

Historical aspects of the formation of national plant varietal resources in Ukraine

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Introduction. National varietal plant resources are of particular importance for the economic development of Ukraine, because they ensure the stability of the crop industry as a component of the country's food security. The analysis of the historiography of the development of the state variety testing since 1923 showed the lack of a systematic study of the formation of the State Register of Plant Varieties suitable for distribution in Ukraine (hereinafter – the Register of Plant Varieties of Ukraine). **Purpose.** To reveal the historical stages of the formation of national plant varietal resources, and substantiate the concept of their development. **Methods.** A collection of commonly known plant varieties that are or were in commercial circulation. Research methods – general scientific: hypothesis, observation, analysis, synthesis method for drawing conclusions; source study database with elements of extrapolation, which is formed based on the results of field, laboratory and analytical research. **Results.** The study of the history of state variety testing regulation made it possible to find out that the variety testing network in Ukraine was established in 1923. Therefore, the formation of national varietal plant resources has its own almost a hundred-year history. At all historical stages of the formation of national varietal resources, a variety with a complex of its morphobiological and economically valuable characteristics remains the subject of the research. State registration of a variety or rights to it ensures the commercial circulation of the variety. Identification of plant varieties, as the basis for varietal certification, increases the turnover of varieties on the market, ensures the growth of production volumes and improves the quality of crop products. Plant varieties distributed on the territory of Ukraine correspond to the criteria of distinctness, uniformity and stability generally accepted in international practice; meet the needs of consumers in terms of economically valuable characteristics; do not threaten the environment and human health. The formation of national plant varietal resources takes place in stages with the tendency to increase the economically valuable criteria, which ensures the competitiveness of the modern market of varieties and seeds in accordance with international requirements. **Conclusions.** The formation of plant varietal resources to meet the needs of consumers and/or breeding practice in Ukraine took place due to rather long historical stages of development and introduction of plant diversity, forms, criteria and methodology of varietal testing in time and space. The substantiation of the historical aspects of the concept of the varietal resources formation will allow optimizing the structure of the variety testing network, organizational foundations of the state registration of varieties and the protection of breeder's rights.

Keywords: variety; seeds; planting material; variety testing; Register of plant varieties of Ukraine; collection; breeding; variety replacement; variety renewal.

Introduction

The main task of the agrarian policy of the state is to increase production and improve the

quality of crop production. One of the stages of its solution is varietal replacement and renewal of varietal plant resources, which ensure the realization of the food security of the state and can be used in further breeding practice. The development of agricultural science and the growth of society's needs for competitive varieties on the domestic and international markets are ensured through state protection of varieties and breeder's rights. The state guarantees the registration of rights to varieties distributed on the territory of Ukraine, protection of property rights of the breeder in accordance with the requirements of the International Union for the Protection of New Varieties

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ties of Plants (UPOV) and the implementation of varietal certification of seeds and planting material in Ukraine in accordance with the requirements of the International Organization for Economic Cooperation and Development (OECD) [1–3].

The Register of Plant Varieties of Ukraine is formed using the positive results of the qualification examination of plant varieties as a complex of field and laboratory studies to determine the criteria of distinctness, uniformity and stability and the criteria of the ban on distribution.

In the conditions of market relations, the state protection of the rights of breeders, producers of agricultural products and raw materials is becoming more and more important. One of the levers of guaranteeing these rights is the Register of Plant Varieties of Ukraine and the Register of Patents [4]. The State Register of Rights of Owners of Patents for Plant Varieties in Ukraine provides protection of the breeders' rights in terms of intellectual property for varieties and promotes their civil circulation on the market. The state system of protection of rights to plant varieties is represented by a competent body and an expertise institution [5, 6].

The competent body – the Ministry of Agrarian Policy and Food of Ukraine – as the central body of the executive power forms and implements the policy in the field of protection of rights to plant varieties and fulfills its obligations to the Convention of the International Union for the Protection of New Varieties of Plants (UPOV), of which Ukraine became a member in 1995. Expertise establishment is a scientific research institution that conducts a complex of field, laboratory, analytical and statistical studies on the qualification examination of plant varieties, based on the results of which conclusions are drawn up on the state registration of varieties and/or rights to them.

Today, the Ukrainian Institute of Plant Variety Examination (hereinafter referred to as UIPVE) is the basic scientific research institution for carrying out a complex of field and laboratory research on the scientific and technical examination of plant varieties in Ukraine. Also, UIPVE is an authorized institution for field (soil) varietal control and laboratory varietal control. UIPVE belongs to the sphere of management of the Ministry of Agrarian Policy and Food of Ukraine. The organizational and legal form of the institution is a state budget non-profit scientific institution with state support.

The complex of field and laboratory studies on the qualification examination of plant varie-

ties is carried out by 21 branches of the UIPVE, namely: Vinnytsia, Volyn, Dnipro, Donetsk, Zhytomyr, Zakarpattia, Ivano-Frankivsk, Kropyvnytskyi, Kyiv, Lviv, Luhansk, Odesa, Poltava, Rivne, Sumy, Ternopil, Kharkiv, Khmelnytskyi, Cherkasy, Chernivtsi, Chernihiv.

During the research, only single unified historiographical works on domestic variety testing were found. Research on the creation and testing of varieties began to develop on the territory of modern Ukraine in the 80s of the XIX century, initially in the private farmsteads of Mendeleev, Engelhardt, etc. At the same time, private agricultural societies began to be founded: Poltava, Kharkiv, Sugar manufacturers, and so on. Thanks to the petitions of professors O. Yermolov, P. Kostychev, D. Rudzinskyi, V. Dokuchaev, P. Budrin and the work of agricultural societies, the Department of Agriculture of Russia in 1880–1900 began to allocate funds for breeding and research. At this time, approximately 10 experimental stations (Shatylyvska, Poltava, Kherson, etc.) were created at the expense of the state, as well as a large network of experimental and demonstration fields were created at the expense of local agricultural societies.

In almost all institutions, the areas of activity were breeding, comparative testing of local and foreign varieties, methods of fertilization, etc. The first separate variety test and its results were obtained by Professor Zaikevych on the Poltava experimental field in 1886, where local wheat varieties 'Chornokolosa ostryta', 'Poltavka', 'Hyrka', 'Sandomyrka', 'Teika' and some foreign varieties were tested [9].

In 1909, Odesa, Kharkiv and other research stations varieties of field crops began testing. At the beginning of the 20th century, the Scientific Committee of the Main Administration at the Department of Agriculture became such an authority. It was entrusted with the management and correction of the scientific activity of research stations and demonstration fields in the country. In 1913, the Scientific Committee held a meeting on agricultural research, where provisions for the organization and methodology of research work on the variety breeding and testing were worked out, but due to the First World War and the Civil War in the period from 1914 to 1918, there was a break in the development of the research [10].

The formation of a single scientific base dates back to 1995, when Ukraine became a member of the International Union for the Protection of New Varieties of Plants (UPOV). Analysis of scientific publications in the field of breeding, seed production and variety tes-

ting; archival documents; official legal acts and source base with elements of extrapolation showed that since 1923, the formation of national plant varietal resources had been unsystematic, there was no justification for the development of the concept of domestic varietal testing at all historical stages. Therefore, the purpose of the research is to reveal the historical stages of the formation of national plant varietal resources as the basis of food security of the country and to substantiate the concept of their development.

Materials and methods

The collection of commonly known plant varieties that are or were in commercial circulation is used as material for analytical studies of the source base with elements of extrapolation. The introduction of plants has its own terminology, theory, methodology, technique and research methods, both field and analytical. The main methods of plant introduction are the ecological-historical, which is based on the array of data of the methodological-source science base of introduced cultivars with elements of extrapolation, which contributes to the gradual introduction of new botanical taxa into the culture.

The subject of the research is plant varieties of the relevant botanical taxa, which are considered generally known and are included or have been included in the Register of Plant Varieties of Ukraine. Research methods are general scientific: hypothesis, observation, analysis, synthesis method for drawing conclusions; source database with elements of extrapolation, which is formed based on the results of field, laboratory and analytical research. Institutions of examination of the state system for the protection of plant variety rights conduct research in accordance with unified methods in the areas of research, the corresponding cultivation area and determination of quality indicators [7, 8].

Results and discussion

The formation of national plant varietal resources has its almost hundred-year history. At all historical stages of the formation of national plant varietal resources, the subject of research remains a variety with a complex of its morphobiological and economically valuable characteristics. The study of the history of state variety testing regulation made it possible to find out that the year 1923 is considered the beginning of the domestic variety testing system, when the All-Ukrainian Seed Society created a special variety network, which tasks

were only variety testing of corn, wheat of all types of development, and potatoes. Later (1927–1930), the variety testing program was significantly expanded – the main field and garden crops were involved. Then, for the first time, a general methodology for conducting the study of varieties was developed, the main characteristics for which the tests were carried out were identified, and the assortment of the studied varieties was selected in accordance with the local soil and climatic conditions of different regions [11, 12].

A decisive role in the establishment of the Ukrainian variety network was played by the All-Ukrainian Society of Seed Production, which carried out work on a huge scale in close connection with research stations. At that time, 16 experimental plots conducted varietal tests.

In 1924, the Bureau of Breeding and Propagation of New Varieties of Field Crops was established under the State Institute of Experimental Agronomy, which began to organize the State System of Variety Testing in the country.

In the same year, Narkomzem (People's Commissariat for Agriculture) and the All-Ukrainian Society of Seed Production in Dnipropetrovsk region created the first variety testing station «Nadezhda», where experiments on the varietal study of wheat, barley, oats, millet and other agricultural crops were started.

In 1925, on the initiative of M. I. Vavilov, the Valkivsky section of the «Merefa» experimental field was organized in the Kharkov region. As of 1928, the autonomous variety testing network of the Ukrainian People's Commissariat of Agriculture and the All-Ukrainian Seed Society consisted of 26 research points.

In 1931, a variety testing plot for the study of varieties of vegetable crops was established at the Voroshilovhrad (Luhansk) Agricultural Institute, and in 1932 – the Kherson specialized variety testing plot for testing vegetable crops and potatoes. Not every site was equipped with cultivators, seeders, reapers, so harvesting, threshing and cleaning of seeds were done manually.

In 1932, the Ukrainian Variety Network of the Narkomzem was merged with the variety testing department of the All-Union Institute of Plant Industry (Moscow) and the All-Union State Variety Testing Network (Derzhsortmerezha) was created, and later – the State Commission for Variety Testing of Grain Crops under the Narkomzem (1937). The Decree of the Council of People's Commissars of the USSR of July 29, 1937 «On measures to improve the seeds of grain crops» outlined the basis for

testing varieties of grain crops, including the creation of a network of state variety testing plots. In the period 1937–1938, 193 stations were organized in the Ukrainian SSR: in Vinnytsia region – 25, Dnipro region – 30, Donetsk region – 25, Kyiv region – 26, Odesa region – 30, Kharkiv region – 35, Chernihiv region – 16). The network of variety testing plots was formed according to the district principle (each district or group of districts with similar soil and climatic conditions) [10, 13].

Almost all grown plants were included in the test. Experiments were laid on variety testing plots in 2-, 3- and 6-fold repetitions. Thanks to the organization of the seed control laboratory, varieties were studied not only for yield, resistance to pests, climatic conditions, but also flour-making, baking qualities of grain, protein content, gluten, flour diastatic activity, etc. were determined. The results obtained, together with the results of soil surveys, made it possible to develop varietal zoning.

In 1940, the variety testing plots of the extended set and the main network were formed with the aim of improving the quality of work, ensuring a comprehensive study of the economically valuable characteristics of the variety and relieving the main network of variety testing plots [14, 15].

Before World War II, there were about 150 variety testing plots on the territory of Ukraine, fully equipped with machinery, transport, laboratory equipment, and highly qualified personnel. These measures provided the first varietal zoning already in 1938.

During the occupation of Ukraine in World War II, the state system of variety testing was significantly destroyed, property was looted. The Ukrainian Republican Inspectorate of the State Commission resumed its activities immediately after the liberation of Kyiv. From October 1943 until the start of spring field work, 11 regional inspectorates and 52 variety testing plots resumed their activities, where variety trials of spring crops were laid. Among the variety trials not provided for by the plan, trophy varieties were sown in the liberated regions of Ukraine (barley ‘Anna’; corn ‘Pameri’, ‘Yanetskyi’, ‘Delila’; oats ‘Erban’, ‘Reynbanu’, etc.). In 1945, the Lviv Inspectorate for the Testing of Grain Crops in the Western Regions was established with 5 variety testing plots [16, 17].

By the beginning of the 50s of the last century, the State Variety Network, thanks to the organization of variety testing points in collective farms and state farms, managed to restore work to a certain extent to the pre-war

level. The number of variety testing plots on the territory of the Ukrainian SSR increased to 225 [18, 19].

In 1954, by order of the Ministry of Agriculture of the USSR, the Crimean State Regional Inspectorate with 23 variety testing plots was subordinated to the Ukrainian State Variety Network. So, at the beginning of 1956, the Ukrainian inspectorate consisted of 296 variety testing plots located in all regions of Ukraine, and 25 regional inspectorates. According to the specialization of the variety testing plot, they were distributed as follows: complex, which tested various crops – 151; specialized – 145, of which: vegetable – 48, sugar beet – 5, fruit and berry – 48, tobacco – 3, essential oil crops – 2, rice – 2, flowers – 2, silkworm breeds – 4. To assess the resistance of varieties to diseases and pests, 7 entomophytopathological variety testing plots were created. 212 variety testing plots worked on the basis of collective farms, 76 – on the basis of state farms and research institutions, 8 had an independent base [10, 20].

Since 1960, the State Commission of Ukraine, together with the State Commission of the USSR, began to test uniform sets of the best varieties of the main agricultural crops of the countries participating in the Economic Union.

At the beginning of 1970, the main functions of the state variety testing were (and still are) objective and accurate comparative assessment of varieties and hybrids of agricultural crops, identification of more productive and valuable varieties for zoning and their introduction into agricultural production. The general provisions of the variety testing methodology are the same for all variety testing plots, regardless of their specialization, production base, and geographic location.

During the period 1960–1990, approximately 1,000 samples of foreign breeding were declared to the State Commission of Ukraine. The collectives of the variety testing plots carried out a great deal of work on the objective assessment of varieties, which is well followed by the example of the Dnipro Regional Inspectorate.

The positive dynamics of growth of the potential yield of plant varieties in the experimental plots of the Magdalynovska State Variety Testing Plot of the Dnipropetrovsk region was worthy of attention. These indicators were typical for other crops in the system of the State Variety Testing of Ukraine.

The yield of plant varieties that were in variety testing at different historical stages (1945–2000) is shown in Table 1.

Table 1

Comparative assessment of the yield index of plant varieties that were in variety testing in 1945–2000

Crops	Zoned varieties	Productivity, c/ha	Yield increase	
			c/ha	%
Winter wheat	1945 – ‘Ukrainka 246’	13.0	–	–
	2000 – ‘Skyfianka’	72.5	59.5	550
Spring barley	1945 – ‘Hrushevskiy’	17.3	–	–
	2000 – ‘Donetskiy 14’	59.4	42.1	340
Sunflower	1945 – ‘Zhdanovskiy’	18.1	–	–
	2000 – ‘Odeskiy 122’	38.1	20	210
Sugar beet	1945 – ‘Romanskiy 06’	262	–	–
	2000 – ‘Bilotserkivskiy ChS 90’	612	350	230

As of November 1, 1985, the network of variety testing stations and plots of the Ukrainian SSR numbered 258 units, of which 154 were based on collective farms, 86 were based on state farms and other enterprises, 17 were independent, and one variety testing station [21, 22].

In accordance with the Resolution of the Council of Ministers of the Ukrainian SSR No. 292 dated 27.12.1989 «On the organizational structure of state testing and zoning of agricultural crop varieties», the Inspectorate of the State Commission for Varietal Testing of Agricultural Crops in the Ukrainian SSR was reorganized into the State Commission for Varietal Testing of Agricultural Crops under the State Agricultural Industry of the Ukrainian SSR (hereinafter – the Commission), which included a network of institutions: 25 regional inspectorates, 8 regional state variety testing stations, 17 state variety divisions and the Ukrainian Central Laboratory for Quality Assessment of Trial Varieties in Kyiv. The main task of the Commission was to carry out state testing of all new varieties, hybrids and lines of both domestic and foreign breeding.

In 1992, the State Commission for Variety Testing of Agricultural Crops under the State Agroprom of the Ukrainian SSR was renamed the State Commission of Ukraine for Testing and Protection of Plant Varieties of the Ministry of Agriculture and Food of Ukraine (State Commission), which carried out state administration in the field of testing plant varieties. The purpose of its creation was to ensure state management of the formation of varietal resources and the protection of breeders' rights to plant varieties. The State Commission consisted of 25 regional inspectorates, 66 state variety testing stations, 122 variety plots, 8 laboratories and 4 enterprises. Decree of the Cabinet of Ministers of Ukraine 3116-XII dated April 21, 1993 adopted the Law of Ukraine «On the Protection of Rights to Plant Varieties», which provided for the regulation of

property and personal non-property relations arising in connection with the acquisition, exercise and protection of intellectual property rights to plant varieties. In accordance with the Decree of the Cabinet of Ministers of Ukraine dated November 22, 1993 No. 935 «On the Register of Plant Varieties of Ukraine», the Regulation on the Register of Plant Varieties of Ukraine was approved, and a number of by-laws were adopted that regulated the maintenance of the Register of Varieties [23].

Formation of the State Register of Plant Varieties Suitable for Distribution in Ukraine made it possible to create in the state its own market of varieties and hybrids, speed up their introduction into production, eliminate artificial restrictions on their use, and give producers greater freedom to choose the best of them based on the maximum use of seed potential.

In 1995, Ukraine became a member of the International Union for the Protection of New Varieties of Plants (UPOV). Verkhovna Rada of Ukraine adopted the Law of Ukraine dated June 2, 1995 No. 209/95-VR «On Ukraine's Accession to the International Convention for the Protection of New Varieties of Plants». In addition, already in 1997, cooperation between Ukraine and the Organization for Economic Cooperation and Development (OECD) began by signing the Agreement on privileges, immunities and benefits provided by the OECD on the territory of Ukraine by the Cabinet of Ministers of Ukraine and the OECD. Verkhovna Rada of Ukraine ratified the agreement in July 1999 (Law of Ukraine dated 07.07.99 No. 850-XIV).

In 2000, the variety network of the State Commission of Ukraine for Testing and Protection of Plant Varieties of the Ministry of Agriculture and Production of Ukraine counted 92 state variety testing stations and 47 variety testing plots. New approaches to the concept of a variety, the world experience of its protection prompted the government to take appropriate steps in the regulatory, scientific,

methodical, international aspects of the system of variety examination and the protection of rights to them. The order of the Cabinet of Ministers of Ukraine in 2001 approved a number of priority measures to solve the most important tasks in seed production and breeding of agricultural crops, and provided for the creation of the Ukrainian Institute for Plant Variety Examination [24].

In 2002, through the reorganization of the State Center for Certification, Identification and Quality of Plant Varieties, the Ukrainian Institute for Plant Variety Examination (hereinafter referred to as UIPVE) was established (Resolution of the Cabinet of Ministers of Ukraine dated 01.06.2002 No. 714 «On the establishment of the State Service for the Protection of Plant Varieties and the Ukrainian Institute for Plant Variety Examination»).

As part of the Ministry of Agrarian Policy and Food, on the basis of the State Commission for Testing and Protection of Varieties, the State Service for the Protection of Rights to Plant Varieties was established as a government body to which the UIPVE and variety testing research stations were subordinated.

In 2003, the UIPVE started publishing the official Bulletin «Protection of Rights to Plant

Varieties», with the aim of officially publishing the results of research, on the basis of which state registration of the variety and/or rights to it takes place. In 2003, Verkhovna Rada of Ukraine adopted Law of Ukraine No. 411-IV dated 26.12.2003 «On seeds and planting material», which determined the basic principles of production and circulation of seeds and planting material, as well as the procedure for state control over them [25, 26].

In 2005, cooperation between Ukraine and the Community Plant Variety Office (CPVO) began. On April 25, 2005, a Memorandum of Understanding was signed in Kyiv between the CPVO and the State Service for the Protection of Rights to Plant Varieties, which provided for the exchange of information and experience, training, cooperation at the technical level (training of technical personnel, participation of Ukrainian representatives as observers in expert meetings of the CPVO) [27].

Ukraine is the 26th UPOV member country out of 67 member countries. Recently, many states that are not members of UPOV have submitted proposals to their legislatures for the adoption of laws on the protection of plant varieties and are carrying out relevant work to join the Union (Fig. 1).

In 1995, Ukraine was one of the first CIS countries to become a member of the International Union for the Protection of New Varieties of Plants. In 2006, it ratified the act of the UPOV international convention of 1991, which allows the protection of varieties of all botanical taxa. In 2022, UPOV membership is represented by 78 participating countries with the EU and the African Intellectual Property Organization among them. November 3, 2020 marked 25 years of UPOV membership.

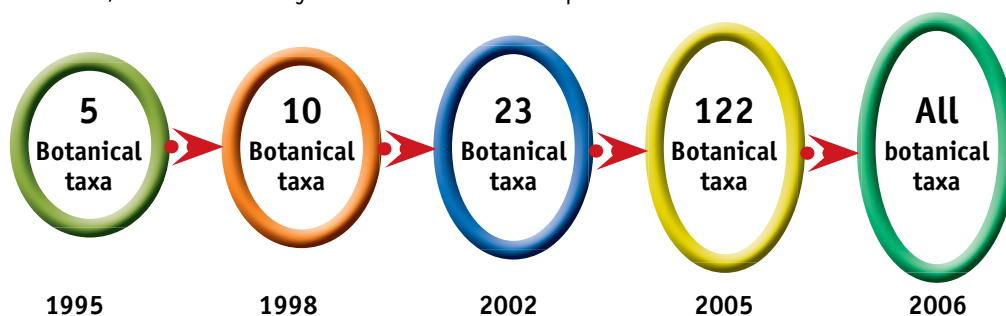


Fig. 1. Stages of protection of new varieties of plants in Ukraine

Verkhovna Rada of Ukraine adopted the Law of Ukraine dated August 2, 2006 No. 60-V «On the accession of Ukraine to the International Convention for the Protection of New Varieties of Plants». Ratification of the 1991 Act of the International Convention for the Protection of New Varieties of Plants allowed the protection of varieties of all botanical taxa.

In 2013, Ukraine hosted the 42nd session of the UPOV Field Crops Technical Working Group in Ukraine (Kyiv), which was attended

by 58 foreign participants from 30 countries of the world (UPOV member countries).

The purpose of scientific research of plant varieties in field and laboratory conditions, which is carried out by the UIPVE, is to obtain collective knowledge about botanical classification, introduction, morphological, physiological, economically valuable characteristics and the suitability of their use to meet the needs of consumers and the subsequent selection process at all historical stages of formation.

The annual filling of the Register of plant varieties of Ukraine with new competitive varieties remains important, which is the key to

the formation of a bank of national plant varietal resources (Fig. 2).

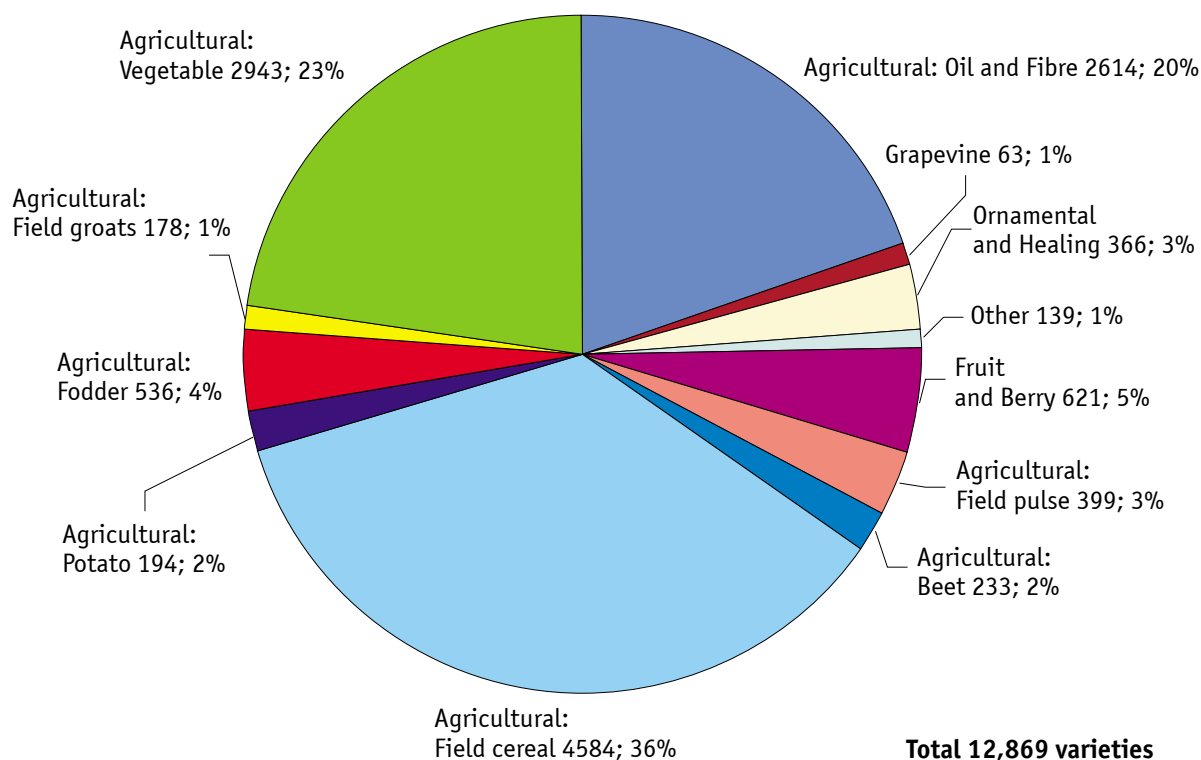


Fig. 2. Structure of the Register of Plant Varieties of Ukraine as of June 1, 2022

State registration of the variety or rights to it ensures the commercial circulation of the variety. The identification of plant varieties as the basis of varietal certification increases the circulation of varieties on the market, ensures the growth of production volumes and the improvement of the quality of crop products. Varieties of plants common on the territory of Ukraine meet the criteria of distinctness, homogeneity and stability generally accepted in international practice; satisfy the needs of consumers in terms of economically valuable characteristics; do not threaten the environment and human health.

Analysis of the results of scientific and technical examination of plant varieties for suitability for distribution and legal protection in Ukraine in certain examination institutions. This expertise determines the directions of creation, formation and use of national varietal resources. Their effective use requires the organization of science-based monitoring of varieties of major agricultural crops involved in commercial circulation. After all, variety study is a scientific study of plant varieties in field and laboratory conditions in order to obtain the completeness of collective knowledge about morphological, physiological, economically valuable characteristics and the suitability

of their use to meet the needs of consumers and the subsequent breeding process.

The formation of national plant varietal resources takes place in stages with the tendency to increase the economic and value criteria, which ensures the competitiveness of the modern market of varieties and seeds in accordance with international requirements.

Monitoring of scientific publications in the field of breeding, seed production and variety testing; archival documents; official legal acts and source base with elements of extrapolation provided the structure of the historical stages of the formation of national plant varietal resources (Table 2).

Further formation of national varietal plant resources of plant varieties required improvement of the mechanism of its legislative, regulatory, methodological, organizational, personnel, scientific and technical, technological and financial regulation in accordance with international and European requirements. The concept of the formation of national varietal plant resources for 2006–2011 revealed the reasons for the unbalanced system of formation of national varietal plant resources.

State funds allocated for state scientific and technical examination of plant varieties are

Historical stages of the formation of national plant varietal resources (1923–2022)

Year	Organizational activities, events, facts
1923	State variety testing was organized (the All-Ukrainian Union of Seed Production was created)
1924	the first variety testing station "Nadiia" in Dnipropetrovsk region;
1925	at the suggestion of M. I. Vavilov, the Valkivsky section of the "Merefa" experimental field was organized in the Kharkov region
1931	the All-Union Institute of Plant Industry (IPI) was created, where approximately 127 botanical taxa were studied; field experiments were laid to study varieties of the vegetable group in the Voroshilovhrad (Luhansk) Agricultural Institute
1932	the State Variety Network was formed: the State Commission for Varietal Testing of Cereal Crops under the People's Commissariat
1937	The Government resolution "On measures to improve the seeds of grain crops" was adopted, which created a seed production system that had the following links: the first is the breeding of new varieties and their selection breeding; the second is the organization of state variety testing; the third is propagation of varietal seeds; the first 13 variety testing plot were organized in all regions
1938	the first zoning of varieties at the variety testing plot
1939	research work is implemented in variety testing; determination of the first economically valuable characteristics
1945	completion of the organization of Inspectorates under the State Commission
1950	formation of the state network, which included 225 variety testing plot
1970	the first methods of variety testing were developed
1985	a network of variety testing stations and plots (258) was formed
1989	the inspectorate was reorganized into the State Commission for Varietal Testing of Agricultural Crops
1991	the Inspectorate of the State Commission for Variety Testing of Agricultural Crops in the Ukrainian SSR of the former State Agricultural Industry of the USSR was transformed into the State Commission for Variety Testing of Agricultural Crops under State Agricultural Industry of the Ukrainian SSR
1992	the State Commission of Ukraine for variety testing was organized
1993	Laws "On Protection of Rights to Plant Varieties", "On Seeds"
1995	Ukraine is a member of the International Union for the Protection of New Plant Varieties (UPOV); 4,665 varieties are undergoing variety trials, including 1,684 varieties of foreign breeding
1998	varieties of 10 botanical taxa are subject to protection
2002	the new edition of the Law of Ukraine "On Protection of Rights to Plant Varieties"; varieties of 23 botanical taxa are subject to protection; creation of the State Service for the Protection of Rights to Plant Varieties and the Ukrainian Institute for Plant Variety Examination
2003	the first official edition of the bulletin "Protection of rights to plant varieties"
2006	the Act of the UPOV Convention of 1991 was ratified; Ukraine protects varieties of all botanical taxa (genera and species)
2009	Ukraine has joined two variety certification schemes of the International Organization for Economic Cooperation and Development (OECD), cereals, corn and sorghum
2011	the State Service for the Protection of Rights to Plant Varieties was liquidated; subordination of the Ukrainian Institute for Plant Variety Examination and variety research stations to the State Veterinary and Phytosanitary Service, which was liquidated in 2016
2012	reorganization of the variety testing network, liquidation of state varietal stations, creation of branches of the UIPVE
2013	Ukraine hosts 78 participants from 70 countries of the world at the meeting of the working group of the "Field Crops" section
2015	the new version of the Law of Ukraine "On Protection of Rights to Plant Varieties", the Ministry of Agrarian Policy and Food of Ukraine becomes the competent body in the field of protection of rights to plant varieties
2019	liquidation of the Ministry of Agrarian Policy and subordination to the Ministry of Economy
2021	the work of the Ministry of Agrarian Policy was restored and the subordination of the UIPVE to the competent body in the field of protection of rights to plant varieties was ensured
2022	the material and technical base and infrastructure of the UIPVE and its branches, as a modern institution of expertise in the field of protection of rights to plant varieties, has been formed

insufficient, but the issue of attracting non-state investments has not been resolved. Issues of scientific and technical, human resources and information and consulting support also

remain unregulated. There is no mechanism of interaction between state and non-state scientific institutions and organizations in the formation of varietal plant resources [28].

There was a production need to model a new concept for the formation of national varietal plant resources and their effective use. The main objectives of the modern concept are the state regulation of the civil circulation of plant varieties and the creation of competitive varieties of domestic breeding, the introduction of varietal certification and entry into the international market; harmonization of state policy in relations related to the use of intellectual property rights for plant varieties in economic activities with the state policy of the member countries of the European Union and other leading countries of the world; increasing the competitiveness of domestic crop production and products of its processing in the domestic and foreign markets.

The optimal solution to the production problem of the formation of national varietal plant resources is based on the results of monitoring the same problems in the countries of the European Union and the International Union for the Protection of New Varieties of Plants. This allows us to state that the development of plant breeding plays a decisive role at all historical stages of the formation of varietal plant resources, and the state scientific and technical expertise of plant varieties through the use of regulatory, supervisory and advisory mechanisms is the best non-alternative option for ensuring the formation of varietal plant resources and their legal protection.

The trends determined by Ukraine during the state scientific and technical examination of plant varieties ensure the formation of national plant varietal resources in accordance with international practice and allow cooperation with the world bank of plant varieties.

Conclusions

Summarizing the above, it can be concluded that from the first attempts to test the first local varieties of agricultural crops to the creation of a separate institution of the Ukrainian Institute for Plant Variety of Examination, which main activity is aimed at organizing and conducting a complex of research on the state scientific and technical expertise of plant varieties, as of intellectual property, more than two centuries have passed. However, the year 1923 should be considered the official date of the introduction of systematic research on variety testing and the creation of a domestic network of variety divisions, when the All-Ukrainian Seed Society created a special variety network, the tasks of which included only variety testing of corn, wheat of various development types, and potatoes.

The formation of plant varietal resources, which can be used by society to meet the needs of consumers or breeding practices, is determined by the historical stages of the development and introduction of plant diversity, forms, criteria and methodology of varietal testing in time and space for the formation of a source base with elements of extrapolation.

The modern market of varieties and seeds allows producers to use varieties that, according to their morphobiological and economically valuable indicators, correspond to the world level, provide the greatest return, with the maximum use of productive and qualitative potential.

The implementation of the new concept of the formation of national plant varietal resources will provide a solution to the food security of the state, the creation of new domestic highly productive adapted ecologically plastic plant varieties and seed production in accordance with international requirements, an increase in production volumes, and an increase in the quality and competitiveness of domestic crop products in the domestic and foreign markets.

References

1. *Plant variety. General requirements: State Standard of Ukraine 7128:2009.* (2010). Kyiv: Derzhspozhyvstandart Ukrainy. [In Ukrainian]
2. *International Convention for the Protection of New Varieties of Plants dated December 2, 1961, revised in Geneva on November 10, 1972, October 23, 1978, and March 19, 1991.* Retrieved from https://zakon.rada.gov.ua/laws/show/995_856#Text [In Ukrainian]
3. *On seeds and planting material: Law of Ukraine dated December 26, 2002 No. 411-IV.* Retrieved from <https://zakon.rada.gov.ua/laws/show/411-15#Text> [In Ukrainian]
4. Ministry of Agrarian Policy and Food of Ukraine. (2022). *State register of plant varieties suitable for distribution in Ukraine for 2022.* Kyiv: Ministry of Agrarian Policy and Food of Ukraine. Retrieved from <https://sops.gov.ua/reestr-sortiv-roslyn> [In Ukrainian]
5. Khudolii, L. M. (1998). *Ekonomichniy mekhanizm formuvannia i funkcionuvannia rynku zerna v Ukraini* [The economic mechanism of formation and functioning of the grain market in Ukraine]. Kyiv: N.p. [In Ukrainian]
6. Zakharchuk, O. V. (2009) Variety as an innovative basis of crop development. *Ahroinkom*, 5/8, 17–22. [In Ukrainian]
7. *Metodyka provedennia kvalifikatsiinoi ekspertyzy sortiv roslyn na prydatnist do poshyrennia v Ukraini. Zahalna chastyna* [Methods of conducting qualitative examination of plant varieties for suitability for distribution in Ukraine. The common part]. (2016). (4th ed., rev. and enl.). Kyiv: Niland-LTD. Retrieved from <https://sops.gov.ua/uploads/page/5b7e5c0ed8332.pdf> [In Ukrainian]
8. *Metodyka provedennia kvalifikatsiinoi ekspertyzy sortiv roslyn na prydatnist do poshyrennia v Ukraini. Metody vyznachennia pokaznykiv yakosti produktsii roslynnytstva* [Methodology for the qualification examination of plant varieties for suitability for distribution in Ukraine. Methods of determining plant production quality indicators.]. (2016). (3rd ed., rev. and enl.). Vinnytsia: N.p. [In Ukrainian]
9. Andriushchenko, A. V., & Kryvytskyi, K. M. (2005). The past and actual Plant Variety Examination in Ukraine. *Plant Varieties*

- Studying and Protection*, 2, 156–167. doi: 10.21498/2518-1017.2.2005.67571 [In Ukrainian]
10. Vasyliuk, P. M. (2013). *Stanovlennia ta rozvytok naukovykh zasad sortovyprobuvannia v Ukraini* [Formation and development of scientific foundations of variety testing in Ukraine]. Kyiv: Niland-LTD. [In Ukrainian]
 11. Andriushchenko, A. V., Kryvytskyi, K. M., & Pavliuk, V. A. (2012). To the problems of creating the Museum of the History of Expertise and Protection of Rights to Plant Varieties in Ukraine. *Plant Varieties Studying and Protection*, 1, 58–60. doi: 10.21498/2518-1017.1(15).2012.60219 [In Ukrainian]
 12. Melnyk, S. I. (2021). Conceptual foundations of the formation of national varietal plant resources: state, prospects, economy. In *Formuvannia novoi paradymy rozvytku ahro-promysloвого sektoru v XXI stolitti* [The formation of a new paradigm for the development of the agricultural sector in the XXI century] (Part 2, pp. 735–759). Lviv–Torun: Liha-Pres. doi: 10.36059/978-966-397-240-4-26 [In Ukrainian]
 13. Malakhovskiy, D. V. (2012). The system of grain seeds graining and its meaning for the country's grain production development. *Efektivna Ekonomika*, 2. Retrieved from <http://www.economy.nayka.com.ua/?op=1&z=955> [In Ukrainian]
 14. Zakharchuk, O. V., Kisil, M. I., Kropyvko, M. M., Zavalniuk, O. I., & Zakharchuk, O. O. (2013). *Nasinnia i sadyvnyi material yak ob'ekt intelektualnoi vlasnosti* [Seeds and planting material as an object of intellectual property]. Kyiv: NNT "IAE". [In Ukrainian]
 15. Andriushchenko, A. V., & Tkachenko, V. M. (2011). On the Need to Review the Procedure of Official Examination of Varieties on Suitability for Dissemination in Ukraine. *Plant Varieties Studying and Protection*, 1, 55–57. doi: 10.21498/2518-1017.1(13).2011.60076 [In Ukrainian]
 16. Volkodav, V. V. (2005). Legal protection of plant varieties in Ukraine. *Plant Varieties Studying and Protection*, 1, 98–109. doi: 10.21498/2518-1017.1.2005.66870
 17. Melnyk, S. I. (2019). Scientific and practical principles of the national varietal resources formation: current state and prospects. In *Theoretical analysis and natural science research in the XXI century* (pp. 141–157). Lviv-Torun: Liha-Pres. doi: 10.36059/978-966-397-187-2/141-157 [In Ukrainian]
 18. Lypchuk, V. V., & Malakhovskiy, D. V. (2015). The sorts resources of grain crops in Ukraine: status and problems of development. *Innovative Economy*, 1, 12–17. [In Ukrainian]
 19. Sabluk, P. T., Khadzhymatov, V. A., Kisil, M. I., & Zakharchuk, O. V. (2009). *Normatyvni vytraty na provedennia ekspertyzy sortiv roslyn* [Regulatory costs for the examination of plant varieties]. Kyiv: N.p. [In Ukrainian]
 20. Radchenko, A. (2016). The variety of plants as an object of agrarian legal relations. *Jurnalul Juridic Național: Teorie și Practică*, 2, 73–77. Retrieved from http://www.jurnaluljuridic.in.ua/archive/2016/1/part_1/16.pdf [In Ukrainian]
 21. Leshchuk, N. V., & Zribniak, M. M. (2006). Government registering varieties of vegetables plants – basis of formation nationality varietal resource. *Plant Varieties Studying and Protection*, 2, 86–96. doi: 10.21498/2518-1017.2.2005.67469 [In Ukrainian]
 22. Sikura, Y. Y. (2003). *Introduktsiia roslyn (ii znachennia dlia rozvytku tsyvilizatsii, botanichnoi nauky ta zberezhennia riznomanittia roslynnoho svitu)* [Introduction of plants (its importance for the development of civilizations, botanical science and the preservation of the diversity of the plant world)]. Kyiv: Fitosotsiotsentr. [In Ukrainian]
 23. *On Protection of Rights to Plant Varieties: Law of Ukraine of 21.04.1993 No. 3116-XII: as of 16.10.2020*. Retrieved from <https://zakon.rada.gov.ua/laws/show/3116-12#Text> [In Ukrainian]
 24. Zakharchuk, O. V. (2013). Valuation of the value of a plant variety as an object of intellectual property. *The Economy of Agro-Industrial Complex*, 2, 86–93. [In Ukrainian]
 25. Leshchuk, N. V., Pavliuk, N. V., & Bronovytska, M. A. (2012). Scientific Rationale for Harmonizing Names of Botanic Taxa in line with International UPOV Requirements. *Plant Varieties Studying and Protection*, 3, 65–73. doi: 10.21498/2518-1017.3(17).2012.58840 [In Ukrainian]
 26. Barabash, O. Yu., Taranenko, L. K., & Sych, Z. D. (2005). *Biolohichni osnovy ovochivnytstva* [Biological bases of vegetable growing]. Kyiv: Aristei. [In Ukrainian]
 27. Andriushchenko, A. V. (2005). Methodological recommendations for the post-registration study of plant varieties. In *Pravovi, naukovi, finansovo-ekonomichni zasady udoskonalennia diialnosti Derzhavnoi systemy okhorony prav na sorty roslyn: materialy naukovo-praktychnoi konferentsii* [Legal, scientific, financial and economic principles of improving the activity of the State system for the protection of rights to plant varieties: materials of the scientific and practical conference] (pp. 35–43). Kyiv: N.p. [In Ukrainian]
 28. *The concept of formation of national varietal plant resources for 2006-2011. Ordinance of the Cabinet of Ministers of Ukraine of August 2, 2005 No. 302-p*. Retrieved from <https://zakon.rada.gov.ua/laws/show/302-2> [In Ukrainian]

Використана література

1. Сорт рослин. Загальні вимоги : ДСТУ 7128:2009. Київ : Держспоживстандарт України, 2020. 6 с.
2. Міжнародна конвенція з охорони нових сортів рослин : від 2 грудня 1961 р., переглянута в м. Женева 10 листопада 1972 р., 23 жовтня 1978 р. та 19 березня 1991 р. URL: https://zakon.rada.gov.ua/laws/show/995_856#Text
3. Про насіння і садивний матеріал : Закон України від 26 грудня 2002 року № 411-IV. URL: <https://zakon.rada.gov.ua/laws/show/411-15#Text>
4. Державний реєстр сортів рослин, придатних для поширення в Україні на 2022 рік (реєстр є чинним станом на 06.07.2022) / Мін-во аграр. політики та прод-ва України. Київ, 2022. URL: <https://sops.gov.ua/reestr-sortiv-roslyn>
5. Худолій Л. М. Економічний механізм формування і функціонування ринку зерна в Україні. Київ, 1998. 212 с.
6. Захарчук О. В. Сорт – як інноваційна основа розвитку рослинництва. *Агроінком*. 2009. № 5/8. С. 17–22.
7. Методика проведення кваліфікаційної експертизи сортів рослин на придатність до поширення в Україні. Загальна частина. 4-е вид., виправ. і доп. Вінниця, 2016. 118 с. URL: <https://sops.gov.ua/uploads/page/5b7e5c0ed8332.pdf>
8. Методика проведення кваліфікаційної експертизи сортів рослин на придатність до поширення в Україні. Методи визначення показників якості продукції рослинництва. 3-е вид., виправ. і доп. Вінниця, 2016. 158 с.
9. Андрющенко А. В., Кривицький К. М. Випробування сортів в Україні: минуле і сучасне. *Plant Varieties Studying and Protection*. 2005. № 2. С. 156–167. doi: 10.21498/2518-1017.2.2005.67571
10. Василюк П. М. Становлення та розвиток наукових засад сортовипробування в Україні. Київ : Ніланд-ЛТД, 2013. 214 с.
11. Андрющенко А. В., Кривицький К. М., Павлюк В. А. До проблем створення музею історії експертизи й охорони прав на сорти рослин в Україні. *Plant Varieties Studying and Protection*. 2012. № 1. С. 58–60. doi: 10.21498/2518-1017.1(15).2012.60219
12. Мельник С. І. Концептуальні засади формування національних сортових рослинних ресурсів: стан, перспективи, економіка. *Формування нової парадигми розвитку агропромислового сектору в XXI столітті* : у 2 ч. Ч. 2 / відп. за випуск О. В. Аверчев. Львів ; Торунь : Ліга-Прес, 2021. С. 735–759. doi: 10.36059/978-966-397-240-4-26
13. Малаховський Д. В. Система насінництва зернових культур та її значення в розвитку зернового комплексу країни. *Ефективна економіка*. 2012. № 2. URL: <http://www.economy.nayka.com.ua/?op=1&z=955>
14. Захарчук О. В., Кісіль М. І., Кривков М. М. та ін. Насіння і садивний матеріал як об'єкт інтелектуальної власності. Київ : ННЦ «ІАЕ», 2013. 92 с.

15. Андрищенко А. В., Ткаченко В. М. Про необхідність перегляду Методики державного випробування сортів рослин на придатність до поширення в Україні. *Plant Varieties Studying and Protection*. 2011. № 1. С. 55–57. doi: 10.21498/2518-1017.1(13).2011.60076
16. Володав В. В. Правова охорона сортів рослин в Україні. *Plant Varieties Studying and Protection*. 2006. № 1. С. 98–109. doi: 10.21498/2518-1017.1.2005.66870
17. Melnyk S. I. Scientific and practical principles of the national varietal resources formation: current state and prospects. *Theoretical analysis and natural science research in the XXI century*. Lviv-Toruń : Liha-Pres, 2019. P. 141–157 doi: 10.36059/978-966-397-187-2/141-157
18. Липчук В. В., Малаховський Д. В. Сортіві ресурси зернових культур в Україні: стан та проблеми розвитку. *Інноваційна економіка*. 2015. № 1. С. 12–17.
19. Саблук П. Т., Хаджимато В. А., Кісіль М. І., Захарчук О. В. Нормативні витрати на проведення експертизи сортів рослин. Київ : Алефа, 2009. 676 с.
20. Радченко А. Сорт рослин як об'єкт аграрних правовідносин. *Jurnalul Juridic Național: Teorie și Practică*. 2016. № 2. С. 73–77. URL: http://www.jurnaluljuridic.in.ua/archive/2016/1/part_1/16.pdf
21. Лещук Н. В., Зрібняк М. М. Державна реєстрація сортів овочевих культур – основа формування національних сортівих ресурсів. *Plant Varieties Studying and Protection*. 2006. № 2. С. 86–96. doi: 10.21498/2518-1017.2.2005.67469
22. Сікура Й. Й. Інтродукція рослин (її значення для розвитку цивілізацій, ботанічної науки та збереження різноманіття рослинного світу). Київ : Фітосоціоцентр, 2003. 280 с.
23. Про охорону прав на сорти рослин. Закон України від 21.04.1993 №3116-XII : станом на 16.10.2020. URL: <https://zakon.rada.gov.ua/laws/show/3116-12#Text>
24. Захарчук О. В. Оцінка вартості сорту рослин як об'єкта інтелектуальної власності. *Економіка АПК*. 2013. № 2. С. 86–93.
25. Лещук Н. В., Павлюк Н. В., Бронюцька М. А. Наукове обґрунтування гармонізації назв ботанічних таксонів відповідно до міжнародних вимог UPOV. *Plant Varieties Studying and Protection*. 2012. № 3. С. 65–73. doi: 10.21498/2518-1017.3(17).2012.58840
26. Барабаш О. Ю., Тараненко Л. К., Сич З. Д. Біологічні основи овочівництва. Київ : Арістей, 2005. С. 119–120.
27. Андрищенко А. В. Методичні рекомендації з післяреєстраційного вивчення сортів рослин. *Правові, наукові, фінансово-економічні засади удосконалення діяльності Державної системи охорони прав на сорти рослин* : матеріали науково-практичної конференції (м. Київ, 14–16 листопада 2005 р.). Київ, 2005. С. 35–43.
28. Концепція формування національних сортівих рослинних ресурсів на 2006–2011 роки. Розпорядження Кабінету Міністрів України від 2 серпня 2005 р. № 302-р URL: <https://zakon.rada.gov.ua/laws/show/302-2005-%D1%80>

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Вступ. Національні сортіві рослинні ресурси мають особливе значення для економічного розвитку України, адже вони забезпечують стабільність галузі рослинництва як складової продовольчої безпеки держави. Аналіз історіографії розвитку державного сортовипробування з 1923 року показав відсутність системного дослідження формування Державного реєстру сортів рослин, придатних для поширення в Україні (далі – Реєстр сортів рослин України). **Мета.** Розкрити історичні етапи формування національних рослинних сортівих ресурсів, та обґрунтувати концепцію їхнього розвитку. **Методи.** Колекція загальновідомих сортів рослин, які перебувають чи перебували в комерційному обігу. Методи досліджень – загальнонаукові: гіпотеза, спостереження, аналіз, метод синтезу для формування висновків; джерелознавча база даних з елементами екстрополяції, яка формується за результатами польового, лабораторного та аналітичного дослідження. **Результати.** Дослідження історії регулювання державного сортовипробування дало змогу з'ясувати, що сортовипробувальна мережа в Україні була створена в 1923 році. Тому формування національних рослинних сортівих ресурсів має свою майже столітню історію. На всіх історичних етапах формування національних рослинних сортівих ресурсів предметом дослідження залишається сорт з комплексом своїх морфобіологічних та господарсько-цінних характеристик. Державна реєстрація сорту або прав на ньо-

го забезпечує комерційний обіг сорту. Ідентифікація сортів рослин як основа сортової сертифікації збільшує обіг сортів на ринку, забезпечує зростання обсягів виробництва та підвищення якості продукції рослинництва. Сорти рослин, поширені на території України, відповідають загальноприйнятим у міжнародній практиці критеріям відмінності, однорідності та стабільності; задовольняють потреби споживачів за господарсько-цінними характеристиками; не загрожують довкіллю і здоров'ю людини. Формування національних рослинних сортівих ресурсів відбувається поетапно з тенденцією підвищення господарсько-цінних критеріїв, що забезпечує конкурентність сучасного ринку сортів і насіння відповідно до міжнародних вимог. **Висновки.** Формування рослинних сортівих ресурсів для задоволення потреб споживачів та/або селекційної практики в Україні відбувалось завдяки доволі тривалим історичним етапам розвитку та інтродукції рослинного різноманіття, форм, критеріїв і методології сортовипробувальної справи в часі і просторі. Обґрунтування історичних аспектів концепції формування сортівих ресурсів дозволить оптимізувати структуру сортовипробувальної мережі, організаційні основи державної реєстрації сортів та охорони прав селекціонера.

Ключові слова: сорт; насіння; садивний матеріал; сортовипробування; Реєстр сортів рослин України; колекція; селекція; сортозаміна; сортооновлення.

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