Doctoral Programme of Forestry

I Discipline Profile

The discipline of forestry has a high domestic impact and international reputation in China. Originated from the Forestry Department of Yunnan University in 1938 and recruited master's degree students in 1978, the discipline of was awarded the authorization institution of master's degree in 1981, awarded the authorization institution of doctoral degree of the first grade discipline in 2013, started the cultivation of doctoral degree of forestry in 2014, and was awarded the national post-doctoral scientific research station of the first grade discipline of forestry in 2023. The discipline of forestry has formed a system of talent cultivation from undergraduate to master's and doctoral and post-doctoral degrees. It has formed the discipline setup of "4 main majors + 2 specialties", with forest genetic breeding, forest cultivation, forest protection and forest management as the main subjects, and biodiversity conservation and forest health, forestry resources excavation and industrialization as the specialties. The discipline is rich in characteristics and advantages in the fields of innovation of characteristic forest germplasm and efficient cultivation of forest resources in Southwest China, sustainable management of forests and carbon accumulation in forestry, information monitoring and green prevention and control of forestry pests, conservation of biodiversity in Southwest China's mountainous areas, and cultivation and utilization of understory resources and etc. The discipline has been awarded the second prize of the National Scientific and Technological Progress Award.

II Main Research Directions

1. Forest Conservation

The main research directions include forest pathology, forest entomology, and integrated pest management. It focuses on the theory and control technology of pathogenesis, pathology, epidemiology, prevention and control of diseases of forest plants, ornamental trees and economic forests as well as the pathogenic mechanism of pathogens. It also focuses on the systematic classification and evolution of Hymenoptera, Coleoptera and Hymenoptera, the mechanism of forest pests, the mutualism, co-evolution, and the mechanism of chemical communication between forest pests and plants, and the discovery, protection, and utilization of natural enemies, insects, and pathogenic microbial resources and their relationship with hosts. microbial resources and explore the

mechanism of their interactions with hosts, as well as new theories, methods and technologies for forest pest control.

2. Forest Management

This direction focuses on forest zoning, survey, evaluation, forest growth and harvesting, planning and decision-making theory, methods and technology of integrated management disciplines, including:

(1) forest sustainable management theory and technology, mainly is engaged in the study of forest sustainable management theory and technology system; Optimization of forest resources and ecological environment based on "3S" technology control theory and technology research; the optimal spatial management of forest resources theory and technology system of forest resources survey and evaluation research under multi-objective constraints;

(2) Forest structure and growth model simulation, mainly studies the growth model of tree and forest stand structure adjustment; carrying out research on the mechanism model of forest growth; studying the dynamic model and simulation technology of forest structure and growth; using "3S" technology as a platform to establish a dynamic prediction model for the dynamics of large-area forest resources and the forest's ability to absorb carbon.

(3) Forestry remote sensing and information technology, mainly researches on remote sensing image digitization processing technology, digital measurement technology, and research on the application of hyperspectral and multi-angle remote sensing technology in forestry.

(4) Forest resources survey and monitoring, mainly researches on multi-resource management information technology for forest resources survey and monitoring based on "3S" technology; digital forestry as the leading, establish a new management information system for forest resources and environmental monitoring; digital information management technology and software development for forest resources, and form an industrial scale of forestry resources information in China.

3. Forest Breeding

The main research areas include the theory and technology of forest seedling cultivation, the theory and technology of plantation forest oriented cultivation, the theory and technology of economic forest cultivation, and the innovation and cultivation technology of forest germplasm resources, etc. The discipline has formed regional characteristics and advantages in the oriented cultivation of timber forests, cultivation and utilization of economic forests, and restoration of vegetation in difficult areas.

4. Wildlife Conservation and Utilization

The main research areas include wildlife diversity and conservation, animal ecology, plant diversity protection and utilization, and plant classification and zonal geography. Research contents include:

(1) Research on the distribution pattern, evolution and causes of wildlife diversity, ecological biology of rare and endangered wildlife, endangerment mechanisms, breeding techniques and their habitat assessment, monitoring and care, wildlife conservation and sustainable utilization;

(2) Impacts of changes in wildlife living conditions on morphological features, physiological structures and behaviors and their adaptive mechanisms, patterns of changes in population parameters and their causes, adaptations and evolution, patterns of occurrence of wildlife diseases and monitoring strategies and measures;

(3) Investigation of flora in important areas in southwest China, and study of the geographic distribution pattern of important taxa, the formation process, and the formation mechanism of biotic and abiotic causes.

5. Forest Genetic Breeding

The main research directions include forest genomics and molecular breeding, forest plant genetics and improvement, forest cytogenetics and cell engineering and breeding of good forest species. The main research is to study the basic principles of forest genetics and variation, to analyze the genetic and molecular basis of trait formation; to evaluate, utilize and manage the major forest plant germplasm resources; to meet the needs of high-quality, fast-growing, productive and high-resistant plantation forests, and to utilize the traditional methods such as selection, hybridization, and ploidy breeding, combined with the modern methods such as genetic engineering, cellular engineering, and molecular markers assisted selection, to select and breed new varieties of trees and to propagate the good varieties. The course is designed to be used for the selection and breeding of new species of forest trees and the propagation of good species.

III Cultivation Objectives

1．To have a rigorous and realistic style of scientific research, and a spirit of exploration that seeks for innovation and differences, so as to effectively enhance the innovation ability of postgraduates.

2．To have systematic study and mastery of basic forestry theory and practice and other advanced technologies, understanding the discipline's frontier areas, the development of dynamic and national industry needs, and the program belongs to the direction of a scientific and technological

problems in-depth research; to have a solid professional foundation and experimental skills, as well as strong independent learning ability and innovation, entrepreneurial spirit, and a rigorous style of study; after graduation, be able to independently carry out scientific research in forestry and related fields, teaching, management, and technology development in forestry and related fields.

3．Be able to skillfully read foreign materials related to this discipline, and have a certain degree of writing and communication skills;

IV Graduation requirements

1．Academic Achievement. Doctoral students must demonstrate a high level of academic achievement throughout their studies, maintaining a satisfactory GPA and completing all coursework. Each PhD candidates must publish at least 1 peer review journal article closely related to the doctoral thesis.

2．Research Project and Dissertation. The dissertation must be original and scholarly work which contributes to the field of study. It should demonstrate the student's ability to conduct independent research, analyze data, and present findings in a coherent and scholarly manner.

3．Language Proficiency. Through the study of Compulsory courses"Chinese Language" and "An Outline Introduction to China", a total of 6 credits,be proficient in using Chinese, understand Chinese culture and the development of contemporary China. Encourage and support the use of Chinese for writing dissertation. Upon graduation, students should pass HSK4 (Chinese proficiency test, level 4) .

V Programme Duration

Candidates are typically expected to finish their studies within 3 years, with a maximum limit of 6 years.