

# English III 203203

## Unit 1 Alternative Agriculture



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v.1

Asst. Prof. Dr. Anchalee Wannaruk

## Objectives

By the end of this unit, you should be able to

### Listening:



- listen for key words
- listen for specific information
- take notes while listening

### Reading:



- read for the main ideas
- read for specific information
- learn new words in context

### Grammar:



- understand the use of 'relative clauses'
- understand the use of 'prefixes' and 'suffixes'

### Vocabulary:



- understand the meaning and the use of vocabulary concerning agriculture

### Writing:



- read a passage from the Internet and take notes
- write an argumentative paragraph

## UNIT 1

### Alternative Agriculture



#### Section 1: Listening

##### Exercise 1.1

**Instructions:** Listen to the following statements and mark each one true or false.

- |          |       |
|----------|-------|
| 1. True  | False |
| 2. True  | False |
| 3. True  | False |
| 4. True  | False |
| 5. True  | False |
| 6. True  | False |
| 7. True  | False |
| 8. True  | False |
| 9. True  | False |
| 10. True | False |

Adapted from [http://www.agclassroom.org/kids/que\\_more.htm](http://www.agclassroom.org/kids/que_more.htm)

##### Exercise 1.2

**Instructions:** You are going to hear a conversation about one method of growing plants. First, look up the following words in a dictionary if you don't know them. Then read the questions that you will answer after you listen to the talk. You will hear the conversation twice.

hydroponic	nutrient	solution	disease
resistant	drought	space	efficient

1. What is the topic of this talk?

---

2. Where does this talk take place?

---

3. What doesn't hydroponics need?

- Soil
- Nutrients
- Air

4. Name the strengths of hydroponic plants.

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_


5. What will they talk about after the break?

\_\_\_\_\_

### Exercise 1.3

**Instructions:** You are going to hear a talk about 'intercropping' which is one type of cultural system. Listen to the talk and fill in each space of the transcript below with one of the words from the following list.

various	herbivores	alternative	conditions
reproductive	potential	species	severe
productivity	infestation	reduced	



Intercropping or polyculture is one type of cultural system common in the tropics which may also provide \_\_\_\_\_ for improved horticultural crop \_\_\_\_\_ in temperate climates. One of the advantages of intercropping compared with sole cropping is that insect pest attack is often less \_\_\_\_\_. There appear to be two reasons for this: first, polycultures provide better \_\_\_\_\_ for natural enemies by providing increased pollen and nectar sources, increased cover and \_\_\_\_\_ prey; and second, plant \_\_\_\_\_ growing in association with each other have a direct effect on the ability of insect \_\_\_\_\_ to find and utilise their host plants. Intercropping also influences pest movement and \_\_\_\_\_ behaviour. Compared with sole cropping, intercropping brassicas with \_\_\_\_\_ taxonomically unrelated plants reduced the \_\_\_\_\_ of *D. radicum*, *B. brassicae* and several lepidopterous pests. The incidence of carrot fly (*P. rosae*) was also \_\_\_\_\_ by intercropping with onions.

Adapted from Mckinlay, R. G. (1992). Vegetable crop pests. London: Macmillan Academic and Professional Ltd.

**Exercise 1.4****Instructions:** Listen to the questions and choose the correct answer.

1.
  - a. carrots
  - b. broccoli
  - c. water melons
  - d. tomatoes
  
2.
  - a. climate and soil
  - b. climate and equipment
  - c. people and soil
  - d. equipment and people
  
3.
  - a. seed and feed store
  - b. jewelry store
  - c. a dairy
  - d. grocery store
  
4.
  - a. To control insects
  - b. To control stray cats
  - c. To control rain
  
5.
  - a. managing the soil wisely
  - b. protecting the air
  - c. keeping the water clean
  - d. all of the above
  
6.
  - a. to prevent the soil from washing away
  - b. to provide pretty blooms
  - c. to cover ugly land
  - d. to use the farm machines
  
7.
  - a. it grows plants
  - b. it can wash away
  - c. it can blow away
  - d. all of these
  
8.
  - a. eat mosquitoes
  - b. never sleep
  - c. help turn flowers into fruit, pollinate plants
  - d. work in the winter to make honey

9. a. Mexico  
b. Iraq  
c. Russia  
d. United States  
e. Canada
10. a. Food, fiber, and shelter  
b. Entertainment  
c. Minerals  
d. Automobiles

[http://www.agclassroom.org/kids/que\\_more.htm](http://www.agclassroom.org/kids/que_more.htm)

### Exercise 1.5

**Instructions:** You are going to hear a lecture about seeds. First, look up the following words in a dictionary if you don't know them. Then read the questions that you will answer after you listen to the talk. You will hear the conversation twice.

consume	livestock	seed	varieties	survive
involve	breed	thrive		

- What is the talk about?
  - The development of agricultural science
  - Plants in America
  - Quality control in plant production
- Why are many different varieties bred?
  - To serve different purposes
  - To survive different conditions
  - Both a and b
- Which of the following is the last step?
  - Development of a new seed variety
  - Quality evaluation
  - Consideration of growing conditions

**Exercise 1.6**

**Instructions:** You are going to hear a lecture about organic food. First, look up the following words in a dictionary if you don't know them. Then read the questions that you will answer after you listen to the talk. You will hear the conversation twice.

define	be pending	regulation
establish	produce	characteristics

1. What is the paragraph about?

---

2. What are the characteristics of organic farming?

a. \_\_\_\_\_

b. \_\_\_\_\_

3. Is it true that organic produce is safer or more nutritious than conventionally grown produce?

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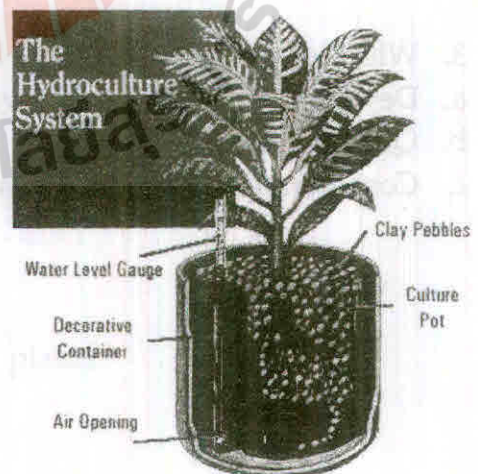
**Section 2: Reading****Text 1**

There are several ways to grow plants. Do you know any of them? Have you heard of growing plants in water?

**Alternative Agriculture**

1 Many farmers are beginning to implement agricultural techniques to reduce their use of chemical inputs from pesticides and fertilizers, for a variety of reasons. Growing public concern about food safety and the potential impact certain agrichemicals may have on the environment are among the concerns.

2 Many farmers will proudly identify themselves as the "original environmentalists," with an immense pride



in caring for their land and other natural resources. The vast majority of farmers would never knowingly harm the soil, or their water or livestock. Chemicals can be a farmer's most expensive production input. By reducing input costs, farmers can increase profit and help keep consumer food products affordable.

3 For all of these reasons, many farmers have adopted alternative agriculture techniques to reduce the risks related to chemicals. But as the National Research Council (NRC) concluded in a 1989 report, "Alternative farming is not easy. Alternative farming practices typically require more information, trained labor, time and management skills per unit of production than conventional farming."

4 Alternative agriculture is not a well-defined set of practices or management techniques. "Rather it is a range of technological and management options used on farms striving to reduce costs, protect health and environmental quality, and enhance beneficial biological interactions and natural processes," according to the NRC report.

5 Alternative agriculture can be compatible with small or large farms and many different types of machinery. However, its techniques cannot be uniformly applied across all commodities or all regions of the country. Differences in climate and soil affect the costs and viability of alternative systems.

**A. Answer if the following statements are TRUE or FALSE.**

1. There are only two reasons why farmers want to reduce the use of pesticides and chemical fertilizers: concern about food safety and the impact of the chemicals on the environment. \_\_\_\_\_
2. Most farmers intentionally damage the soil, water and livestock. \_\_\_\_\_
3. If the farmers use less chemicals, they will get more profit. \_\_\_\_\_
4. Alternative agriculture techniques have been applied to solve the problems from the use of chemicals. \_\_\_\_\_
5. Alternative agriculture can be done in farms of any size. \_\_\_\_\_
6. It is not difficult to define alternative agriculture. \_\_\_\_\_
7. Alternative agriculture techniques are different from region to region. \_\_\_\_\_



**B. Vocabulary**

**Instructions:** Complete the following sentences using the words from the list below.

commodities	compatible	implemented
impact	regions	enhance
resources	alternative	interaction

1. The changes to the national health system will be \_\_\_\_\_ next year.
2. The major \_\_\_\_\_ of this epidemic worldwide is yet to come.
3. Britain's mineral \_\_\_\_\_ include oil, coal and gas deposits.
4. \_\_\_\_\_ energy uses natural sources of energy such as the sun, wind, or water for power and fuel, rather than oil, coal, or nuclear power.
5. Sound engineers utilize a range of techniques to \_\_\_\_\_ the quality of the recordings.
6. Research concerning the \_\_\_\_\_ between physical and emotional illness is being conducted at this hospital.
7. South Africa's most valuable \_\_\_\_\_ include \_\_\_\_\_ and diamonds.
8. Only a few kinds of plant can grow in the semi-desert \_\_\_\_\_ of Australia.
9. This software may not be \_\_\_\_\_ with older operating systems.

**Text 2**

What are the agricultural problems in Thailand?  
What can we do to solve them?

**Pesticides**

1 The word "pesticides" refers to a broad class of crop protection chemicals, including four major groups:

- insecticides used to control insects;
- rodenticides used to control rodents;
- herbicides used to control weeds;
- fungicides used to control mold, mildew and fungi.

2 Some common uses of pesticides by consumers include in the home or yard to control termites and roaches, clean mold from shower curtains, destroy crab grass, kill fleas on pets, and disinfect swimming pools, to name a few.

3 Most pesticides are highly toxic. Some pesticides (administered at extremely high dosages) have been found to cause cancer in laboratory

animals. Food safety concerns about pesticide residues generally focus on potential chronic effects, the way federal and state governments set safety standards, and residue monitoring on foods.

- 4 Pest problems and their management vary widely throughout the country based on climate, soil types and many other conditions. As a result, chemical pest control has won a central place in modern agriculture. **It** contributes to the dramatic increase in crop yields achieved in recent decades for most major field, fruit and vegetable crops. The use of pesticides has allowed growers to produce crops profitably in otherwise unsuitable locations, extend growing seasons, maintain product quality and extend shelf life.



- 5 Farmers must contend with approximately 80,000 plant diseases, 30,000 species of weeds, 1,000 species of nematodes and more than 10,000 species of insects. Today, national and international agricultural organizations estimate that as much as 45 percent of the world's crops continue to be lost to these types of hazards. In the United States alone, about \$20 billion worth of crops (one-tenth of production) are lost each year. As illustrated by the Irish potato famine, which was caused by widespread blight, crop damage from pests and disease can be devastating. Weeds can choke off nutrients and crowd out crops. Mold and mildew, brought on by heavy rains or high humidity, can destroy crops in just a few days. An "explosion" of insects can devastate a field in hours.

Adapted from <http://ificinfo.health.org/backgrnd/bkgr12.htm>

**A. Answer the following questions.**

1. What is Paragraph 1 about?

---

2. What is the main idea of Paragraph 2?

---

3. Advantages of pesticides include .....

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

e. \_\_\_\_\_

4. What does "It" (Paragraph 4) refer to?
- 
5. How can we choose appropriate method to solve pest problems in different regions?
- 
6. What caused the Irish potato famine?
- 
7. What can lead to the fastest damage to crop?
- 

**B. Complete the following sentences using the words from the list below.**

damaged	hazard	nutrients	devastating
affect	disinfect	estimate	

- The new telephone rates will \_\_\_\_\_ all consumers including businesses.
- We use alcohol to \_\_\_\_\_ a wound.
- It was difficult to \_\_\_\_\_ how many trees had been destroyed after the forest fire.
- The busy traffic entrance was a \_\_\_\_\_ to pedestrians.
- Many buildings were badly \_\_\_\_\_ during the war.
- If the bomb had exploded in the main shopping area, it would have been \_\_\_\_\_.
- A healthy diet should provide all your essential \_\_\_\_\_.

**Text 3**

**Pest Control**

1 Cultural control is the deliberate modification of a crop production system to make the crop habitat less favourable to a pest and more favourable to its natural enemies and/or the crop. Cultural control uses a wide range of techniques which are normally within the competence of individual growers to perform without the need for high technological input. Cultural control methods should be based on biological and ecological principles, and be economical. These techniques may be classified under the following headings: cultivation, timing of sowing and harvesting, crop rotation, sanitation, destruction of a pest's host plants, trap crops, water management and various other managerial practices (Coaker, 1987).

2 Cultivation is a traditional method of weed control and tilling the soil can also kill arthropods by mechanical injury, desiccation or exposure to predation. Direct drilling or minimum tillage can also have an inhibitory effect on some insects, but may favour survival of other pests (e.g. slugs). Cultivation does not discriminate between beneficial and pest species, so the timing of operations is critical to obtain the maximum effect on pest suppression.

3 Destruction of weed hosts, crop residues, scrub or shelter in which insects may harbour and from which they may move into crops involves work targeted solely at the control of insect pests, unlike other cultural control methods, which are targeted more directly at crop plants. In addition to harbouring pest species, wild plants in agroecosystems may also benefit natural enemies of pests, although the advantages of food and shelter offered to the natural enemies may to some extent be offset by similar advantages to the pest species.



Before weeding



After weeding

4 Variation in sowing dates can reduce or eliminate pest damage by growing crops when pests are inactive. Increasing seed rates may compensate for expected plant losses and may also help to reduce infestation by migrant pests—for example, aphids, which find dense plantings less attractive. Harvesting as soon as crops are mature can reduce damage. It can also remove pests before they emerge and perpetuate their population in the local area.

## 5 Crop rotation which attempts to separate pests and host plants in time

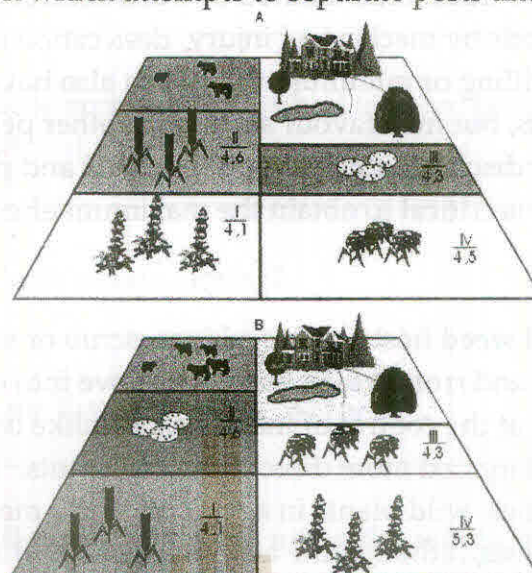


Fig. 2.5. Four-field crop rotation: A- first year of rotation: I – lupine for fodder, II – rye, III – potatoes, IV – oat; B – second year of rotation: I – rye, II – potatoes, III – oat, IV – lupine  
[http://baap.lt/codes\\_gap/lithuania/chapter\\_2.htm](http://baap.lt/codes_gap/lithuania/chapter_2.htm)

and space is one of the oldest and most widespread farm practices. It is still one of the most effective controls for some nematode problems. Rotation is not likely to be effective against pest organisms that can survive for long periods in the soil without access to host plants or against mobile pests. Crop rotation normally reduces or delays pest attacks rather than completely preventing them, because, although important in single fields, it is a much less effective practice over larger cropping areas, where particular host crops are almost always likely to be growing somewhere.

6 Attempts to avoid pests by isolating crops from regularly infested sites have been frequently tried, particularly to prevent spread of insect-borne disease, but because wild plants can be reservoirs of both **vectors** and the diseases **they** carry, this method has rarely proved successful on a regional scale.

7 Trap crops can be used to concentrate insect pests into small areas where they can then be killed by insecticides or by destroying the trap crops. Trap crops can be either an earlier planting of the crop to be protected or a 'preferred' host plant. Clearly, the destruction of the trap crop and its insect pests must be properly timed to avoid pest build-up.

8 Where crops are irrigated, manipulation of watering regimes can influence pests both favourably and unfavourably. Irrigation after dry conditions may cause pest incidence to rise dramatically, whereas excessive

irrigation may wash pests off plants or drown them, and soil insects may be killed by colloidal particle pressure in saturated soil.

9 Most cultural control measures have been developed empirically and require careful assessment of their economic benefits. For some measures, such as varying planting and harvesting times, the costs would essentially remain the same, since they would simply be used at different times. Cultural control methods are not, however, usually, fully effective and are perceived in some circles as having the disadvantage of being preventative rather than curative. **They** should nevertheless be seen as a first-ditch defense against pest attacks in association with other techniques of pest control.

Mckinlay, R. G. (1992). Vegetable crop pests. London: Macmillan Academic and Professional Ltd.

**A. Answer the following questions.**

1. What do you think is the purpose of this passage?

---

2. In the passage you can see several techniques of cultural control. Rearrange the following techniques according to the order in which they appear in the passage.

- a. Trap crops
- b. Crop rotation
- c. Water management
- d. Cultivation
- e. Crop isolation

3. Which paragraph talks about the timing of sowing and harvesting?

---

4. What does **they** (paragraph 6) refer to?

---

5. Can you guess what "vectors" are?

---

6. What does **they** (paragraph 9) refer to?

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**B. Use the information from the passage to fill in the following table.**

Cultural method	How is it done?	Limitations
Cultivation		
Timing of sowing and harvesting		
Crop rotation		
Crop isolation		
Trap crop		
Water management		

**C. Vocabulary**

**a. Match the word with the meaning by drawing a line.**

- |                 |                       |
|-----------------|-----------------------|
| A. variation    | a. wet                |
| B. saturate     | b. concern            |
| C. favourable   | c. try                |
| D. manipulation | d. old-fashioned      |
| E. traditional  | e. helpful            |
| F. beneficial   | f. control            |
| G. involve      | g. change, difference |
| H. attempt      | h. advantageous       |

**b. Complete the following sentences using the words from the list below.**

performing	modification	eliminate	discriminate
infestation	destruction	access	compensate
effective			

1. A complex engine has many separate components, each \_\_\_\_\_ a different function.
2. The company agreed to keep up high levels of output in order to \_\_\_\_\_ for supplies lost.
3. Parts of Thailand are suffering from an \_\_\_\_\_ of oriental fruit flies.
4. Getting some rest is an extremely \_\_\_\_\_ cure for a headache.
5. If you think you may be allergic to a food or drink, \_\_\_\_\_ it from your diet.
6. The device can \_\_\_\_\_ between the cancerous and the normal cells.
7. \_\_\_\_\_ of the engine to run on lead-free fuel is fairly simple.
8. The typhoon has left a trail of death and \_\_\_\_\_ across much of Taiwan.
9. The only \_\_\_\_\_ to the village is by boat.

**c. Word Form**

Put the following words into the correct column according to part of speech.

various      alternative      reproductive      hydroponically  
 resistant      destruction      favourable      drought      curative  
 economical      mechanical      survival      beneficial  
 eliminate      migrant      widespread      preventative  
 access      normally      dramatically      rarely      isolate

Noun	Verb	Adjective	Adverb





## Section 3: Grammar

### Relative clauses

#### A. Defining Relative Clauses

Relative clauses give essential information to define or identify the person or thing we are talking about. The information is necessary if there is more than one person or thing involved. Commas are not used in defining relative clauses. The following relative pronouns are used in defining relative clauses:

	Person	Thing	Place	Time	Reason
<b>Subject</b>	who/that	which/that			
<b>Object</b>	who/whom/ that/∅	which/that/∅	Where	when	why
<b>Possessive</b>	whose	whose			

#### Notes:

1. The relative pronoun stands in place of a noun.

This noun usually appears earlier in the sentence:

e.g. The teacher **who/that spoke at the meeting** now lives in Canada.

2. *Who*, *whom* and *which* can be replaced by *that*. This is very common in spoken English.

3. The relative pronoun can be omitted ( $\emptyset$ ) when it is the *object* of the clause:

e.g. The book **that she wrote** was a best-seller.

The book **she wrote** was a best-seller.

Both of these sentences are correct, though the second one is more common in spoken English.

4. *Whose* is used for things as well as for people.

e.g. The man **whose car was** stolen is my friend.

A tree **whose leaves have fallen** is dying.

They live in the house **whose roof is full of holes**

5. *Whom* is very formal and is only used in written English. You can use *who/that*, or omit the pronoun completely.

e.g. The teacher **whom/who/that/ø every student looked up to** retired 10 years ago.

6. *Where* is used for a certain place

Let's go to a country **where the sun always shines**.

7. *That* normally follows words like *something, anything, everything, nothing, all*, and superlatives.

e.g. There's something **that you should know**.

It was the best film **that I've ever seen**.

A clown is someone **who makes you** laugh.

Nothing **that anyone does** can replace my lost bag.

### B. Non-defining Relative Clauses

The information in non-defining relative clauses is not essential. It tells us more about someone or something, but it is not needed to identify them or it. Commas are needed at both ends.

Compare:

1. Peter invited a girl **who/whom/ he had met** in Paris to the party. (This tells us which girl we are talking about).

2. Peter invited Jennifer, who (whom) he had met in Paris, to the party. (This gives us some extra information about Jennifer).

### Notes

1. In non-defining clauses, 'who' and 'whose' are used for people and 'which' and 'whose' are used for things. 'That' cannot be used in non-defining clause.

2. You cannot leave out the relative pronoun, even when it is the object of the verb in the relative clause:

e.g. He gave me the invitation card, **which was in a blue envelope**.

3. The relative pronoun *which* at the beginning of a non-defining relative clause, can refer to all the information contained in the previous part of the sentence, rather than to just one word.

e.g. Pam could not do well in the exam, **which was a disaster for her**.

**A. Instructions:** The following sentences are taken from the texts you have read. These sentences contain relative clauses. Underline relative clauses in these sentences.

1. As illustrated by the Irish potato famine, which was caused by widespread blight, crop damage from pests and disease can be devastating.
2. Increasing seed rates may compensate for expected plant losses and may also help to reduce infestation by migrant pests –for example, aphids, which find dense plantings less attractive.
3. It is a much less effective practice over larger cropping areas, where particular host crops are almost always likely to be growing somewhere.
4. Crop rotation which attempts to separate pests and host plants in time and space is one of the oldest and most widespread farm practices.
5. Cultural control uses a wide range of techniques which are normally within the competence of individual growers to perform without the need for high technological input.
6. Destruction of weed hosts, crop residues, scrub or shelter in which insects may harbour and from which they may move into crops involves work targeted solely at the control of insect pests, unlike other cultural control methods, which are targeted more directly at crop plants.

**B. Instructions:** Make a relative clause from the sentences given.

1. a. Irish potato famine was caused by widespread blight  
b. It can cause a lot of damage to crop.
- 
- 

2. a. Crop rotation is one of the oldest and most widespread farm practices.  
b. It attempts to separate pests and host plants in time and space.
- 
-

3. a. Cultural control uses a wide range of techniques.  
b. Those techniques are normally within the competence of individual growers to perform without the need for high technological input.
4. a. Increasing seed rates may help to reduce infestation by migrant pests –for example, aphids.  
b. Aphids find dense plantings less attractive.
5. a. Destruction of shelter involves work targeted solely at the control of insect pests.  
b. Insects may harbour in the shelter.
6. a. Destruction of weed hosts involves work targeted solely at the control of insect pests.  
b. Insects may move from weed hosts into crops.
7. a. Destruction of weed hosts and crop residues are different from other cultural control methods.  
b. Other methods are targeted more directly at crop plants.

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### Section 4: Vocabulary Review

**Instructions:** Can you find other forms of the following words? Put them into the right parts of speech.

Noun	Verb	Adjective	Adverb
majority	consume		
varieties		affordable	
produce	survive	devastating	
viability	estimate		typically
hazard			uniformly



### Section 5: Writing an argumentative paragraph

**Instructions:** There are several techniques to control pests. Write a paragraph of 60-80 words to support the technique you think is the best.

**Step 1:** Get more information about the technique you have chosen from different sources (i.e. books, journals, Internet).

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**Step 2:** Make an outline.

Technique that you support : \_\_\_\_\_

Topic sentence: \_\_\_\_\_

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Supporting reasons

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Disadvantage of this technique

\_\_\_\_\_

**Step 3:** Write your first draft.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Step 4:** Use connectors in your paragraph.

First supporting reason: use 'first' or 'firstly'

Second supporting reason: use 'second', 'secondly' or next

Last supporting reason: use 'finally' or 'lastly'

First disadvantage: use 'however'

**Step 5:** Revise your second draft. Correct any grammatical mistakes.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Appendix**  
**Core vocabulary**

access	affect	alternative	beneficial	commodity
compatible	consume	eliminate	enhance	establish
estimate	impact	implement	interaction	involve
isolate	major	potential	region	regulation
resources	solution	survive	traditional	uniform
widespread				

**Computer lab activities**

1. Listening

Go to the following websites and click on any topic for listening.

<http://www.voanews.com/SpecialEnglish/article.cfm?objectid=7B16D896-4C51-11D5-841900508BF9712A&Title=Agriculture%20Report>

2. Grammar practice: Prefix-Suffix

Go to <http://www.spelling.hemscott.net/> and do the exercises concerning prefixes and suffixes.

3. Note-taking

Go to [www.google.com](http://www.google.com) and look for facts about agriculture in Thailand (e.g. plants, animals, food) from the Internet and take note of what you have found in the following table.

Facts about


## Listening Scripts

### (script1.1)

1. Half of the earth's land is suitable for growing crops.
2. Pumpkins like other squash are harvested in the spring.
3. Conservation is using up our resources.
4. Land preservation is land not used for farming.
5. It is important for farmers to conserve soil and keep it healthy.
6. Bees gather pollen from farmers' orchards to make honey.
7. Soybeans are a very important crop in the United States.
8. Aquaculture is the practice of raising food in water.
9. One acre of land is about the size of a football field.
10. The hydroponic method of farming does not include soil.

Adapted from [http://www.agclassroom.org/kids/que\\_more.htm](http://www.agclassroom.org/kids/que_more.htm)

### (Script1.2)

- A: Good evening Ladies and Gentlemen. Our guest for our tonight's program is Dr. Nancy Pierce. She is here with us to talk about hydroponic gardening. Dr. Pierce, could you tell us what hydroponics is?
- B: Of course. Hydroponics is the science of growing plants without soil. The plants grow on the nutrient solution alone.
- A: What are the advantages of hydroponic plants over soil grown plants?
- B: No soil means no weeds, no pests and disease from soil. Hydroponically grown plants grow faster, are healthier and more disease resistant because they are not stressed by drought. Hydroponics is clean, so it adapts easily to indoor culture, but may also be used outdoors and in greenhouses.
- A: Sounds interesting. What types of plants can be grown hydroponically?
- B: Anything can be easily grown, but some plants prove to be more space efficient. Some plants I suggest are tomatoes, sweet peppers, broccoli, lettuce, spinach, cucumbers, beans and snow peas.
- A: Everything seems to be perfect about hydroponics. Okay. After the break, we'll come back to talk about the process of hydroponic gardening. Stay tuned.



**(script1.3)**

Intercropping or polyculture is one type of cultural system common in the tropics which may also provide *potential* for improved horticultural crop *productivity* in temperate climates. One of the advantages of intercropping compared with sole cropping is that insect pest attack is often less *severe*. There appear to be two reasons for this: first, polycultures provide better *conditions* for natural enemies by providing increased pollen and nectar sources, increased cover and *alternative* prey; and second, plant *species* growing in association with each other have a direct effect on the ability of insect *herbivores* to find and utilize their host plants. Intercropping also influences pest movement and *reproductive* behaviour. Compared with sole cropping, intercropping brassicas with *various* taxonomically unrelated plants reduced the *infestation* of *D. radicum*, *B. brassicae* and several lepidopterous pests. The incidence of carrot fly (*P. rosae*) was also *reduced* by intercropping with onions.

**(script1.4)**

1. Which of the following is known as a root crop?
2. What does the types of crops grown in a region depend upon?
3. Which of these is not a part of the agribusiness system?
4. Why do farmers use pesticides?
5. What does conservation include?
6. Why does a farmer plant cover crops?
7. Why do we protect our topsoil?
8. Why are bees important?
9. Which country produces the most food?
10. What does agriculture provide for people?

[http://www.agclassroom.org/kids/que\\_more.htm](http://www.agclassroom.org/kids/que_more.htm)

**(script1.5)**

Almost everything we eat starts with the planting of a seed. The seed grows into either a plant for humans or a crop for livestock feed. For thousands of years, agriculture relied on the seeds provided by nature. By the 1950s, agricultural science had progressed to the point where seed varieties were being improved to produce certain characteristics or to better survive specific growing conditions. For instance, American farmers plant more than 200 different wheat varieties in a typical year. Each of these is bred to thrive in specific growing conditions—weather, soil, and climate—and to meet milling and baking requirements. When a new seed variety is developed, it must pass a process of purity, germination and quality evaluations before it is sold commercially. Today, more than 600 U.S. companies are involved in producing and selling seeds. They call sell those seeds more than \$1 billion annually.

**(scrip1.6)**

Organic food is defined in several ways. According to the U.S. Department of Agriculture or USDA, the final federal regulations for organic standards are still pending. Generally, organic produce has the following characteristics. First, it allows for minimal "inputs", such as fertilizers and pesticides. Second, it establishes standards for allowable materials, restricted materials and prohibited materials. Third, although synthetic pesticides are not permitted, it allows some "natural" pesticides to be used. However, there is no evidence that organic fruit and vegetables are safer or more nutritious than conventionally grown produce.

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