

# *Analysis on the Collaborative Innovation Organization Model of Agricultural Scientific Research Featuring Collaborative Tasks-Take the Chinese Academy of Agricultural Sciences as an Example*

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**Abstract:** Modern agriculture has a growing demand for scientific and technological innovation. It faces the main battlefield of modern agricultural construction, the resolution of major problems in the development of agricultural industry and the breakthrough of core technologies. The construction and development of agriculture and rural areas puts higher demands on technological innovation. As an important organizational form of agricultural scientific research innovation, collaborative innovation plays an important role in the construction of innovative countries in China, and is also of great significance for the construction of modern agricultural research institutes. Taking the Chinese Academy of Agricultural Sciences as an example, this paper summarizes the status quo, implementation effects and main problems of the collaborative research tasks of agricultural scientific research, explores the root causes of the problems, and proposes to strengthen the collaborative innovation planning layout and strengthen the collaborative task classification. Guide and other important measures to promote the efficient coordination of agricultural research, with a view to providing reference for the strengthening and cooperation of modern agricultural research institutes.

## **1. Introduction**

Under the existing scientific research system, the collaborative innovation task is used as a link to mobilize the innovation power of the whole hospital, break through the original subject organization system, strengthen the synergy linkage between the subjects, and promote the integration of talents, technology, information and other elements to establish a strong overall. A new and complementary research and development organization model with high complementarity. Scientific research team collaboration, research institute collaboration, academic collaboration, innovation alliance and other forms of agricultural scientific research collaborative organization accelerated the formation of the scientific and technological innovation project of the Chinese Academy of Agricultural Sciences.

In the new era, the central leadership put forward an important directive of “three orientations” to the Chinese Academy of Agricultural Sciences. This is a basic follow-up of the construction and

development of agricultural research institutes in China. With the new round of scientific and technological revolution and industrial transformation, the interdisciplinary and technological integration is accelerating, and emerging technologies and emerging industries are becoming important forces to lead the future development. Information, biology, materials and other fields have continuously made revolutionary breakthroughs, and they have been integrated with traditional agricultural fields. The trend of integration of scientific research, technological innovation and industrial development has become more apparent. With the acceleration of transformation and upgrading of agricultural production methods, in order to meet the challenges of future agricultural science and large projects, agricultural research institutes must establish a more scientific and innovative development strategy, promote the optimization and integration of innovation resources, and achieve efficient coordination [1].

## **2. The Status Quo and Challenges of Collaborative Innovation of Chinese Academy of Agricultural Sciences**

### **2.1 Collaborative Innovation Organization Status**

The Chinese Academy of Agricultural Sciences has always attached great importance to the collaborative innovation of agricultural research. Over the years, characterized by collaboration, long-term and systematic nature, the Chinese Academy of Agricultural Sciences has organized the national agricultural science and technology forces to continuously promote the coordinated research of agricultural science and technology through the platform of agricultural scientific research cooperation network, focusing on the key technical issues of agricultural and rural economic development. Organized the national agricultural scientific research strength and carried out a series of major scientific and technological research, which provided strong support for the transformation of traditional agriculture and the transformation and upgrading of modern agriculture. Aiming at the joint research of wheat stripe rust and stem rust, the research results of physiological race supervision and rust resistance of varieties have reached the world advanced level; the joint development of horse-borne poor vaccine has overcome the key problem that horse infectious anemia virus can not be immune-prevented. For the low-yield field improvement and regional comprehensive development tasks deployed in the Huang-Huai-Hai Plain, the Songnen-Sanjiang Plain, the Northern Dry Area, the Loess Plateau and the Southern Red-yellow Soil Region, 51 comprehensive establishments were established in 25 provinces (autonomous regions and municipalities). In the experimental area, through the joint research, the agricultural regional governance and development model was put forward. Through assembly and integration, a comprehensive supporting technical system was established to adapt to different types of areas with grain as the guide, agriculture and animal husbandry, and coordinated development of agriculture, forestry, animal husbandry and fishery. Food security has laid a solid foundation for achieving high and stable production. In recent years, with the continued support of stability funding, the Chinese Academy of Agricultural Sciences has made remarkable achievements in the development of highly pathogenic avian influenza vaccines, research on genetically modified insect-resistant cotton, selection of super rice varieties, and selection of breeding for dwarf wheat reincarnation. The achievements have accumulated a large number of effective collaborative innovation organization experience, providing important support for meeting the country's major needs and serving the main battlefield of modern agricultural construction [2].

## 2.2 Main Problem

(1) The technical master's organizational ability is not strong, and joint cooperation is insufficient. Limited by factors such as personal organizational ability, time and energy, and responsibility, some technical masters of the task have insufficient control over the task team, and the organic integration between the research teams is poor. The task development results are mostly the work results of the chief team. The synergy effect has not been fully reflected. Collaboration and communication between different tasks is not enough, and the task team has not formed an effective coordinated operation mechanism.

(2) The scope of collaborative task design is too wide and the theme is not focused. Some collaborative task names are too general, the design goals are not very clear, and the research content is too scattered and not focused. For example, the localization task of horticultural crops involves nearly 10 kinds of vegetables, covering almost all the main vegetable species; the localization of livestock and poultry varieties covers many kinds of cattle, sheep and poultry, and the task objectives are too scattered. The content is not focused enough. In addition, some tasks still have unclear positioning of the topic, the key points are not prominent, and the key issues of the core technology of the industry to be solved are not significant [3].

## 2.3 The Main Reason for the Problem

(1) Insufficient understanding of the connotation essence of collaborative innovation. Although many collaborative innovation participants have clearly defined the form of collaborative innovation, they have not deeply considered and grasped the essence of collaborative innovation. Most of the time, collaborative innovation is still treated as a simple project cooperation. There is no corresponding system design to promote collaborative innovation. There is no focus on collaborative innovation from a deeper and farther level.

(2) The concept of scientific research organization for collaborative innovation has not yet been formed. For a long time, with the development of China's market economy and the implementation of the rural land contract responsibility system, agricultural scientific research has formed the traditional scientific research organization and project contracting model of "scientific research institutions – research groups". The agricultural research institutes are still in a state of self-development, self-operation and self-contained system, and the integration of resources and collaborative innovation across departments, regions, units, and disciplines is insufficient. Subject to the traditional concepts such as project entrustment, results sharing and benefit distribution, the research groups in the form of small workshops and couples stores exist in a large number of scientific research institutions at all levels. The researchers are fighting and self-contained. Group operations are seriously considered and reserved.

## 3. Conclusions: Measures to Strengthen Collaborative Innovation in Agricultural Research

### 3.1 Strengthen the Layout of Collaborative Innovation Planning

Strengthen the top-level design, actively learn from the successful experience of collaborative innovations such as universities and the Chinese Academy of Sciences, and do a good job in collaborative innovation top-level design and planning. Taking the implementation of the National Agricultural Science and Technology Innovation Alliance Construction and Innovation Engineering Collaborative Innovation Tasks as the starting point, the system deploys key scientific and technological tasks such as in-house collaboration, courtyard (college) collaboration, and international collaboration, and advances the "14th Five-Year" collaborative innovation focus area

and The direction of the topic. Cooperate with the national key R&D plan, basic scientific research business expenses, innovative engineering team tasks and other plans or special projects, build a collaborative innovation task and the national agricultural science and technology innovation alliance integration layout, realize the national agricultural scientific research “a game of chess”, to achieve superior resources organic Integration, multi-channel and diversified development, rational distribution of innovation power, and synergistic focus on output targets.

### 3.2 Strengthen Collaborative Task Classification Guidance

According to the different types of research and development and the direction of the collaborative task, the policy is classified. Give play to the resource advantages of the Chinese Academy of Agricultural Sciences as the national team for agricultural research, strengthen the organic integration and optimal allocation of information resources such as information, talents, projects and platforms, fully mobilize all kinds of scientific and technological forces, and drive relevant universities, enterprises and industrial sectors at home and abroad. Actively participate in task coordination. Effectively distinguish three types of collaborative research objectives: basic frontier technology innovation, industrial core key technology integration and regional agricultural development comprehensive solution, classify the required scientific and technological strength, adopt diversified synergy strategies according to local conditions, build problem-oriented convergence, and organize support methods. There are other new collaborative innovation research and development systems.

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