

# FORMATION AND DEVELOPMENT OF THE SCIENTIFIC HERITAGE OF THE INSTITUTE OF BOTANY OF THE ACADEMY OF SCIENCES OF THE REPUBLIC OF UZBEKISTAN (1960–1980)

**Murodova Risolat Davron qizi**

Researcher, The State Museum of History of Uzbekistan, Academy of Sciences of the Republic of Uzbekistan  
ORCID: 0009-0009-5062-9601

**Abstract:** This article studies and analyzes the scientific activity of the Institute of Botany of the Academy of Sciences of the Republic of Uzbekistan (ASRU) in the 1960s–1980s. The research was based on archival documents, scientific publications and other sources. In the course of the study, the formation of the scientific heritage during the 30 years of the Institute of Botany's activity was examined. The scientific heritage was identified and its structural components were analyzed. As a result, it was established that the laboratories, stations, expeditions, herbaria and scientific publications set up at the institute in these years are the main components of its scientific heritage, and that they provided a methodological basis for creating a museumification concept.

**Keywords:** Committee, botany, institute, scientific heritage, research, herbarium, stationary, expedition, museumification.

## Introduction

In 1960, the growth of the world's population (3.3 billion) led to a rise in the demand for food. As a result, the irrational use of natural products caused a disruption of the biological environment. To counter this, the International Biological Programme (IBP) was developed in 1961. The main aims of the programme were the rational use of natural resources, increasing productivity and eliminating hazards.

In 1969, the National Committee of the International Biological Programme of the Uzbek SSR was established [10, p. 3-10]. This coordinated the implementation of research and development related to the IBP plan in the institute's activities. In accordance with the committee's tasks, research on primary productivity was carried out at the Kyzylkum and Ustyurt desert stations. As a result, work to increase the productivity of the desert plant izen was carried out at the "Zarkent" state farm (sovkhoz) in Andijan region, the "Nishon" sovkhoz in Surkhandarya region, the "Lenin" and "Gozgan" sovkhozes in Samarkand region, and the "Kommunizm" sovkhoz in Bukhara region. During the research, Doctor of Biological Sciences V.A. Burigin and Candidate of Biological Sciences A.Y. Butkov studied 18 forms of izen.

In 1960–1980, the Institute of Botany focused on phytomelioration experiments on pastures and arid lands. As a result, the Kyzylkum Desert Station (Bukhara), the Nurata Semi-Desert Station (Samarkand), the Bostanlyk Mountain Geobotanical Station (Tashkent region) and the Khonabad base station (Andijan)

were established. According to the initial test results, the productivity of pastures increased 2–3 times and that of desert areas 4–5 times. The institute's staff succeeded in raising the productivity of desert vegetation on more than 70,000 hectares. In 1971, owing to this success, the institute was awarded the Beruni State Prize of the Uzbek SSR [7, p. 6-7].

Studying the institute's scientific activity in 1960–1980 – alongside identifying the research directions characteristic of the period and its inventions and discoveries – clarifies the process by which a scientific heritage that can be museumified was formed.

For this reason, the main aim of this article is to identify the research directions pursued at the institute in this period and the scientific heritage created in the course of the research. This process lays the foundation for the museumification of the scientific heritage of the Institute of Botany.

### **Methods and Degree of Study**

The main sources used in preparing the study were the archival materials of the ASRU, the scientific publications and jubilee publications of the ASRU Institute of Botany, and archival data. In the course of studying the sources, the components of the scientific heritage resulting from the institute's activities in 1960–1980 were identified.

Historical, systemic and analytical methods were used in presenting the data. The historical method was used to determine the stages in the formation of the institute's scientific activity, new laboratories, stations, expeditions and scientific publications in 1960–1980. The systemic method was used to determine how research activity took shape and what the structural components of the scientific heritage are. The analytical method was used to group the achievements, inventions and discoveries, and applied developments of the research activity as scientific heritage.

### **Results**

In 1960–1980, research at the institute was carried out under the leadership of S. Askarov, J. Sayidov and U. Prатов. These years in the institute's activity are characterized by new scientific laboratories, stationary expeditions at new stations, plants new to science, inventions for industrial use, the publication of scientific works, and the establishment of the “Central Herbarium” fund.

In 1960–1969, seven new laboratories carrying out research on the flora of Uzbekistan were established at the institute. These were the Laboratory of Plant Anatomy and Morphology (1962), the Laboratory of Essential-Oil and Dye Plants (1966), the Laboratory of Paleobotany (1969), the Laboratory of Medicinal Plants (1969), the Laboratory of Saponin-Bearing Plants (1969), the Laboratory of Glycyrrhizin-Bearing Plants (1969) and the Laboratory of Tanning Plants (1969).

Table 1.

Laboratories established at the Institute of Botany of the ASRU in 1960–1980 and their main scientific results

| №  | Laboratory name                 | Main research focus and scientific achievements   |
|----|---------------------------------|---------------------------------------------------|
| 1. | Laboratory of Plant Anatomy and | The anatomical characteristics of valuable forage |

|    |                                            |                                                                                                                                                                                                                                                                                                                 |
|----|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Morphology                                 | plants during ontogenesis and their intraspecific polymorphism were studied. The structure of the absorbing roots of desert subshrubs and the formation of their adaptive anatomical traits were determined.                                                                                                    |
| 2. | Laboratory of Essential-Oil and Dye Plants | More than 560 essential-oil plants, more than 200 aromatic-spice plants and more than 100 dye plants were identified. 22 species of essential-oil plants were tested under industrial conditions and recommended for use in the perfumery industry.                                                             |
| 3. | Laboratory of Paleobotany                  | The Mesozoic and Cretaceous floras and the fossil woods of the Angren coal deposit were studied. Nearly 127 species belonging to 56 genera were identified for the Jurassic flora, and more than 120 species belonging to 80 genera in Southern Fergana. 9 genera and 45 species new to science were described. |
| 4. | Laboratory of Medicinal Plants             | The distribution of licorice over an area of more than 6,000 hectares in the Amu Darya, Syr Darya and Zarafshan valleys and its reserves of 35,200 tonnes were determined. Maps of medicinal plants were compiled and used in practice.                                                                         |
| 5. | Laboratory of Saponin-Bearing Plants       | Nine species of saponin-bearing plants were studied and species promising for the national economy were identified. Perfoliate gypsophila (teshikbargli kachim) was successfully brought into cultivation in the Mirzachul.                                                                                     |
| 6. | Laboratory of Glycyrrhizin-Bearing Plants  | Methods for cultivating naked licorice (yalang'och shirinmiya) on the fresh-water and saline soils of Uzbekistan were developed, and production volume increased ninefold.                                                                                                                                      |
| 7. | Laboratory of Tanning Plants               | The tanning properties of yorongul were confirmed. Leather products treated with its extract were found to meet the requirements of the state standard.                                                                                                                                                         |

According to the data in this table, it was precisely in these years that the institute achieved scientific results such as the creation of new plants, increased productivity, and the identification of plants suitable for industrial use.

In cooperation with the Ministry of Food Industry and the Ministry of Fruit and Vegetable Farming of the Uzbek SSR, Q.X. Xojimatov prepared recipes for 17 types of non-alcoholic beverages, which were introduced into production [9, p. 34]. These include the beverages "Rayxon", "Toshkent", "Paxtakor" and "Tog' guli" (Mountain Flower). As a result of scientific invention, recipes for the balms "Samarqand" and "Samarqand ifori" (Fragrance of Samarkand) were developed. A red dye used in confectionery, non-alcoholic beverages and minced sausage meat was extracted from the hollyhock plant (gulxayri) and put into practice. As a result, large-scale cultivation of hollyhock was established at the "Kommunizm" sovkhoz in Jizzakh region [8, p. 52].

In 1966–1970, under the leadership of A.Y. Butkov, a stationary geobotanical study was carried out in the Chirchik-Angren water basin to determine the barley-grass and wheatgrass-type vegetation cover. The study succeeded in establishing results such as plant composition, root mass and the dynamics of seasonal productivity [5, p. 1].

In 1967, O.N. Bondarenko went on a business trip to Leningrad to study the herbarium of the Botanical Institute of the USSR Academy of Sciences. During this trip, which was planned to last four years, the scientist processed about 150 species. Herbarium specimens relating to Central Asia were extracted from the Mongolian, Chinese, Japanese and Caucasian sections of the Central Asian herbarium [4, p. 5-6].

In 1975–1985, Academician J.K. Saidov was awarded the USSR State Prize and the Bronze Medal of the USSR Exhibition of Achievements of the National Economy (VDNKh) for developing the scientific basis for the phytomelioration of desert pastures [3, p. 58].

In the formation of the institute's scientific heritage in 1960–1980, scientific publications, identification keys, monographs and scientific collections are of importance. In 1963, a 10-volume "Key to the Plants of Central Asia" was prepared at the institute in cooperation with Tashkent State University. The preparation of the key drew on herbarium data from the Institute of Botany of the Academy of Sciences of the Uzbek SSR, TashSU, the Botanical Institute of the USSR Academy of Sciences (BIN) and the botanical institutes of Central Asia [1, p. 252].

Under the leadership of A. Vvedenskiy, and in cooperation with Tanya State University, the 10-volume "Identifier of the Flora of Uzbekistan" was compiled. It is a critical work on the flora of a large region. The TashSU herbaria were taken as the basis for compiling the work. Six volumes of the work were prepared in cooperation with the Academy of Sciences of the USSR (BIN AN SSSR) and the botanical institutes of the Central Asian republics (BINOV).

In 1965, the "Identifier of Higher Plants of Karakalpakstan" was compiled. The work included 87 families, 413 genera and 874 species of wild and cultivated plants.

In 1968, the institute's staff were awarded the Abu Rayhon Beruni State Prize for the books "Flora of Uzbekistan" and "Botanical Materials of the Herbarium".

In 1970–1971, the monographs "Физиология семян дикорастущих пустынных растений" (Seed Physiology of Wild Desert Plants) and "Газообмен и обмен веществ пустынных растений Кызылкума" (Gas Exchange and Metabolism of Desert Plants of the Kyzylkum) were published [7, p. 25].

In 1982, fundamental publications such as "Flora of Uzbekistan" and the "Key to the Plants of Central Asia" are among the important sources that make up the institute's scientific heritage. These works not only carried out a scientific inventory of the flora of Uzbekistan but also served as a basis for preserving plant diversity, protecting rare species and forming biological collections [2, p. 177]. In 1982, Volume VI of the "Key to the Plants of Central Asia" was published. It

includes 57 families, 568 genera and 4,029 species. This volume contains information on two genera new to science, 125 new species and 40 new combinations [1, p. 253].

From 1983 to 1985, scientists such as R.V. Kamelin, I.I. Malsev and I.G. Levich jointly organized an expedition to the Kugitang Range. The expedition collected a large volume of scientific material that would help in creating a grid mapping program for Surkhandarya region [9, p. 11].

In 1984, the urgency of Uzbekistan's ecological problems led botanists to create the "Red Book". It compiled a list of 163 rare, unique and endangered higher plants of various kinds [6, p. 1-2].

In 1987, in the history of the institute, the "Central Herbarium" fund was created through the merger of four large herbarium collections. It comprises the herbaria of the National Herbarium of Uzbekistan, the Herbarium of the Institute of Botany, the Institute of the Chemistry of Plant Substances and the Tashkent Museum of Nature. The earliest forms of the herbaria date back to 1835–1840. The herbaria come from Central Asia, North Africa, Russia, Korea, China and other regions. Among them is also a herbarium from 1900 collected by the botanist B. Fedchenko.

### **Discussion**

As a result of the study, it was established that the research activity of the Institute of Botany of the ASRU developed in three directions.

First, the establishment of new laboratories and stations demonstrated the expansion of directions in scientific activity. The development of research on medicinal, essential-oil, saponin-bearing, glycyrrhizin-bearing and tanning plants led to their introduction into practice.

Second, the expansion of stationary studies and expeditions created the opportunity to conduct research in the natural environment. As a result, herbarium specimens, expedition documents and maps were formed. These are assessed as heritage that makes up the institute's scientific heritage.

Third, the research results were oriented toward practice, that is, toward agriculture and industry. This shows the expansion of applied directions such as determining the reserves of medicinal plants, bringing plant species into cultivation and applying them in industry.

Generalizing these three directions made it possible to determine the composition of the institute's scientific heritage and to divide it into groups.

### **Conclusion**

The results of the study show that in 1960–1980 the institute's fundamental and applied activities developed together. The scientific heritage formed as a result of this activity can be classified into material, intellectual and practical components. This classification is a methodological basis for systematizing the scientific heritage and creating the possibility of its museumification. Taking precisely these aspects into account, the results of the institute's scientific activity in these years are an important source for creating the scientific concept "Museumification of the Scientific Heritage of the Institute of Botany".

## References

1. Academy of Sciences of the Uzbek SSR. Tashkent: "Fan". 1983. 547 p. (in Russian)
2. The Academy of Sciences in the Intellectual History of Uzbekistan. Monograph. Tashkent: "Yangi nashr". 2012. 195 p. (in Russian)
3. Current archive of the Institute of Botany of the ASRU. Data on laboratory activity. 2004. 65 p. (in Uzbek)
4. ASRU Central Archive, fund 35, bound file (case) 541, leaves 5-6. (in Uzbek)
5. ASRU Central Archive, fund 35, bound file (case) 591, leaf 1. (in Uzbek)
6. ASRU Central Archive, fund 35, bound file (case) 876, leaves 1-2. (in Uzbek)
7. Institute of Botany of the Academy of Sciences of the Uzbek SSR: 30 Years. Tashkent: "Fan". 1982. 62 p. (in Russian)
8. Rakhimova T., Rakhimov N. Institute of Botany of the Academy of Sciences of the Republic of Uzbekistan: 80 Years. Tashkent: "Fan". 2021. 111 p. (in Uzbek)
9. Turdiboev O.A., Esemuratova R.Kh., Serekeeva G.A., Achilova N.T. Khasanov Furkat Orunbaevich (on the 65th anniversary of his birth) // Bulletin of the Khorezm Mamun Academy. 2024. No. 3/1. – pp. 11-21. (in Russian)
10. Yunusov A.Yu., Novikov L.K. International Biological Programme. Tashkent: "Fan". 1970. 60 p. (in Russian)