

全 国 高 等 农 林 院 校 教 材



高等教材

经济林栽培学

杨建民 黄万荣 主编

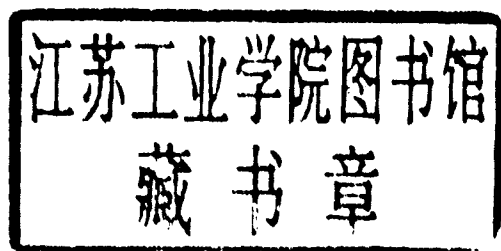


中国林业出版社

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内 容 简 介

本教材全面系统地介绍了经济林栽培的理论与技术。全书分为总论和各论两部分。总论部分着重介绍了我国经济林资源及其分类、生态环境对经济林生长发育的影响、经济林栽培的生物学基础、苗木培育、优质无公害栽培技术、植物生长调节剂在经济林栽培中的应用、矮化密植栽培、设施栽培、经济林自然灾害预防、野生经济林资源开发利用等方面的理论与技术；各论部分按经济林用途分为干果林、木本油料林、药用林、木本蔬菜林、调料林和饮料林6大类，重点介绍了48个主要经济林树种的优良品种、生物学特性、栽培技术要点和产品收获及产后处理的相关理论与关键技术。充分反映近年来经济林生产和科研进展的成果，以经济林优良品种、优质无公害生产为主线，使教材的内容更具有特色和符合时代要求。

本教材以高等农林院校林学专业的本科生为对象，也可供其他农林师范类院校相关专业、成人教育等有关师生、经济林生产者及科技人员参考。

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前言

经济林是指以生产果品、油料、饮料、调料、工业原料和药材等为主要目的的林木。它是林业生产的重要内容之一，也是我国森林资源的重要组成部分。经济林属多功能性林木，在具有生态、社会功能的同时，还为国家提供充足的相关工业原料，为人民生活提供营养丰富的多种食物。随着我国改革开放的深化，经济林产品已逐步成为我国发展农林经济和扩大对外出口的大宗产品之一。经济林生产是我国当前林业经济增长的亮点和林业产业结构调整热点。本书将对经济林专业人才培养、经济林生产和科学研究等方面发挥重要的桥梁和纽带作用。在 20 世纪 80 年代，中南林学院主编了国内第一部经济林栽培学教科书，作为经济林专业本、专科生和林学专业等相关专业的教材和广大经济林科技工作者的参考书，对培养经济林专业人才、指导经济林生产和科学研究作出了历史性贡献。近年来，随着经济林科学研究的深入以及经济林产品优质标准化生产技术的不断发展，涌现出大批新品种、新成果、新技术，面对我国林业产业结构调整和加入世界贸易组织的新形势，社会对经济林生产技术和人才提出了更高的要求。为使 21 世纪大学生更好地掌握现代经济林栽培的理论与技术，急需一本能反映当代中国和世界经济林科技发展水平的新教科书，中国林业出版社组织了国内 9 个单位长期从事经济林教学、科研、生产的第一线专家学者，历时近 2 年的时间编写了这本新教材。

在教材编写过程中，力求教材既能反映具有中国特色的经济林栽培技术的最新成果，又能反映国际经济林栽培技术的基础知识。做到理论联系实际，先进性和实用性兼备，体现“新”和“基础”的原则。本书全面系统地介绍了经济林栽培的理论与技术及主要经济林树种栽培管理技术。全书分为总论和各论两部分。总论部分着重介绍了我国经济林资源及其分类、生态环境对经济林生长发育的影响、经济林栽培的生物学基础、苗木培育、优质无公害栽培技术、植物生长调节剂在经济林栽培中的应用、矮化密植栽培、设施栽培、经济林自然灾害预防、野生经济林资源开发利用等方面的理论与技术；各论部分按用途将经济林分为 6 大类，重点介绍了 48 个主要经济林树种的优

良品种、生物学特性、栽培技术要点和产品收获及产后处理的相关理论与关键技术。新编写的《经济林栽培学》有以下几个方面的特点：第一，以经济林优良品种、优质无公害生产为主线，使教材的内容更具有特色和符合时代要求，把基本理论、基本知识、基本技能作为重点，内容充实、文字简练、图文并茂，使教材具有较强的先进性、适用性和实用性。第二，本教材采用按经济林的用途分类的方法将我国经济林树种分为干果林、木本油料林、药用林、木本蔬菜林、调料林和饮料林6大类，每一类中重点介绍了当前生产中广泛栽培和具有开发利用前景的经济林优良品种和栽培技术。第三，为了便于学生全面了解我国经济林资源和栽培技术，照顾不同地区的需要，可结合本地区经济林生产的实际情况，在教学过程中，对各论部分有针对性地加以选择，其他部分可以作为学生自学的参考。第四，由于我国经济林资源十分丰富，经济林涵盖的范围十分广泛，考虑到教学时数等因素的限制，也便于与《果树栽培学》相区别，隶属于经济林范畴内的水果类树种在本教材中未列入，各院校在教学过程中，如果需要讲授水果类树种，可参考相关的果树栽培学教材。

本教材由河北农业大学、北京农学院、南京林业大学、山西农业大学、中南林学院、华南农业大学、江西农业大学、吉林省果树研究所、中国林业科学研究院亚热带林业研究所9个单位有关教师和科研人员合作编著。第1章，第4章，第9章，第10章第1节，第12章仁用杏由杨建民编写；第3章，第14章越橘、五倍子、五味子、小檗，第15章野葛、刺五加、其他，第17章刺梨由黄万荣编写；第2章第2~4节，第5章第6、7节，第12章银杏、香榧，第14章厚朴、山茱萸、连翘，第17章茶树由彭方仁编写；第5章第1~5节，第10章第2~4节，第12章榛子、第14章枸杞由刘汉云编写；第6章，第11章，第12章板栗，第13章文冠果，第16章花椒，第17章桑树由李保国编写；第2章第1节，第12章阿月浑子，第13章黄连木、翅果油树由路丙社编写；第7章和第8章，第12章无花果由齐国辉编写；第12章腰果、橄榄和乌榄，第16章八角、肉桂，第17章椰子由黄永芳编写；第13章油茶、油桐、油橄榄和乌桕由李建安编写；第12章山楂和扁桃由乔进春编写；第14章杜仲，第15章香椿和楸木由袁玉欣编写；第12章金樱子，第15章笋用竹由郭起荣编写；第12章核桃由张志华编写；第12章枣由周俊义编写；第12章柿由王文江编写；第12章余甘子由姚小华编写；第16章玫瑰由刘冬云编写；第17章沙棘和黑穗醋栗分别由刘慧涛和张冰冰编写。杨建民负责全书的统稿。

本教材在编写过程中，参阅了许多学者编著的教材、著作和相关的研究资料。中国科学院植物研究所李绍华研究员主审了本教材，李

保国教授、彭方仁教授、齐国辉副教授参与了审稿。在教材编写过程中，得到中国林业出版社、河北农业大学、南京林业大学和山西农业大学等有关单位领导的大力支持和帮助，在此表示衷心的感谢！

本教材涉及的树种多，从理论到实践内容知识面广，加之编者水平有限，教材中缺点和错误在所难免，恳切希望使用本教材的师生和读者提出宝贵意见。

杨建民 黄万荣

2004 年 3 月

PREFACE

Economic forest is focus on the trees that produce fruits, edible oils, beverages, seasonings, raw materials for industries, and Chinese medicines. It is one part of the forest resource, and plays an important role in the forest industry in China. Trees falling into economic forest category have more functions in terms of maintaining ecological balance, producing numerous relative raw industry materials, and providing kinds of foods with rich nutrition for people's daily life. With the processing of reforms and opening in China, the products of economic forest have been becoming one of the main products for the developing of economy in agriculture and forest and for the export. The production in economic forest is the highlight of growing in forest economy and the hot spot of adjusting for the structure in forest industry at the present time in China. This book, *Culture in Economic Forest*, is an important link amongst education, production, and research in economic forest field. In 1980's, the first textbook about culture in economic forest in China was written by the authors from Zhongnan Forestry College. It has great been contributed to the education, production, and research in economic forest field as a textbook for the college students majoring in forest and other relative fields, and as a reference for the technicians working in economic forest field. In recent years, more and more new varieties and practices have been developing with the moving forward of research and the establishment of production standardization for high quality fruit. The higher demand for the practices and education in economic forest field has been raised under the new situation of adjusting in forest industry structure and the joining in WTO. It is highly necessary to have a new textbook to meet the requirement for the college students who study in the 21st century to get the modern theory and technology in economic forest culture. Under the organization of China Forestry Publishing House, the specialists and professors from nine units across the nation who have been working in teaching, research, and production for a long period time, put their efforts together and spent almost two years to make this new textbook available.

As much as possible, this book contains not only the new achievements with Chinese features in economic forest field, but also the elementary knowledge in economic forest culture practices overseas. This book is designed to introduce the theory in eco-

economic forest culture systematically and the practices for main economic forest species. It is divided into two parts. In Part I, it focuses on the economic forest resources and their classification, effect of ecological environment on growth and development of economic forest, biology of economic forest culture, propagation, culture practices for high quality and organic production, application of plant regulators in economic forest culture, natural calamity protection, exploitation of wild economic forest resource, dwarfing and high density culture, and protected culture. In part II, the economic forest species are divided into six categories in terms of what their products used for. There are forty eight main species introduced in terms of their biological features, key culture practices, and harvest and post harvest technologies. The new *Culture in Economic Forest* has new features as following. Firstly, following up the development of new varieties and high quality and organic production, the book has its own feature and meets the requirement of modern time. The book focuses on the elementary theory, basic knowledge, and conventional practices by using plenty materials, concise explanation, and charts and tables, which makes it to being advance, suitable, and useful. Secondly, in this book the economic forest species are divided into six categories in terms of what their products used for, and they are nut forest, woody oil forest, Chinese medicine forest, woody vegetable forest, seasoning forest, and beverage forest. In each category, good varieties and practices used in the industry nowadays have been introduced, which help the students to focus on the points and the researchers and growers to use as a reference. Thirdly, for the convenience of knowing the economic forest resource and culture practices in China, the textbook does not write in southern and northern versions. Depending on the situation of economic forest production in your area and the teaching hours applied, the chapters in Part II may be selected, and the others may be used as reference for student's self-teaching study. Fourthly, the fruit trees under economic forest category are not covered due to the plenty economic forest resource in our country, the broad scope of economic forest spread, and the limit of teaching hours. It is also to differentiate from Pomology. In teaching practice, may refer to relative reference in Pomology if fruit tree teaching is processed.

This textbook is contributed by teachers and researchers from Hebei Agricultural University, Beijing Agricultural College, Nanjing Forestry University, Shanxi Agricultural University, Huanan Agricultural University, Jiangxi Agricultural University, Fruit Tree Institute of Jiling, and Subtropical Forest Institute at Forest Academy in China. Yang Jianmin and Huang Wanrong are responsible for arranging all the manuscripts in order.

It is the first time for the authors to write the textbook with general theory and practices in one. There could be errors or weaknesses in this book due to its broad coverage in species, theory, and practices, and author's experiences and time limit. We hope

teachers and students who use this book as a textbook and readers can give us comments and advise which would be references for the book's new edition.

Many textbooks, books, and relative research data have been used as references for the writing. We are indebted to Dr. Shaohua Li from Institute of Plant at Chinese Academy of Sciences, who reviewed the entire manuscript. Professor Baoguo Li, Professor Fangren Peng, and Associate Professor Guohui Qi also made their contribution to the manuscript review. We appreciate the support and help from China Forestry Publishing House, Hebei Agricultural University, Nanjing Forestry University, Shanxi Agricultural University, and so on.

Jianmin Yang, Wanrong Huang

March 10, 2004

前 言

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