fodder. The largest acreage of corn on irrigated lands is in Chaplynka, Kakhovka, Novotroitsk and Belozerka districts, Kherson region.

Key words: corn for silage, green fodder, irrigation, acreage, total yield, yield.

Nosenko S.M., Belyaeva I.N., Sinelnik L.M. Fairs as a marketing tool // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 48-52

In the article is investigated the modern approaches to the classification of exhibitions (of the frequency, composition exhibits scope, purpose of, the tipe of commercial operation). The structure of the exhibition costs. Analyzed methodological approaches evaluating the effectiveness of participation in the exhibition for the comprehensive ROI and the percentage of goal. Analyzed exhibition and fair activity in the Republic of Belarus, the most common errors in the exhibitions.

Key words: exhibition, fair, marketing, advertising, market

Piliarskii V.G., Piliarskaya E. A., Shepel A.V., Bondarenko E.V. The Morpho-biological indicators of a maize hybrid Cross 221 M, depending on moisture conditions, the background of mineral nutrition and plant density // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 52-50

Goal. To substantiate and refine the elements of technology of cultivation of plants of hybrid medium early ripening group Cross 221 M.

The objective of the research was to study the response of maize plants to the conditions of moisture, mineral fertilizers and thickening crops.

Research methods. The study was based on the use of such General scientific methods: analysis, synthesis, observation, comparison, deduction and induction, dispersion, and statistical analysis.

Results. The greatest weight of crude mass of corn observed in the phase of milky-wax ripeness of grain. Comparing the studied factors, the maximum impact on the amount of aboveground biomass provided irrigation in the range of 27-30 %. Mineral fertilizers have increased the accumulation of green mass of plants only 3.4 to 5.5%. And thickening of crops, on the contrary, led to a decrease in wet weight of plants 9.8-18.8 per cent. Maximum level indicators in dry weight of plants of maize hybrid Cross 221 M reached the end of the vegetation period, the period of wax ripeness of grain. Found that irrigation increased weight 37,5-46,0 %, depending on the irrigation regime. The use of mineral fertilizers increased the growth in average factors, 9.4-13.7 percent. However, the increase in plant density, on the contrary, had a negative impact on dry weight per plant.

Conclusion. Optimal hydration of corn has yield of 7.45 tons/ha of grain. The glaze on before irrigation threshold humidity 70-70-70% of the NV in 0-30 and 0-50 cm soil layer reduced the average yield by a factor of 0.1 of 0.84 t/ha. Application of fertilizers provided an increase of grain yield of maize, compared to unfertilized variant, the average factor of 1.3-1,41 t/ha. Thickening of crops hybridization sites from 40 to 60 and 80 thousand/ha, the average factor contributed to the increase in the yield on 0,81-1,44 t/ha, respectively.

Key words: maize, moisture conditions, fertilizers, plant density, fresh and dry substance yield.

Kovalenko A.M, Kovalenko O.A Features sowing winter wheat for arid autumn in the southern plains in climate change mitigation // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 56-59

The purpose of research - determining the probability of obtaining the stairs to the termination of winter wheat autumn vegetation at low volohozapasiv in the plow layer of soil at the time of optimum terms of sowing. **Methods.** Experiments were carried out in stationary experiments to study the construction of the laboratory dry farming rotation farming irrigated agriculture NAAS Institute during 1976-2015 years. Also used agro meteorological observation stations Kherson on water regime of the soil in these experiments. **Results**. A detailed analysis of topsoil moisture conditions of the soil in September and October for the past 55 years when sowing winter wheat on black pair and after dry farming predecessor. Based on this analysis made recommendations about the possibility of planting winter wheat in the soil at different levels of its moisture at the time of optimum sowing time. **Conclusions.** Found that in the southern plains winter wheat sowing in later periods in the soil on black pair can be conducted in the years with high probability receive stairs. After no fallow predecessors in the supply of moisture in the plow layer of soil in late September at least 6 mm sow winter wheat in later periods in the soil is inappropriate because there was likelihood get a ladder that can overwinter. Only when stocks of productive moisture in this period in the range of 8-10 mm is a high enough probability to receive stairs after the rain in the second half of October, which could provide a satisfactory their wintering.

Keywords: winter wheat, sowing period, moisture reserves, rain, stairs, black couples, no fallow predecessors.

Zaiets S.A., Netis V.I. Efficiency of application of biological stimulators that their complexes with microelements on sowing of soybean in the conditions of irrigation // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 60-62

Purpose. To define biological stimulators, that give an opportunity completer to achieve the productivity of existent sorts of soybean in terms irrigation.

Methods of research are field, laboratory, analytical.

Results. The article presents the results of research of efficiency of application of biological preparations on the sorts of soybean of Aratta and Sofia in the conditions of irrigation. It is set, that sprinkling of sowing of soybean the biological stimulators in the increase of aboveground mass of plants and their height. Mostly preparations influence on processes of height of plants of soybean Megafol, Nanomics and Gumifild. Under their influence the height of plants increased on 2-6 cm. Preparations Nanomics and Megafol stimulate also forming of reproductive organs, provide increase of harvest 0,27-0,40 t/ha and the greatest economic efficiency. Preparations of Nanovit and Gumifild appeared less effective. The greatest productivity, net profit and profitability of growing of soybean, was provided by a sort Sofia at sprinkling of sowing by the growth factor is a Megafol.

Key words: soybean, sort, biostimulyator, height of plants, productivity.

Fedorchuk M.I., Sviridovsky V.M. Effect of irrigation and plant protection regimes on the productivity of onions in the conditions of the South of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 62-64

The article presents the results of studies on the productivity of onion depending on irrigation regimes and plant protection schemes from pathogens in growing culture in the system of drip irrigation in Southern Ukraine.

Goal. Place onion bulb efficiency depending on irrigation regimes and plant protection under drip irrigation method.

Methods. The studies were conducted using generally accepted in crop and vegetable production techniques of experimental work.

Results. At high moisture, reduce the tendency of water consumption as a factor for years, and the average for the entire period of research in the biological and chemical plant protection. Increased soil moisture up to 90% MW and chemical plant protection reduced the water consumption ratio up to 77.2 m^3/t. In 2014, this ratio was lower and ranged from 0.7 to 3.9 m^3/t.

In the experiment noted the positive effect of the use of biological and chemical plant protection, application of which has led to an increase in leaf area in all variations of soil moisture on average by 34.4%. In chemical plant protection circuit leaf area it was 66.2% greater than the control at all variant embodiments soil moisture.

Through years of research there is a tendency of growth of productivity of onion using chemical plant protection and increase soil moisture from 70 to 90% MW. The lowest yield - 54.2 t/ha under irrigation is marked with the regime of irrigation 70% NV and without plant protection.

Conclusions. According to the research it found that the best results provides the use of drip irrigation to meet irrigation 80% MW in the layer mode of 0.5 m and a chemical protection of plants against pests and pathogens on the integrated circuit. Using such elements of cultivation technology allows you to crop yield at 83.5 t/ha with high-quality products produced.

Key words: onion, drip irrigation, crop protection, productivity, yield, quality onions

Homina V., Stroyanovskyy V. Oil quality indicators of unconventional fat-containing crops depending on farming practices in terms of forest steppes of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 65-68

The article describes the fatty acid composition of fat-containing oils of non-traditional crops, milk thistle, safflower and linseed. The results of the fat content in the seeds of these crops, depending on the impact of factors: row spacing and seeding rates, pieces per linear meter. Also it has been assessed quality indicators of oils: acid number, mg (KOH) and iodine number depending on the studied factors.

Purpose. The aim of our study was to identify the optimal ratio of the width and number of rows of plants in a row to form the habit of the plant, which would be characterized by a large number of productive baskets (boxes) full of seeds, high yield per unit area and quality indicators of oil.

Methods. Analysis, accounting and surveillance were carried out in accordance with conventional techniques, including «Basic scientific research in agronomy».

Results. Our research showed that fat content in milk thistle seeds ranged 20,1-32,0 %, the highest rates were characterized by variants of wide-crop seeding rate of 10 pieces per linear meter.

Variants with a width of 45 cm between rows and seeding rate of 30-10 pieces per linear meter were distinguished by the maximum fat content 32,0-32,2% in safflower seeds.

Fluctuations in fat flax seeds within 39,2-40,9 % did not depend on the studied factors, indicators were within error.

In terms of KOH and Iodine number thistle oil and safflower meet standard specifications of edible oils and can be used in food and medical industries, while flax seed oil has a high iodine number - within 181,3-183,3.

Conclusions. Fat content and quality of milk thistle oil, safflower and linseed are dependent on row spacing and seeding rate of seeds. In general, it was observed the tendency to increase fat standards with decreasing of sowing and increase of the width of the rows.

Key words: milk thistle, safflower oil, method of sowing, seeding rate, acid number, Iodine number.

Limar V.A., Voloshina K.M. Influence of modes of an irrigation and mineral nutrition on water use, productivity and quality of watermelon seedlings under drip irrigation in southern Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 68-71

The article reflects the results of studies on water use studies, productivity and quality of watermelon seedlings under cultivation at its drip irrigation.

Goal. Scientifically based irrigation schedules and mineral nutrition of grafted watermelon under drip irrigation method in Southern Ukraine.

Methods. Use special techniques, which are used in melon, irrigation and irrigated agriculture.

Results. The study found that the use of mineral fertilizers affect the nutrient content in the soil. During transplanting the amount of nitrate nitrogen in 0-40 cm soil layer was, on average, 11.6 mg mobile phosphorus - 80.4 mg, and exchangeable potassium - 583.0 mg/kg of absolutely dry soil. In the flowering stage when grown seedlings of watermelon with the recommended level of mineral nutrition and irrigation regime, they were, respectively, 8.70 mg, 65.4 mg and 629.0 mg/kg of absolutely dry soil. The high productivity of the plant - 19.68 kg, with an average amount of fruit on it - 3.17 pc. obtained by cultivation of grafted watermelon, maintaining irrigation regime at 65-80-70% FC. On the productivity of watermelon plants affect the processes associated with water use.

Conclusions. According to the research found that the nutrient regime of the soil greatly depended on the influence of the studied factors. The highest total water consumption has been growing at a grafted watermelon. The highest yield of fruit - 98.4 t/ha was obtained when grown grafted watermelon under the regime of irrigation 65-80-70% FC and making the calculated doses of mineral fertilizers on the yield of 100 t/ha. The maximum amount of dry soluble substance and the amount of sugars also formed a combination of these options. Economic analysis proved that the conventional high net profit of UAH 32785 obtained in areas with grafted watermelon in making calculated doses of mineral fertilizers on the yield of 100 t/ha and maintaining irrigation regime 65-80-70% FC.

Key words: watermelon seedling, drip irrigation, irrigation regime, food background, water consumption, yield, quality, economic efficiency.

Markovskaya E.E., Biliaeva I.N., Maliarchuk A.S., Maliarchuk V.N. Influence of the systems of basic treatment of soil and fertilizer on the productivity of agricultural cultures in a crop rotation on irrigation of south of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 71-74

In the article the brought results over of experimental researches of influence of different methods and depth basic treatments of soil, on a background the protracted application of the dump, безотвальных and differentiated systems of treatment in a crop rotation on the productivity of agricultural cultures.

The purpose of the article was establishment of the most effective methods of basic treatment of soil at growing of cultures in a crop rotation on irrigation souths of Ukraine, which will provide the increase of the productivity and economy of энергоресурсов.

For realization of researches used the field, laboratory, statistical and calculation-comparative methods.

Authors came to the conclusion, that the use on the fertilizer of all side products of agricultural cultures and bringing on one hectare of area of crop rotation of $N_{97,5}P_{60}$ with treatment of seed of soy of ризогумином on a background application of the system of basic treatment differentiated after methods and by a depth provided the receipt of gross products at the level of 19,3 thousand hrn. and with the level of profitability of 109,8% and power coefficient 3.

Key words: method and depth of till of soil, dose of fertilizers, productivity, economic and power efficiency.

Kozyrev V.V., Bidnina I.A., Tomnitsky A.V., Vlasyuk O.S. Influence of continuous application of various ways of the basic processing on the physical and physico-chemical properties of dark chestnut soil // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 75-78

Goal. The aim of this work was to establish the parameters of the indicators of physical and physico-chemical properties of the soil in moldboard, subsurface and differential treatment of irrigated soils; to determine peculiarities of formation soloncovo process and the structural-aggregate state in various ways of the basic processing.

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

Results. The results show that during irrigation with water of high salinity percentage of microaggregates size 0,25-0,05 mm was highest at dump and processing made in the soil layer of 0-30 cm 52,43%, slightly less than it was when differentiated system – 40,56%, while in other embodiments, it fluctuated in the range of 29,00-35,72%. The amount of exchangeable sodium in the soil layer of 0-50 cm from the amount of cations in the absorbing complex grew at the expense of the absorbed calcium, the content of which is decreased relative to the option with plowing with moldboard ways of handling 3,5-3,9% and in differentiated – 2,1-2,2%. The highest content of exchangeable calcium from the sum of cations was observed when plowing – and 74,0% and differentiated treatment system is 72,3-72,5% of the amount of cations, and the content of magnesium in the deep subsurface treatment was 25,8% and the highest content of sodium is 3,4% of the amount of cation in shallow subsurface, which shows a slight increase in secondary alkalinization at subsurface methods. At subsurface methods in soil solution ratio of CA:Na accounted for in the soil layer of 0-30 cm to 0,67, and in the layer of 0-100 cm was 0,63, and in turn to 0,69 and 0,71.

Conclusions. When moldboard plowing and differentiated soil treatment methods with application of recommended dose of nitrogen fertilizers, a slight decrease in the process of irrigation solontsovaya, however, different ways primary tillage and application of mineral fertilizers is not able to eliminate it.

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

Shkoda O.A. Forming of assimilatory surface and net productivity of photosynthesis of winter rape depending on method of basic treatment of soil and fertilizers in the conditions of South Steppe of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 79-81

Purpose. Determination of photosynthetic activity of plants of winter rape depending on the different doses of mineral fertilizers on a background of post-harvest residues of winter wheat with the use of ploughing and subsurface tillage.

Methods. Field; analytical; laboratory-field – for determination of influence of the investigated factors on the dynamics of forming of area of sheet surface; calculation-comparative; statistical - for realization dispersible and cross-correlation-regressive analyses of results of researches.

Researches conducted in an experience field of Institute of irrigable agriculture of NAAS that is located in South Steppe of Ukraine. A culture – winter rape sorts of Dembo. The area of sheet surface of plants was determined by the method of carving in the basic phases of development of winter rape and expected the net productivity of photosynthesis on A.A. Nichiporovich according to the formula of Kidd-Vest-Briggs.

Results. It is set that at the beginning of development of winter rape the least indexes of area of sheet surface were observed in control variants without fertilizers is 8,3 thousand м^2/ha (ploughing) and 7,7 thousand м^2/ha (subsurface tillage). Maximal she was formed in the variants of application of calculation dose of mineral fertilizers regardless of method of basic treatment of soil. In next phases as far as a height and development of plants there was growth of area of sheet surface. A maximum she arrived at in the phase of flowering of plants of winter rape in variants with the calculation dose of fertilizers is 87,3 thousand м^2/ha (ploughing) and 80,6 thousand м^2/ha (subsurface tillage). In an autumn period of vegetation of winter rape the net productivity of photosynthesis made a 3,35-3,97 g/м^2/twenty-four hours. The least she was on control variants without fertilizers, and most – at application on the background of straw of doses of $N_{90\text{-}120}$. It is set that the net productivity of photosynthesis arrived at the maximal values in a between budding and flowering of winter rape and made a 6,71-8,28 g/м^2/twenty-four

hours (ploughing) and a 6,67-8,00 g/м^2/twenty-four hours (subsurface tillage).

Conclusions. Bringing of calculation dose of mineral fertilizers on a background of post-harvest residues of winter wheat assists forming considerably of greater area of sheet surface of plants during all vegetation of culture. A maximum she arrives at in the phase of flowering of winter rape – 87,3 thousand м^2/ha (ploughing) and 80,6 thousand м^2/ha (subsurface tillage). Thus the net productivity of photosynthesis makes a 8,28 g/м^2/twenty-four hours and a 8,00 g/м^2/twenty-four hours accordingly.

Keywords: winter rape, area of sheet surface, net productivity of photosynthesis, fertilizer, treatment of soil

Tymoshenko G.Z., Kovalenko A.M., Novokhizhniy M.V., Shepel A.V. Influence closeness stowage soil on the productivity agricultural cultures at the different systems till soil in korotkorotacion crop rotations // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 82-85

Researches are conducted by the laboratory unwatering agriculture during 2008-2012 years in stationary experience on unwatering earths Institute the irrigated agriculture NAAN, which included two four-course crop rotations with different correlation cultures. The first crop rotation had six variants the systems treatment soil, second are three variants. A purpose and task are an improvement the system basic treatment soil in the direction defence soils, maintenance power and material resources, accumulation and economy use moisture due to optimization closeness his addition. **Method**. Field method - for determination features height and forming the productivity agricultural cultures in four-course crop rotations at the different systems treatment soil. **Result.** In sowing wheat winter-annual after black steam at deep treatment soil under him the closeness addition layer made a 0-40 cm a 1,28-1,29 g/sm^3, and at shallow no dump - on 0,01-0,02 g/sm^3 was higher. After the predecessor pea and corn on a silage in sowing wheat a closeness addition soil was within the limits a 1,24-1,30 g/sm^3 . the Least she was in the variant ploughing, and most at systematic shallow treatment. Like the closeness addition soil changed depending on the depth her treatment and in sowing sunflower and barley furious. But a difference between these variants was higher. Most productivity wheat winter-annual - 5,47 t/ha is got at ploughing under black steam, and at systematic shallow treatment in a crop rotation the productivity went down on 1,19 t/ha. In other variants the systems treatment soil the identical productivity - 4,53-4,75 t/ha is got in a crop rotation practically. Analogical dependence the productivity grain wheat winter-annual from the systems treatment soil was observed and in a crop rotation №2 after a pea and corn MVS. Productivity grain wheat winter-annual in variants ploughings after these predecessors was on 12,8 and 9,7% accordingly higher as compared to systematic shallow no dump treatment soil in a crop rotation. **Conclusion.** As a result our researches by the best method basic treatment soil in korotkorotacion crop rotations spring cultures, and also for a wheat winter-annual under her predshestveniki is ploughing with the turn layer.

Key words: closeness stowage soil, dump till soil (ploughing), no dump till deep (chizelne loosening), no dump till shallow (disk loosening), productivity.

Nesterchuk V.V. Economic and energetic evaluation of elements of technology of cultivation of sunflower hybrids in the conditions of the South of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 85-88

The article describes the results of research on the study of the economic and energy efficiency of cultivation of sunflower seeds, depending on the composition of the hybrid, plant density and fertilizing of complex fertilizers.

Goal. The establishment of economic and energy efficiency of technology of cultivation of sunflower seeds in the Southern Ukraine.

Methods. The studies were conducted using generally recognized in plant and agricultural techniques economy.

Results. Calculations revealed that the lowest cost of 1 quintal at the level of UAH 350.4 sunflower seeds was in the variant with hybrid Megasan, plant density of 50 thousand/ha of fertilizer and processing of crops Master. With such a combination of factors to get the most net profit of 17.1 thousand UAH. Hybrids Megasan and Jason at the plant density of 50 thousand/ha obtained by a high net profit by 14.6 and 11.4 thousand/ha. In hybrid Darius was the best plant density of 40 thousand/ha, while the other gradations of density, this indicator decreased by 3.9-26.8%. The level of profitability of more than 160% was observed in variants with hybrid Megasan at a density of 40-50 thousand/ha and for the introduction of complex fertilizers Ristconcentrate, Wuxal and Master. Analysis of energy intensity of 1 quintal of sunflower seeds has allowed to establish the trend of reducing the figure to 0.68-0.72 GJ for growing hybrid Megasan a density of 40-50 thousand/ha and application of complex fertilizers Wuxal and Master.

Conclusions. Research has established that the cultivation of sunflower seeds was cost-effective in all variants of the experiment, indicators of production costs were characterized by stability and the net income and the level of profitability - had significant fluctuations. The use of any and all complex fertilizers has caused a significant (in 20.2-35.1%) increase in net profits in growing the seeds of hybrids Megasan, Jason and Darius. Energy efficiency ratio reached a maximum level in the variant with hybrid Megasan in the formation of plant population of 40-60 thousand/ha with fertilizer dressings.

Key words: sunflower, hybrid, plant density, complex fertilizers, economic efficiency, energy rating

Shevel V.I. Yield and fitometrical parameters of varietyes millet depending on technological methods of cultivation of in Steppe of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 88-91

On the lands NPA "Zemlerobec" Zhovtnevy district Nikolaevskaya region conducted research to establish the characteristics of formation fitometrical parameters of plants and grain yield of millet depending on elements

of growing technologies in conditions southern Steppe of Ukraine.

It is noted that studied methods of agrotechnic millet had a significant influence on formation of square of leaf surface, increasing photosynthetic potential, intensity of accumulation of organic matter, resulting in increased yield of its grain. The most effective variant has been sown varieties Tavriyskoe during the III decade of April-I decade of May, after a steady warming of soil at a depth of 10 cm to 10-12 ° C, fertilization based on level of yield of 4 t/ha.

In this variant was observed highest square of leaf surface (average for period of vegetation - 30.7 thousand m^2/ha) and photosynthetic potential (1.41 million m^2 per day/ha), the maximum increase in dry matter (32.58 g/m^2 per day), this contributed to formation of high grain yield - 5.29 t/ha, which is higher compared to other variants in 0,36-3,62 t/ha.

Key words: millet, variety, sowing date, nutrient status, square of leaf surface, photosynthetic potential, net productivity, yield.

Yakoliuda S.M. Formation of buckwheat crops depending on the terms and methods of sowing in the terms of western forest steppes // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 92-94

The article presents the results of production research on the impact of timing and methods for sowing of buckwheat on field germination and survival of plants at the end of the growing season. In addition, it is shown set changes in the length of growing season and interphase of buckwheat varieties Zelenokvitkova 90 depending on seeding at different levels of thermal regime of the soil. It is mathematically proved materiality of length difference of interphase periods of ladder-flowering and flowering browning depending on studied factors.

Objective. The aim of our study was to identify the optimal duration and method of buckwheat sowing in the terms of western forest steppes

Methods. Analysis, accounting and surveillance were carried out in accordance with conventional techniques, including "Basic scientific research in agronomy."

Results. According to the results of our research field germination of seeds especially were dependent on sowing time. There was a tendency to increase the percentage of similar seeds from early to later dates. Among studied terms of the variety of buckwheat Zelenokvitkova 90 high indicators of field germination were characteristic of the fourth and fifth terms and amounted to 89,4-91,1%, while the lowest were in the first term - 81,8-82,0%.

In our studies it has been found that the later sowing leads to a reduction in the growing season, so the difference in variety Zelenokvitkova 90 for sowing in the third week of April and in early June was 16 days. Reducing of the growing season also was observed at decrease of row spacing, particularly the difference in duration of this index between varieties 15 and 45 cm was 6-8 days.

Conclusions. The highest indicators of field germination of buckwheat were characteristic of the fourth and fifth terms (for RTR 14 and 16°C) and amounted to 89,4-91,1%, while the lowest were in the first term - 81,8-82,0%. The advantage of the first sowing of the last in terms of survival of buckwheat plants was 8,1 points.

It has been found that every subsequent term of buckwheat sowing with intervals RTR of soil 2°C and since 8°C causes a reduction in the growing season of buckwheat plants. However, in management of growth and development way of sowing has a significant impact. Increasing the width between rows 15 to 45 cm extends the duration of these interphase periods of 2-4 days depending on investigated sowing terms.

Key words: buckwheat, method of sowing, sowing period, field germination, survival, length of growing season

Cherenkov A.V., Nesterets V.G., Solodushko N.N., Crotinov I.V. Agri-environmental and technological factors of the yield of winter wheat in the area of south-eastern steppe of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 94-101

The article presents the results of experimental studies of the influence of agro-ecological and technological factors on the formation of the autumn-winter and spring-summer seasons moisture different precursors, the total value of evapotranspiration and agrotcenozov winter wheat yield based on the level of mineral nutrition in low moisture southeastern steppe.

Field studies were carried out on two predecessors: fallow and maize silage. The technology of cultivation of winter wheat, with the exception set out in the examination of issues was common for the region. Annually 4-5 sown varieties best adapted to the soil and climatic conditions of cultivation in the region.

Experimental studies were carried out at the experimental station of the Institute of rozovskii crops NAAS over pyatnadtsyati years, which are represented by two seven-year period: 2001 / 02-2007 / 08 v.y. and the 2008 / 09-2014 / 15 v.y.

The results of the research found that in the conditions of south-eastern Steppes for the period from the sowing of winter wheat growing season to complete her observation of precipitation in the I was seven years on average, 359 mm, with an annual variation in the range of 263-527 mm, seven years in the II - 386 mm with a range from 252 to 511 mm.

According nintendo couple agrotcenozov total evapotranspiration of winter wheat in the I changed seven years within 389-607 mm, in the II seven-year period from 412 to 605 mm, and after maize silage seven years these rates were respectively 286-559 and 260-579 mm.

The average annual yield of winter food for backgrounds fallow wheat in the I was seven years of 4.54 t / ha, in the II - 6.27 t / ha, but with the exception of adverse 2002/03 v.y. and 2011/12 respectively, for seven years - 5.22 and 6.56 t / ha. After corn silage srednefonovaya yield of winter wheat for seven years was reduced to 3.20 and 4.20 t / ha, and increased to 3.68, and 4 years in the absence of adverse data (2002/03 and 2011/12 v.y.) 40 t / ha.

Thus, in the southeastern Barrens during 2001/02-2007/08, 2008/09-2014/15 years of vegetation traced

turnover climatic conditions of the warm period of the year in the direction of warming: increased observation of precipitation with an average daily air temperature is above 10°C, which directly and indirectly has a positive impact on growth, development and productivity of plants of winter wheat agrotcenozov it.

Key words: winter wheat, predecessors, evapotranspiration, harvest, agricultural lands.

Lavrinenko Y.A., Vlasuk A.N., Shapar L.V., Zheltova A.G. The yield of certified seeds of varieties of winter rape depending on the structural parameters and the impact of sowing time and sowing rates // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 102-111

The aim of the research is to determine the effect of structural indicators on the yield of winter rape under study depending on sowing time and seeding rate.

Research methods: studies have been conducted according to the requirements of generally accepted research methods.

Research findings. The highest yield and the best structural indicators of winter rape have been obtained when Antaria variety was sown in the first decade of September, the seeding rate being 1.1 million plants per hectare, in the cases when plant density ensured plants optimal development . During the period of 2013-2015 Antaria variety demonstrated the greatest yield (2.58 t /ha) when sown in the first decade of September, the seeding rate being 1.1 million plants per hectare.

Conclusion. In the Ukrainian southern steppe winter rape seed production depends directly on the main structural elements, which is confirmed by high correlation coefficient.

Key words: winter rape, productivity, structural indicators, sowing time, variety, seeding rate.

Balashova G.S., Kotova O.I., Kotov B.S. Microclonal reproduction of potato plants recovered by biotechnological methods *in vitro* // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 111-113

Objective. Analyzing the history of development and efficiency of microclonal reproduction. **Methods.** The research has been based on the integrated use of abstract logic and system analysis. **Results**. The worldwide history of plant microclonal reproduction by biotech methods *in vitro* has been reported. The advantages of this method for growing potato plants *in vitro* over conventional reproduction methods have been grounded. **Conclusion**. Using the technology of potato microclonal reproduction makes it possible to obtain quickly a very large number of healthy initial clones, thus enabling shorter elite reproduction periods and, consequently, its higher quality due to reduced viral infection accumulation time. Besides, using the methods of plant microclonal reproduction *in vitro* is indispensable for maintaining efficiently the genetic source material collections, which is essential for achieving success in modern biotechnology.

Key words: clone, *in vitro*, biotechnology, cell culture, microclonal reproduction, meristem, microtubers.

Lavrynenko Y.A., Kuzmich V.I., Borovyk V.A. Breeding soybeans to improve the productivity and quality traits under irrigation // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 113-115

Goal. It is to identify the constant Hy-lines, and to create new soybean varieties with high productivity and seeds quality level by using of improved methods of selection for productivity. **Materials and methods of research.** Investigations has conducted in the soybean breeding nurseries of the Institute of irrigated agriculture of NAAS during the 2007-2011. Soybean lines selected from hybrid populations F_2 were basic material. A growing technology was common for irrigation conditions of Southern Ukraine. **Results and discussion.** There were selected most productive Hy-lines with a different length of vegetative period from the researched F_5 hybrid combinations of soybean (Yug 40/Lambert, Yug 40/Banana, 1814 (2) 90/KS 9, Danaia/Phaeton, Izumrudnaia/Tresor and BY 5823/Altair).

In comparation with standard the Hy-lines of Yug 40 / Lambert had higher data by: quantity of seeds per plant (up by 124,53-193,07%), yield (47,98-90,65%); Yug 40 / Banana – amount of seeds per plant (up by 110,90-159,68%), the seed weight per plant (up by 105,52-162,92%), yield (up by 34,27-76,95%); 1814 (2) 90 / KS 9 – amount of seeds per plant (up by 138,88-169,31%), seed weight per plant (131,74-157,12%), yield (up by 45,48-66,36%). Only one Hy-line of combination Danaia / Phaeton was better standard by seeds amount per plant (up by 96,20%), by seed weight per plant (up by 114,51%), by yield (up by 45,79%). Hy-lines of Izumrudnaia / Tresor was better standard up by 117,50-118,79% for amount of seeds per plant, up by 122,39-132,58% for seeds weight per plant and up by 51,09-55,45% for yield; Hy-line of hybrid combination BY 5823 / Altair: for seeds amount per plant – up by 120,23%, for seeds weight per plant – up by 109,55%, for yield – up by 37,38%. There were selected Hy-lines with content digestible crude protein 32,50-42,38%(for dry matter) and with content of oil 14,90-18,11%.

Conclusions. High-productive early ripening Hy-lines with yield's level 4.31-6.12 t/ha and average content of digestible protein and oil were selected from F_5 hybrid populations by using of improved method of selection by amount of productive nodes per plant, which we recommend to use in the selection process, which aims to improve a productiveness and quality of soybean seeds.

Key words: breeding, soybean, seed's weight, yield, weight of 1000 seeds, protein, oil, vegetation period.

Kokovikhin S.V., Kovalenko A.M., Nikishov A.A. The seeds productivity of winter wheat varieties depending on the micro-fertilizers and the protection of plants in the conditions of the South of Ukraine *o* // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 115-119

Purpose. To set the productivity of sorts of wheat winter-annual depending on microfertilizers and protect of plants.

Methods. The studies were conducted using generally accepted in crop and seed production techniques.

Results. Taking into account the features weather terms, which was characterized by the mionectic amount fallouts in the phase pouring grain wheat winter-annual, on the average a posteriori, the productivity grain in 2014 presented 3,38 t/ha. This year of high quality composition (factor A) had a the greatest (74,0%) influence on forming harvest grain. In 2015 favourable weather terms promoted the productivity grain substantially, on the average after factors, on 42,4%. Realization treatments sowing wheat winter-annual preparation of Awatar (factor B) assisted the permanent height the productivity on 14,2-15,7 %. In the conditions 2016g. favourable meteorological parameters allowed to get high, as well as in 2015, level the productivity. Taking into account the positive action weather terms in 2016 most value from the point view forming harvest, as well as in 2015, had oligoelementss, part influence which in creation harvest presented 47,0 %.

Conclusions. It is set on results researches, that sort wheat winter-annual Konka provides, on the average years realization researches, large (on 5,3%) productivity grain, that it is related to his firmness to the droughty weather terms, what at a sort Kherson 99. Application preparations oligoelementss was characterized by the different operating on the height the productivity plants. Yes, in a variant with bringing Riwerm the increase the productivity grain is marked from 4,57 to 4,89 t/ha, id est on 6,5%, comparatively with control variantom (without treatments). Treatment of sowing preparation Nanovit Mikro assisted the substantial height the productivity plants wheat winter-annual on 0,46 t/ha (9,1%). Most height harvest - 0,63 t/ha provided the oligoelementss Awatar, id est to 12,1% in relation to control. Protecting plants from the causative agents illnesses provided the increase the productivity grain on 1,4-5,5%, especially in a variant with preparations Trichodermin+Haupsin. Variety Conca formed 3.59 t / ha, which is 8.2% more varieties Kherson 99. Use of Chemical and Biological Protection varying degrees affect the seed production culture under study, the most effective was the combined use of biological preparation of Trichoderma and Gaupsin. Among the micronutrients studied had the advantage of Avatar, which allowed to get on 7,3-14,2% more seeds than with Riverm drugs anew Micro. Analysis of variance proved the largest share of the impact of micronutrient (58.0%) in the formation of a crop of winter wheat seed.

Keywords: winter wheat, variety, minerals, plant protection, crop yields, the share of.

Dziuba M.V. The main directions of optimization of the technology of growing winter rape in Southern Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 120-122

The article describes the economic - biological significance of winter rape. Identified the need to use fungicides - retardants Caramba and Unikale.

Aim is to improve the technology of growing winter rape on the basis of the formation of the optimal conditions for vegetation.

Analysis of the literature shows the need for studies using fungicides - retardants. The research results provide an opportunity to effectively use chemicals to improve plant health and increase yields.

Key words: winter rape, growing conditions, fungicides - retardants, terms of payment of yield.

Misevich A.V., Vlaschyk A.N. Features white clover growing technology annuals in Southern Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 122-124

The purpose of the study - establishment of seed production of white clover annual depending on term and rate, and also depending on the use of herbicides and different norms of their entering on the lands of the southern Steppe of Ukraine Goal. Install white clover seed production annual depending on the date and seeding rate, and depending on the use of herbicides and different rules for their implementation in the lands of the southern steppes of Ukraine.

The article presents economic and biological characteristics of white clover annual. The peculiarities of the technology of cultivation on the seed material.

Research methods: Analysis of the literature points to the need for studies using different technologies. The results of these studies will make it possible to use these technologies in optimal terms and standards to improve crop cultivation and improving the quality of the crop.

Key words: annual clover, seed production, seeding rate, herbicides.

Balashova G.S., Yuzyuk S.N. Formation of the potato crop in southern Ukraine for drip irrigation // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 124-127

Aim. The study of the process of growing potatoes for drip irrigation in Southern Barrens; patterns of water, soil nutrient regimes; indicators of growth, plant development and yield formation of spring planting potatoes, depending on the technology elements of irrigation and fertilization methods.

Methods. Integrated use of laboratory, field, mathematical-statistical, settlement and comparative methods and systems analysis. **Results.** The experimental data on the effect of different methods of fertilization on yield and plant productivity under different moisture conditions in the cultivation of ware potatoes for drip irrigation in Southern Barrens

Conclusions. In the study of methods of fertilization under different moisture conditions in the cultivation of ware potatoes for drip irrigation in Southern Ukraine has provided the best performance locally making fertilizer in dose N60P60K60 while maintaining differentiated by periods of growth and development of plants before watering soil moisture 80-80-70% in NV the current layer 0-60 cm. The cost per unit was 1,345 thousand. UAH / t, profitability - 160.3%.

Keywords: potatoes, drip irrigation, soil settlement, methods of fertilizer, productivity, performance, moisture conditions, profitability.

Krivenko A.I. The influence of biologized growing technologies on the quality of grain of winter wheat when grown in conditions of the Southern Steppe of Ukraine // Irrigated agriculture: interdepartmental thematic scientific collection. – 2016. – Issue 66. – P. 127-131

Aim. Investigate the effect of biologized growing technologies on the quality of winter wheat grain, depending on the tillage systems and predecessors.

Methods: field, laboratory, analytical.

Results. The tillage systems had almost no effect on the quality of winter wheat grain, since, according to all processing schemes, the quality of grain of the 3rd class was formed. On average, over four years, the protein content in the grain became almost the same according to the processing schemes - the first and second differentiated and shallow depths of the depth (range of 11.0-11.4%). When tilling the soil without accumulation, protein accumulation tended to increase (12.0%). The predecessor also influenced the quality of the grain along with the meteorological conditions. On average, four years against the background of all predecessors grain of the 3rd class was obtained, although the value of the protein and raw gluten content in the variants with black and green manurels with winter vetch is significantly higher than after the mixture of peas and mustard, and also after peas for grain (12.1 and 12.4 against 11.8 and 11.4% and, respectively, 21.4 and 21.3 against 19.9 and 19.6%).

Conclusions. It has been proved that in all the variants of the experiment, the best indicators of the quality of winter wheat grain were observed after the green manure side pair with winter vetch in the 1st crop. The nature of the grain and the mass of 1000 grains in the 1st winter wheat crop after sidereal steam (winter vetch and pea – mustard mixture) turned out to be higher compared to other predecessors. The nature of winter wheat grains after black and green manure fumes (winter vetch and pea-mustard mixture) meets the requirements that apply to the 1st class of wheat (760 g/l). Different systems of primary tillage did not significantly affect the bulk grain mass of winter wheat. The mass of 1000 grains, which was placed in the 2nd crop after the vapors and peas for grain against the background of green fallow and peas for grain, had the same performance with a slight deviation from each other. The best quality of winter wheat grain in terms of protein content and raw gluten was obtained against the background of green manure with winter vetch and with the basic soil tillage under the first and second crops. Basically, wheat grain of group A was obtained, which allows it to be used for food purposes and for export to foreign markets.

Key words: winter wheat, crop rotation, primary tillage systems, predecessor, grain quality, grain nature, 1000 grain weight, protein, gluten.

Chaban V.O. Scientific substantiation of photomeliorative measures to improve the quality of irrigation water for drip irrigation of the *Salvia sclarea* L.

The task is to scientifically substantiate photomeliorative measures to improve the quality of irrigation water for drip irrigation of the *Salvia sclarea* L. in the conditions of the Southern Steppe of Ukraine.

Methods. Field research to improve the technology of growing sage by using the drip irrigation system was conducted on the lands of PE "Diola" Beryslav district of Kherson region from 2011 to 2016 according to the methodology of the research case.

Results. The *Eichhornia crassipes* species can be effectively used in the processes of biological treatment of water in ponds, reservoirs, as well as wastewater contaminated with organic and inorganic compounds that can be easily oxidized. In our experiments, plants of the species *Eichhornia crassipes* successfully adapted to the conditions of the Southern Steppe of Ukraine, as their phytomass increased quite rapidly, it formed up to 8-15 daughter plants per month. The most active vegetation of plants took place in the flow regime, where the reservoir constantly received water with a high concentration of ingredients, among which there were many substances of organic origin.

Conclusions. It was determined that the chloride content decreased the most in the variants with reeds and *Eichhornia crassipes*. Analysis of water from the studied variants showed that the chemical oxygen demand was reduced under reed plants to 13.3, cattail – to 9.4, *Eichhornia* – to 7.0 mg O_2/l. Analyzing the water indicators after three weeks of settling, we can conclude that the quality of irrigation water, where *Eichhornia crassipes* was cultivated, has significantly improved. Thus, the chemical oxygen consumption decreased to 30.3 during the preliminary water withdrawal, this indicator was 1200 mg O_2/l, the biological oxygen consumption during the preliminary water withdrawal was 850, and after the water settling – 12.6 mg O_2/l. The content of nitrates to 4.1 mg/l and ammonium nitrogen to 5 mg/l was also reduced.

Key words: *Eichhornia crassipes*, *Salvia sclarea* L., drip irrigation, irrigation water quality, ecological safety.

Vozhehova R. A., Maliarchuk A. S., Kotelnikov D. I. Energy efficiency of minimized and no-till in irrigated conditions in the south of Ukraine

The article presents the results of research on the study of crop rotation productivity and energy efficiency of crop rotation technology in conditions depending on different methods and depth of the main tillage and fertilizer. The aim of the research was to determine the impact of basic tillage and fertilization on crop rotation productivity indicators and indicators of economic efficiency of crop rotation technology in irrigated conditions of the south of Ukraine. During the experiment, 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 of IIA NAAS of Ukraine.

As a result of research it is established that application of zero tillage against all investigated systems of fertilizers, leads to decrease in productivity on the average on 13,1-18,3% with the smallest indicators at at organomineral system of fertilizer N90P40 with use of postharvest products and the maximum on N120P40 on crop rotation. The highest productivity per hectare of crop rotation area was provided by crop rotation against the background of shelfless multidepth system of basic cultivation with deep chisel loosening for all crops, which depending on the fertilizer system ranged from 7.87 to 8.99 grain units. On average, by factor A, the highest gross energy yield in crop rotation 123.61 GJ / ha with the highest energy efficiency coefficient 1.87 was obtained for systems of shelf-free shallow tillage in crop rotation, which is 3.4% more than the control. At the same time, the lowest level of gross energy yield was obtained with zero tillage in crop rotation 104.3 GJ / ha with an energy efficiency ratio of 1.63, which is 14.4% less than the control.

Key words: crop rotation, tillage, fertilization system, crop productivity.