云南省普通高等学校“十二五”规划教材
农林类英汉双语教材

牛焕琼◎主编

观赏植物苗木繁殖技术

Propagation Techniques of Ornamental Plants

中国林业出版社

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内容简介

本教材是配合观赏植物苗木繁殖技术英汉双语课程的教学而编写的，被列为云南普通高等学校“十二五”规划教材。教材内容包括观赏植物的生长环境、种子采集与处理、种子贮藏、实生繁殖、营养繁殖(嫁接、扦插、分株、压条等)、常见观赏植物生产技术。教材突出职业教育“重应用，轻理论”的特点。

教材内容在选用英文原文素材的基础上，结合国情和本科、高职学生的英语水平，进行了简化，并配有译文、词汇和课后练习。教材紧扣我国高速国际化进程中对农林类专业英语的需求，面向广大的园林类和林业类本科、高职学生，为专业课程双语教学的开展提供教材。同时，也可作为花卉园艺爱好者、英语爱好者的课外学习资料，从事林木种苗生产、园林绿化、花卉、风景园林等相关工作人员也可参考使用。

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《观赏植物苗木繁殖技术》

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编写说明

本教材是配合观赏植物苗木繁殖技术英汉双语课程的教学而编写的，被列为云南省普通高等学校“十二五”规划教材。教材紧扣我国高速国际化进程中对农林类专业英语的需求，面向广大的园林类和林业类本科、高职学生，为专业课程双语教学的开展提供教材。教材内容包括观赏植物生长环境、种子采集与处理、种子贮藏、实生繁殖、营养繁殖（嫁接、扦插、分株、压条等）、常见观赏植物生产技术。教材突出职业教育“重应用，轻理论”的特点。

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本教材由牛焕琼（云南林业职业技术学院）、张国君（河北科技师范学院）、沈俊岭（青岛农业大学）、韩杭（云南林业职业技术学院）、赵会芝（河北科技师范学院）五位老师合作编写完成，主要编写人员具备英语国家研究工作经历，或为英语老师，保证了书稿的质量。牛焕琼老师负责组织编写和统稿工作。

本书编写过程中选用了大量英文文献资料，并征得有关作者和组织的许可，翻译过程中还得到了 Mr. Graham Armstrong 的很多帮助，在此一并致以真挚的感谢！但因为编者水平有限，时间仓促，书中还存在许多不足，敬请各位专家、同行、读者给予批评指正！

编　者

2012 年 11 月

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引言 Introduction

What are ornamental plants?

From Wikipedia

Ornamental plants are plants that are grown for ***decorative purposes*** in gardens and landscape design projects, as houseplants, for cut flowers and specimen display. The cultivation of these forms a major branch of horticulture.

Most commonly ornamental garden plants are grown for the display of ***aesthetic features*** including: flowers, leaves, scent, overall foliage texture, fruit, stem and bark, and aesthetic form. ***In some cases***, unusual features may be considered to be of interest, such as the prominent and rather vicious thorns of rosa sericea and cacti. ***In all cases***, their purpose is for the enjoyment of gardeners, visitors, and/or the public.

Similarly certain trees may be called ornamental trees. This term is used when they are used as part of a garden or landscape setting, for instance for their flowers, their texture, form and shape, and other ***aesthetic characteristics***. In some countries trees in "utilitarian" landscape use such as screening and roadside plantings are called ***amenity trees***.

For plants to be considered as ornamental, they may require specific work and activity by a gardener. ***For instance***, many plants cultivated for topiary and ***bonsai*** would only be considered as

什么是观赏植物?

摘自维基百科

观赏植物是种植在花园、景观工程等场所以装饰为目的的植物，如室内植物、鲜切花植物、标本植物。观赏植物的栽培形成了园艺一个重要的分支。

通常情况下，观赏园林植物种植是为了展示其美学特点，包括花、叶、气味、树叶质地、果实、茎和树皮，以及优美的树形。有时，一些不同寻常的特性也被视为是有趣的，如玫瑰和仙人掌锋利而会伤人的刺。总之，栽培观赏植物的目的是为园艺工作者、游客和大众带来愉悦的感受。

同样，有些树木也被称为观赏树木。当树木因为其具有花、叶质、树形和其它方面的美学特征而被用于花园、风景园林时，就被认为是观赏树木。有些国家把用于隔离和种植在路旁的实用景观树木称为风景树木。

植物要成为观赏植物，需要经过园林工人的精细管理，如很多造型植物和盆景要经过园艺师定期修剪管理后，才能被认为是观赏植物，如果没有这些工作，它们很快

ornamental by virtue of the ***regular pruning*** carried out on them by the gardener, and they may rapidly ***cease to*** be ornamental if the work was abandoned.

Ornamental plants and trees ***are distinguished from*** utilitarian and crop plants, such as those used for agriculture and vegetable crops, and for forestry or as fruit trees. This does not preclude any particular type of plant being grown both for ornamental qualities in the garden, and for ***utilitarian purposes*** in other settings. Thus lavender is typically grown as an ornamental plant in gardens, but may also be grown as a crop plant for the production of lavender oil.

The term ornamental plant is used here ***in the same sense*** that it is generally used in the horticultural trades. The term largely ***corresponds to*** "garden plant", though the latter is much less precise, as any plant may be grown in a garden.

就失去了观赏价值。

观赏植物和树木不同于具有实用功能的植物和农作物，如那些用于农业、蔬菜、林业或者果树的植物，但这不排除有些植物既用于园林观赏，也出于实用目的而种植在其它地方。如薰衣草是一个典型的园林观赏植物，但也可以种植来生产薰衣草油。

这里所说的观赏植物与通常用于园艺贸易的观赏植物意思相同。在很大程度上，观赏植物相当于"园林植物"，尽管后者（园林植物）没有这么准确，因为任何植物都可以种植在花园里。

Unit 1 Site Description

第 1 章 立地描述

The site description[1] has many uses:

A. It can be used to describe the environment at a particular site where you want to carry out some vegetation management activity.

B. With this description, you can make full use of the ***Species Navigator Tool*** [2] to help you select species for revegetation.

C. The site description will give you valuable information for property planning for both conservation and production purposes.

D. You can use the site description when you are preparing project applications for conservation incentives.

E. You can also take your site description to your local nursery to make sure the species you order are most appropriate for your site.

1.1 What bioregion is your site in?

Bioregion is an area constituting a ***natural ecological community*** with characteristic flora, fauna, and environmental conditions and bounded by natural ***rather than*** artificial borders.Bioregions have

立地描述有许多用途：

(1)它可以用来描述你打算进行植被管理的一个特殊地点的环境。

(2)通过这个描述，你可以充分利用**物种导航程序**来帮助你选择适宜栽植的植物种类。

(3)立地描述会让你得到以保护和生产为目的的产品计划的有用信息。

(4)当你准备申请以保护为目的的项目时，可以利用立地描述资料。

(5)你也可以拿着你的立地描述到当地苗圃去确定订购的植物种类是否最适合你的种植地。

1.1 你的所在地位于哪个生物区？

生物区是由具有相同特征的动物、植物和环境条件的**自然生态群落**构成的区域，是自然分界**而不是**人为划分的。同一生物区拥有相似的动植物生存环境，如地质、

similar environmental characteristics such as geology, landform patterns, climate, ***ecological features*** for plants and animals, and are useful for thinking of clusters or similar environments.

1.2 Climate

Three climate parameters are very important for the survival and growth of native vegetation: ***mean annual rainfall*** and its distribution throughout the year; ***mean annual temperature range***; and ***number of frosts in a year***.

Mean annual rainfall

Mean annual rainfall is measured in millimeters. It is ***derived from*** those years for which rainfall has been recorded. In many parts of Australia, rainfall has been recorded for over 100 years. ***Rainfall distribution*** describes when the majority of the rainfall is received. Winter rainfall dominance is most common in the south of the continent; while the tropical regions are strongly summer dominant. Areas in the middle may have no obviously dominant rainfall period or may have winter and summer peaks of approximately equal magnitude.

Mean annual temperature range

Mean annual temperature range gives an indication of the range of temperature extremes. Plants growing in environments with big differences between maximum and minimum temperatures have to be very adaptable.

Hottest:_____℃

Coldest:_____℃

Number of frosts per year

Frosts can kill plants or reduce their growth. Frost is influenced by temperature, humidity and landform, but this measure gives an approximate indicator of the severity of frost and likelihood of occurrence at a particular site. The number of frosts below degree per year is a useful indicator of severe

地形、气候、**生态特征**，用来考虑群组或相似的环境很有用。

1.2 气候

三个气候参数对原生植被的生存和生长非常重要：**年均降雨量**及其年分布，**年均温度变化范围**，以及**年霜冻天数**。

年均降雨量

年均降雨量用毫米来表示。它**源于**被记录的那些年的降雨量。在澳大利亚的许多地方，降雨量已经记录了100多年。**雨量分布**描述的是主要降雨量被接收的时间。澳大利亚南部雨季主要在冬季，而热带地区的降雨量主要在夏季。中部地区可能没有明显的降雨季节，也可能在冬季和夏季有差不多的降雨量。

年均温度变化范围

年平均温度变化范围指示了温度两端的变化幅度。在最高温和最低温相差很大的环境中生长的植物适应性无疑很强。

最高温：_____℃

最低温：_____℃

年霜冻日数

霜冻能冻死植物或减缓他们的生长。霜冻虽然受温度、湿度和地形的影响，但是估测的霜冻日数可以大约表明某一特定地点霜冻的严重性和发生的可能性。年霜冻日数是指示霜冻严重程度的一

frost.

Measuring these parameters

To determine the climate parameters for your site, go to the Government Bureau of Meteorology website. Detailed climate information can be found there. Locate your town or the nearest locality from the station list.

For mean annual rainfall, use the ***ANN*** (***Artificial Neural Networks***) [2] column of mean rainfall (mm). Look at the monthly averages to determine when your site receives most of its rainfall.

For mean annual temperature range, use the highest monthly temperature from ***mean daily Max temp*** (deg C) for Hottest and the lowest monthly temperature from ***Mean daily Min temp*** (deg C) for Coldest.

For a rough estimate of frost days, use the line titled Mean no.Days, Min ≤0.0 deg C.

The ***Bureau of Meteorology*** can provide this data only for locations where it has a ***weather station.*** You will need to choose from the station that is in a similar location and environment to your site. This may not necessarily be the closest station. Alternatively, you can get a very good estimate of the ***climate parameters*** for your site by using the ***Data Drill*** [3]. You will need to enter the latitude and longitude for your site, and Data Drill then uses a range of weather stations to estimate climatic records for your site.

Altitude (or Elevation)

Altitude (or Elevation) affects climate and is measured as metres above ***sea level***. Altitude indicates broad scale effects such as climate. To determine your altitude, you can use a ***contour map***, or Google Earth.

个重要指标。

参数测定

在政府气象局的网站可以找到有关你所在地点的详细的气候参数或信息。从网站的地点列表中找到你所在的城镇或最近的地方即可。

年均降雨量可以通过**人工神经网络柱**来获得。查看月平均值来确定你所在地点何时获得主要的降雨量。

对于年平均温度变化范围，最高温用最热月**日均最高温**表示，最低温用最冷月**日均最低温**表示。

霜冻天数的粗略估计，可以用标记有“小于等于零度的平均天数”线来确定。

气象局只能提供那些有**气象站**的地点的数据。你需要从这些地点中选择与你所在地点具有相似的位置和环境的地方，这不一定是最近的地方。你也可以用 Data Drill 工具来很好地估计你所在地点的**气候参数**。这需要你输入你所在地点的**经纬度**，随后 Data Drill 用一系列的气象站来估算你所在地点的气候数据。

海拔

海拔影响气候，它用高于**海平面**多少米来表示。海拔与气候一样表示**大范围**的影响效果。你可以用**等高线图**或 Google Earth 来确定你所在地的海拔。

1.3 Soils

Soil is one of the most important factors in growth and survival of native vegetation. Understanding the type of soil at your site and some of its physical and chemical properties is important for successful vegetation management.

At the site level, soil usually needs to be described from inspection and testing in the field.The most important soil parameters for native vegetation are:

Texture
Depth
pH
electrical conductivity
bulk density

1.4 Landform

The principle landforms ***relevant to*** the management of native vegetation are: element, slope position, elevation and aspect.

Landform element

Landform element affects microclimate, moisture and nutrient availability. Terms used to describe Landform element include:

Crest
Hillock
Ridge
Slope
Flat
Open Depression
Closed Depression

Position on Slope

Position on Slope affects ***microclimate***, soil formation and moisture availability. Terms used to describe Position on Slope include:

Crest
Upper Slope

1.3 土壤

土壤是原生植被生长和生存最重要的因素之一。掌握你所在地点的土壤类型和它的物理及化学性质对成功进行植被管理是非常重要的。

在实际工作中,土壤常常需要通过田间调查和检测来描述。对原生植被来说最重要的土壤参数有:

质地
厚度
pH值
导电率
密度

1.4 地形

与原生植被管理相关的主要地形因子是:小地形、坡位、海拔和坡向。

小地形

小地形影响小气候、湿度和养分的有效性。用于描述小地形的术语包括:

山顶
丘陵
山脊
坡地
平地
盆地
峡谷

坡位

坡位影响小气候、土壤结构和水分的有效性。用于描述坡位的术语包括:

山顶
中上坡

Mid Slope
Lower Slope
Flat
Creek/River

山腰
中下部
平地
小河

Aspect

Aspect affects the amount of solar radiation received and describes the ***predominant*** direction that sloping land faces. Terms used to describe Aspect include:

Northerly
Northeasterly
Easterly
Southeasterly
Southerly
Southwesterly
Westerly
Northwesterly

北坡
东北坡
东坡
东南坡
南坡
西南坡
西坡
西北坡

N/A (abbr of Not Applicable, for a site on less than 1% slope)

N/A(是“不适用”的英文缩写,用于坡度小于1%的地点)

方位

方位用来描述坡地的主要朝向,它影响太阳辐射接收量。描述方位的术语包括:

1.5 Additional information

This additional information may be useful for your site description and helpful for planning revegetation on your site.

Location Information

It is common practice to describe locations by using a ***grid system***. Your location is described by the intersection of two lines, ***running perpendicular to each other***. The most common examples of grid systems are latitude and longitude, and ***map references***.

Latitude and longitude

The Earth is approximately spherical in shape. Points are measured in degrees, minutes and seconds. Latitude measures position from the equator, while longitude measures position from a fixed north-south line. Latitude lines ***run parallel to each other*** and begin at 0 degrees (Equator) and end at 90

1.5 其它信息

这些附加信息也许有助于你所在地点的立地描述,对制定植被恢复计划有帮助。

地理位置

地理位置通常用**坐标**来表示,即用两条**相互垂直**的线的交叉点来描述你所在地的地理位置。坐标系统最常见的例子是经纬度和**地图点位号**(地图索引)。

经纬度

地球的形状大致呈球形,地球上的点用度、分和秒来表示。纬度从赤道开始测量,而经度从一根固定的南北线开始测量。纬度线**相互平行**,从赤道开始为0°,到90°的极地结束。经度线从南极开始,到

degrees (the poles).Longitude lines begin at the south pole and end at the north pole, so are further away from each other at the equator than at the poles.The most practical way to measure latitude and longitude is using a GPS.

Latitude: DDD ____ MM ____ SS ____

Longitude: DDD ____ MM ____ SS ____

From the internet

Google Earth, an interactive map website, has a tool which enables the user to ***zoom into*** their site and view an ***aerial photo***, often at very ***high resolution*** (http://www. earth. google. hk). The software is free to download for a basic version. Panning and zooming tools ***come in view*** when the mouse is held over the upper right-hand side of the image.By holding the mouse over the site, latitude and longitude coordinates are displayed in the bottom left-hand corner of the screen.Google Earth can also be accessed (without having to download the software to your computer).

北极结束,因此,经度线间的距离在赤道比在极地更远。测量经纬度最实用的方法是用 GPS。

互联网工具

Google Earth 是一个人机交互式地图网站,拥有让用户**进入**网站并观看用户所在地**航空图片**的工具,通常具有**高分辨率**(http://www. earth. google. hk)。这个软件的基础版本可以免费下载。当鼠标停放在图片右上侧时,**就能看到**镜头和变焦工具。把鼠标放在查询点上,经纬度坐标就显示在屏幕左下角。Google Earth 也可以直接进入(不需要下载软件到你的电脑上)。

Motto 格言

Year from now, you will wish you had started now.

明年的今日,你会希望此时此刻自己已经行动了。

Vocabulary

species['spi:ʃi:z] *n.* 物种;种类
revegetation [ˌri:vedʒi'teiʃən] *n.* 再种植;再生长;植被恢复
nursery['nə:səri] *n.* 苗圃;托儿所;温床
bioregion['baiəuˌri:dʒən] *n.* 生物区
cluster['klʌstə] *n.* 簇;丛;群集
parameter[pə'ræmitə] *n.* 参数;参量
frost [frɔst] *n. v.* 霜冻
millimeter['miliˌmi:tə] *n.* 毫米
dominance ['dɔminəns] *n.* 优势;统治;支配
tropical ['trɔpikəl] *a.* 热带的