ACTIVITIES OF THE ALL-UKRAINIAN NETWORK OF THE OBSERVATION POINTS (1920'S – 1930'S)

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Summary

The article analyzes the history of formation and development of agricultural research work – a component of the culture of agronomy, which was considered the basis of the agriculture. Despite the organizational and financial difficulties, the research work had developed.

The flourishing of research in Ukraine fell on 20-30's of the 20th century. At this time in the agrarian science of Ukraine there were the significant scientific and organizational changes, as a result of which the priorities in the tasks of research institutions changed and practice began to dominate over theoretical developments.

In the conditions of agriculture of the Ukrainian SSR, successful control of the pests and plant diseases was the key to ensuring a good harvest. But the struggle without knowledge of the conditions of development of the pests or pathogens of the plant diseases, was a measure only of a palliative nature. The correct and expedient control of the plant diseases required knowledge of the course of development of the disease, the time of its occurrence, the prevalence and harmfulness and many other aspects of biological and economic nature.

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1. Introduction

A detailed analysis of the topic of the formation and activities of the All-Ukrainian observation points gives grounds to assert a limited historiographical legacy. Among the noteworthy works are monographs *(Prysiazhniuk, 2006), (Verhunov, 2002), (Shchebetiuk, 2017)* and others. At the present stage, the issues of the history of the creation of the observation points are poorly understood, have a fragmentary nature of coverage of the historical aspect of the problem, so there is a need for more systematic and comprehensive research.

The aim of the work is to carry out a scientific-historical analysis of the formation and activities of the All-Ukrainian network of the observation points as an original organizational and scientific phenomenon of the 1920's of the 20th century, the historical circumstances that led to the social need for the emergence, its formation and function.

2. The metodology

The methodological basis of the research was the principles of historical knowledge of published scientific works on the creation and activities of the observation points. It involved the search for published works, which to some extent reflected the history of its establishment. Its analysis made it possible to objectively assess the contribution of scientists to modern knowledge about the development of the methods of observation and protection against pests.

3. Presentation of the main research material

In February 1925, at the 3rd All-Ukrainian Entomo-Phytopathological Congress, the Plant Protection Department of the People's Commissariat of Lands of the Ukrainian SSR and the Plant Protection Section of the Agricultural Scientific Committee of Ukraine have developed and implemented the project ''The All-Ukrainian Network of the Observation Points on Statics and Dynamics of Pests and Plant Diseases'' *(Strakhov, 1929: 2).* The observation points have established in different natural and economic regions of Ukraine according to the data of natural and historical zoning. The organization of points, setting works and its management were entrusted to the Departments of Research Agricultural Stations, respectively, by specialties (entomology and phytopathology) and branches of agriculture (farming, horticulture and horticulture).

In 1919–1934, the talented scientist and organizer T.D. Strakhov carried out painstaking work on the organization of the stronghold and observation points. Thus, a number of the branches (Poltava, Lubny, Sumy, Lokhvytsia, Drabiv, etc.) were established at the Department of Phytopathology of the Kharkiv Regional Agricultural Experimental Station, as well as a network of the observation points in various ecological and geographical zones of the Ukrainian SSR.

The field studies were conducted according to programs developed by T.D. Strakhov *(Mamrai, 2019: 262-266).* He also proposed the first instructions for accounting for diseases of field, garden, vegetable crops, which gave rise to the development of accurate methods of accounting for diseases, which were approved by the All-Union Congress on Plant Protection in February 1929 and adopted as the basis for the work of all enterprises, first as management work instructions, and later as principles for the development and detailing of accounting work *(Strakhov, 1929).*

The general management of the observation points and coordination of the work of the entire network belonged to the Section of Plant Protection of the Agricultural Scientific Committee of Ukraine. The observation points carried out work together with the relevant control centers, namely the departments of the research stations. The leading center for monitoring plant diseases of field and garden crops, according to the adopted plan of organization of points, was the Phytopathological Department of the Kharkiv Regional Agricultural Experimental Station *(Strakhov, 1925).*

The lack of accurate and systematic information on plant diseases not only complicated the work of the operational center of Plant Protection Department of the People's Commissariat of Lands of the Ukrainian SSR, but also led to economic costs as a negative factor in reducing yields. Only regular and constant detection of a disease and monitoring of it could specifically and reasonably raise the question of the need to combat it, as exemplified by the main cereals.

The economic importance of the smut in the farms remained almost in last place and was considered a prejudice – not only by ordinary owners, but also persons involved in agronomic propaganda. To destroy such skepticism, it was necessary to conduct mass inspections of crops, to show that smut is a primary disease in agriculture, which leads to huge crop losses. Thus, the "smut issue" was raised as a matter of national importance.

The observation points, in this formulation of the question, became the institutions that were to combine work on the study of plant diseases under the auspices of one organization, working on a single agreed method and ensuring the accuracy and comparability of the results. The observation points were thus auxiliary establishments, on the one hand, of the operational center of Plant Protection Department of the People's Commissariat of Lands of the Ukrainian SSR, which according to the points was building planned control work, and on the

other hand, of the Plant Protection Section of the Agricultural Scientific Committee of Ukraine *(Strakhov, 1925).*

The basis of the tasks of the observation points included: regular monitoring of the diseases of the cultivated plants, indicating the time of its appearance and the course of development; accounting for harmfulness caused by major diseases; the methods that guarantee sufficient accuracy of accounting, as well as determining the degree of damage to plants, in the absence of the accurate methods of accounting for harmfulness; conducting basic phenological observations that characterize the development of the diseases and plants; notification of all information and data on the conditions governing the course of the disease. These tasks had a minimum for each observation point and were carried out in the manner and within the conditions required by the instructions and the attached "accounting cards". Analytical tasks for the observation points were not envisaged. In-depth works were carried out only in those points where there were objective and personal opportunities for its implementation.

The instructions for accounting and observation provided that the district of activities of an observation point throughout the growing season should be permanent and limited to the area of ownership of one village, state farm, if the area of its crops was large and crops of the experimental station were diverse. Observations in the fields of experimental stations or state farms were conducted only on crops that were close to the type of peasant, otherwise the work had to be transferred to the peasant crops of the nearest village. The territory of a point included all types of crops of field crop rotation accepted in the given area.

At each observation point, the work was of a contradictory nature: some studies was aimed at determining the economic significance of some plant diseases and was carried out by quantitative methods of accounting for harmfulness or the degree of damage to plants by smut (or zone); other works were aimed at collecting information on a number of the diseases with a qualitative determination of the degree of plant damage. These and other works were aimed at tracking the dynamics of plant pathogens, so observations and records were conducted repeatedly. Detailed information on the procedure for observation was provided in the relevant instructions.

Plots for all works on all crops were allocated in the area of an observation point. It should be noted that observations and records were repeated three times. The area of fields of the observation points was determined by the nature of the crop and the combination of all the typical features of the part of the crop rotation field where the experimental plot was allocated. The choice of a plot was one of the important moments of the work on observations and records. Observation data conducted at the plots were material for characterizing the entire area of an observation point. Therefore, before choosing the plot, they first got acquainted with the nature of the area, the impact of which can affect both the culture and the its diseases.

No less important is the cultural and economic characteristics of the area: methods of farming, the use of the certain methods of farming, namely the application of fertilizers (organic and mineral) or their absence, the presence of cleanup in crop rotation, the previous plant. They found out whether methods of plant disease control were used in the area of the point. The selection of observation plots was carried out in accordance with these data.

Each record and each observation were necessarily accompanied by the collection of the affected plants. When counting plants affected by smut, crop counts were collected in full, including healthy and affected plants. Each collection for some plots must be accompanied by a label indicating: culture, plot number, registration card number, names of observers, and the time of collection creation. The samples were well dried and sent to the control center. Some samples of garden plants were sent in jars with 5% formalin. Copies were sent to the address

of the Section of Plant Protection of the Agricultural Scientific Committee of Ukraine, to the leading center – Department of Phytopathology of Kharkiv Regional Agricultural Experimental Station and remained with the observer.

If meteorological station was in the area of the observation point, they together with maps and samples provided meteorological information. In the absence of a meteorological station, records were made of the weather in the diary. Meteorological data were sent to the control center. All records of current work, observations were kept in diaries. Diary entries served as material for compiling a consolidated report on the activities of the observation point. The report was submitted to the control center at the end of the growing season. Under favorable weather conditions, some diseases became widespread. Such diseases in Ukraine included hard (smelly) smut.

4. Instructions for accounting for smut (areas) of cereals

The principles of the instruction were developed at the 1st All-Ukrainian Entomo-Phytopathological Congress in February 1923 and provided the following:

1. All major cereals grown in Ukraine were subject of accounting for plants affected by smut. Winter and spring cereals were considered as separate crops.

2. Crops of untreated grain were taken into account. The crops of poisoned grain were taken into account only in addition.

3. The accounting of smut was carried out by the method of taking trial or accounting plots, the size of one square yard each. Time of accounting – the period of ripening of cereals.

4. Trial or accounting sites were located on the accounting plot always in the same order and in the same number.

5. At each trial plot (1 sq. arshin), after the end of the account and records in the card, crops were collected completely – healthy and affected by smut plants.

6. Harvesting was carried out by pulling out the plants with roots.

At the end of the accounting work, the well-dried sheaves were sewn into a burlap cloth and sent by parcel to the Department of Phytopathology of the Kharkiv Regional Agricultural Experimental Station for further processing. Simultaneously, registration cards were sent. The copies of the cards were sent to the address of the plant protection section of the Agricultural Scientific Committee of Ukraine. All materials (sheaves and cards) were sent within a week after the end of accounting.

Observations on the basis of the cards were aimed at tracing the manifestations and development of diseases, the most common cultivated plants, in the different regions of Ukraine. It was envisaged to transfer information on all diseases registered in the area of the observation point. All observation points were provided with basic equipment and materials needed to carry out the planned work plan.

On April 1-5, 1929, a plenum of the "Commission on the Organization of the Accounting Service of the USSR" at the laboratory of A.A. Yachevsky was held in Leningrad. It considered the principles underlying the development of instructions in 1925. The accumulated large factual material allowed to make a number of corrections and additions to the new edition *(Strakhov, 1925: 23 p.)*

The Meeting on the Development of Programs for the Work of Experimental Stations in Entomo-Phytopathology, held on November 3, 1926, had a great importance in the activities of the observation points. In particular, the issues of organization of observation points were solved, the schemes of communication of the departments and points with the section of

Agricultural Scientific Committee of Ukraine were considered, the instructions for conducting the disease accounting were developed and approved. The Meeting on Phytopathology was attended by T.D. Strakhov, Spangenberg, O.I. Bordgardt, Averin, Migulin.

The reports of the observation points for the plant diseases since 1926 were the first results of the experience of the Phytopathology Department of the Kharkiv Regional Agricultural Experimental Station in organizing certain types of work on phytopathology with the help of a network of the observation points. This form of work was completely new. The observation points located in different natural-historical and economic districts of the Kharkiv region carried out their work in a coordinated manner and united under the auspices of a single leading center.

The network of experimental fields was organized mainly in grain-growing regions, where most of the research was aimed at studying varieties, identifying forms focused on the ecological and production conditions of the region, as well as those that would be most cost-effective. Much attention was also paid to the study of diseases of cultivated plants.

Krasnograd observation point

Krasnograd observation point was located in the district of the Krasnograd Agricultural Experimental Station and was undoubtedly coordinated by it. This is the area of transition of the Forest-Steppe into a typical Steppe zone, where a large percentage of crops were occupied by grain crops.

Krasnograd observation point had a certain direction of its activities on studying of diseases of grain crops. Initial observations began in June 1925, but the results of the first year could not be complete enough, the work was carried out by one observer on phytopathology F.M. Maksymenko. Only in 1926, with the organization of the "regional network" and the allocation a special position of observer-phytopathologist by the institution at Krasnograd observation point, the work became managed and more systematic. All experiments were performed according to the schemes and instructions of the Department of Phytopathology of Kharkiv Regional Agricultural Experimental Station on the basis of the general program of work of the observation points. The observer who conducted all the work of the Krasnograd point in 1926 was A.G. Dovgopoly *(Maslovsky, 1926).* The final processing and combination of the presented materials belonged to the specialist A.D. Maslovska. According to the Krasnovgrad point data, the defeat of cereals grain by smut was insignificant in 1926.

Lubny observation point

Lubny observation point activities was based on the study of diseases of medicinal plants, as well as major crops. Of the diseases of cereals, smut was the most common, and the percentage of smut in 1927 was higher than in 1926. The work was carried out by observers A.I. Sladkomedova and V.I. Vergovsky *(Vergovsky, 1926 and 1927).*

Sumy observation point

Sumy Experimental station was founded in 1904, and in 1910 it was transferred to a new plot. It had departments of farming, application, agrochemistry subdivision, meteorological station, chemical laboratory and vegetation house. The director of the station was I.N. Fomichev. The program of scientific works of the station included the following issues:

– increasing the yield of the main agricultural crops;
– intensive use of land;
– feed production, etc.

The report of Sumy observation point is the second district report of the regional network of observation points for 1926. The main objects of the observation points were cereals and beets. All work on accounting for crop disease, in particular smut, was carried out by observer E.F. Zaparenko *(Zaparenko, 1926).*

Drabiv observation point

Drabiv Agricultural Experimental Station was founded in 1910. There were departments in the structure of the station: agriculture, agrochemistry, economics and application. Director of station was Lobovitkov.

The station began work on collective farm experiments in 1914. But due to the First World War the work was stopped. In the spring of 1925, the station laid the first 10 postwar experiments, which were unsuccessful. During the winter of 1925-26, the station received budget funds from the state for collective experiments, for the organization of local institutions and organizations involved in agricultural aid. The observation point for plant disease at the Drabiv Agricultural Experimental Station was headed by the Phytopathology Department of the Kharkiv Regional Agricultural Experimental Station.

The work of the Drabiv point began after the opening in 1925 of an all-Ukrainian network of the observation points. Since 1926, the point became part of the regional network of the observation points, which later became the regional phytopathological organization. The work of the point has been carried out in close contact with the Drabiv Experimental Station, taking into account the main issues of agriculture in this area. Being in a rather significant natural-historical district of the Kharkiv-Poltava region, the Drabiv branch had the main work on studying the diseases of grain and row crops, which were the basis of the field economy of the district *(Strakhov, 1928).*

5. Conclusions

Thus, it is established that in the 1920's the achievements of the experimental institutions became a significant contribution to development of domestic agricultural research work in Ukraine.

The clear statement of the work on plant protection was in constant connection with the demands and actual requirements of agriculture, which were not the same in the different regions of Ukraine. The random nature of the available information about the harmfulness of the diseases often led to the unsubstantiated conclusions, and sometimes to distrust of the actual data provided by some owners or people with little knowledge about plant diseases.

The development of phytopathology in the period of 20-30's was facilitated primarily by the creation of the stronghold and observation points for the diseases and pests of the agricultural crops, as well as plant protection stations. The creation of the stronghold and observation points was a achievement in the development of phytopathology. This has helped to improve the work of existing plant protection institutions.

The task of the points was regular monitoring of the plant diseases and pests, conducting phenological observations that characterize the development of the diseases in a given district. With the organization of the observation points there was a rapid development of phytopathology for the needs of agriculture.

In general, the study of the history of creation and activities of the All-Ukrainian network of the observation points adds new touches to the history of development of agricultural work in Ukraine and the addition of new historical and scientific material about this process.

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