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## SUMMARIES

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**Vergun O.M., Rakhmetov D.B., Bryndza Y., Grygorieva O.V. Specific features of fruiting of plant species of the genus *Symphytum* L. (*Boraginaceae*)**

The paper provides data on the biological features of plant species of the genus *Symphytum* L. in the fruiting phase. It presents morphometric parameters of fruits and seeds of plants of five species of this genus that are characterized by the variation coefficient ranging from 0.64 to 10.20%. The study shows that in their fruiting phase *Symphytum* plants form from  $3.77 \pm 0.17$  to  $6.70 \pm 0.19$  of generative shoots and from  $3.30 \pm 0.15$  to  $6.60 \pm 0.12$  of leaf rosettes. The coefficient of seed productivity for plants under study ranges from 0.05 to 0.73.

**Key words:** *Symphytum*, fruiting, fruitage, seeds

**Komir Z.V., Trofymenko O.A., Alyokhin O.O. Biological features of seeds of taxons of the *Fabaceae* Lindl. ex situ family**

The paper presents the results of studying biological features of seeds of the taxons of the *Fabaceae* Lindl. ex situ family according to the following pattern: size, shape, surface, seed coloration; size, shape, raphe location; endosperm; embryo's size, shape and location in the seed. An illustrated description of the seed is provided.

**Key words:** seed, embryo, raphe, endosperm

**Kustova O.K. Ontogenesis of species of the genus *Ocimum* L. introduced through the Donets'k botanical garden affiliated with the National Academy of Sciences of Ukraine**

The paper investigates biomorphological features and duration of age periods in the ontogenesis of *O. basilicum*, *O. sanctum* and *O. gratissimum* grown under the conditions of Southern Ukraine. The plants undergo a full cycle of development that ends at the stage of generative maturity when the first autumn frosts come.

**Key words:** introduction, ontogenesis, *Ocimum basilicum* L., *Ocimum gratissimum* L., *Ocimum sanctum* L.

**Gorlachova Z.S., Kustova O.K. Individual development of *Stevia rebaudiana* (Bertoni) Hemsl. introduced in the south-east of Ukraine**

The paper examines onto-morphological characters of *Stevia rebaudiana*, identifies the main distinctions of its age periods, and their duration under propagation by seeds under the conditions of its introduction in the southeast of Ukraine. *Stevia* is characterized by a typically long pregenerative period, a middle-age and late generative period, and remontancy. A one-year vegetation cycle made up 255 – 275 days.

**Key words:** introduction, onthogenesis, *Stevia rebaudiana* (Bertoni) Hemsl.

**Komisar O.S. Mosses (*Bryophyta*) in the parks of Mykolaiiv**

The article provides a list of mosses identified in the parks of Mykolaiv. There were found 40 species of mosses, which fall into 2 divisions, 4 classes, 9 orders, 17 families and 26 genera. In the city parks dominate mesoxerophytes (as related to moisture) and heliophytes (as related to light).

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**Key words:** mosses, epiphyte, mesoxerophyte, calciphyte, incertophyl, heliophyte.

**Popkova L.L., Teplyts'ka L.M., Astapenko N.A. Special features of the initial stages of ontogenesis under seed propagation of the subtropical aboveground orchid *Bletilla striata* L.**

The study identifies specific features of seed germination of the subtropical aboveground orchid *Bletilla striata* and initial stages of ontogenesis of protocorms, determines the composition of nutrient media for their successful cultivation, and formation of plantlets and young plants. Since the seeds of this species do not have deep dormancy and form protocorm very fast, their germination is possible at the same intensity throughout the whole season. Optimal modified Knudson nutrient media and culture conditions ensure the process of obtaining sufficient material for mass propagation.

**Key words:** *Bletilla striata* L., *Orchidaceae*, seed propagation, protocorm

**Sydorenko O.V. The development of introduced resources of tropical medicinal plants**

The paper considers the issue of developing the introduced resources of tropical medicinal plants, which includes the study of specific features of growth and development of cultivated species, identification of their ecological demands and useful properties, and an overall assessment of the prospects for practical application of these species.

**Key words:** introduction, tropical plants, floral region.

**Pavlenko L.L., Mashkovs'ka S.P. Latent and pregenerative periods of ontogenesis of *Cardiospermum halicacabum* L. (*Sapindaceae*) and *Lablab purpureus* (L.) Sweet. (*Fabaceae*) in the forest-steppe of Ukraine**

The paper presents a detailed research-based description of the latent and pregenerative periods (plantlets, juvenile plants, immature plants, virginal plants) of the ontogenesis of the introduced species of ornamental herbaceous lianas – *Cardiospermum halicacabum* and *Lablab purpureus* under the conditions of the forest-steppe of Ukraine.

**Key words:** *Cardiospermum halicacabum*, *Lablab purpureus*, ontogenesis, latent period, pregenerative period, plantlets, juvenile plants, immature plants, virginal plants

**Grygorieva O.V. Initial stages of ontogenesis of common persimmon species (*Diospyros* spp.)**

The paper investigates special features of the initial stages of ontogenesis of three species of persimmon – *Diospyros kaki*, *D. lotus*, *D. virginiana* under the conditions of their introduction in the Grishko National Botanical Garden of the National Academy of Sciences of Ukraine (NASU). The study identifies diagnostic characters necessary for determining in early ontogenesis to what species these plants belong.

**Key words:** *Diospyros*, introduction, age-related condition, ontogenesis.

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**Vitenko V.A., Muzyka G.I. The inventory of trees of the *Yuvileinyi* park of the conservation zone of the national dendropark *Sofiyivka* of the National Academy of Sciences of Ukraine and their phytosanitary condition**

The paper features the results of the inventory and evaluation of the phytosanitary condition of the tree and bush plantation on the territory of the *Yuvileinyi* park of the conservation zone of the national dendropark *Sofiyivka* of the National Academy of Sciences of Ukraine. The study determines the taxonomic structure of the tree and bush plantation.

**Key words:** conservation zone, inventory, phytosanitary condition, tree and bush plantation.

**Nemertsalov V.V. Adaptation of the *Rosaceae* Juss. family representatives to the north-western Black Sea shore conditions**

The study analyzed the adaptive stability of tree and shrub plants from the *Rosaceae* family under the North-Western Black Sea Shore conditions using acclimatization numbers (AN) as an objective characteristic of the adaptive capacity of plants in the region related to their origin. The AN values were estimated for superspecies taxa of *Rosaceae*, and for their original floristic regions of the world. A prognosis about the introduction and migration of the plants of this family is made.

**Key words:** *Rosaceae*, north-western Black Sea shore, adaptation, origin, phylogenesis

**Gerasimiyuk N.V. Ornamental plants of the private residential sector of Odessa**

In our investigation, 118 species of ornamental plants belonging to 106 genera and 59 families were identified on a test area of 1 km<sup>2</sup> in the private residential sector Bolshoy Fontan of the Odessa city. Most of them (62%) are herbaceous plants. Analysis of the dynamics of flowering shows that the majority of plants bloom in July, while the minority flowers in March and November. Leaf ornamentality varies in color and can change during the vegetation season. Analysis of the ornamentality of plant fruits shows that most of them are berries and drupes. The prevailing colors of fruits are yellow and orange.

**Key words:** ornamental plants, landscaping, Odessa, vegetative and generative organs

**Kovalenko S.G., Sorokovskaya K.A., Vasylyeva T.V. Seed germination of *Dianthus hypanicus* Andr. under various conditions**

The study examines specific features of the germination of seeds of a rare endemic plant *Dianthus hypanicus* Andr. stored for different periods. The test was done in Petri dishes and in soil mix under the influence of several factors. It is found that positive results are obtained after cold stratification of seeds for a month. Seed treatment with the preparation "Gibberellin" at a concentration of 0.01% stimulates the germination of seeds, especially of those that were stored for several years, while seed treatment with "Vympel" had almost no impact on the germinating power.

**Key words:** seeds, rare and endangered plants, germination

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**Teslyuk M. G. Seasonal rhythms of the growth and development of *Cynoxylon japonica* (DC) Nakai. and *Cynoxylon florida* (L.) Raf in the Gryshko National botanical garden affiliated with the National Academy of Sciences of Ukraine**

The article presents the findings of the study of growth and development phases of some representatives of the genus *Cynoxylon* Raf.: *Cynoxylon japonica* (DC) Nakai. and *Cynoxylon florida* (L.) Raf. conducted in 2010-2012.

**Key words:** *Cornaceae*, *Cynoxylon*, phenology, growth and development phases.

**Dragan N. Productivity of oak trees in the dendropark *Alexandria* of the National Academy of Sciences of Ukraine (NASU)**

The paper investigates soil conditions in the oak grove *Golendernya* of the dendropark *Alexandria* of NASU. It reveals significant differentiation in the humus horizon potential, humus content, available nutrients, and soil density. There is a clear relationship between the deterioration of physical and agrochemical soil characteristics and the level of anthropogenic stress, which in its turn leads to the destruction of the above-ground cover, litter, forest pathology and the deterioration of sanitary conditions and, ultimately, reduces the productivity of plantations.

**Key words:** age-old oak forest, recreational load, productivity, land degradation.

**Kovalenko I.N. Individual ecology of plants of the grass and shrub layer of forest phytocenoses in north-eastern Ukraine**

The study analyzes the species composition of the grass and shrub layer of forest phytocenoses in the region at the level of vegetation classes, and determines an individual ecological optimum of the main species of grass and shrubs with the aim of predicting possible dynamics of their populations under the expressed effect of global warming and changes in the patterns of wood exploitation in the region.

**Key words:** grass and shrub layer, individual ecological optimum, plant populations.

**Pekhova O.A., Chaikovs'kyi V.A. Specific features of morphogenesis in the culture of vegetative organs of mint**

The paper examines the impact of the nutrient medium, explants types, seasonal introduction of explants into culture in vitro on the induction of morphogenesis in the culture of isolated organs of mint of the *Zagrava* and *Udaichanka* varieties.

It shows the possibility of the induction of direct morphogenesis from explant tissues, and the possibility of indirect morphogenesis in tylosis culture.

A self-clone of mint of the *Zagrava* variety different from the donor plant in morphobiological and biochemical characteristics was produced for the first time.

**Key words:** mint, morphogenesis, culture in vitro, tylogenesis, explants.

**Filimonova E.M. Some results of the introduction of the species *Rhododendron adamsi* Rehd., *Rh. aureum* Geprgi., *Rh. dauricum* L. and *Rh. ledebourii* Pojark. by the Botanical garden of the Irkutsk State University**

*Rhododendron* is still rarely used in settlement gardening in Eastern Siberia. In our opinion, the species *Rh. adamsii* Rehd., *Rh. dauricum* L. and *Rh. ledebourii* Pojark. are quite suitable for further introduction, whereas *Rh. aureum* Geprgi. can also

be used, but to a lesser extent. More research is needed into their reaction to the new environment of the Botanical garden of the ISU.

**Key words:** Eastern Siberia, rhododendron, introduction, settlement gardening.

**Men'shova V.A., Chumak P.Y., Koval'chuk V.P. *Melittis sarmatica* and its forms**

The paper presents the results of studying the variability of morphological and quantitative characteristics of vegetative organs of different forms of a rare plant and a relic of the tertiary age *Melittis sarmatica* in the period of its introduction.

**Key words:** *Melittis sarmatica*, variability, form, morphological and quantitative characteristics.

**Zhmurko V.V., Avksentyeva O.O., Khan Bin The distribution of nitrogenous compounds in plant's organs and productivity elements of soft winter wheat (*Triticum aestivum* L.) lines isogenic in *VRN* genes**

Field experiments on wheat lines isogenic in *VRN* genes (*Myroniv'ska 808* and *Olviya* varieties) reveal a correlation between total nitrogen content in the leaves, stalk and ear of the main shoot in the heading-flowering stage as well as plant productivity and protein content in grains and the condition of these genes (dominant and/or recessive). Lower productivity versus increased protein content was registered in the line that carries the *VRN-B1a* gene. Varieties (lines) with the identified *VRN* genes can be used in selection for wheat productivity and grain quality.

**Key words:** wheat (*Triticum aestivum* L.), *VRN* genes, total nitrogen, protein, productivity, rate of development

**Fedorchuk M.I., Makukha O.V. Specific features of morphogenesis of *Foeniculum vulgare* Mill. introduced under arid conditions of Southern Ukraine**

The paper highlights specific features of growth and development of common fennel plants under dry conditions of the Kherson region. It provides data on morphological parameters of plants at different developmental stages, on the main phenological phases and age periods, and determines the length of the vegetation period. It proposes ways of minimizing possible risks during fennel growing.

**Key words:** common fennel, developmental phase, vegetation period, age periods, herbocritical period, cotyledonary, true leaves, hypocotyl, lateral (axillary) buds, apical (terminal) buds.

**Martynenko V.F., Gonchars'kyi I.L. The impact of enterprises on biological diversity conservation under the conditions of private ownership of agricultural land**

The article highlights some problems related to the adverse effect of new land ownership relations in agricultural production on natural biological diversity, and considers ways of their resolving.

**Key words:** land, agriculture, land ownership forms, biological diversity

**Fedorchuk M.I., Vitenko V.A., Mryns'kyi I.M., Onyshchenko S.O., Boiko N.V., Kotovs'ka Yu.S. Analysis of the taxonomic composition of trees and shrubs on the park territory of the Kherson State Agricultural University**

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The inventory of tree and shrub plantations on the territory of the dendrological park of the Kherson State Agricultural University has been conducted. The taxonomic composition of trees and shrubs is determined.

**Key words:** inventory, taxonomic composition, trees, shrubs.

**Ryaba O.I. The formation of the Moscow agricultural society in the context of the evolution of farming systems**

The paper highlights the history of the establishment, formation and the first years of a century-long period of the activities of the Moscow agricultural society. It shows that in the 20-30s of the 19th century the Society determined its goal and objectives, organizational forms, and found recognition in scientific, production and government circles. The paper outlines the contribution of the Moscow agricultural society and its individual members to the development of farming systems, agricultural education and science, and research in crop production.

**Key words:** Society, farming systems, Agricultural school, Butyrski farmstead, «Agricultural journal», soil fertility, land, foddergrass cultivation.

**Chkhaidze N.M., Lobzhanidze M.I. Grapevine phytoplasma disease and its potential carriers in Georgia**

The paper investigates some anatomic and physiological disorders in grapevines infected by phytoplasmas, as well as species composition of cicadas in Eastern Georgia, the center of phytoplasma diseases. It shows the reduction of the conductive system of the leafstalk and carbohydrate transport blocking, and occurrence of *Hysteropterum grylloides*, *Lepironia coleoptrata*, *Hyalesthes obsoletus*, *Cicadella viridis*, L., *Philaenus spumarius* L., *Empoasca vitis*. Each of these species could be a potential carrier of phytoplasma diseases of the vine. Special research is required on the identification of disease carriers.

**Key words:** grape, phytoplasma disease, carriers, cicadas

**Korzun O.S., Isayev S.V. Optimization of sowing time and rates of Japanese millet (*Echinochloa frumentacea*) grown for green fodder in the Grodno region**

The study of the impact of sowing time and rates on the growth, development and fresh yield of Japanese millet (*Echinochloa frumentacea*) was conducted under soil and climatic conditions of the Grodno region in 2008-2011. It shows the expediency of growing Japanese millet for green fodder if it is sown in the second half of May at a rate of 5 mln seeds per ha.

The paper provides a characteristic of phytometric parameters of the crop under study depending on sowing times and rates.

**Key words:** Japanese millet (*Echinochloa frumentacea*), field germination rate, survival rate, productive bushiness, plant height, leaf area, fresh yield, dry matter yield per ha

**Antal T.V. Field germination rate of durum spring wheat seeds depending on the variety and fertilization under the conditions of the forest-steppe area on the right bank of the Dnieper**

The research shows that on typical black soils of the area under study with low humus content field germination rate depends on weather conditions, fertilization

system and varietal features: *Izol'da* variety displayed a higher field germination rate (80.8-85.2 %) compared to *Bukuria* variety (77.0-83.2 %). The greatest amounts of moisture in a 0-10 cm soil layer available to plants in the period of sowing were marked in 2008 (10.8 mm), which determined a high field germination rate of spring durum wheat seeds (75-85 %), whereas in 2007 moisture content was only 5.2 mm, and field germination rate did not exceed 73 %.

**Key words:** durum spring wheat, fertilization system, variety, cultivation technology, field germination rate, yielding capacity.

**Garbar L.A. The effect of agrotechnological practices on the content of pigments in rape plants**

The paper investigates the effect of varietal characteristics, sowing and fertilization rates on the content of chlorophyll in spring rape plants. The research shows that the best results were obtained from the *Sriblyastyi -1* variety sown at a rate of 1.6 mln germinating seeds per hectare, and at a mineral background of N120P80K140.

**Key words:** spring rape, sowing rates, variety, fertilization rate, chlorophyll

**Doroshenko O.L. The impact of microelements on the dynamics of leaf area increment**

The study considers the influence of microelements on the dynamics of leaf area increment in different buckwheat varieties.

**Key words:** buckwheat, variety, microelements, seed treatment, leaf area

**Zuza V.S., Gutians'kyi R.A., Popov S.I., Buryak Y.I. The tolerance of winter wheat for herbicides**

The results of many years of research into herbicide application show that herbicides for winter wheat crops can be divided into highly tolerant (stimulating), moderately tolerant and not sufficiently tolerant.

**Key words:** herbicides, winter wheat, tolerance

**Novokhats'kyi M.L. The effect of the size of sown seeds on their biological productivity and fraction composition of soybean yield**

The paper presents the results of research into the effect of the size of sown seeds on the biological productivity and fraction composition of soybean yield.

It shows that coarse-fraction seed sowing contributes to a higher biological productivity of grains compared to the sowing of unsized seeds and average-sized and fine-fraction seeds, and results in the formation of a greater part of the coarse fraction in the yield.

**Key words:** soybeans, variety, seeds, fraction, biological productivity.

**Lykhats'kyi V.I., Cherednychenko V.M. The effectiveness of using water-retaining granules *Akvod* in the cultivation of broccoli under the conditions of the forest-steppe of Ukraine**

The paper presents the results of studies carried out in the forest-steppe zone of Ukraine on the application of different rates of water-retaining granules of the hydrogel *Akvod* in growing seedlings of broccoli in containers. The research shows that the highest yields of broccoli were obtained under the following rates of water-retaining

granules: 20 g/10 kg of soil mix - 16.21 t/ha, 30 g/10 kg of soil mix - 16.62 t/ha, 40 g/10 kg soil mix - 16.79 t/ha, and in the control - 14.53 t/ha, that is correspondingly 1.68, 2.09 and 2.26 t/ha less. The use of hydrogel granules helps to ensure broccoli yields at an earlier date.

**Key words:** broccoli, water-retaining granules, *Akvod*, *Lednitskaya* variety.s

**Averchev O.V., Gubenia Y.E. Economic efficiency of growing irrigated millet in Southern Ukraine**

The article provides the results of research on the effect of genotype on the productivity and economic efficiency of irrigated millet cultivation in Southern Ukraine.

**Key words:** genotype, millet, productivity, economic efficiency, profitability, production cost.

**Shelud'ko L.P., Kutsenko N.I. Findings and prospects of breeding medicinal plants**

From 1919 to 2011, at the experimental station of medicinal plants of the Institute of Agriculture of the Northeastern Region of the National Academy of Agricultural Sciences there was conducted breeding and seed-growing research into 70 species of medicinal plants. As a result, 48 varieties, four varietal populations, five strain samples, 30 improved populations were produced.

**Key words:** breeding, medicinal plants, variety, population.

**Morozov V.V., Beznits'ka N.V., Nesterenko V.P., Polukhov A.Y., Morozov O.V. The effect of climatic factors on the formation of rice productivity in southern Ukraine**

The influence of climatic factors during the ontogeny of rice on the formation of its productivity in Southern Ukraine is analyzed. The classification of years by water content based on the amount of rainfall per year and per growing season is developed. A model of the influence of temperature on rice yield depending on the phase of crop development is presented.

**Key words:** rice productivity, climatic factor, water content, rice yield.

**Ushkarenko V.O., Lazer P.N., Rudik O.L. Specific features of the technological elements of growing oil-bearing flax under the conditions of Southern Ukraine**

The paper provides data on the impact of mineral nutrition background, inter-row spacing and sowing rate on the productivity of irrigated and rainfed oil-bearing flax.

**Key words:** oil-bearing flax, mineral nutrition background, sowing rate, inter-row spacing, irrigation.

**Lykhats'kyi V.I., Popova L.M. The productivity of non-bolting spring garlic depending on the storage method of seed material**

The paper considers the impact of storage methods on the growth and development rates of non-bolting spring garlic, its productivity and product quality under early spring seeding.



It shows that cold ( $0\pm 3^{\circ}\text{C}$ ) and combined storage methods contribute to high quality yields. High temperatures ( $+18$   $+20^{\circ}\text{C}$ ) result in significant losses of bulbil weight, intensive growth of vegetation and hinder the process of bulb formation.

**Key words:** non-bolting spring garlic, storage method, seed material, productivity.

**Lavrenko S.O. The effect of agrotechnical practices on the height dynamics of grass peavine in Southern Ukraine**

The paper provides data on the height dynamics of irrigated grass peavine depending on the preceding crop, fertilization background, tillage depth and antecedent moisture under the conditions of Southern Ukraine.

**Key words:** grass peavine, preceding crop, fertilization background, main tillage operation, antecedent moisture, plant height.

**Lymar A.O., Ryabinina N.P. The growth and development of transplant tomatoes depending on the fertilizer background, tillage methods and depth under drip irrigation**

The article considers the issues of the effect of methods and depth of the main tillage operation and estimated fertilizer rates on the expected yield according to growth and development phases and on the height and assimilation area of transplant tomatoes.

**Key words:** transplant tomato, drip irrigation, method of the main tillage operation, soil tillage depth, fertilizer background, height, leaf area.

**Ushkarenko V.O., Lavrenko S.O., Kononenko V.G. The efficiency of moisture consumption by rained white sweetclover plants depending on the sowing rate and cover crop under the conditions of Southern Ukraine**

The study looks at the impact of cultivation technology elements (cover crop, sowing rate) of biennial white sweetclover on the efficiency of water use by its plants on salinized soils of Southern Ukraine.

**Key words:** white sweetclover, sowing rate, pure sowing, cover crop, total water consumption, water consumption coefficient, soil moisture, effective rainfall.

**Pashtetsky V.S. Tomashova O.L., Tomashov S.V., Kharitonchik L.A. Prospects of growing alfalfa under a resource-saving irrigation system.**

The article presents the results of studies on the growth, development and productivity of alfalfa of two and three years of use in two rotations of a nine-crop rotation under optimal and resource-saving irrigation regimes. It shows a significant decrease in fresh yield of alfalfa under water-saving irrigation, especially in dry years.

**Key words:** alfalfa, year of use, rotation, crop rotation, irrigation regime, productivity.

**Lavrynenko Y.O., Borovyk V.O., Stepanov Y.O., Baranchuk V.A., Kulish I.M. Ecological and genetic aspects of cotton plant cultivation in Southern Ukraine**

Southern Ukraine has sufficient breeding and genetic material as well as conditions for launching cotton plant production and processing, and setting up modern

clusters with the involvement of scientific institutions, agricultural workers, and the processing industry.

**Key words:** cotton plant, breeding, irrigation, productivity.

**Lavrynenko Y.O., Klubuk V.V., Marchenko T.Y., Borovyk V.O. Variability and inheritance of the vegetation period in soya varieties and hybrids under irrigation**

The paper presents the results of research on the variability and inheritance of the character "length of the vegetation period" in hybrids of the first-fourth generations produced by crossing strain parental forms belonging to different maturity groups and having different genetic origins.

**Key words:** soya, vegetation period, crossing, heterosis, hybrid

**Zhuikov O.G., Logvinovs'kyi A.Y. An experimental study of the system of the main and secondary tillage as a constituent of the zoned resource-saving technology of growing Indian mustard under the conditions of the Dry Steppe**

The paper presents the results of research into different systems and methods of the main and secondary (presowing) tillage. It shows that the most expedient system for Indian mustard cultivation in Southern Ukraine is fallow farming and the improved system of land ploughing in autumn for spring sowing; among the main tillage methods preference is given to mouldboard ploughing at a depth of 22-24 cm done in October.

**Key words:** Indian mustard, system and methods of the main and secondary (presowing) tillage, ploughing, harrowing, packing, weediness, seed yield.

**Filipiev I.D., Dymov O.M., Sydiakina O.B., Drachova N.I. The effect of separate mineral nutrition elements and their ratio on the formation of the productivity of winter wheat cultivated after corn**

The study provides data on the effect of separate mineral nutrition elements and their ratio on the productivity and grain quality indices of irrigated winter wheat cultivated after corn of milky-wax ripeness.

**Key words:** winter wheat, mineral nutrition elements, fertilizers, productivity, quality.

**Bazaliy V.V., Lavrynenko Y.O., Ivaniv M.O. Phenological indices of corn hybrids depending on the soil-ecological location**

The study shows that the duration of separate phases of development is influenced mostly by the maturity group of a hybrid, then by the weather conditions, the agro-ecological factor having the least effect. Under optimal agrotechnical provision, late and mid-season corn hybrids form the highest yielding capacity.

**Key words:** corn, vegetation period, productivity, agro-ecological conditions, hybrids.

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**Ivaniv M.O., Sydyakina O.V., Artiushenko V.V. The impact of agro-ecological conditions of cultivation on morpho-biological characteristics of corn hybrids of different maturity groups**

The paper provides data on the impact of agro-ecological conditions of cultivation on the leaf area, photosynthetic potential, plant height and the height of the upper cob's point of attachment in corn hybrids of different maturity groups.

**Key words:** corn, hybrids, agro-ecological conditions, leaf area, photosynthetic potential, plant height, height of cob's point of attachment.

**Glushko T.V. The productivity of corn hybrids of different maturity groups depending on mineral fertilization and irrigation**

The article features the results of studying the formation of grain productivity of corn hybrids of different groups of maturity depending on irrigation and mineral fertilization.

**Key words:** corn hybrids, maturity groups, fertilizers, irrigation, grain productivity

**Gamayunova V.V., Shepel' A.V., Berdnikova O.G. Winter wheat yield formation depending on the number of productive ears per area unit**

The paper considers special features of the formation of productivity of winter wheat varieties *Khersons'ka awnless*, *Odes'ka-267* under irrigation (soil moistening and vegetative irrigation) and at the mineral nutrition background under the conditions of Southern Ukraine.

**Key words:** productive ears, weight of grains in the ear, water supply, moistening, vegetative irrigation, biometrical indices, productivity, foliar application, Tenso, Cristalon.

**Ushkarenko V.O., Silets'ka O.V. Agrotechnological conditions of enhancing the efficiency of the old-age alfalfa field in the year of its ploughing up**

The results of three-year investigations carried out on the irrigated lands of Southern Ukraine confirm the expediency of additional sowing of fodder crops on alfalfa stands in early and late spring. Both alfalfa and companion crops have a positive response to mineral fertilizers ( $N_{45}P_{30}$ ,  $N_{90}P_{60}$ ), which is reflected in the data on the efficiency of mineral fertilization of old-age alfalfa stands depending on the accompanying crop.

**Key words:** old-age alfalfa stands, additional sowing, sowing time, fertilizers, fodder crops.

**Bazaliy V.V., Kokovikhin S.V., Mykhalenko I.V. The duration of separate phases of the development of corn hybrids of different groups of maturity (according to FAO) depending on sowing time under the conditions of the Southern Steppe**

The study determines the duration of the main phases of development of corn hybrids of different maturity groups depending on sowing time under the conditions of Southern Ukrainian Steppe.

**Key words:** phenological observations, corn, sowing time, vegetation, grain humidity, genotype

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**Shelud'ko O.D., Markovs'ka O.Y. Economic evaluation of the elements of pest control of irrigated corn**

The paper presents the results of studying the effectiveness of mixes of fungicides and insecticides in the pest and fungus control of irrigated corn. It shows that the mix of protectants (Force Zea 280 FS or Cruiser 350 FS + Insure Perform) contributes to an increase in seed germinating power, laboratory and field seed germination, and optimization of the sanitary condition of the crop and yield protection against losses.

**Key words:** corn, irrigation, protectant, fungus diseases, pests.

**Almashova V.S., Onishchenko S.A., Ursal V.V. The influence of microelements on the productivity of garden pea plants under irrigation**

The study shows that pea seed treatment with boron, molybdenum and rhizotorphin results in a 1.4-1.6 times increase in the content of chloroplasts in the cells of assimilative parenchyma, which leads to a 23-30% increase in crop yield.

**Key words:** garden pea, microelements, chloroplasts, crop yield.

**Fedorchuk M.I., Domaratskiy A.A., Onishchenko S.A., Almashova V.S. The study of the productivity of sunflower varieties and hybrids under the conditions of balanced nature management in Southern Ukraine in 2011**

Sunflower strain testing in 2012 showed that the mid-season hybrid *Basalt*, mid-early hybrid *Syuzhet* and early hybrid *Elvis* had the highest rating.

**Key words:** sunflower, strain testing, hybrids, *Basalt*, *Syuzhet*, *Elvis*.

**Gamayunova V.V., Shevel' V.I. Millet productivity in Southern Ukraine depending on varietal characteristics and mineral fertilization background**

The paper presents the results of research (2008-2010) on the formation of productivity of millet varieties depending on mineral fertilizer rates, in particular the effect of the estimated rates on the expected productivity level.

**Key words:** millet varieties, yielding capacity, mineral fertilizer rates, weather conditions of years under study.

**Panfilova A.V., Gamayunova V.V. The impact of mineral fertilizers on soil nutrient status in the period of spring barley cultivation**

The paper features the results of research into the effect of mineral fertilizers on soil nutrient status in the period of spring barley cultivation.

**Key words:** spring barley, fertilizers, soil nutrient status.

**Lymar V.A., Naumov A.O. The effect of irrigation practices and fertilizer rates on the productivity and quality of carrot roots in the zone of the Lower Dnieper sandy soils**

The paper presents the results of research into the development of a technology of garden carrot cultivation under microirrigation in the zone of the Lower Dnieper sandy soils. The technological elements include microsprinkling together with maintaining the antecedent soil moisture at 80-70-70 % of the lowest moisture, and fertilization rate of 80 t/ha.

**Key words:** garden carrot, drip irrigation, microsprinkling, water consumption, root system, productivity, economic efficiency.

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**Lymar V.A. Regularities in soil moistening under different methods and regimes of table watermelon irrigation**

The article considers the results of studying the methods of table watermelon irrigation: drip irrigation, drip irrigation under mulch, furrow irrigation, furrow irrigation using perforated film, water distribution in the soil under these methods, and their impact on crop productivity.

**Key words:** irrigation, irrigation method, watermelon, soil, mulching.

**Semen D.T. A technology of growing *cucurbita maxima* for seeds under irrigated conditions of southern Ukraine**

The paper presents the results of research in the complex of technological elements and methods of growing *Cucurbita maxima* under irrigated conditions of the southern Steppe of Ukraine.

**Key words:** pumpkin, irrigation, fertilization, area of nutrition.

**Fedorchuk M.I., Onishchenko S.A., Mrynskyi I.N., Ursal V.V., Boiko N.V. The results of the introduction of new bioenergy, feed and medicinal plants in the experimental field of the Kherson State Agricultural University**

The study conducted on the experimental field of the Kherson State Agricultural University in 2006-2011 is devoted to the introduction of new bioenergy, feed and medicinal plants in Southern Ukraine. The research findings show that the following species displayed a higher degree of naturalization: feed sorrel (*Rumex* variety), feed mallow (*Cornella* variety), hybrid mallow, and woad. They provided a total plant weight of 82.8-105.6 t/ha.

**Key words:** introduction, bioenergy plants, medicinal plants, yield.

**Bazaliy V.V., Boichuk I.V., Larchenko O.V. Specific features of the manifestation of yield structure elements and their interrelation in the formation of productivity of different soft winter wheat varieties**

The research findings show a high stable correlation between the number of grains in the ear and its productivity regardless of the origin of the variety. Thus, in the selection of elite ears special attention should be paid to grain content in the ear.

**Key words:** grain content in the ear, productivity, selection of elite ears, correlation.

**Boryshchuk R.V. Grain quality indices of winter barley under different ways of soil preparation and nitrogen fertilizer rates**

The paper provides the results of studies on the effect of tillage methods and depth as well as nitrogen fertilizer rates on grain quality indices of irrigated winter barley. It identifies those variants that ensure the best conditions for the formation of high-quality grain.

**Key words:** winter barley, tillage method, tillage depth, mineral fertilizer rate, starch, protein, weight of 1000 grains, grain-unit.

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**Klymenko S.V. Non-traditional fruit plants in Ukraine: introduction, breeding, application prospects**

The paper highlights the results of long-lasting investigations on the introduction and breeding of non-traditional fruit plants in Ukraine. A rich gene pool of these plants is kept at the Nikitski botanical garden (the National scientific and research center), at the Gryshko National botanical garden of the National Academy of Sciences of Ukraine, at the Donetsk botanical garden of the National Academy of Sciences of Ukraine, and at the Artemis'k scientific and research institute of horticulture. The study shows the economic and social value of non-traditional plants and presents newly developed promising varieties. The following species varieties are entered on the List of plant varieties of Ukraine: *Cydonia oblonga*, *Amygdalus communis*, *Ficus carica*, *Hippophae rhamnoides*, *Actinidia*, *Cornus mas*, *Diospyros kaki*, *Lonicera edulus*, *Viburnum opulus*, *Morus alba*, *Zizyphus jujuba*.

**Key words:** non-traditional fruit plants, introduction, breeding, gene pool, List of plant varieties of Ukraine

**Teleutse O.S., Tsytsey V.G. Non-traditional plants of the legume family: their feeding value and productivity under the conditions of the Republic of Moldova**

The article presents the results of studying the following species of forage plants of the legume family in the Botanical garden (Institute) of the Academy of Sciences of Moldova: *Astragalus galegiformis* L., *Astragalus cicer* L., coronilla *Coronilla varia* L., annual Arctic clover *Melilotis albus* Desr., cow clover *Trifolium pratense* L., cat's clover *Lotus corniculatus* L., *Onobrychis tanaitica* Spr., lucerne *Medicago sativa* L., *Medicago tianschanica* Vass, *Lathyrus grandiflorum* Sm., flat pea *Lathyrus sylvestris* L., their biochemical composition, productivity and full value of feeds.

**Key words:** feed legumes, biochemical composition, metabolizable energy, feed units, digestible protein.

**Kisnichan L.P. Prospects for the introduction and application of ground cherry (*Physalis* spp.) in Moldova**

For expanding and improvement of the assortment of spice and essential oil-bearing plants that are in demand on the spice market, we have introduced and are currently studying very useful species of ground cherry (*Physalis* spp.). The most often used and popular species (*Physalis alkekengi* L., *Physalis Franchetii* Mast., *Physalis ixocarpa* Brot and *Physalis peruana* L.) are identified. Effective methods of reproduction and pest and disease control are developed. The best samples are tested as spice, medicinal, and ornamental plants.

**Key words:** ground cherry, spice, medicinal, fruits, ripening, seeds.

**Myslyva T.M., Bilyavskiy Y.A. Spatio-temporal variations in lead and cadmium content in medicinal plants of Zhytomyr Polissya**

The features of spatio-temporal variations in Pb and Cd availability in the phytomass and separate organs of five species of medicinal plants that grow within the limits of mezohemeric ecotopes on the territory of Zhitomir oblast have been studied. It is shown that the maximal amount of pollutants is concentrated in the roots of plants at the end of the vegetation period, and their content depends on the species, habitat and harvesting season.

**Key words:** heavy metals, medicinal plants, soil, spatio-temporal variations, accumulation coefficient, danger coefficient.

**Djan T.V., Klymenko S.V., Grygorieva O.V. Biologically active substances in the leaves of common persimmon (*Diospyros virginiana* L.) under the conditions of the forest-steppe zone of Ukraine**

The study determines the qualitative composition and content of volatile compounds in the leaves of common persimmon and in lipophilic extracts of the leaves of common persimmon of *Medova 1* and *Medova 2* varieties. It identifies 83 volatile compounds in the leaves and determines their amount: fatty acids dominate, especially palmitic acid. The paper also specifies substances that can be used as markers for common persimmon varieties under study.

**Key words:** common persimmon, volatile compounds, fatty acids, squalen, neophytadien, markers

**Il'nytskyi O.A., Fedorchuk M.I., Paliy I.M., Filipova I.M. The optical properties of leaves of *Nepeta cataria* var. *citriodora* Beck. and *Agastache foeniculum* Pursh. in relation to their water regime**

The study investigates the optical properties of the leaves of *Nepeta cataria* var. *citriodora* Beck. and *Agastache foeniculum* Pursh. under near infrared radiation (NIR) at the background of the changing water regime. It is the first time that a method based on the correlation between the optical properties of the leaves and leaf plate thickness and water supply has been used.

**Key words:** *Nepeta cataria* var. *citriodora* Beck., *Agastache foeniculum* Pursh., water regime, optical properties

**Dashchenko A.V., Dunich A.A., Mishchenko L.T. Prospects of using a new medicinal plant *Smallanthus sonchifolia* Poepp. & Endl**

The paper studies biomorphological characters of *Polymnia sonchifolia* of Ukrainian introduction. It shows dominant amounts of derivatives of hydroxicoric acids in ethanolic extracts of leaves and root tubers. It also reveals a difference in their content in ethanolic extracts of fresh and dry root tubers. The study determines the content of hydroxicoric acids in the leaves: 2.8 % - 4.3 % depending on the cultivation region.

**Key words:** *Polymnia sonchifolia*, *Smallanthus sonchifolia* Poepp. & Endl., introduction, phenol compounds, hydroxicoric acids.

**Mykolaychuk V.G., Andruschenko O.L. Morphological and biological features of generative plants *Baptisia australis* (L.) R. Br. ex Ait. f. (*Fabaceae*) in the process of their introduction to the northern area of the Ukrainian forest-steppe on the right bank of the Dnieper and prospects for their use**

The study identifies specific features of the vegetation period duration and phenological phases of *Baptisia australis* plants, determines their morphometric characteristics and dynamics, and establishes a correlation between the height of generative shoots and productivity of the aboveground organs.

Plant pigments from *B. Australis* leaves (depending on the availability and type of treatment salts) can dye eggshell and wool different shades of yellow, green, brown and black, penetrating deep into the texture of material but preserving its properties.

**Key words:** *Baptisia australis*, phenological phases, height, generative shoot, dyeing.

**Kotyuk L.A. Sowing qualities of the seeds of *Dracocephalum moldavica* L. introduced under the conditions of Zhytomyr Polissya**

The study of sowing qualities of seeds of Moldavian dragonhead introduced under the conditions of Zhytomyr Polissya allows showing the advantages of *D. moldavica* L. cv. *Perlynka* in morphometric parameters, while *D. moldavica* L. displays better laboratory germination. Germinating power indices and germination rate of the seeds of Moldavian dragonhead decrease with a longer storage period.

**Key words:** spice and essential oil-bearing plants, Moldavian dragonhead, morphometric parameters, germination rate and germinating power

**Skrypchenko N.V. Actinidia as a source of high vitamin products**

The paper provides the results of studying actinidia *A. arguta* and *A. purpurea* as a valuable fruit crop in the area of the forest steppe of Ukraine on the right-bank of the Dnieper and a source of curative and dietetic products. It features data on the content of biologically active substances in the fruits and leaves of actinidia varieties selected in the Nikitski botanical garden, and proposes methods of their processing. The study shows the expediency of introducing actinidia to horticulture.

**Key words:** actinidia, biologically active substances, microelements.

**Mitina L.V. Comparative analysis of the initial stages of ontogenesis of species of the genus *Berberis* L. under the conditions of open and protected ground in the steppe zone of Ukraine**

The study shows that the development of all species of the genus *Berberis* in open ground was much slower than in greenhouses. In both cases, the development of plants of the first year of life stopped at the immature stage. The difference in morphometric characteristics of the seedlings under artificial and natural conditions reached 2-3 times. Specific features of the latent and virginal periods of the ontogenesis for 22 species of the genus *Berberis* L. are identified.

**Key words:** ontogenesis, species of the genus *Berberis* L., introduction, reproduction.

**Rabotyagov V.D., Svydenko L.V, Fedorchuk M.I., Brindza J., Filipov E.G. Biological features and essential oil content of *Ocimum sanctum* L. under the conditions of the steppe zone of Ukraine**

*Ocimum sanctum* L. is a valuable aromatic and medicinal plant. In the steppe zone of Ukraine, it undergoes all developmental phases. Seed population is characterized by heterogeneity. The study identifies two forms different in morphological characteristics, essential oil content and composition.

**Key words:** *Ocimum sanctum*, developmental phases, essential oil, essential oil composition



**Mishchenko S.V. Occurrence of *Abutilon theophrasti* Medik. in the north-east of Ukraine**

The paper provides a description of the biology of *Abutilon theophrasti* Medik based on literary sources. It identifies habitats of this species in the north-east of Ukraine, determines special features of separate morphological characters and seed productivity. The average and high coefficients of variability of traits on the fixed nutrition ground make it possible to carry out research into finding sources and donors of valuable characters. The prospects of further investigations of the variability of important utility characters and reproductive capacities of abutilon are outlined.

**Key words:** *Abutilon theophrasti* Medik, abutilon, fiber, morphological characters, seed productivity, variability.

**Kutsenko N.I. Areas and methods of breeding European madder**

The study identifies the main characters for selection of European madder, and provides a draft plan and specific methods of the breeding process.

**Key words:** breeding, European madder, samples, breeding methods.

**Glushchenko L.A. Spreading and harmfulness of diseases of medicinal plants**

The paper describes types of diseases of medicinal plants of the *Asteraceae*, *Lamiaceae*, *Fabaceae* and other families. *Cercospora*, *Septoria*, *Phyllosticta*, *Colletotrichum*, *Ramularia*, *Peronospora*, *Macrosporium*, *Alternaria*, *Phytophthora* and other genera of micromycetes cause blight. Fungi of the genera *Fusarium*, *Phytophthora*, *Alternaria*, *Helminthosporium* cause root rot. *Erysiphe* and *Sphaerotheca* cause powdery mildew. *Puccinia*, *Uromyces*, *Coleosporium* and *Phragmidium* cause downy mildew.

In different years, virus diseases smite *Plantago major* L., *Echinacea purpurea* (L.) Moench, *Mentha piperita* L., *Valeriana officinalis* L, *Ammi visnaga* (L.) Lam.

These diseases result in the loss of 25-60% of the above-ground mass of plants and 25-35% of underground organs.

Agrotechnical practices, biological and chemical methods are used in disease control.

**Key words:** medicinal plants, pathologies, harmfulness

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