

全国高等农林院校“十一五”规划教材

园艺专业

英语

*S*pecial English for Horticulture

第二版

李亚灵 主编

 中国农业出版社

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第二版编写人员

主 编 李亚灵

副主编 赵一鹏 须 晖 戴洪义 李 宝

编 者 (按姓氏汉语拼音排序)

戴洪义 Dai Hongyi (青岛农业大学 Qingdao Agricultural University)

李 宝 Li Bao (中国农业大学 China Agricultural University)

李建吾 Li Jianwu (河南农业大学 Henan Agricultural University)

李亚灵 Li Yaling (山西农业大学 Shanxi Agricultural University)

沈 军 Shen Jun (河南科技学院 Henan Institute of Science and Technology)

王国英 Wang Guoying (河北农业大学 Agricultural University of Hebei)

辛艳伟 Xin Yanwei (山西农业大学 Shanxi Agricultural University)

须 晖 Xu Hui (沈阳农业大学 Shenyang Agricultural University)

张广华 Zhang Guanghua (河北农业大学 Agricultural University of Hebei)

张学英 Zhang Xueying (河北农业大学 Agricultural University of Hebei)

赵一鹏 Zhao Yipeng (河南科技学院 Henan Institute of Science and Technology)

审 稿 Nicholas Hatt (Oberlin College, Ohio, USA 美国欧柏林大学)

第一版编写人员

主 编 李亚灵

副 主 编 邓西民 须 晖 王国英 李建吾

参编人员 李亚灵 白锦荣 辛艳伟 杜 伟（山西农业大学）

邓西民（中国农业大学）

须 晖（沈阳农业大学）

王国英 张广华 张学英（河北农业大学）

李建吾（河南农业大学）

第 二 版 前 言

《园艺专业英语》教材自 2003 年出版以来, 至今已经使用了 6 年, 期间随着用量的增加进行了多次重印, 选用该教材的院校达到 20 余所。我们曾于 2006—2007 年对部分院校进行过相关问卷调查, 从各个院校反馈回来的信息来看, 许多院校的园艺专业(包括蔬菜、果树、观赏园艺等)都开设了专业英语, 大家一致认为该教材内容切合园艺专业特点, 结构安排合理, 难易程度适中, 符合园艺专业教学要求, 对本教材给予了很好的评价。根据大家对本教材使用中的意见和建议, 为了更好地适应园艺专业英语的教学需要, 中国农业出版社于 2006 年决定对该教材进行修订, 并纳入全国高等农林院校“十一五”规划教材。

新版教材对编写人员进行了调整。在修订过程中, 全体人员对《园艺专业英语》教学中存在的问题进行了广泛的讨论, 对教材存在的问题、教学方法、教学时数及课时分配等问题进行了认真研讨, 对教材修订达成了共识。

根据大家的讨论意见, 此次修订中我们对教材做如下调整:

1. 每一课内容由 Part A 和 Part B 两篇课文组成, Part A 的篇幅略长一些, 在 1 500 字左右; Part B 的篇幅略短一些, 在 1 000 字左右。两部分内容基本相同或相近, 或是互相补充, 这样的设计主要是为了适应不同层次的大学灵活选用, 同时也可根据学时有选择地进行讲授(如讲授一篇, 另外一篇作为阅读材料, 以补充和强化讲授内容)。

2. 每篇课文后面都列出了本课的关键词汇, 特别是专业术语词汇。词汇标出了音标, 单词标出词性, 并给出中文和英文解释, 便于学生查阅。另外, 新词汇第一次在课文中出现时, 用黑体加粗标注。

3. 为了学生学习和理解方便, 每篇课文后有作业题。作业仍然分为两部分, 即英语练习部分(要求学生用英语回答)和汉译英练习(根据课文内容给出汉语句子, 让学生从专业的角度练习英语写作)。

《园艺专业英语》教材在修订过程中得到大家的关心和支持, 编者也多次讨论或电话交流, 或通过电子邮件发表意见和建议, 大家积极配合, 认真选材、踊跃完成编写任务, 保证

了该教材的质量。所以本教材的完成是大家共同努力、协同合作的结果。教材完稿后，由山西农业大学外籍教师 Nicholas Hatt（来自美国欧柏林大学 Oberlin College）进行了审核，对此我们表示感谢。

尽管编写过程中大家认真仔细，但由于各位编者教学和科研任务繁重，编写时间短，加之主编水平有限，因此书中难免会有一些错误，恳请读者提出宝贵意见，以便再版修正。

编 者

2009 年 3 月

第一版前言

加入 WTO 后,随着国际贸易的迅速增长,我国的农业生产迎来新的发展机遇和挑战,国家从 2001 年起设置了农业高新技术的 863 计划,农业教育面向世界,面向未来,迈向国际合作与竞争的新战场。双语教学应运而生,成为高校教学改革的重点,培养既懂专业又懂英语的高级人才成为迫切需要解决的问题之一。教育部于 2001 年年初制定出相关政策,计划在一些高等院校内率先试用英语开设基础课程和专业课程,以培养高素质的、符合国际化标准的人才,使学生毕业后能很快适应社会的要求,能够进行国际交流与合作,参与国际竞争。为了尽快培养国家急需人才,目前“园艺专业英语”课程,已在许多高校的园艺专业本科生和硕士生中开设。为了满足教学的需要,在与一些兄弟院校的领导和教师和学生座谈后,我们组织了一批学有所成的留学归国人员作为编写队伍的主要成员,将国内外园艺领域的新知识、新技术、新发展编写成《园艺专业英语》教材,提供给园艺专业师生使用。

教材由三部分构成:正文、阅读材料和问题。正文及阅读材料主要选自欧美大学园艺专业的一些教材、博士论文、最新园艺方面的书籍和杂志、国际园艺会议发表的论文、从网站下载的材料等,内容涵盖了果树、蔬菜、花卉作物的栽培、育种和病虫害防治技术,以及设施园艺方面的最新技术和最新研究动态。本教材旨在使学生在掌握园艺专业英语词汇、语言特点的同时,了解园艺专业的一些发展和研究动向。为加深理解,教材中增加了一些图片和表格,每篇课文及阅读材料后都根据其内容,提出一些问题,以便于学生的理解和掌握。此外,本教材还将常用的园艺专业词汇收录于附录中,并将本教材的词汇整理成总词汇(Glossaries)作为附录 VI,以便于师生的学习和查阅。

本书得到参编单位的大力支持与合作,各单位都推选了优秀的教师参与,书稿从开始酝酿到完成,花费了不到半年的时间,反映出各个院校的重视和负责态度。在编写过程中各编委给予了积极的配合,并提出了许多宝贵意见和建议,山西农业大学外籍教师 Richard 对其中的部分课文进行了审阅,山西农业大学教务处处长李长萍和教材科科长许大连在本书的出版过程中给予了积极的支持,山西农业大学的研究生田鹏、李灵芝、沈军对书中部分内容进

行了核对、整理和电脑录入工作，在此一并表示深深的谢意。

在征求了多个层面的意见并试讲后，本教材注重了课文的选材。限于篇幅内容，不少好的稿件不得不压缩，许多好的稿件也未被采用。由于主编水平有限，时间也仓促，疏漏和错误在所难免，恳请读者批评指正，以便再版修改。

编 者

2002年9月

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Lesson 1

Part A

The History and the Development of Protected Cultivation

Selected and rewritten from “The History and Geography of the Greenhouse”, by H. Zvi Enoch and Yael Enoch. In: *Greenhouse Ecosystems*, edited by G. Stanhill and H. Zvi Enoch, a series book of *Ecosystems of the World 20*, ELSEVIER.

(Li Yaling, Shanxi Agricultural University)

This lesson briefly describes the development of the greenhouse from **antiquity** to the present. It includes a discussion of protected cropping in **cold-and hot-frames**, **glass cloches**, **lean-to houses**, **winter gardens**, **orangeries**, **conservatories** and glasshouses in their varied forms, and **plastic-clad plant enclosures** of all sizes ranging from **low tunnels**, **walk-in tunnels**, to **large plastic houses**.

For the purpose of this lesson, the greenhouse is defined as a **transparent enclosure** designed to grow or temporarily protect plants. Thus the definition does not include enclosures for growing mushrooms or **tissue cultures**.

In antiquity, however, there were probably no greenhouses in the sense defined here, but there were various practices adopted to provide **out-of-season** flowers and vegetables.

The cultivation of out-of-season plants was intensely studied in ancient Athens and Rome. This can be seen for instance in the work of Theophrastus [who lived from 372 to 287 BCE (before the **Common Era**)]. He mentioned moving plants into the **peristyle** (**verandah** in a closed courtyard of a Greek house) at night and heating soil by mixing it with **decaying manure or compost**.

Growers in China, **Mesopotamia**, Egypt, Israel, Greece and Rome grew **valuable plants** in pots and placed them indoors at night or during cold periods to protect them. Sometimes, plants were grown on **wheelbarrows** that could easily be brought into a **grotto**, cellar or room at night. Chinese plant culture may have included greenhouses that, according to tradition, go back to antiquity. The traditional Chinese greenhouse (Fig. 1-1) consisted of a brick wall oriented east-west. On its southern side, a transparent surface consisting of **bamboo sticks** covered with **oiled paper** was placed at an angle of 30-40° to the horizontal. During the day, the brick wall became heated by the sun and at night it released its heat. In addition, at night the paper window was

covered by **rush mats** which acted as **thermal insulation**. Similar simple greenhouses are in use today, and it is claimed that they increase the night temperature by up to 6°C.

In the 20th century, in both Northwestern Europe and North America, there was a development from smaller to larger greenhouse units, usually **even-span** or **ridge-and-furrow multi-span** houses. The use of small electrical motors allowed automated climate control, including the opening of **vents**. Heating by **thermo-siphon** hot water circulation was replaced by **forced circulation**. Electrical pumps were used for irrigation and to operate **shading systems**, etc.

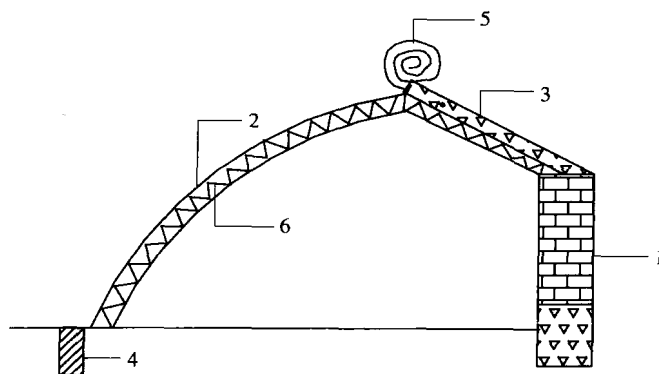


Fig. 1-1 The profile of a Chinese greenhouse

1. brick wall 2. transparent surface 3. back roof
4. ditch to prevent freezing 5. rush mats 6. steel frames or bamboo sticks

Lean-to glasshouses slowly became **obsolete** and heating by smoke flues disappeared in the first decades of the 20th century. However, these changes all occurred very gradually. An example of this development in the Netherlands is outlined below.

Simple **over-wintering sheds** were used in **Aalsmeer**, the Netherlands, up to the 1920's, and **store-frames**, placed against the walls to protect vines in the Westland region were photographed in 1928.

At the beginning of the 20th century, 90% of the area used for **protected cultivation** in the Netherlands consisted of cold frames or **hotbeds** (heated by decomposition of manure and compost). By 1950, the area was still about 30%, and in 1964 it was 10%.

The use of **Dutch lights** was introduced at the beginning of the 20th century. Initially, only **single-span** frames were used; double-light frames date from about 1920. Comparing the building practices in the Netherlands with those in the more advanced United States, one sees that in 1904, 90% of the glass-covered area in the Netherlands consisted of light frames, while 25% of the glass-covered area in the USA in the year 1900 was of proper glasshouses. The area under glass in the Netherlands increased from 1.6 km² in 1904 to 4.0 km² in 1912, to 32.9 km² in 1950, reaching 60.2 km² in 1964.

Heating and carbon-dioxide fertilization of hotbed through the decomposition of mixtures of

horse manure and plant residues was widely used in the Netherlands at the beginning of the 19th century, and remained the common way for growing cucumbers and melons until horses were replaced by tractors in the years after the Second World War.

Claassen and Hazeloop (1933) mentioned that at that time **flue heaters** were only used by a few growers in the Netherlands, whereas in Belgium, most of the 4.40 km² used for fruit-growing in 1939 was heated by flues. Dutch greenhouses suitable for a variety of crops were developed gradually over half a century. In 1900, at **Loosduinen**, a **steel-framed greenhouse** was built which became the forerunner for the “**Venlo Warenhuis**”, a house that could be used for different crops. This glasshouse, first built in 1937, consists of large sheets of glass held within the **grooves** of the two sides of a separating narrow steel bar, permitting the maximum **transmission** of light. Venlo-type structures (Fig. 1-2) were becoming popular in **Westland** of the Netherlands in the 1950's. Burning **natural gas** for the supply of carbon dioxide to greenhouse crops began in the Netherlands in 1961, following work done by J. Stender from the Institute of Horticultural Engineering in Wageningen, and became globally applied over the next decade.

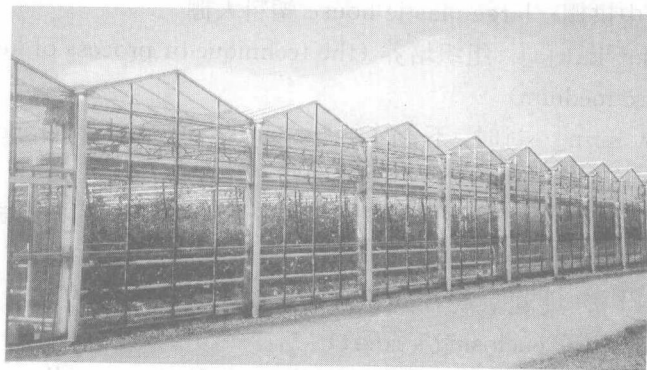


Fig. 1-2 Venlo-type glasshouses

Glossary

1. antiquity [æn'tɪkwɪti] *n.* 古代; 古老 (ancient times, especially the times preceding the Middle Ages)
2. cold- and hot-frame [kəʊld ænd hɒt freɪm] 阳畦和温床 (a glass-covered bed of soil, used for the germination of seeds or for protecting tender plants, sometimes heated with fermenting manure or by electricity)
3. cloche [kləʊʃ] *n.* 园艺用钟形玻璃盖 (a usually bell-shaped cover, used chiefly to protect plants from frost)

4. lean-to ['lin tu:] *n.* [建] 单坡屋顶 (a shelter or shed having a roof with a single slope or pitch); lean-to house 一面坡温室, 单屋面温室
5. garden ['gɑ:dn] *n.* 菜园, 花园 (a plot of land used for the cultivation of flowers, vegetables, herbs, or fruit; often gardens Grounds laid out with flowers, trees, and ornamental shrubs and used for recreation or display); winter gardens 冬季花园 (或菜园)
6. orangery ['ɔ:rɪndʒəri] *n.* 橘园, 橘子的温室, 养橘温室, 培橘暖棚 (a sheltered place, especially a greenhouse, used for the cultivation of orange trees in cool climates)
7. conservatory [kən'sə:vətəri] *n.* 温室 (尤指植物园中将植物摆放得很美观以供观赏的暖房) (a greenhouse, especially one in which plants are arranged aesthetically for display, as at a botanical garden)
8. enclosure [in'kləʊʒə] *n.* 围住 (the act of enclosing); 围栏, 四周有篱笆或围墙的场地 (the state of being enclosed); plastic-clad plant enclosure 塑料覆盖的植物房子, 塑料大棚; transparent enclosure 透明房屋
9. tunnel ['tʌnl] *n.* 隧道, 地道, 拱棚 (a passage through or under a barrier); low tunnel 小拱棚; walk-in tunnel 中拱棚; large plastic house 塑料大棚
10. tissue culture ['tisju: 'kʌltʃə] 组织培养 (the technique or process of keeping tissue alive and growing in a culture medium)
11. out of season [aut əv 'si:zn] 过时, 不合时令 (not at the right or proper moment; inopportunately); out-of-season flowers and vegetables 反季节的花卉和蔬菜
12. Common Era ['kɒmən 'iərə] 基督时代与公元相符合的时期, 可以缩写为 C. E. (the period coinciding with the Christian Era)
13. peristyle ['peristail] *n.* [建] 绕柱式, 列柱走廊, 以柱围绕的内院 (a series of columns surrounding a building or enclosing a court)
14. verandah [və'rændə] *n.* 阳台, 走廊 (a porch or balcony, usually roofed and often partly enclosed, extending along the outside of a building)
15. decay [di'kei] *n.* 腐朽, 腐烂 (the destruction or decomposition of organic matter as a result of bacterial or fungal action); *v.* 腐朽, 腐烂 (rot; to break down into component parts); decaying manure or compost 正在腐熟的农家肥或堆肥
16. Mesopotamia [ˌmesəpə'teimjə, -miə] *n.* 美索不达米亚 (亚洲西南部 Tigris 和 Euphrates 两河流域间的古王国, 今伊拉克所在地) (an ancient region of southwest Asia between the Tigris and Euphrates rivers in modern-day Iraq)
17. valuable ['væljuəbl] *adj.* 贵重的, 有价值的, 颇有价值的 (having considerable monetary or material value for use or exchange); valuable plant 名贵植物
18. wheelbarrow ['wi:l'bærəu] *n.* 独轮手推车, 手推车 (a one-or two-wheeled vehicle with handles at the rear, used to convey small loads)
19. grotto ['grɒtəu] *n.* 洞穴, 岩穴, 人工洞室 (a small cave or cavern; or an artificial structure or excavation made to resemble a cave or cavern)

20. cellar ['selə] *n.* 地窖, 地下室 (a room or enclosed space used for storage, usually beneath the ground or under a building)
21. bamboo stick [bəm'bu: stɪk] 竹片, 竹竿 (a long, slender piece of wood made by temperate or tropical grasses of the genera *Arundinaria*, *Bambusa*, *Dendrocalamus*, *Phyllostachys*, or *Sasa*)
22. oiled paper [ɔɪld 'peɪpə] 油纸 (a kind of paper that is stronger than normal paper)
23. rush mat [rʌʃ mət] 用蒲草 (灯心草或类似物, 通常是水生植物) 编织的席子, 用于温室外覆盖物草帘 (a kind of mattress made by stiff marsh plants of the genus *Juncus*)
24. thermal insulation ['θɜ:məl ɪnsju'leɪʃən] 热绝缘, 绝热 (material used to reduce the rate of heat, or the method and process used to reduce heat transfer)
25. span [spæn] *n.* 跨度, 跨距 (the distance between two points); even-span 等屋面的; single-span 单跨; multi-span 连跨或多跨
26. ridge- [rɪdʒ] and furrow ['fʌrəu] multi-span houses 脊沟多连跨温室 (gutter connected multi-span greenhouse)
27. vent [vent] *n.* 通风孔, 通风口 (an opening permitting the escape of fumes, a liquid, a gas, or steam); *v.* 放出, 排出, 发泄
28. thermo-siphon [ˌθɜ:məu'saɪfən] *n.* 热虹吸 (管), 温差环流系统 (a method of passive heat exchange based on natural convection which circulates liquid in a vertical closed-loop circuit without requiring a conventional pump)
29. forced circulation [fɔ:st ɪsə'kju'leɪʃən] 强制循环 (air movement or passage imposed by force through a system of vessels or greenhouse)
30. shading system ['ʃeɪdɪŋ 'sɪstəm] 遮阴系统 (a screening against light or heat)
31. obsolete ['ɒbsəli:t] *adj.* 荒废的, 陈旧的 (no longer in use)
32. over-winter ['əʊvə'wɪntə] *adj.* 整个冬季的 (occurring during the period of winter); over-winter shed 越冬棚
33. Aalsmeer [ɑ:smi:l] *n.* 阿斯米尔, 荷兰的一个地名, 是世界著名的花卉拍卖中心所在地 (the name of a local place which is located in the Netherlands)
34. store-frames [stɔ: freɪm] *n.* 贮藏棚, 或保温棚 (frames used for storing vegetables or plants temporarily)
35. protected cultivation [prə'tektəd ɪkʌltɪ'veɪʃən] 保护地栽培 (cultivated crops in protected structures such as greenhouses, tunnels, etc.)
36. Dutch ['dʌtʃ] *n.* 荷兰人, 荷兰语; *adj.* 荷兰的 (of or relating to the Netherlands or its people or culture); Dutch lights 荷兰之光 (荷兰土温室 (lights, 这里特指见光面); double-light frame 双屋面进光骨架)
37. km²=square kilometer [skwɛə 'kɪləmi:tə], 1km²=100ha
38. flue [flu:] *n.* 烟洞, 烟道, 暖气管 (a pipe, tube, or channel for conveying hot air, gas, steam, or smoke, as from a furnace or fireplace to a chimney); smoke flue 烟道加热管; flue heater 烟道暖气管, 或烟道加热器