

# Cooperation Among University, Enterprise and Local Government to Cultivate Postgraduate Students of Agricultural Professional Degree Jointly

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**Abstract**—In order to train postgraduate students of agricultural professional degree more effectively and make the students adjust to their future professions, a training mode for postgraduate students of agricultural professional degree, university-enterprise-government joint cultivation, has been adopted in Hunan University of Humanities, Science and Technology since 2012. In this paper, the interests of co-operational partners among the university, enterprises and the local government were analyzed, and the operation mechanisms of joint cultivation were studied including the curricula system reform, the measures to keep continuity and consistency of study during all the training stages, and the evaluation index system. In this way, the affecting factors on university-enterprise-government joint cultivation of postgraduate students were explored and achieved a remarkable promotion in the cultivation quality of postgraduate students in agriculture.

**Keywords**—: *agricultural professional degree; university-enterprise-government joint cultivation; operation mechanism; joint bases*

## I. INTRODUCTION

Professional degrees are forms for postgraduate education. Different from the academic types of postgraduate education, the cultivation of professional types attaches importance to train postgraduates' working ability and often takes vocation as orientation. Undoubtedly, founding postgraduate cultivation bases by the university, enterprises and even the local government jointly is an efficient way to promote the education quality. Referring to the education of postgraduate students of agricultural professional degree, some universities still chose the similar mode with the academic types to cultivate students which is obviously unsuitable for the professional degree education, while some others tried to make some reforms including adopting "two-stage and two-tutor" mode, which implied that postgraduate students were trained both in college and enterprises during different stage and supervised by different tutors both from the university and enterprises [1]. In 2012, Hunan University of Humanities, Science and Technology began to adopt a cultivating mode, which was university-enterprise-government joint cultivation, to train postgraduate students of agricultural professional degree as a five-year pilot project. Our university has established several training bases with enterprises and the local government including Hunan Ava Training Base, Hunan Jiulong Training Base for Students of Specialities in Agriculture and Biotechnology, Hunan Xinhua "Three Rural Issues Studio" since then. Based on the prophase survey on the interests of co-operational partners and the mode of fostering talents in agriculture, we adjusted the cultivating mode and the curricula system, focusing on promoting the professional abilities of the postgraduate students, and greatly upgraded the teaching quality.

## II. PROBLEMS EXISTED IN JOINT CULTIVATION

### A. Analysis of joint cultivation bases for agricultural professional degree education

Since the academic mode was not suitable for training postgraduate students of professional degree, universities began to cooperate with agricultural enterprises or public institutions of government to establish bases jointly for training students. When students finished the basic theory and skill learning in college, they were transferred to the practical stage of off-campus learning in the joint bases. But in most cases, the ways that on-campus tutors connected with off-campus tutors were not always effective. The students usually participated in the projects held by the on-campus tutors at first. Unfortunately, those projects were not entirely consistent with the future trainings in enterprises and public institutions. On-campus tutors paid more attention to the academic merits of projects rather than their commercial interests, whereas enterprises and government institutions laid more emphasis on promoting the commercial and social values of products. Since universities are the main body of cultivating postgraduate students, the "two-stage and two-tutor" mode probably resulted in nominal off-campus tutors, and the trainings in college and in off-campus bases did not match the real vocational demands on students.

### B. Analysis of interests of co-operational partners

In general, universities mainly care about the comprehensive effects of the education qualities, employment rates, and the social recognitions on postgraduate students of agricultural professional degree. Then the systematicness and integration of on-campus training and off-campus training courses may be the most concerned in cultivation of postgraduate students. But as for enterprises, the situation is quite different. Nowadays enterprises in agriculture are often the main body of agricultural technology creation in market including the innovations of planting technology and experience, germplasm resources and processing techniques. When cultivating postgraduate students jointly, they often worry about the brain drain and the leakage of core technology.

The institutions of the local government may be another partner in the cultivation of postgraduate students in agriculture. Firstly, they are the supporters of the policies regarding the cultivation of postgraduate students in agriculture. In the meantime, postgraduate students of agricultural professional degree can be the high level backup talents for the basic institutions of the local government. The problem is how the local government takes part in the creation of collaborative innovation platform for cultivation of postgraduate students of agricultural professional degree.

## III. JOINT CULTIVATION WITH ENTERPRISES AND GOVERNMENT INSTITUTIONS

### A. Forms of joint cultivation bases

In recent year, we have build three forms of joint cultivation bases for postgraduate education in agriculture, which were the provincial bases in enterprises supported by the funds of the Provincial Education Department, the bases in enterprises supported by funds of Hunan University of Humanities, Science and Technology, and the “Three Rural Issues Studio” supported by the university, the local agricultural cooperative and the local government jointly. These provincial bases were cooperated with the leading agricultural companies such as Hunan Haili Chemical Industry Co, Hunan Ava Seeds Co, and Hunan Xiaolaoye Food Co. More than 51 students had been trained there, and 17 of them became employees after graduation since 2012. In addition, our university built another seven bases with other enterprises in order to satisfy the off-campus training. In 2014, Hunan Xinhua “Three Rural Issues Studio” was built, which was a new form of training base which was jointly founded by the university, the local agricultural cooperative and the local town government to train village officials from postgraduate students. In this studio, off-campus tutors including agricultural entrepreneurs and the government officials along with the on-campus tutors supervised the postgraduate students together.

### B. Reform of training mode

Hunan University of Humanities, Science and Technology set up a “seven-stage multi-tutor” training mode in the cultivation for postgraduate students in agriculture. A flexible education system from two to four years of schooling was adopted, and each student studied in college and training bases alternatively. At the last stage, students came back to college again, and finished their training reports and theses. Each one was trained by one on-campus tutor and several off-campus tutors and practiced in several working positions in the training bases. Over 130 postgraduate students had been trained in this way since 2012, and 54.96% of them were enrolled by the agricultural listed companies and the relevant government institutions after graduation (Table I). Consequently, their comprehensive practice abilities were promoted obviously and finally recognized by the societies.

TABLE I. NUMBERS OF POSTGRADUATE STUDENTS OF AGRICULTURAL PROFESSIONAL DEGREE TRAINED IN BASES AT HUNAN UNIVERSITY OF HUMANITIES, SCIENCE AND TECHNOLOGY SINCE 2012

Field	Training Bases			Employed by Agricultural Listed Companies and Government Institutions after Graduation
	Provincial bases	Bases founded by the university	Three rural issues studio	
Rural regional development	-	28	4	25
Agricultural information	5	15	-	7
Crop	22	8	4	12
Plant protection	24	21	-	28

### C. Measures to enhance effect of joint cultivation

#### 1) Curricular system reform

On the one hand, the proportion of the on-campus theory teaching of main courses for postgraduate students in agriculture were reduced to 50% in our university, but on the other the discuss teaching and case teaching were chosen instead of the traditional theory teaching. The discuss and teaching cases were prepared by on-campus tutors and off-campus tutors including entrepreneurs, agriculture technicians and officials together, and all the off-campus tutors were invited to the university to hold discuss and teaching courses or lectures at least once a year. To evaluate the teaching effect, a form was required to be filled by students after class, in which the assessment items were including teaching target, teaching content, and teaching effect. And in the end of the form, students were requested to provide suggestions and advice.

Besides the reform of teaching method, Hunan University of Humanities, Science and Technology encouraged on-campus tutors and off-campus tutors to write textbooks together. These tutors had already compiled and published seven textbooks such as "Agricultural biotechnology tutorial", "Facility farming technique", "Principle and practice of integrated control of diseases and insect pests in rice", etc. Agricultural entrepreneurs, technicians and officials were invited to join the compiling groups, and these textbooks were used both in college and in the training bases.

#### 2) Other arrangements to ensure continuity and consistency in training bases

The on-campus tutors often paid more attention to academic researches, while tutors from agricultural enterprises and government institutions cared more about agricultural technology development and extension. To keep the continuity and consistency while training students alternatively in college and in bases, tutors both from college and from bases were encouraged to declare research projects together. In 2016, three provincial scientific technology planning projects were approved which were co-presided by on-campus tutors and off-campus tutors. When students studied in college, they took part in the researches held by on-campus tutors; when students entered the bases, the continued the research work supervised by off-campus tutors. For this purpose, the supporting institution of master degree Hunan Provincial Collaborative Innovation Center for Field Weeds Control also set up more than six open funds every year to financially aid the researches both in college and in the training bases.

The proper achievement distribution principle was also established. All the participated units could publish research papers and apply for intellectual rights alone or jointly. In general, the attribution and benefit share were according to the scientific contribution of the partners during training postgraduate students, and all the partners were encouraged to apply jointly. Through the cooperation among the university, enterprises and the local government during the cultivation of postgraduate students in agriculture, a serial of achievements have been gained including 121 published agricultural research papers, 28 issued patents, and one released local standard in the past five years.

## IV. CONCLUSION

Joint training bases are the most important sites for vocation-oriented cultivation on postgraduate student in professional degree [2]. Through our practice in the last five years, we have cooperated with enterprises and the local government to build the training bases jointly, and the relative measures and operation mechanisms referring to these bases were established to keep continuity and consistency of study during all the stages. Through cultivating students in college and in the training bases alternatively, the education mode was changed into a vocation-oriented mode in the real sense and the postgraduate students were highly recognized by the society.

## ACKNOWLEDGMENT

This research was financially supported by Innovation Base for Postgraduates Cultivation of Hunan Province (2261602) and Research Project of Teaching Reform of Degree and Graduate Education in Hunan (JG2016B106).

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