Research on the Cultivation Mode of Plant Protection Professionals in the New Century Based on the Current Situation of Plant Protection

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Abstract: the Quality of Training Senior Professionals is the Key to the Future Development of Higher Education. the Problems Existing in the Cultivation of Plant Protection Professionals in Agricultural Universities in the New Century Are Mainly Related to Professional Training Objectives, Curriculum System Construction, Teaching Contents, Teaching Methods and Teaching Means, Practical Education Forms, Employment and Entrepreneurship Guidance. Based on the Current Situation of Plant Protection, This Paper Analyzes the Current Situation and Existing Problems of Plant Protection Specialty from the Perspective of the Training Objectives of Plant Protection Specialty and the Basic Specifications of Training Talents, and Determines That the Training Orientation of Plant Protection Specialty in Colleges and Universities is Plant Protection and Application. At the Same Time, the Current Talent Training Mode of Plant Protection Specialty is Described, and the Current Teaching Reform is Briefly Summarized.

1. Introduction

Facing the 21st Century, with the Rapid Development of Economy, Science and Technology, the Scale of China's Higher Education Development Continues to Grow, the System Reform is Advancing Steadily, and the Social Environment Facing Vocational and Technical Normal Education is Also Undergoing Profound Changes [1]. the Major of Plant Protection is One of the Main Specialties of Traditional Agronomy, Aiming At Training Senior Technical Personnel with Basic Theories, Knowledge and Skills of Plant Protection Science, Who Can Be Engaged in Teaching and Research, Technology and Design, Promotion and Development, Operation and Management of Plant Protection in Agriculture and Other Relevant Departments or Units [2]. in Recent Years, the Plant Protection Institute Has Carried out a Series of Reform and Construction of Personnel Training Mode and Teaching Mode Around the Innovation and Entrepreneurship Education of College Students, Actively Carried out Research Work, Extensively Collected Data. However, with the Deepening of the Reform of Our Country's Graduate Employment System and the Continuous Expansion of the Scale of Higher Education, the Employment Problem of This Major is Becoming More and More Prominent, and the Brain Drain is Very Serious, Thus Restricting the Development of Plant Protection Major [3]. in Order to Meet the New Requirements of the 21st Century Society, We Have Adjusted and Reformed the Training Mode of Plant Protection Professionals in the New Century, Constructed a Talent Training Innovation System, and Trained Creative Talents Facing the World and the Future.

2. Current Situation of Cultivation of Plant Protection Professionals in the New Century

2.1 General Situation of Cultivation

The Talent Training Plan or Plan Determines the Knowledge Structure and Level of Talents as Well as Their Professional Ability, and Has the Essence of Keeping Pace with the Times [4]. the Personnel Training Programs of All Kinds of Agricultural Universities in the Country Are Constantly Changing, But for a Specific Institution, the Personnel Training Programs Are Relatively Stable for a Period of Time. the Society's Demand for Talents Began to Diversify. in Order to Meet the Needs of the Society and Cultivate High-Quality Agricultural Talents, Colleges

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and Universities Have Gradually Begun to Reform the Traditional Training Objectives and Training Modes. the Requirements of Enterprises for Talents Are Oriented to Agricultural Production Technical Service and Management and Other Professional Positions, Based on the Periodicity of Agricultural Production [5]. This Shows That the Economic and Social Development of Our Country in Recent Years Has Put Forward Higher Requirements for College Graduates, That is, Graduates Should Have the Ability of Employment and Development Across Industries, and Cannot Just Stay in the Situation of Professional Counterparts. Graduates Blindly Spend Their Time and Energy on Various Preparation Tests and Miss the Best Application Opportunity. Career Choice Should Be Combined with Graduates' Own Abilities, Interests and Career Development Direction. Lack of Career Planning Often Increases the Difficulty and Blindness of Employment.

2.2 Cultivation Objectives of Plant Protection Specialty

Due to the increasing employment pressure, in order to seek better development opportunities and higher income, more and more graduates choose to continue their studies (Table 1). In the survey of the 2018 graduate employment department, 20 of the 50 graduates were admitted to graduate school that year, with a postgraduate entrance examination rate of 40%, and 7 were admitted to graduate school after reviewing for one year.

Table 1 Graduate Entrance Examination Rate for 2016-2018.

Year	Number of graduates	Number of graduate students admitted	Entrance examination rate(%)
2016	458	215	46.94
2017	819	521	63.61
2018	1544	663	42.94

An analysis of the positions taken by undergraduate graduates in enterprises is made. as shown in fig. 1, they can be summarized into five major job groups: first, plant doctors, whose specific work includes the prevention and control of crop diseases and insect pests, the investigation and prediction of crop diseases and insect pests, the natural protection of natural enemies, artificial breeding, domestication and application, etc., accounting for 30% of the investigated positions. The second is the plant hospital, which includes the promotion and sale of pesticides, seeds, fertilizers, biological agents and other posts, the rational allocation of crop varieties and production management, accounting for 28% of the total. Third, pesticide production, processing and other posts, accounting for 25% of the investigation posts. Fourth is the promotion and service of plant protection technology, including the park design of crop production farms, the development planning and comprehensive management of agricultural distribution enterprises, and the release and promotion of agricultural information technology, with jobs accounting for about 17% of the total.

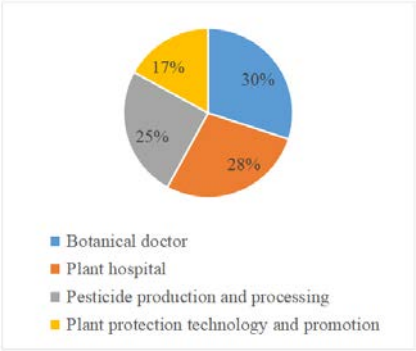

Fig.1 Analysis on the Employment Groups of Undergraduate Graduates Majoring in Plant Protection in Enterprises

The training objectives of plant protection specialty should be oriented to agricultural vocational education, and the cultivation should meet the needs of socialist modernization construction, develop morally, intellectually and physically in an all-round way, and be familiar with the relevant theoretical knowledge and professional skills of comprehensive management and prediction of

agricultural diseases, insects, grasses and rodents [6]. The advantage of biological control is that in addition to playing a role at the beginning of use, biological control can survive and proliferate in an appropriate ecological environment, thus continuously protecting crops from damage. Have the basic theories, basic knowledge and basic skills in the concept of large-scale agriculture, prediction and forecast of plant diseases, insects, grass and rats, comprehensive management, production and management of pesticides, etc. Make clear the current development situation of this discipline and the basic needs of the society. Master the basic skills required by the plant protection specialty, pay attention to the study of experimental courses, in-school and out-of-school practical courses and the cultivation of practical ability. According to the requirements for undergraduate talents in plant protection in the new era and some deficiencies in traditional education, reform proposals must be put forward from the aspects of teaching content and teaching methods, practical teaching, examination methods and student status management, etc., and personnel training must be ensured from all aspects of university management, teaching and learning, so as to deliver advanced plant protection talents with innovative spirit and ability to the field of plant protection [7]. Senior scientific and technical personnel with basic theories, basic knowledge and basic skills of plant protection discipline and capable of engaging in the technology and design, promotion and development, operation and management, teaching and scientific research of plant protection in agriculture and other relevant departments.

3. Personnel Training Specifications for Plant Protection Major

3.1 Basic Requirements of Knowledge

Grasp the basic principles of Marxism-Leninism, Mao Zedong Thought, Deng Xiaoping Theory and the important thoughts of “Three Represents” and the Scientific Outlook on Development; Having certain basic knowledge of natural science, humanities and social science; Have solid basic theoretical knowledge in mathematics, physics, chemistry, etc. Master certain humanistic knowledge, have certain cultural accomplishment, have modern consciousness and interpersonal skills; Master the basic theories and knowledge of biological science and agricultural science; Master methods and skills for identification, monitoring and control of plant pests; Moral education infiltration in the teaching process of pesticide management is helpful to realize the dialectical unity of teaching and educating people. The innovative experimental class is mainly composed of students who meet the conditions for exemption, and is jointly guided by professional teachers of the Plant Protection Institute and cooperative research institutes. The teaching time is consistent with the occurrence period of local crop diseases and insect pests, so as to strengthen students' understanding and knowledge of the actual production, and can directly observe and identify plant diseases and insect pests. Pay attention to the knowledge study focusing on the occurrence of local diseases, insects, grass and rats. Familiar with relevant policies, policies and regulations related to agricultural production and plant protection; Have the awareness and basic knowledge of sustainable agricultural development, and understand the scientific frontier and development trend of agricultural production and plant protection.

3.2 Basic Requirements for Competence

With word processing, as well as certain foreign language data translation and interpretation capabilities; Familiar with the use of computers and the ability to use network resources correctly; Master professional knowledge, with strong practical application skills; Has the organization management ability, as well as the technical marketing ability. To master the basic theory and knowledge of plant protection and to be able to skillfully apply the basic methods and skills of plant protection, to understand the frontier and development trend of various disciplines in plant protection, and to have the sustainable development of agriculture. Graduates are required to be competent in four aspects related to plant protection, which can also be said to represent four types of abilities. Especially the awareness and basic knowledge of environmental protection and human health, familiar with the relevant principles, policies and regulations of agricultural production and

rural work; Master the basic methods of scientific and technological literature retrieval and data inquiry, and have certain scientific research and practical working ability.

3.3 Basic Requirements for Quality

Willing to serve the socialist modernization construction; Devote oneself to one's post and have a sense of responsibility; Abide by the law, be honest and trustworthy; Having good ideological and moral character, social ethics and professional ethics; In terms of cultural quality, hardworking, assiduous, modest and courteous; Having certain cultural accomplishment and writing ability; Practical teaching link: all kinds of agricultural universities attach more importance to practical teaching link and arrange rich contents, including professional labor, social practice, two-course practice, military training, teaching practice, production practice, course paper, scientific research training, graduation thesis, etc. Master the basic principles of Marxism, Mao Zedong Thought and Deng Xiaoping Theory, have a scientific world outlook and methodology, have a high sense of social responsibility and pioneering spirit, and have good moral and psychological qualities. Actively participate in social practice activities to meet the needs of social development; Have certain communicative ability and be able to establish friendly interpersonal relationships; In terms of professional quality, he has certain basic knowledge of natural science and loves natural science. Have strict scientific attitude and the ability to observe, analyze and solve problems. Strong ability of investigation, research and decision-making, organization and management, oral and written expression, and basic ability of independent knowledge acquisition, information processing and innovation.

4. Training Mode of Plant Protection Professionals in the New Century

4.1 Building a “Platform”+”Module” Curriculum System, Focusing on the Relative Stability and Dynamic Flexibility of the Curriculum System

The curriculum system of colleges and universities must be set up closely around the goal of personnel training, and at the same time focus on consolidating the foundation, highlighting innovation and paying attention to ability, and optimize the curriculum system according to the principle of “thick foundation, wide caliber, strong ability, high quality and wide adaptability” [8]. Strengthen the basic theory, optimize the curriculum structure, broaden the scope of knowledge, attach importance to practical teaching, and add humanities courses. From the perspective of horizontal types, it is also different. The training objectives of training research-oriented talents and training application-oriented talents are different. This problem is often ignored and confused by people [9]. At present, China's agriculture is in a period of rapid development, and the demand for agricultural talents and the development of agricultural disciplines have not tended to be stable and mature. Therefore, attention should be paid to maintaining dynamic stability in the process of curriculum system construction. Only those trained can actively adapt to social changes, meet the challenges of the new technological revolution, participate in social competition and be good at cooperation. This requires that the students we train can adapt to the needs of future social development in terms of knowledge, ability and quality. To enable students to have a solid public foundation and professional basic knowledge, master the basic skills of plant protection and plant quarantine training. At the same time, the college takes scientific research teams and cooperative enterprises as carriers to cultivate students' interest and learning ability through the formation of interest groups and creative teams. It is an inevitable requirement for the development of modern agriculture to use modern biotechnology and information science to promote, integrate and transform the traditional plant protection specialty.

4.2 We Should Build an Integrated Teaching System, Strengthen Practical Training, and Pay Attention to Training Students' Application Ability

The training plan in general colleges and universities has a theoretical period of 7 semesters, so it is necessary to strengthen the connection between theoretical course teaching and practical links,

and to shorten the knowledge conversion cycle from theoretical teaching to practical teaching [10]. Based on the professional training objectives and training specifications, comprehensive courses and emerging courses have been set up in the curriculum, reflecting the new achievements in the development of agricultural science and technology revolution. According to the actual content of practical teaching, the specific implementation plan of practical teaching is formulated, and a comprehensive and standardized evaluation system of practical teaching is established, combining summative evaluation with procedural evaluation. In the future, the undergraduate talents who are in greatest demand in agriculture and rural society are practical application and micro-management talents, not scientific research and macro-management talents. It is better to split training after admission, and scientific research talents should be transferred to the graduate education level. According to the requirements of professional posts for talents' professional ability and professional quality and the different stages in the typical work process, establish corresponding courses in the learning field, and rely on this major to form three employment directions: pest control, agricultural technology promotion and agricultural marketing. Emphasis is placed on assessing students' ability to find problems, analyze problems and solve problems by using the knowledge and skills they have learned, so as to promote the improvement of students' practical skills. The internal practice teaching is linked with the external practice teaching evaluation, and the planned practice teaching is linked with the evaluation of unplanned practice teaching activities, thus forming an all-round and three-dimensional practice teaching evaluation system.

4.3 The Construction of Teachers and Teaching Environment

In order to cultivate practical talents with strong practical ability, teachers' practical ability must be guaranteed first. For this reason, the school has issued relevant policies and assessment mechanisms to encourage teachers to apply for scientific research projects so as to promote practice through scientific research. In the past, there were few courses with teaching practice, and teaching practice was carried out separately. Now, teaching practice of several courses is offered and the practice time is relatively concentrated. Therefore, we began to try the teaching road of combining teaching practice. Therefore, it is necessary to design different training programs, different teaching plans, different levels of teaching content, and different teaching progress to separate them, which is conducive to outstanding students to stand out. In the aspect of training teachers' teaching ability, we should attach importance to the teaching quality and organize related activities such as the basic skills competition to improve teachers' teaching quality. The establishment of school-level teaching reform projects, etc., to encourage teachers to carry out teaching research and reform. In addition, the establishment of a scientific and standardized practical teaching assessment system plays an important role in improving the quality of teaching practice for plant protection majors. At the same time, combined with scientific research institutes, plant protection stations and agricultural enterprises that have cooperative relations, students' innovative and entrepreneurial abilities in their units are evaluated, and students' innovative and practical abilities are comprehensively evaluated. Relevant experts from pesticide enterprises and plant protection and quarantine departments are invited to set up an off-campus teaching steering committee to report to students on a regular basis, to participate in practical teaching in combination with production and market demand, and to jointly undertake the teaching of project courses with professional teachers, so as to improve the ability of professional teachers to solve practical problems.

5. Conclusion

With the promotion of enrollment and teaching reform in agricultural colleges and universities, the plant protection specialty has undergone a process of transformation from traditional education to modern education. Teachers' educational thoughts and concepts, teaching contents, methods and means have also undergone a process of reform and adjustment, making teachers' thoughts and concepts more in line with the requirements of innovative education. The Institute of Plant Protection of Agricultural University, taking the reform and construction of practical courses as its starting point, actively promotes the organic connection of experimental courses, teaching practice,

comprehensive large-scale experiments, production practice, graduation practice and on-the-job practice, so as to smoothly promote the systematic education of professional knowledge. On the basis of actively cooperating with the construction of the school spirit and style of study, we should also pay attention to creating a strong academic atmosphere within our major, launching professional knowledge competitions, scientific research reports and academic lectures, and inviting well-known experts and scholars to give academic and situation reports to colleges and universities. This can fully explore students with scientific research potential, stimulate students' potential in scientific research, and further improve the comprehensive quality of students. It can provide a certain reference for the cultivation of plant protection professionals in general colleges and universities in the new century to carry out scientific research early education.

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