# Exploration of the Transformation from Plant Protection to Plant Medicine under the Background of New Agriculture

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**Abstract:** The status and development of plant protect and plant medicine were reviewed. The development of plant protect was faced with severe challenges in China. The significance of turning to plant medicine were expounded in this paper. The specific content of the reform was proposed in terms of the subject research content and subject setting. It is hoped that the content can provide ideas for the development of plant protection.

## 1. Introduction

The understanding of the new agricultural subject should first break through the traditional thinking pattern of the subject. Plant protect, a traditional discipline in agriculture, for example, has begun to advance towards plant medicine. Plant protection is a primary subject in agronomy category, is a traditional advantage in the field of life science specialty. Based on botany, zoology, microbiology, agroecology, information science, etc., it studies the occurrence and development law of pests and puts forward integrated pest management. Plant protection science has made great contribution to the further development of Chinese agriculture, sustainable control of pests and the sustainable development of agriculture, as well as the cultivation of highly educated, high-quality and high-level professionals. It plays a very important role in Chinese economic construction and social development.

The “Phytomedicine” was first proposed by Henri Leclerc, French doctor, in 1934[1]. German scholar Braun first proposed the concept of plant medicine in 1956. It is a science that takes plants as the subject of research and deals with the problems related to the healthy growth of plants. It is a systematic science from prevention to treatment of plant diseases for the purpose of treatment, prevention of plant diseases and improvement of plant body health. In the future, plant medicine should not only consider and study the harmful organisms that harm plants, but also study the harm of non-biological factors to plants, the active defense ability of plants, namely immunity, and guarantee the healthy growth of plants from the perspective of health care medicine and preventive medicine [2]. Professor Fengmei Zhu, a famous plant pathologist in China, established the first plant hospital in Zhejiang province in 1948. She compared the image of plant diseases to "internal medicine", and regarded insect damage to plants as "surgery". In the 1980s, as a Beijing agricultural university professor of plant pathology, Shimai Zeng and Zhihe Guan, professor entomology put forward the idea of "plant medicine discipline". Their proposals was received by leaders of the department of agriculture. Plant medicine discipline construction got many scholars attention.

## 2. The Development of Plant Protection Discipline Faces Severe Challenges

In recent years, there are some new problems in the undergraduate enrollment and employment of plant protection: (1) Difficulty in enrollment. The first volunteer rate of plant protection major is always low. The first volunteer rate of national agricultural and forestry colleges was between 5-30%. Students were not clear about what to learn and what to do in the future. Students' sense of professional identity was not strong, and they lacked a clear direction and confidence in their future development. This situation has a lot to do with the name of "plant protection" subject and major, which is not clear at a glance. (2) Non-ideal graduates' employment. The narrow range of

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employment for graduates majoring in plant protection, and the large number of female students now, had created greater difficulties for the first time employment. Treatment was also relatively low, for enrollment caused a great negative impact.

## 3. Significance of Plant Protection Turning to Plant Medicine

### 3.1 The Concept of Plant Medicine is More in Line With the Development of Modern Professional Characteristics Than That of Plant Protection

Plant medicine has shifted its focus to plant community health. Compared with the professional plant protection, plant medicine professional demands students to master more skills: including from the whole cycle health of plant growth, use all kinds of professional knowledge to keep plants and to promote health, and use modern biology and biological technology for plants suffer from a variety of biological and non-biological factors "abnormal" symptoms make accurate diagnosis, prescribing a regulation, use various techniques, make the plant in the shortest possible time "rehabilitation". It's more like human medicine.

### 3.2 Demand for Professionals in Plant Medicine is Great and Employment Prospects is Better

In addition to Taiwan, there is no major related to plant medicine or plant health in universities in the mainland [3]. The society's strong demand for plant doctors requires that our university of agriculture and forestry should set up the plant medicine major in time, and set up the "plant medical college" in time to improve the discipline system and train plant doctors to meet the needs of the society. Undergraduate and master degree in plant medicine will be the main force in plant health and medicine in the future.

With the continuous development of China's modern agriculture, "new agricultural science", "large agriculture" has become an inevitable trend. With the change of urban ecological environment, the development of urban landscaping, the increase of precious flowers and plants, and even the protection of precious trees in China, all need the participation of "plant doctor". "Botanist" will also replace the traditional "plant protection" workers to play the role of "general" doctors. There is no doubt that the specialty of plant medicine will have a broader prospect.

## 4. Contents of the Reform

### 4.1 Deepen the Concept of Plant Medicine

In 2015, Qingdao agricultural university set up the direction of plant medicine in China. In September 2018, the symposium on the development of plant medicine, talent cultivation and textbook compilation was held in Qingdao agricultural university. The meeting had been clear about the "plant medicine" and "plant doctor" concept, service tenet, training objectives, the emphasis on the concept of medical plants, with plants as the main research object, and not as a harmful organisms, was asking the country to other joint plant protection professional teaching reform of agricultural college, plant protection towards the direction of the implanted medical inevitably in the not too distant future. It was not only the requirement of professional development, but also the requirement of social, ecological and economic development. Through the development of training programs, curriculum construction, talent training and so on, we will move from ideas to action [4].

### 4.2 Formulate Personnel Training Program for Plant Medicine

The training program for plant medicine talents was suitable for professional development through the formulation of training objectives, training requirements, main subjects, main courses, curriculum and credit allocation of credit hours, and main practical teaching rings. To cultivate students with all-round development of morality, intelligence, physique and beauty, who have a high sense of responsibility, good scientific and cultural accomplishment and good professional ethics. They can master the basic theory and professional knowledge of plant health and safety production, have the basic ability to promote and restore good plant production, They will be

application-oriented talents with strong professional practice, innovation and entrepreneurship ability, capable of engaging in plant quarantine, plant disease and insect pest monitoring and control, and agricultural product safety testing in the fields of planting industry, garden, agricultural product storage and food safety, and suitable for the needs of coastal urban agricultural economy.

### 4.3 Curriculum Setting and Construction

In the development of the new training program, the curriculum system in the original basis through the merger, increase, decrease and other ways of reform and construction. Some exclusive and special courses can be set up: biological pesticides, plant physiological diseases, chemical ecology, plant disease diagnosis, plant nutrition, etc., while reducing the hours of ecology, pest toxicology and other courses. In addition, increasing network video courses, mu class, small class, combine micro network curriculum and course resources development, the advantages of the two optimization combination, will be more enriched the contents of the network courses and learning resources for students to learn more rich and colorful, improve the students' learning initiative.

### 4.4 Reform of Practical Teaching

#### 4.4.1 The Construction of a Comprehensive and Multi-Module Practical Teaching System

The practical links include comprehensive practice of plant protection, graduation practice, innovation experiment of college students and other experiments and scientific and technological activities at different levels. It solves the problem of previous course experiments being relatively dispersed, theoretical knowledge isolated from practical skills, and poor system, which is conducive to the cultivation and improvement of students' comprehensive innovation ability.

#### 4.4.2 Extensive Collection of Experimental Materials

According to the characteristics of professional practice, students are required to hand in a certain amount of specimens of diseases, insects and weeds after the practice. All kinds of specimens collected not only enrich the teaching specimens, but also increase the collection of the herbarium.

#### 4.4.3 Scientific Research Projects Boost Teaching

Students' innovation experiments are mostly supported by college students' innovation projects and teachers' scientific research projects. This not only facilitates students to combine professional knowledge and scientific research closely, but also makes practical teaching have sufficient funds.

### 4.5 Talent Training

#### 4.5.1 Gradually Integrate Resources and Establish a Cultivation Mechanism for Plant Doctors

We will adhere to the overall requirements of putting people first, putting moral education first, putting ability first and pursuing all-round development, deepen the reform of agriculture and forestry education and teaching, and provide talent support, scientific and technological contributions and intellectual support for ecological progress, agricultural modernization and the building of a new socialist countryside. We will integrate school resources and lay a solid foundation for training talents, make full use of the school's human resources to build and cultivate the innovation and practice ability of talents [5].

#### 4.5.2 Steadily Advance Reform and Innovate the Operational Mechanism for Training Talents

Local agricultural colleges and universities need to constantly innovate the system and mode of talent training, gradually improve the talent training mechanism, and deepen the reform in curriculum system reform, tutorial system, student ability training, practical teaching system, academic education evaluation, teaching method research and other aspects.

### 4.6 Teaching Team Building

Through the introduction of high-level personnel, strengthening the hiring of part-time teachers, send young and middle-aged teachers to both at home and abroad to visit, to strengthen the recruitment of part-time teachers, send young and middle-aged teachers to visiting one's credentials the exercise, to the enterprises and institutions at home and abroad, based on the old with the new (green) and various training methods, effectively improve young teachers' teaching ability, practice ability, at the same time, through evaluation measures such as strengthening teaching and research, comprehensively improve the overall level of teachers, trying to build an age, educational background, reason and title reasonable structure of teaching staff, to compound applied talents cultivation provide strong faculty.

## 5. Peroration

In a word, plant protection is an important part of sustainable development strategy. Pest management strategies and specific measures will meet the needs of this strategy, and ecological control will also become the center of plant disease and insect control. It can be seen that the direction and ultimate goal of the development of plant protection science will be to coordinate the relationship between plants, pests, environment and human, so as to establish a plant-centered pest management system.

The theory and practice of plant medicine still needs to be developed and improved, and the theory and technology should be constantly enriched and improved to guarantee the healthy growth of plants [6]. The emergence of plant medicine is the inevitable result of the social demand and the development of science and technology. The development of plant medicine is of great significance to the control of plant diseases and the guarantee of healthy growth of plants.

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