International Journal of Computer Science and Information Technology
ISSN: 3005-9682 (Print), ISSN: 3005-7140 (Online) | Volume 7, Number 3, Year 2025
DOI: https://doi.org/10.62051/ijcsit.v7n3.09
Journal homepage: https://wepub.org/index.php/IJCSIT/index

# Research on the Role of Agricultural and Forestry University Libraries in Cultivating New Quality Agricultural Talents

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## ABSTRACT

As an important support for cultivating new quality agricultural talents, the libraries of agricultural and forestry universities need to break through traditional service models to meet the needs of modern agricultural technology development. At present, there is a mismatch between the library and the demand for new agricultural quality in terms of resource structure, information service, professional ability and coordination mechanism. Specifically, it is reflected in the lack of coverage of cutting-edge technical literature, the lack of scene-based services, the lack of interdisciplinary support, and the lack of smooth industry-university-research linkage. It is necessary to build a resource guarantee system that can be dynamically updated, innovate the information service mode that actively pushes and contextualizes, create a cultivation platform covering training, innovation, and communication functions, and deepen the coordination mechanism with agricultural enterprises and scientific research institutes. Through resource co-construction, project joint, achievement transformation and other ways to build an innovative ecology, it provides the whole process support for the cultivation of new agricultural talents.

## KEYWORDS

Agricultural and forestry universities; Library; The cultivation of new agricultural talents

## 1. INTRODUCTION

With the advent of the era of agriculture 4.0, cutting-edge fields such as intelligent equipment, biotechnology, and big data are reshaping the form of the agricultural industry, and the demand for new agricultural talents with both technological innovation and industrial vision is increasingly urgent. As the core of knowledge service, the resource structure, service mode and professional ability of agricultural and forestry university libraries directly affect the quality of talent training. At present, library services are still in the stage of literature borrowing and basic retrieval, which is difficult to meet the students ' requirements for deep learning of emerging technologies such as agricultural Internet of things and precision agriculture, and lack of collaborative innovation mechanism with enterprises and scientific research institutions, resulting in the disconnection between talent training and the actual needs of the industry. How to reconstruct the library service system to support the growth of new agricultural talents has become a key proposition to improve the quality of agricultural higher education.

## 2. THE CONNOTATION AND TRAINING NEEDS OF NEW AGRICULTURAL TALENTS

### 2.1. The Definition of the Concept of New Agricultural Talents

Agricultural new quality talents are compound talents that conform to the requirements of modern agricultural development and integrate scientific and technological innovation, industrial management and ecological management capabilities. The key is to break the limitations of traditional agricultural skills and build a professional group supported by digital and intelligent technology with market insight and sustainable development concept. Such talents not only need to master cutting-edge knowledge such as precision agriculture and biotechnology, but also have the ability to collaborate and integrate resources across fields, and can upgrade the agricultural industrial chain with the help of technological innovation. Its essence is the qualitative change of talent structure in the process of agricultural modernization. It not only includes the knowledge renewal of traditional agricultural technicians, but also covers the introduction of professional talents in emerging fields, and finally forms an intelligent agricultural talent system covering the whole chain of production, processing and circulation [1].

### 2.2. The Requirements of the Times for the Cultivation of New Agricultural Talents

At the present stage, agricultural transformation is facing multiple challenges of increasingly tight resource constraints, increasing international competition and continuous upgrading of consumer demand. Talent training is needed to cope with the era issues of efficiency improvement, ecological protection and industrial integration. It is necessary to build a compound knowledge system of " technology + management + business " with the help of systematic education, so that talents can have the ability to cope with the transformation of the whole agricultural industry chain ; At the same time, we should focus on practice-oriented, build a mechanism for industry-university-research collaborative education, and closely link theoretical knowledge with the actual needs of the field and market terminals. In addition, under the background of globalization, it is also necessary to cultivate agricultural talents with an international perspective, be able to participate in the formulation of international rules and the output of technical standards, and promote the transformation of Chinese agriculture from scale expansion to quality leading.

### 2.3. The Goal Orientation of Cultivating New Agricultural Talents

The cultivation of new agricultural talents should be guided by the strategy of serving national food security, rural revitalization and agricultural power, and focus on shaping three major ability dimensions :The first is to have the ability of technological innovation, rely on the in-depth training of biological breeding, intelligent equipment and other fields, and set up a core talent team that can break through the ' neck ' technology ; The second is to enhance industrial leadership and focus on cultivating strategic talents with the thinking of the whole industry chain and the integration of resources to promote the development of agricultural clusters ; The third is to enhance ecological adaptability, deepen the concept of green development, and let talents play a leading role in agricultural non-point source pollution control, carbon sink agriculture and other fields [2]. The ultimate goal is to build a talent echelon that matches the modern agricultural industrial system and provide sustainable intellectual support for the high-quality development of agriculture.

# 3. THE PROBLEMS OF AGRICULTURAL AND FORESTRY UNIVERSITY LIBRARIES IN SERVING THE CULTIVATION OF NEW AGRICULTURAL TALENTS

## 3.1. The Resource Structure Does Not Match the Demand for New Agricultural Quality

In the construction of literature resources, agricultural and forestry university libraries still focus on traditional paper books and basic subject databases. However, the professional literature in the frontier fields such as precision agricultural technology, intelligent equipment research and development, and agricultural big data analysis required by new agricultural talents is not covered enough, resulting in students ' lack of systematic learning materials when they are exposed to emerging technologies such as biological breeding and agricultural Internet of Things. The update cycle of library electronic resources is long, and the subscription of some international authoritative journals is delayed, which is difficult to meet the needs of students to track the global agricultural science and technology trends. Moreover, the library 's interdisciplinary resource integration ability is not good, and the literature in the interdisciplinary field of agriculture, information technology and management science is scattered. It is difficult for students to obtain compound knowledge by single retrieval, which is contradictory to the ' technology + management + business ' compound ability that new agricultural talents should have. It is worth noting that the practice-oriented case base and industry report resources are scarce, and students cannot understand the actual operation of the agricultural industry chain through the literature analysis of real scenes, which further aggravates the disconnection between the resource structure and the training objectives.

## 3.2. The Information Service Model is Out of Touch with the Development of New Agricultural Quality

The existing library services are still dominated by passive borrowing and basic retrieval, and there is a lack of active push mechanism for the demand of new agricultural talents. For example, when students carry out agricultural robot research and development or agricultural products e-commerce projects, they cannot obtain customized technical standards, patent information and market analysis reports through the library. Information services have shortcomings in time and space coverage. Online platform functions can only be downloaded for literature, and there is a lack of interactive communication modules. Students cannot conduct real-time discussions with industry experts or researchers in the same field. The opening time of offline service is limited, which is difficult to meet the needs of flexible learning of new agricultural talents. It is particularly critical that the information service does not start from the perspective of the whole agricultural industry chain, fails to establish a correlation between the technical literature of the production side and the market data of the consumption side, and causes students to have a cognitive fault in understanding agricultural modernization. This service model has a significant gap with the dynamic, collaborative and cross-border information support system required by the development of new agricultural quality.

## 3.3. Dislocation Between Professional Service Ability and New Agricultural Quality Training

In the team of librarians, compound talents with agricultural technology background and information analysis ability are very scarce. Although most librarians are good at traditional literature management, they lack knowledge reserves in emerging fields such as agricultural Internet of Things and blockchain traceability, and cannot provide in-depth consultation for students. When students ask about the technical parameters of the application of agricultural drones, most librarians can only provide basic literature, but it is difficult to give solutions based on the actual operation scenarios. The library lacks a training system for new agricultural talents. It has not carried out training in the

use of intelligent retrieval tools, nor has it arranged practical courses for agricultural science and technology information analysis, resulting in students ' information literacy and agricultural modernization needs. The more prominent problem is the lack of forward-looking professional services, insufficient attention to cutting-edge technologies such as digital twins and artificial intelligence breeding required in the era of agriculture 4.0, and failure to layout relevant resources and services in advance. This lag further amplifies the dislocation of professional service capabilities and training objectives.

### 3.4. Collaborative Innovation Mechanism and the Lack of New Agricultural Quality Ecology

The cooperation between libraries and agricultural enterprises and scientific research institutions mostly stays on the surface, lacking the innovation mechanism of deep coordination. For example, although it has built a practice base with some agricultural enterprises, it has not transformed the actual needs of enterprises into the direction of literature resource construction, resulting in the decoupling of collection resources and enterprise technological innovation. The library is not fully embedded in the industry-university-research collaborative training system for new agricultural talents, and the support for project declaration and achievement transformation is insufficient. It is difficult for students to obtain the data needed to study the real problems of the industry from the library. The construction of inter-school library alliance is backward, and colleges and universities repeat the construction of agricultural characteristic resources, while the scarce frontier technical literature has not been shared. This ' island effect ' hinders the development of new agricultural talents.

## 4. THE STRATEGY OF AGRICULTURAL AND FORESTRY UNIVERSITY LIBRARIES TO HELP THE CULTIVATION OF NEW AGRICULTURAL TALENTS

### 4.1. Construction of Agricultural New Quality Resources Security System

In view of the demand of new agricultural talents for cutting-edge technology and interdisciplinary knowledge, libraries need to break through the traditional resource construction mode and build a dynamic and updated resource guarantee system. It is necessary to build a ' demand-oriented ' resource procurement mechanism, and regularly conduct research on the technological innovation direction of agricultural enterprises and scientific research institutes [3]. Focus on purchasing professional literature in the fields of intelligent agricultural machinery and equipment, biological breeding technology, agricultural big data analysis, etc., and increase the subscription of foreign language databases, so that students can grasp the international agricultural science and technology trends in time. We should deepen the construction of characteristic resources, integrate the original data of agricultural laboratories, technical reports of agricultural enterprises, industry white papers and other non-traditional documents, and build a characteristic resource database covering the whole chain of ' technology research and development-industry application-market feedback '. It can cooperate with agricultural UAV enterprises to build a thematic database covering equipment parameters, operation cases and fault solutions, and provide students with practice-oriented learning materials. It is also necessary to promote the digital transformation of resource structure, create a literature traceability system based on blockchain technology, and ensure the authority and traceability of core resources such as agricultural patents and technical standards. At the same time, AI technology is used to realize the intelligent classification and related recommendation of resources, so as to help students quickly locate interdisciplinary knowledge. In order to ensure the sustainability of resources, it is also necessary to establish an update mechanism that is synchronized with the development of new agricultural quality, evaluate resource coverage every six months, timely supplement literature in emerging fields, and form a closed-loop system of 'procurement-integration-update'.

### 4.2. Innovation of Agricultural New Quality Information Service Mode

The traditional information service model is difficult to meet the dynamic needs of new agricultural talents. Libraries need to build a new model of ' active push + scene service '. It is necessary to build an intelligent information push system. With the help of the analysis of students ' retrieval history, curriculum projects and scientific research directions, machine learning algorithms are used to customize personalized information packages, such as pushing sensor technology, 5G application cases, industry standards and other related resources for students engaged in agricultural Internet of things research. Scenario-based information services should be created to provide differentiated assistance according to different learning stages of new agricultural talents; During the course, the integrated data package of ' literature + experimental data + industry report ' was provided ; in the research stage of the project, the expert resources inside and outside the school are docked to provide technical consulting and literature interpretation services ; in the period of entrepreneurship practice, push practical information such as market analysis report, policy interpretation, success stories. It is necessary to expand the space-time scope of services, develop mobile APP, and integrate functions such as literature retrieval, expert question and answer, and online training to facilitate students to obtain information at any time. Build a 24-hour virtual reference desk, use natural language processing technology to deal with common problems, and transfer complex problems to professional librarians [4]. In order to improve the service depth, it is also necessary to establish an information literacy training system, set up courses such as agricultural science and technology information analysis, patent retrieval, data visualization, etc., cultivate students' ability to extract valuable knowledge from massive information, and form a "information acquisition-analysis-application" whole process service chain.

### 4.3. Build a Platform for Cultivating New Agricultural Talents

Libraries should break through the traditional service boundary and build a cultivation platform integrating learning, practice and innovation. We should build a training base for new agricultural talents, equipped with hardware facilities such as intelligent agricultural machinery simulation operation equipment, agricultural big data analysis workstation, and agricultural e-commerce live broadcast room, so that students can master cutting-edge technology through real scene practice. In the training base, a "smart farm" simulation system is built. Students can control UAV plant protection, Internet of Things irrigation and other equipment, analyze the data collected by sensors, and understand the application logic of technology in actual production. To build an innovation incubation platform, and agricultural science and technology parks, agricultural enterprises jointly set up "innovation workshop", for students to supply for technical verification, product prototype development sites and equipment, help them to turn scientific research results into actual products, agricultural robots developed by the student team can carry out field tests in the workshop. The library should contact enterprise experts to guide the optimization design, build an interdisciplinary communication platform, hold agricultural new quality technology forums and workshops on time, and invite enterprise technical backbones, scientific researchers and students to jointly study cutting-edge topics such as intelligent agriculture and carbon sink agriculture, so as to promote the integration of technology, management and business knowledge. In order to ensure the operation of the platform, it is also necessary to establish a "mentor + project" cultivation mechanism, equip each student team with a joint guidance group of librarians, professional teachers, and enterprise mentors, and provide full support from resource acquisition, technology implementation, and market promotion, forming a closed-loop cultivation system of "learning-practice-innovation-transformation" [5].

### 4.4. Deepen the Coordination Mechanism of Agricultural New Quality Industry-University-Research

Libraries need to actively integrate into the industry-university-research ecology of cultivating new agricultural talents and build an innovative mechanism of deep coordination. It is necessary to build a resource co-construction mechanism with agricultural enterprises and scientific research institutes to jointly develop the corresponding database of “enterprise demand-technical problems-literature resources”, such as cooperating with seed industry enterprises to transform their breeding technology needs into literature procurement direction [6]. At the same time, the enterprise 's experimental data and variety test reports are included in the collection resources, which promotes a virtuous cycle of “demand-driven resource construction and resource-supported technological innovation”. We should promote the joint development of industry-university-research projects. Libraries can rely on the advantages of their own resource integration to help enterprises and universities declare major issues in the field of new agricultural quality. For example, in the R & D project of agricultural artificial intelligence, libraries collect the latest international algorithm literature and organize inter-school expert discussions. Enterprises give application scenarios and data, universities carry out technology research and development, and create a collaborative model of 'literature support-technology research-industry verification'. It is necessary to build a service channel for the transformation of achievements, create a patent information database of new agricultural technology, provide patent retrieval, application guidance and market analysis services for the innovation achievements of teachers and students, and cooperate with enterprises to establish a technology transfer center to promote the industrialization of intelligent agricultural machinery, agricultural sensors and other achievements. In order to ensure the sustainability of collaboration, it is also necessary to build a benefit-sharing mechanism. By signing cooperation agreements to clarify the terms of resource input, achievement attribution, income distribution, etc., a long-term mechanism for resource complementarity and benefit sharing is formed.

In order to help the cultivation of new agricultural talents, the libraries of agricultural and forestry universities should lay the foundation with the dynamic updating of resources, take the scene service as the link, take the platform cultivation as the carrier, and take the industry-university-research cooperation as the guarantee to construct the whole chain support framework including knowledge acquisition, technical practice and innovation transformation, strengthen the coverage of frontier technical literature, innovate the service mode of active push, build the integration platform of training and incubation, and deepen the benefit sharing mechanism with the industry. Libraries can not only make up for the shortcomings of traditional services, but also become the “knowledge engine” and “innovation hub” for the growth of new agricultural talents. It provides a steady stream of intellectual support for promoting the transformation of agricultural modernization, and finally achieves the deep integration of education chain, talent chain and industrial chain.

## ACKNOWLEDGEMENTS

CALIS National Agricultural Literature Information Center Research Project

"Research on the cultivation of new agricultural talents in agricultural and forestry university libraries" (project number: 2025030Reference)

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