

# Practice and Exploration on the Teaching Reform of Plant Protection Course in Higher Vocational Colleges

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**Abstract:** With the accelerating process of agricultural modernization, plant protection, as an important guarantee for agricultural production, has an increasingly urgent demand for professional talents. As a key base for cultivating applied agricultural technical talents, the teaching quality of plant protection courses in higher vocational colleges directly affects the effectiveness of talent training. Based on this, this paper studies the teaching reform of plant protection courses in higher vocational colleges, expounds the existing problems, analyzes the important value of the reform, and proposes corresponding reform and practice strategies. It aims to improve the teaching effect of plant protection courses and provide talent support for agricultural development.

**Keywords:** Higher vocational colleges; Plant protection course; Teaching reform; Practice strategies

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## 1. Introduction

Plant protection is an important branch of agricultural science, undertaking the important mission of ensuring the yield and quality of crops and safeguarding the safety of the ecological environment. Under the background of the in-depth implementation of the rural revitalization strategy and the continuous adjustment and optimization of the agricultural industrial structure, agricultural production is increasingly dependent on plant protection technology, and higher requirements are put forward for the skill level and comprehensive quality of plant protection professionals<sup>[1]</sup>. Higher vocational colleges aim to cultivate high-quality technical and skilled talents, and the plant protection courses they offer play a pivotal role in the talent training system of agricultural majors. Therefore, in-depth practice and exploration of the teaching reform of plant protection courses in higher vocational colleges are of great value.

## **2. Existing problems in the teaching of plant protection courses in higher vocational colleges**

### **2.1. Insufficient update of teaching content**

The plant protection discipline is developing rapidly. With the continuous progress of science and technology, new types of diseases and insect pests, new prevention and control technologies, new pesticide products, and new plant protection concepts are constantly emerging. However, the teaching content of plant protection courses in some higher vocational colleges is updated slowly and lags behind industry development<sup>[2]</sup>. In terms of textbook selection, some colleges and universities still use textbooks published many years ago. Some content in the textbooks is outdated and cannot reflect the latest research results and technical trends in the field of plant protection. There is a lack of introduction to the application of plant protection technologies under modern agricultural production models, such as plant protection technologies in protected agriculture, organic agriculture, and smart agriculture. These problems lead to the disconnection between the knowledge learned by students and the actual needs of the industry, making it difficult for them to quickly adapt to the requirements of jobs after graduation.

### **2.2. Outdated teaching model**

At present, the plant protection courses in many higher vocational colleges still mainly adopt the traditional one-way indoctrination teaching model. In this teaching model, teachers occupy a dominant position in the classroom, and students are in a passive state of accepting knowledge, lacking opportunities for active thinking and active participation<sup>[3]</sup>. Classroom teaching is often limited to the explanation of textbook content. Teachers impart theoretical knowledge word by word in accordance with the chapter order, rarely interact with students, and it is difficult to adjust the teaching rhythm and content in a timely manner according to students' learning situation and interests. In addition, some teachers do not fully apply modern educational technology, the classroom teaching methods are single, and there is a lack of effective use of modern teaching tools such as multimedia courseware and network resources, which further reduces the attractiveness and appeal of classroom teaching.

### **2.3. Lack of practical links**

Plant protection is a highly practical discipline, and practical teaching is an important link in cultivating students' professional skills and comprehensive quality. However, the practical links of plant protection courses in many higher vocational colleges currently have many deficiencies, which cannot meet the needs of talent training. The content of practical teaching is single and the form is rigid<sup>[4]</sup>. Practical teaching is often limited to simple operations in on-campus laboratories, such as the production and identification of disease and insect pest specimens, and the preparation of pesticides. There is a lack of comprehensive and innovative practical projects closely combined with actual field production.

## **3. Important value of the teaching reform of plant protection courses in higher vocational colleges**

### **3.1. Conducive to cultivating high-quality applied talents meeting industry needs**

At present, the demand for plant protection professionals in the agricultural industry has shifted from traditional technical operation-oriented to high-quality applied-oriented. It requires talents to not only have solid theoretical knowledge but also strong practical ability, innovative ability, and comprehensive quality. The teaching reform of plant protection courses in higher vocational colleges, through measures such as optimizing the teaching model,

updating teaching content, and strengthening practical links, can make teaching closer to the actual needs of the industry. The cultivated students can quickly adapt to the jobs in the front line of agricultural production <sup>[5]</sup>. For example, through case teaching, project teaching, and other methods, students can master knowledge and skills in the process of solving practical problems; by introducing cutting-edge technologies such as green plant protection and smart plant protection, students' knowledge and vision can be broadened. These reform measures can effectively improve students' professional ability and comprehensive quality, making them high-quality applied talents meeting the needs of industry development, and injecting new vitality into the development of the agricultural industry.

### **3.2. Conducive to improving the college-running quality and competitiveness of higher vocational colleges**

Curriculum teaching is the core link of talent training in higher vocational colleges, and the quality of curriculum teaching is directly related to the running quality and competitiveness of the colleges. As one of the core courses of agricultural majors, the effect of the teaching reform of plant protection courses has an important impact on the development of agricultural majors in higher vocational colleges. Through teaching reform, the teaching level and quality of plant protection courses can be continuously improved, and the attractiveness and influence of the major can be enhanced <sup>[6]</sup>. At the same time, the experience and practices accumulated in the process of teaching reform can also provide a reference for the teaching reform of other courses, promoting the improvement of the overall teaching quality of higher vocational colleges. In the context of the rapid development of vocational education, only by continuously deepening teaching reform and improving college-running quality can higher vocational colleges stand out in the fierce competition and win social recognition and praise <sup>[7]</sup>.

### **3.3. Conducive to promoting sustainable agricultural development and the implementation of the rural revitalization strategy**

Grasping agricultural development must attach importance to plant protection work, which is related to the yield and quality of agricultural products, food safety, and environmental safety. With the comprehensive implementation of the rural revitalization strategy, green development and high-quality development will become new trends, which also put forward new requirements for plant protection. The reform of plant protection professional education in higher vocational colleges integrates green plant protection concepts and plant protection technologies into teaching content, which can cultivate students' ecological and environmental protection awareness and strengthen their sustainable development concepts. In their future jobs, students will advocate and apply green plant protection technologies, realize the reduction of pesticide use, prevent pollution from the source, and ensure the health of the natural environment <sup>[8]</sup>. In addition, the senior plant protection talents cultivated by these higher vocational colleges can provide scientific and technological support for agricultural production, help farmers solve the problems of diseases and insect pests, increase the yield and quality of crops, improve farmers' income, and provide strong talent and technical services for the realization of the rural revitalization plan.

## **4. Practical strategies for the teaching reform of plant protection courses in higher vocational colleges**

### **4.1. Timely update of teaching content and introduction of cutting-edge materials**

Teaching content is an important basis for teaching activities. Teachers should timely update teaching content

and introduce cutting-edge materials into teaching to improve the effectiveness and pertinence of teaching. First, optimize textbook content. Teachers can compile college-based textbooks or handouts according to the actual situation of the college and local agricultural characteristics. The college-based textbooks can introduce some common local types of diseases and insect pests and characteristic crop plant protection technologies, narrowing the distance between the course and students; the handouts should focus on the combination of theory and practice, adding some content such as case analysis and practical operation guidance to make the handouts more operable<sup>[9]</sup>.

Second, introduce cutting-edge knowledge and technologies. For example, teachers can add content such as alien invasive species prevention and control technologies and smart plant protection technologies, introduce drone plant protection, Internet of Things detection of diseases and insect pests, etc. to students, invite some industry experts to give on-site explanations to students, and display cutting-edge industry technologies, so as to broaden students' knowledge and vision. Teachers should also use some network resources to collect the latest industry materials and incorporate them into teaching promptly to improve the advanced nature of teaching content<sup>[10]</sup>. Third, adjust teaching content in combination with regional agricultural characteristics. Higher vocational colleges mainly cultivate talents for regional development, which requires the teaching of plant protection courses to be adjusted to regional agricultural characteristics. Different regions have different climatic conditions and the occurrence of diseases and insect pests. Teachers can adjust the teaching content according to the local crop situation. For example, Yibin, where our college is located, is rich in characteristic crops such as Wuliangye special grain, citrus, and plums. Teachers can focus on explaining the common anthracnose and aphid prevention and control technologies of Yibin sorghum, introduce the comprehensive prevention and control measures of citrus canker and plum red spot disease, etc., and display the planting models of Yibin mountainous agriculture and characteristic orchards, so that students can better meet the needs of Yibin's agricultural production after graduation<sup>[11]</sup> and provide support for local agricultural development.

## 4.2. Set up diversified teaching models to improve teaching effect

In the curriculum teaching reform, teachers should pay attention to setting up diversified teaching methods to effectively improve teaching effect. First, carry out online-offline mixed teaching. In the online link, teachers can use platforms such as MOOC or Xuexitong to carry out teaching, provide students with rich learning resources, so that they can arrange time according to their own learning rhythm, conduct online learning independently, and complete the tasks assigned by teachers. In the offline link, teachers can focus on interactive communication and practical guidance, focus on explaining the problems arising online, and answering students' doubts<sup>[12]</sup>. For example, when explaining the content of "comprehensive prevention and control of crop diseases and insect pests", teachers can first upload some micro-course videos and disease and insect pest case materials online to let students understand the course knowledge in advance, and organize students to analyze cases, put forward prevention and control schemes, and carry out simulated prevention and control operations in offline classes to master the course knowledge.

Second, carry out case teaching. Teachers can obtain cases of real events from the front line of agricultural production, such as the outbreak case of rice planthoppers and the comprehensive prevention and control case of orchard canker, and let students analyze the cases, find out the key problems, and put forward relevant solutions. Teachers compare and evaluate students' schemes. The selection of cases should pay attention to typicality and pertinence, and be able to reflect the hot issues and actual needs in the current field of plant protection, so as to be more in line with teaching<sup>[13]</sup>.

Third, carry out curriculum ideological and political education. Teachers should organically integrate curriculum, ideological and political elements into the teaching links of the plant protection major, and cultivate students' sense of work responsibility, social responsibility, and patriotic feelings. Explore ideological and political elements, such as examples of outstanding individuals in the plant protection profession and examples of scientific and technological achievements from teaching materials. For example, introduce the contributions made by excellent Chinese plant protection experts to the research on disease and insect pest prevention and control, and cultivate their national pride and creative spirit; explain the concept of green plant protection, and enhance their awareness of ecological protection and sustainable development<sup>[14]</sup>. Through the integration of curriculum, ideological and political education, the organic unity of knowledge impartation, ability training, and value guidance can be realized, and students' comprehensive quality can be comprehensively improved.

#### **4.3. Strengthen practical teaching links to exercise comprehensive skills**

Practical teaching is an important way to exercise students' practical skills. Teachers should strengthen the adjustment and reform of practical teaching links to effectively exercise students' comprehensive skills. First, promote the combination of classroom teaching and field practice. Higher vocational colleges should increase the proportion of practical teaching content and apply it to classroom teaching, and combine it with rural practice. Insert rural practice content into the theoretical teaching link, guide students to go to the front line of rural areas to observe the occurrence of diseases and insect pests and the characterization mode of prevention and control, so as to deepen the impression of theoretical teaching content. For example, when teaching the knowledge topic of "identifying and diagnosing diseases and insect pests", encourage students to conduct on-site investigations in rural areas, sample and identify, and carry out diagnostic training; when teaching knowledge topics such as "pesticide use technology", lead students to carry out practical activities such as pesticide preparation and sprayer use in farmland.

Second, build practice bases through college-enterprise cooperation. Higher vocational colleges should strengthen the stable construction of off-campus internship bases in cooperation with agricultural enterprises, cooperatives, plant protection departments, and other departments. Both parties jointly formulate practical teaching plans, and the company selects technical personnel as internship instructors to guide students' internship and learning together with higher vocational college teachers. The higher vocational college can also use the company's resources to expand college-enterprise production, education, and research cooperation projects. Both students and teachers can participate in the development of scientific research projects to strengthen students' innovative ability and scientific research ability. It can cooperate with pesticide production enterprises to enable students to participate in the verification of new pesticide products; cooperate with large-scale growers to enable students to participate in the whole process of crop disease and insect pest prevention and control production<sup>[15]</sup>.

Third, strengthen the construction of practical teaching faculty. Higher vocational colleges should build a "double-qualified" practical teaching faculty with solid theoretical knowledge and rich practical experience. On the one hand, encourage teachers to carry out practical training in the front line of agricultural production, take on post-internships in enterprises, and accumulate practical experience; on the other hand, introduce technical backbones and industry experts from enterprises as part-time teachers to enrich the practical teaching faculty. At the same time, higher vocational colleges regularly organize practical teaching faculty training to improve teachers' practical teaching level and guidance ability. By strengthening the construction of practical teaching faculty, it can provide a strong faculty guarantee for practical teaching and ensure that students can receive professional and effective guidance in practical learning.

## 5. Conclusion

In summary, the teaching reform of plant protection courses in higher vocational colleges is a systematic project that requires in-depth exploration and practice from multiple aspects, such as teaching models, teaching content, and practical links. In the actual teaching process, teachers should set up diversified teaching models, timely update teaching content, and strengthen practical teaching links to effectively exercise students' comprehensive abilities and improve the course teaching effect. In the subsequent teaching reform, teachers should always aim at cultivating high-quality applied talents meeting industry needs, combine the development trend of the agricultural industry and regional agricultural characteristics, continuously optimize the teaching system, innovate teaching methods, so that the teaching quality of plant protection courses can be continuously improved, and contribute to the development of vocational education.

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