

# Exploration of On-campus Practice Base Construction for Agricultural Professional Postgraduate Students in Local University\*

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**Abstract**—In order to combine the theory teaching with the practice training on the agricultural professional postgraduate students' cultivation seamlessly at university, Hunan University of Humanities, Science and Technology began to construct two on-campus practice bases in 2014. This paper analyzed the functions of the on-campus practice bases, and introduced the teaching and scientific research achievements gained during the personnel cultivation based on these two on-campus practice bases. As a result, the personnel cultivation quality was promoted and the postgraduate students were welcome when they entered the enterprises to practice. At the same time, the teachers also acquired remarkable achievements in the scientific research. This experience will be a valuable reference to other universities.

**Keywords**—theory teaching; practice training; on-campus

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*practice base; personnel cultivation quality; scientific research*

## I. INTRODUCTION

In 2011, Hunan University of Humanities, Science and Technology was approved with the pilot qualification by the National Education Department for the personnel cultivation of agricultural professional postgraduate students of master's degree, and later in 2016, the personnel cultivation project was highly evaluated and passed the medium-term acceptance by the National Education Department. Since the target of the personnel cultivation was aiming at training the high-level applied talents in the agricultural industry for the development of the local economics, to cultivate the innovative abilities and application abilities of the postgraduate students were of great importance during education.

In the agricultural colleges and universities, emphasis is often laid on the construction of joint practice bases, whereas most of them do not pay enough attention to the on-campus

practice construction. They prefer to set up off-campus teaching resources with the limited investment. But the disadvantages are also obvious. It is difficult to combine the theory teaching with the practice training seamlessly under this mode, and this situation greatly restricts the personnel training quality and the “two first-class disciplines” construction in the local universities [1], [2]. In view of this, Hunan University of Humanities, Science and Technology has kept a close eye on the on-campus practice base construction, and made a lot of teaching efforts by using the on-campus practice bases during the talent cultivation in the recent years. In the meantime, a series of scientific research achievements were also made during this process. This paper introduced the past years’ experiences of on-campus practice bases construction for the postgraduate students in Hunan University of Humanities, Science and Technology, hoping to provide valuable references for the other local universities.

## II. FUNCTIONS OF ON-CAMPUS PRACTICE BASES

### A. Cultivating Talents

One of the basic functions of the on-campus practice bases for the agricultural professional postgraduate students is the practice teaching [3]. In Hunan University of Humanities, Science and Technology, two agricultural professional postgraduate specialties, i.e., the agronomy and seed industry specialties and the resources use and plant protection specialty, need the on-campus practice bases. The postgraduate students can be trained systematically in the on-campus practice bases with the courses including “comprehensive control of plant pest”, “facility horticultural engineering technology”, “production and marketing of horticultural products”, and “plant production technology” and so on. The postgraduate students can deepen their understanding on their basic theory knowledge during their practice training in these bases and prepare necessary techniques for the further practice training in the enterprises. On the contrary, the joint practice bases with enterprises or public institutions are mainly for the real production or providing services. If the postgraduate students go out to practice in the off-campus directly without the training in the on-campus practice bases, they will not fit in the working environments quickly. Consequently, the practice training in the on-campus practice bases will fill the gap between the theory teaching and the enterprise internship [4], [5]. In addition, the on-campus practice bases are suitable not only for the postgraduate students in agriculture to study, but also for the undergraduate students in the specialties of horticulture, agronomy, and plant protection. These bases will be a necessary bridge to connect the class learning with the enterprise internship both for the postgraduate students and the undergraduate students.

### B. Scientific Research

The on-campus practice bases also serve as the ideal scientific research platforms for teachers [6], [7]. In the Agriculture and Biotechnology School of Hunan University of Humanities, Science and Technology, institutions so as to make full use of the high-quality practice Science and Technology, the teachers

practice bases jointly with the enterprises and the public include two parts of members: one part is the full-time teachers, and the other is the scientific research personnel from the former Municipal Agricultural Institute. The full-time teachers can use these bases to carry out their scientific researches such as the plant growth experiments, the plant resistance tests, the soil fertilizer test, and the pesticide toxicology experiments which are often difficult to fulfill in the laboratories, whereas the scientific research personnel can also execute the pot experiments, plant breeding, and cultivation experiments in the bases, so that both the full-time teachers and the part-time teachers can make full use of the on-campus bases to conduct their scientific researches.

### C. Space for Demonstration of Agricultural Extension

The on-campus practice bases can be used as an ideal place for the new agricultural technology demonstration to the farmers. The achievements including the new agricultural techniques, the new crop varieties, and the new farming methods created by the teachers can be demonstrated and expanded in the on-campus practice bases to benefit the farmers, and the postgraduate students can also participate in these demonstration activities guided by their tutors to promote their abilities of serving agriculture, countryside, and farmers.

## III. PRACTICE IN HUNAN UNIVERSITY OF HUMANITIES, SCIENCE AND TECHNOLOGY

Hunan University of Humanities, Science and Technology began to construct the on-campus bases for the agricultural professional education in 2014 when the former Municipal Agricultural Institute was merged into the Agriculture and Biotechnology School of Hunan University of Humanities, Science and Technology. Then the construction of on-campus practice teaching bases was put on the agenda. On one hand, these bases were essential for the practice training on the postgraduate students. On the other hand, the scientific research personnel in agriculture were urgently in need of these bases to carry out their basic scientific researches. For these reasons, the university built two on-campus practice bases in agriculture: the Greenhouse Teaching and Scientific Research Base and the Jiuer Agriculture Practice Base.

### A. Overview of On-campus Practice Bases

The Greenhouse Teaching and Scientific Research Base covers an area of 1.5 ha with a total investment of 650000 RMB, including the monomer greenhouse clusters, the connective plastic greenhouse, the steel frame greenhouse, the outdoor test area, and the buildings affiliated to the base (as shown in "Fig. 1"). Among them, the monomer greenhouse clusters and the steel frame greenhouse are of simple type without temperature and humidity control, where the vegetable breeding and the practice teaching are hold. The garden flower production and the plant protection test are hold in the connective plastic greenhouse where the light intensity, temperature and humidity can be controlled and the plants can be sprayed automatically. The outdoor test area can be used for the cultivation and breeding experiments.

Furthermore, the location of this base is located next to the laboratory used by the teachers and postgraduate students. It is a suitable place for the practice training for the

postgraduate students as well as an ideal scientific place for the teachers.

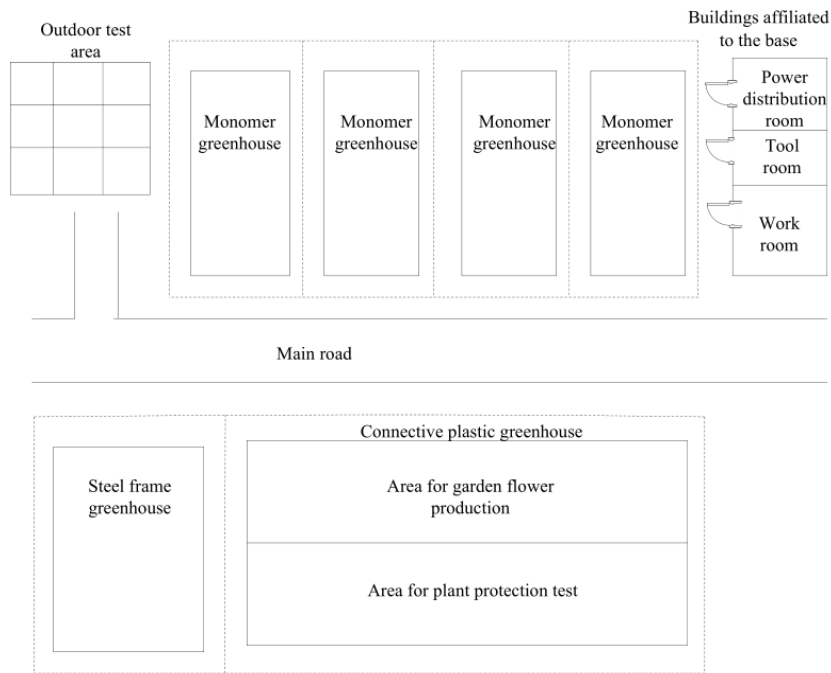


Fig. 1. Layout of Greenhouse Teaching and Scientific Research Base.

The other on-campus is the Jiuer Agriculture Practice Base, covering an area of 12.5 ha in total. It is consisted of four function areas including the hybrid rice planting area, the rape planting area, the fruit tree planting area, and the vegetable planting area ( as shown in "Fig. 2"). This base is

prepared both for the plot test in agriculture and for the students practice training. The base is facilitated with the automatic sprinkler system, and the students can carry on the practice trainings of crop planting, breeding, and facility agriculture technology in the base.

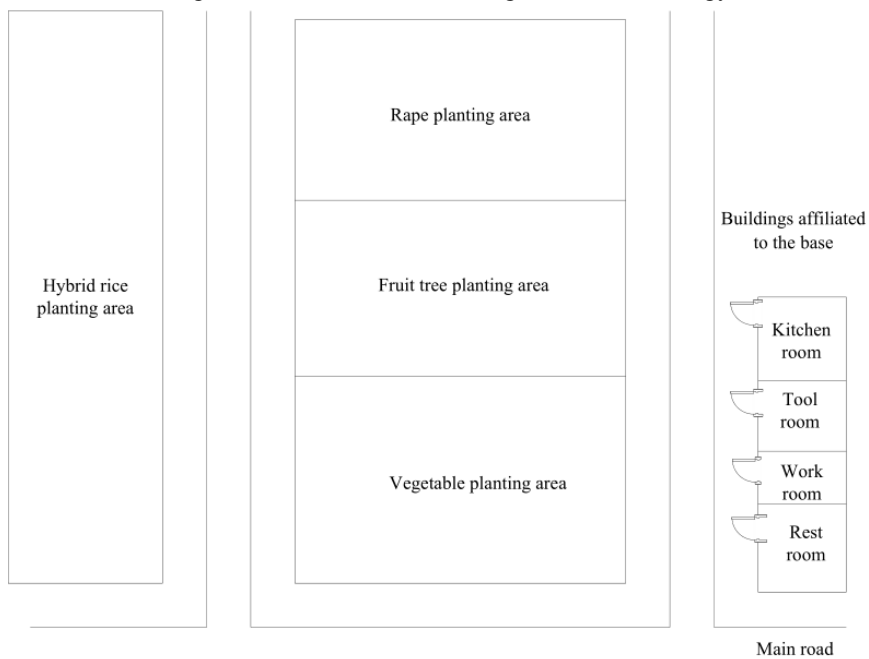


Fig. 2. Layout of Jiuer Agriculture Practice Base.

**B. Achievements Based on On-campus Bases**

Based on the two on-campus bases, Hunan University of Humanities, Science and Technology has acquired a lot of symbolic achievements in the recent years both in the postgraduate students' cultivation and in the scientific researches (as shown in "Table I"). In 2016, the Provincial Agriculture Entrepreneurial Platform was established by the Hunan Department of Science and Technology under the basis of the two on-campus practice bases. Twenty postgraduate students acquired the provincial research-based learning and innovative experimental projects from 2015 to 2019, and the postgraduate students in agriculture published

eleven research papers with the postgraduate students as the first authors relying on the bases. Their practice ability and creative ability were promoted after learning in the on-campus practice bases, and they were welcome to the joint teaching bases for their further study and training. At the same time, the teachers acquired four provincial scientific research projects and twelve other relative projects based on the bases, and published four relative books and eight SCI indexed scientific papers. Furthermore, four provincial achievements were identified by the professional societies, and three provincial awards were approved by the relative government institutions.

TABLE I. PART OF REPRESENTATIVE ACHIEVEMENTS BASED ON ON-CAMPUS BASES FROM 2015 BY TEACHERS

No	Achievement	Type	First author	Remark
1	Glyphosate resistance in "Tridax procumbens" via a novel EPSPS Thr-102-Ser substitution	Paper	Jingbo Li	JCR quartile 1
2	"Polygonatum odoratum" polysaccharides modulate gut microbiota and mitigate experimentally induced obesity in rats	Paper	Yan Wang	JCR quartile 2
3	Purification and characterization of a soluble glycoprotein from garlic ("Allium sativum") and its in vitro bioactivity	Paper	Yan Wang	JCR quartile 4
4	Responses of "Polygonatum odoratum" seedlings in aeroponic culture to treatments of different ammonium: nitrate ratios	Paper	Tingting Zou	JCR quartile 4
5	Investigation of weed species and control technology in "Camellia oleifera" forests in the hilly areas of the central Hunan Province	Evaluated achievement	Zanjiang Zhu	Provincial level and domestic leading
6	Research and application of key technologies of eco-recycling using livestock and poultry bones	Industry award	Zhenzhong Jin	Third prize of China Circular Economy Association

**IV. INNOVATIVE POINTS**

In the construction of the on-campus bases, both the agricultural scientific research and the practice teaching were put under consideration altogether, and the function areas were comprehensive and diversified including the garden flower production, the seedlings growth, the crops breeding, and the plot test areas which were necessary for the agricultural technology learning. These bases were ideal training places for the postgraduate students in agriculture and built a bridge from the university to the joint off-campus practice bases.

**V. CONCLUSION**

Practice training is important during the theory learning in the cultivation of agricultural professional postgraduate students. If the suitable on-campus practice bases are not built in universities, the students will not be well trained in universities and they will not adapt the practice environments in the enterprises quickly in future. In view of this, Hunan University of Humanities, Science and Technology began to build two on-campus practice bases in 2014 and used them for the practice teaching and scientific researches. These measures evidently promoted the personnel cultivation quality. At the same time, the teachers also acquired remarkable scientific achievements.

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