研究生英语教程系列丛书

哈尔滨工业大学“十二五”规划教材

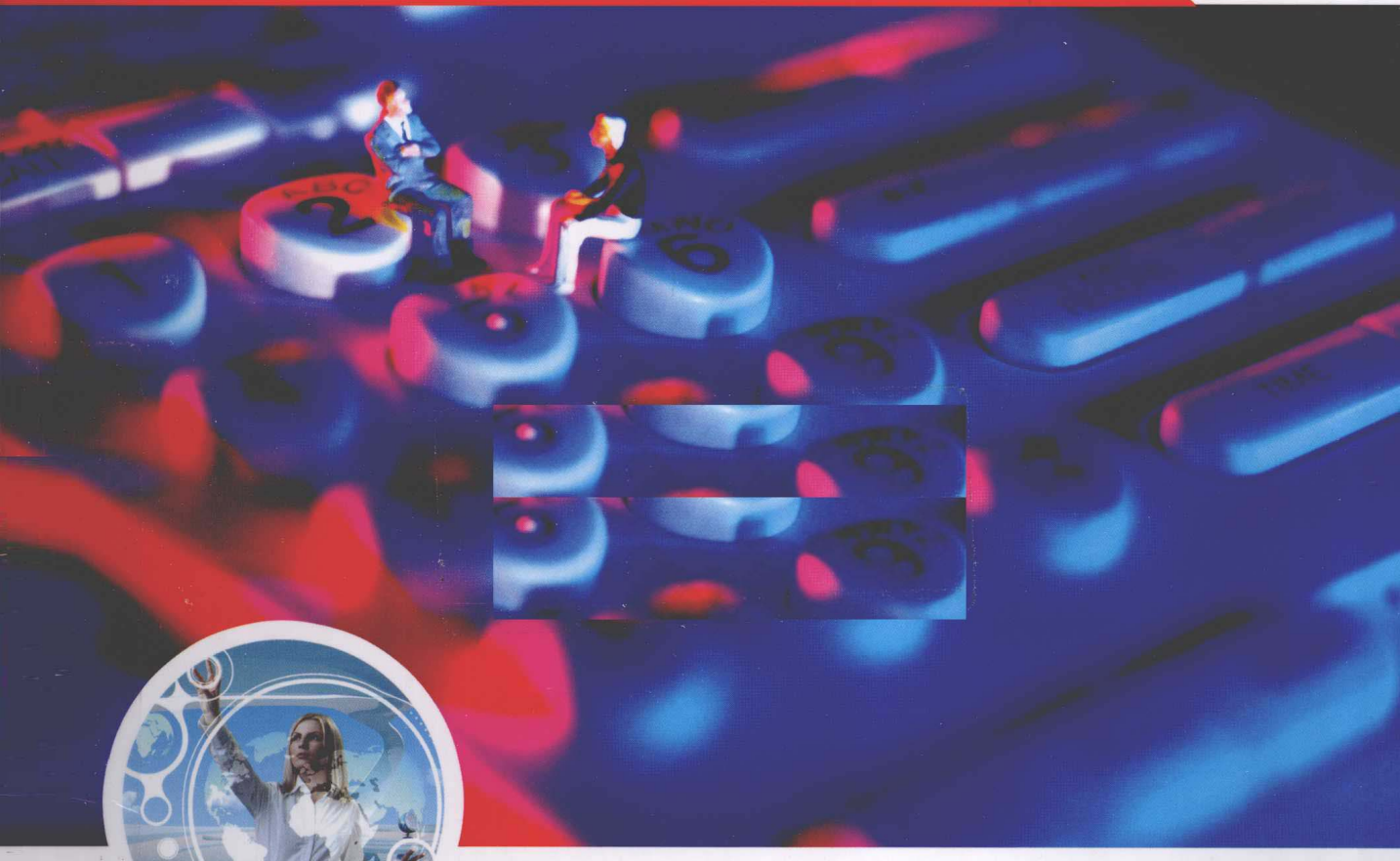
总主编　刘晓丹

LANGUAGE and SCIENCE

语言与科技

硕士研究生英语读写译教程

主编　常梅 张继书



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内 容 简 介

本教程是哈尔滨工业大学“十二五”规划教材，以《非英语专业研究生英语教学大纲》为主要依据，在对理工科硕士研究生的需求和兴趣进行调查分析的基础上，由多年从事英语教学的教师精心设计和编写而成。全书由科技英语阅读翻译和实用写作两部分构成，每部分 8 个单元，共计 16 个单元。

本教程适用于非英语专业硕士研究生、工程硕士、工商管理硕士以及具有同等英语水平的学生使用。

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前言
Foreword

二十一世纪是世界进入经济全球化和科学一体化的时代，英语作为国际性通用语言和最广泛的信息载体，其作用和价值日显突出。我国研究生培养水平的提高和科研工作的蓬勃开展使得硕士生英语教学日益成为培养高层次人才的重要组成部分。使硕士研究生真正掌握好英语这一交流工具，及时了解当今世界最新科技动态，并在本专业的学习和研究中具备创新思维、创新能力，是我国发展经济、进行现代化建设的迫切需要。

理工科硕士研究生面临双重选择，一方面要从事科学研究，阅读和撰写学术性英文文章，另一方面要面向就业，需要求职英语技能。《非英语专业研究生英语教学大纲》明确指出，“研究生英语教学的宗旨是为了使学生掌握英语这门工具，进行本专业的学习、研究与国际交流”。“教学的重点必须强调应用，结合专业英语的特点，突出读、写、译的训练”。《语言与科技——硕士研究生英语读写译教程》正是基于理工科学生的特点和需求应运而生的。作为哈尔滨工业大学“十二五”规划教材，该教程从全新角度编写而成，把培养研究生的英语应用能力和科研能力作为首要方针，注重语言的实践性和实用性，帮助学生掌握科技英语的语言特点以及科技英语翻译中一些常见的技巧，使英语能够有效地为学生的专业篇章阅读和写作服务，同时培养学生实用写作技能。

《语言与科技——硕士研究生英语读写译教程》是在对理工科硕士研究生的需求和兴趣进行调查分析的基础上，由从事大学英语教学和科技英语教学多年的教师精心设计和编写而成的。全书由科技读译和实用写作两部分构成，每部分各8个单元，共计16个单元。

科技读译部分选取了航天、计算机网络、生物技术、环境科学、医学、科学与政治、自然科学与人文科学的关系等最前沿、最热点的科技话题，在编排设计上将阅读与翻译有机地结合。每单元的阅读课文分为A、B篇，课文内容新颖独到，具有很强的学术性、时效性、知识性和趣味性，同时科技文体特点突出，使学生通过阅读领悟科技文章的行文特点。同时，每一单元结合课文，从词语、句子、篇章、时态、语态等多重角度由浅入深地介绍翻译技巧。本书大量引入专业篇章翻译讲解与训练，科技含量高，针对性强，真正做到英语教学面向专业技能培养。本书重视科技翻译的美学取向，揭示信、达、雅的翻译原则及其实现的途径。

实用写作部分是基于研究生科研、求学和求职的实际需求编写而成的。一方面面向学生的科研需求，涉及与科技论文写作息息相关的摘要写作、学术报告写作和图表写作；另一方面面向学生求学和求职就业需求，涉及求职信、简历、个人陈述、备忘录、便条等应用文写作形式。本书为学生搭建辅助框架，使学生经历从学习文体特点、写作技巧、经典句型、写作模版到赏析范文，再到独立完成写作任务这一从输入到输出的全过程。

本教程有以下几个主要特点：

◎ **科技性**

无论是读译部分还是写作部分都与学生专业紧密结合，体现了很强的科技特色，使英语真正成为研究生从事科研工作的有力工具。

◎ **实用性**

从实用性的角度出发，面向学生需求，以论述与实例结合的方式有针对性地介绍学生求职和求学所要接触的各种应用文体。

◎ **精准性**

本书读译部分所选文章均为原汁原味的佳作，语言地道，表达准确，结构严谨，思想深刻。写作部分讲解采纳了众多名家之见，结合编者的教学研究经验，尽可能做到准确无误。

◎ **操作性**

练习编排以学生为中心，题型多样，难度适宜，既有读前问题，也有复习巩固性的练习，既适合课堂上进行讨论式教学，促使学生能就某些知识点发表个人观点，也便于使用本教材自修的学生自学。

编者对使用本教材的教师有以下几点建议：

（1）本书读译部分每单元包含A、B篇，建议A篇供精读使用，教师要求学生课前预习，课上可以采用教师点评、学生讨论、学生讲解等方式进行学习，B篇供泛读使用，学生课下自学。

（2）读译部分的翻译讲解和练习应和阅读课文相结合，使学生对翻译理论和技巧融会贯通。

（3）对于写作部分，教师应通过讲解实例，帮助学生掌握所学文体的特点。同时为学生设计接近真实的写作任务，使学生在写作练习时有针对性。

本书在编写过程中曾得到加拿大籍专家Nonie Cornell和Brett Cornell的大力支持。他们对本教程的稿件做了细致审读，在内容和语言等方面给予建议和修改，在此向他们表示感谢。此外，本教程选用了一些国外书刊上的有关内容。由于选材面涉及较广，未能在此一一注明，特此说明，并向所有有关人士表达谢意。

尽管编者潜心编写，但由于水平有限，教材中难免有疏漏之处，恳请广大读者不吝赐教。

编者

于哈尔滨工业大学

2011年1月

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Unit 1

Frankenfood and Health

Lead-in Questions

1. How can you achieve a healthy weight and improve your health?
2. What kinds of food can be considered as healthy food?

Text A

Will Frankenfood Feed the World?

Bill Gates

1 If you want to spark a heated debate at a dinner party, bring up the topic of genetically modified foods. For many people, the concept of genetically altered, high-tech crop production raises all kinds of environmental, health, safety and ethical questions. Particularly in countries with long agrarian traditions, the idea seems against nature.

2 In fact, genetically modified foods are already very much a part of our lives. A third of the corn and more than half the soybeans and cotton grown in the U.S. last year were the product of biotechnology, according to the Department of Agriculture. More than 65 million acres of genetically modified crops will be planted in the U.S. this year. The genetic genie is out of the bottle.

3 Yet there are clearly some very real issues that need to be resolved. Like any new product entering the food chain, genetically modified foods must be subjected to rigorous testing. In wealthy countries, the debate about biotech is tempered by the fact that we have a rich array of foods to choose from – and a supply that far exceeds our needs. In developing countries desperate to feed fast-growing and underfed populations, the issue is simpler and much more urgent: Do the benefits of biotech outweigh the risks?

4 The statistics on population growth and hunger are disturbing. Last year the world's population reached 6 billion. And by 2050, the U.N. estimates, it will probably near 9 billion. Almost all that growth will occur in developing countries. At the same time,

the world's available cultivable land per person is declining. Arable land has declined steadily since 1960 and will decrease by half over the next 50 years, according to the International Service for the Acquisition of Agri-Biotech Applications (ISAAA).

5 The U.N. estimates that nearly 800 million people around the world are undernourished. The effects are devastating. About 400 million women of childbearing age are iron deficient, which means their babies are exposed to various birth defects. As many as 100 million children suffer from vitamin A deficiency, a leading cause of blindness. Tens of millions of people suffer from other major ailments and nutritional deficiencies caused by lack of food.

6 How can biotech help? Biotechnologists have developed genetically modified rice that is fortified with beta-carotene — which the body converts into vitamin A — and additional iron, and they are working on other kinds of nutritionally improved crops. Biotech can also improve farming productivity in places where food shortages are caused by crop damage attributable to pests, drought, poor soil and crop viruses, bacteria or fungi.

7 Damage caused by pests is incredible. The European corn borer, for example, destroys 40 million tons of the world's corn crop annually, about 7% of the total. Incorporating pest-resistant genes into seeds can help restore the balance. In trials of pest-resistant cotton in Africa, yields have increased significantly. So far, fears that genetically modified, pest-resistant crops might kill good insects as well as bad appear unfounded.

8 Viruses often cause massive failure in staple crops in developing countries. Two years ago, Africa lost more than half its cassava crop — a key source of calories — to the mosaic virus. Genetically modified, virus-resistant crops can reduce that damage, as can drought-tolerant seeds in regions where water shortages limit the amount of land under cultivation. Biotech can also help solve the problem of soil that contains excess aluminum, which can damage roots and cause many staple-crop failures. A gene that helps neutralize aluminum toxicity in rice has been identified.

9 Many scientists believe biotech could raise overall crop productivity in developing countries as much as 25% and help prevent the loss of those crops after they are harvested.

10 Yet for all that promise, biotech is far from being the whole answer. In developing countries, lost crops are only one cause of hunger. Poverty plays the largest role. Today more than 1 billion people around the globe live on less than $1 a day. Making genetically modified crops available will not reduce hunger if farmers cannot afford to grow them or if the local population cannot afford to buy the food those farmers produce.

11 Nor can biotech overcome the challenge of distributing food in developing countries. Taken as a whole, the world produces enough food to feed everyone — but much of it is simply in the wrong place. Especially in countries with undeveloped transport infrastructures, geography restricts food availability as dramatically as genetics promises to improve it.

12 Biotech has its own "distribution" problems. Private-sector biotech companies in the rich countries carry out much of the leading-edge research on genetically modified crops. Their products are often too costly for poor farmers in the developing world, and many of those products won't even reach the regions where they are most needed. Biotech firms have a strong financial incentive to target rich markets first in order to help them rapidly recoup the high costs of product development. But some of these companies are responding to the needs of poor countries. A London-based company, for example, has announced that it will share with developing countries technology needed to produce vitamin-enriched "golden rice."

New Words

agrarian	*adj.*	农业的	genetic	*adj.*	遗传的
aluminum	*n.*	铝	genie	*n.*	鬼怪
arable	*adj.*	适于耕种的	incentive	*n.*	动机
array	*n.*	大量	incredible	*adj.*	难以置信的
biotechnologist	*n.*	生物科技学家	infrastructure	*n.*	基础设施
biotechnology	*n.*	生物科技	modified	*adj.*	改良的
borer	*n.*	蛀虫	mosaic	*n.*	花叶病
carotene	*n.*	胡罗卜素	neutralize	*vt.*	中和；使无效
cassava	*n.*	木薯	panacea	*n.*	万能药
corn borer		玉米螟虫	recoup	*vt.*	补偿
cultivable	*adj.*	可耕种的	rigorous	*adj.*	严格的
deficient	*adj.*	缺乏的	soybean	*n.*	大豆
devastating	*adj.*	破坏性的	staple	*adj.*	主要的，基本的
disturbing	*adj.*	烦扰的	temper	*vt.*	调和，调节
ethical	*adj.*	与伦理有关的	toxicity	*n.*	毒性
fortify	*vt.*	增加	trial	*n.*	试验
fungi	*n.*	（复数）真菌类	unfounded	*adj.*	没有根据的

Notes

1. **William (Bill) H. Gates** is Chairman and former Chief Executive Officer of Microsoft Corporation. He was born in Seattle, Washington in 1955, and began his career at age 13, when he started programming, and by 1974, while an undergraduate at Harvard, he developed BASIC for the first microcomputer. He formed Microsoft with Paul Allen in 1975. He and his wife founded The Bill and Melinda Gates Foundation in 2000, which funds global health, education and public library projects.
2. This article is on food biotechnology by Microsoft CEO Bill Gates in *TIME*, Volume 155(25). It is a positive assessment of the advances that have been made in biotechnology.
3. **Frankenfood** refers to food that has been genetically modified. The word Franken comes from the novel, *Frankenstein*. It is the story of a young scientist, Victor Frankenstein who in an attempt to create new life in his labratory, created a monster and how that monster destroyed his life.
4. **Genetically modified** (GM) crops certainly have the potential to end the misery of hunger, and they are desperately needed. But GM crops should be introduced only after rigorous testing, and more work needs to be done to improve food distribution.

EXERCISES

Part I Vocabulary

Directions: ***Choose the word or phrase from the four choices given to best complete each sentence.***

1. The act of authorization described above does not _____ ownership of software copyright.
   A. abandon B. adapt C. alter D. arraign
2. In an ideal world, surgeons would have at their disposal an _____ of spare parts. Like mechanics, they could fix any malfunction or defect with a factory-made replacement.
   A. arraign B. arrange C. arrant D. array
3. How can you so frequently ask for a time off for such a minor _____ ? You need to improve your attitude about work.
   A. ailment B. alibi C. diabetes D. disease
4. The investigation found that local government departments and enterprises had _____ their authority in approving the project.
   A. attributed B. exceeded C. modified D. tempered
5. To his delight, a _____ 10-week program of exercise, diet and meditation significantly slowed the progression of his heart disease.
   A. accurate B. nourished C. recoup D. rigorous

6. Land, _____ land in particular, should be used reasonably and economically.
   A. arable B. edible C. manageable D. testable
7. An error or a fault usually results from poor judgment, _____ knowledge, or carelessness.
   A. adequate B. deficient C. lack D. sufficient
8. When teachers leave the security of centralized or text book curriculum, they need _____, negotiation and open pedagogical discussion to share, to initiate, to evaluate, to reflect and to re-create the school curriculum and their instructional actions.
   A. collaboration B. collaborationism C. incentive D. infrastructure
9. It's true that talking about the weather is a _____ topic of conversation in the UK, but as a native speaker and an expert on sociolinguistics, I am of the opinion that the reasons for this practice are not only climatic but also social.
   A. staple B. steady C. stable D. still
10. The farmers will _____ from the insurance companies, their losses caused by the flood.
   A. recoup B. reimburse C. replay D. reply

Part II Reading Comprehension

A. Multiple-choice Questions

Directions: ***Choose the one best answer from the four choices.***

1. According to the text, genetically altered high-tech crop production may NOT raise _____ questions.
   A. environmental B. ethical C. health D. psychological
2. What is the situation of food supplies according to the article?
   A. In developing countries, food supplies far exceed the needs.
   B. In developing countries, the debate about biotech is tempered because people have adequate food to eat.
   C. In wealthy countries, people have a rich array of foods to choose from.
   D. In wealthy countries, it is urgent that a way is found to feed fast-growing populations.
3. A leading cause of blindness is _____.
   A. vitamin A deficiency B. vitamin B deficiency
   C. vitamin C deficiency D. all of the above
4. Which one is NOT true according to the article?
   A. Biotechnology can help reduce the damage caused by pests and viruses.
   B. Excess aluminum in soil can damage roots and cause many staple-crop failures.
   C. Genetically modified, pest-resistant crops can kill good insects as well as bad ones.
   D. Drought-tolerant seeds can be used in water shortage regions to reduce the damage.

5. According to the article, biotechnology can NOT _____.

A. increase farming productivity
B. solve the food distribution problem
C. produce nutritionally improved crops
D. reduce the crop damage caused by fungi

B. True or False

Directions: ***Decide whether the following statements are true or false.***

_____1. People in countries with long agrarian traditions are in agreement about the benefits of genetically modified foods.

_____2. Although the idea of genetically modified foods seems against nature, they are already a part of peoples' lives.

_____3. Genetically modified foods must be subjected to rigorous testing before they enter the food chain in the US.

_____4. The main reasons for food deficiency are population growth and the decline in cultivable land.

_____5. So far biotech still can not improve farming productivity in places where food shortages are caused by crop damage attributable to drought, and fungi.

_____6. Genetically modified, pest-resistant crops kill good insects as well as bad ones.

_____7. Biotech could raise overall crop productivity in developing countries as much as 25%, but will not completely solve the problems of hunger in developing countries.

_____8. Genetically modified crops will not reduce hunger if poor people cannot afford to buy the produced food.

_____9. Biotech companies in the rich countries will first target markets in developing countries where they are most needed.

_____10. Collaboration between government agencies and private biotech firms can increase the impact of genetic research on the food production.

Text B

Health Risks and Benefits

— Genetically Modified Food Controversies

1 The genetically modified foods controversy is a dispute over the relative advantages and disadvantages of genetically modified (GM) food crops. The dispute involves biotechnology companies, governmental regulators, non-governmeosystems, gene flow into non GM crops, moral or religious concerns. And corporate control of the food supply. Food safety is the primary issue of this controversy.

Present knowledge on GM food safety

2 Worldwide, there are a range of perspectives within non-governmental organizations on the safety of GM foods. For example, the US pro-GM group AgBioWorld has argued that GM foods have been proven safe. Other pressure and consumer rights groups, such as the Organic Consumers Association, and Greenpeace claim the long term health risks which GM could pose, or the environmental risks associated with GM, have not yet been adequately investigated. In Japan, Consumers Union of Japan is opposed to GMO foods. They also claim that truly independent research in these areas is systematically blocked by the GM corporations which own the GM seeds and reference materials.

3 A 2008 review published by the Royal Society of Medicine noted that GM foods have been eaten by millions of people worldwide for over 15 years, with no reports of ill effects. Similarly a 2004 report from the US National Academies of Sciences stated that to date, no adverse health effects attributed to genetic engineering have been documented in the human population. A 2004 review of feeding trials in the *Italian Journal of Animal Science* found no differences among animals eating genetically modified plants. A 2005 review in *Archives of Animal Nutrition* concluded that first-generation genetically modified foods had been found to be similar in nutrition and safety to non-GM foods, but noted that second-generation foods with significant changes in constituents would be more difficult to test, and would require further animal studies. However, a 2009 review in *Nutrition Reviews* found that although most studies concluded that GM foods do not differ in nutrition or cause any detectable toxic effects in animals, some studies did report adverse changes at a cellular level caused by some GM foods, concluding that more scientific effort and investigation is needed to ensure that consumption of GM foods is not likely to provoke any form of health problem.

Safety assessments

4 The starting point for the safety assessment of genetically engineered food products is to assess if the food is substantially equivalent to its natural counterpart. To decide if a modified product is substantially equivalent, the product is tested by the manufacturer for unexpected changes in a limited set of components such as allergens that are present in the unmodified food. If these tests show no significant difference between the modified and unmodified products, then no further food safety testing is required. The manufacturers' data are then assessed by an independent regulatory body, such as the U.S. Food and Drug Administration.

5 However, if the product has no natural equivalent, or shows significant differences from

the unmodified food, then further safety testing is carried out. A 2003 review identified the main parts of a standard safety test: to study the introduced DNA and the new proteins or metabolites that it produces; to analysize the chemical composition of the relevant plant parts, measuring nutrients, anti-nutrients as well as any natural toxins or known allergens; to assess the risk of gene transfer from the food to microorganisms in the human gut; to study the possibility that any new components in the food might be allergens; to estimate how much of a normal diet the food will make up; to estimate any toxicological or nutritional problems revealed by this data; and to do additional animal toxicity tests if there is the possibility that the food might pose a risk.

6 This process was examined further in a review published by Kuiper *et al.* 2002 in the journal *Toxicology*, which stated that substantial equivalence does not itself measure risks, but instead identifies differences between existing products and new foods, which might pose dangers to health. If differences do exist, identifying these differences is a starting point for a full safety assessment, rather than an end point. The authors concluded that the concept of substantial equivalence is an adequate tool in order to identify safety issues related to genetically modified products that have a traditional counterpart. However, the review also noted difficulties in applying this standard in practice, including the fact that traditional foods contain many chemicals that have toxic or carcinogenic effects and that our existing diets therefore have not been proven to be safe. This lack of knowledge on unmodified food poses a problem, as GM foods may have differences in anti-nutrients and natural toxins that have never been identified in the original plant, raising the possibility that harmful changes could be missed.

7 The application of substantial equivalence has also been more strongly criticized. For example, in a speech in 1999, Andrew Chesson of the University of Aberdeen, stated that substantial equivalence testing could be flawed in some cases and that some current safety tests could allow harmful substances to enter the human food chain. In a commentary in *Nature* Millstone argued that all GM foods should have extensive biological, toxicological and immunological tests and that the concept of substantial equivalence based solely on chemical analysis of the components of a food should be abandoned. They stated that this is necessary since it is currently impossible to predict the biological properties of a substance only from knowledge of its chemistry. This commentary was controversial and was criticized for misleading presentation of data and presenting an over-simplified version of safety assessments. For example, Kuiper *et al.* responded to this criticism by noting that equivalency testing does involve more than chemical tests and may include toxicity testing.

8 The value of current independent studies is problematic as researchers are forbidden by law from publishing independent research in peer reviewed journals without the approval of the agritech companies. Cornell University's Elson Shields, the spokesperson for a group of scientists who oppose this practice, submitted a statement to the United States Environmental Protection Agency (EPA) protesting that as a result of restrictive access, no truly independent research can be legally conducted on many critical questions regarding the technology. Scientific American noted that several studies that were initially approved by seed companies were later blocked from publication when they returned unflattering results. While recognizing that seed companies intellectual property rights need to be protected, Scientific American calls the practice dangerous and has called for the restrictions on research in the End-user agreements to be lifted immediately and for the EPA to require, as a condition of approval, that independent researchers have unfettered access to GM products for testing. The Welsh pressure group GM Free Cymru argues that governments should use independent studies rather than industry studies to assess crop safety.

Retrieved and adapted from http://en.wikipedia.org/wiki/Genetically_modified_food on Aug. 7th, 2010.

EXERCISES

Reading Comprehension

Directions: ***Choose the one best answer from the four choices.***

1. The primary issue in the controversy over genetically modified foods is _____.
   A. food safety
   B. food supply problem
   C. moral concerns
   D. religious concerns
2. What is tested by the manufacturer to decide whether a modified product is substantially equivalent to its natural counterpart?
   A. Allergens.
   B. Nutrients.
   C. Toxins.
   D. All of the above.
3. How many main parts of a standard safety test have been identified by a 2003 review in Trends in Biotechnology?
   A. Five.
   B. Six.
   C. Seven.
   D. Eight.
4. According to a 2002 review in Toxicology, a substantial equivalence test _____.
   A. can measure risks of eating genetically engineered food products
   B. can identify differences between existing products and new foods
   C. is an end point of safety assessment of genetically engineered food products
   D. is an adequate tool to identify safety issues about genetically modified products