Urban Agriculture - How and Why?

Introduction for the Teacher:

Most of our food nowadays is based on industrial agriculture. The majority of Israel's population lives in cities, meaning that they live far from the food-producing regions. Due to this, the food needs to be packed, transported and stored, causing loss of a certain percentage of the food, the food is less fresh, costs are high, and there is considerable pollution due to the packing and transport. Moreover, industrial agriculture involves waste of water and environmental pollution from fertilizers and pesticides.

Alongside the industrial agriculture, there is also **urban agriculture** - crops being grown inside towns, close to the consumer population. The urban crops can include a wide variety of species. They are grown on small plots of land or on detached substrates. Urban agriculture cannot replace industrial agriculture; however, it can complement it and reduce the pressure on natural resources such as land and water. Urban agriculture enables fresh, varied food without the need for substantial storage and transportation, while at the same time it provides opportunities for community social activities.

In this chapter we shall learn what the impacts of industrial agriculture are, and we will examine how urban agriculture can help.

Goals:

- The students will describe the impacts of growing food far from the population centers
- The students will describe the environmental impacts of industrial agriculture
- The students will be introduced to urban agriculture and its advantages compared with industrial agriculture
- The students will experience searching for, and organizing, information and its presentation.

Recommended duration

90 minutes

Key terminology

Industrial agriculture, urban agriculture, environmental impacts

Acquired skills

Searching for information, organizing information, presentation

---

Prepare in advance

Accompanying presentation

Computer, linked to a projector

Where do fruit and vegetables come from?

The food we eat has an effect on our health. In order to maintain a healthy, balanced diet, it is important to eat a variety of fruit and vegetables every day. The common recommendation is to eat at least 5 servings of fruit and vegetables of different colors every day (a serving is mostly a whole fruit or vegetable). Most likely every one of us has fruits and vegetables which s/he likes more than others.

- **What is the vegetable or fruit we each prefer?**
- **Do we know where these fruit and vegetables come from?**

Some of the fruit and vegetables are grown in Israel - for example: tomatoes, potatoes, peppers, carrots, bananas, avocado, apples, olives, dates and grapes.

And the rest of the fruit and vegetables? Some arrive here from great distances. For example:

- Some of the cucumbers sold in Israel are imported, mostly from Turkey.
- Pears in Israel are sold about two months per year. The rest of the time pears are imported from Europe and the United States.
- Apples are mostly imported from the United States.
- Corn on the cob is imported from many parts of the world, for example: Malaysia.
- Garlic is imported mostly from China.
- Frozen peas and carrots are imported from Europe, mostly from Belgium.
- 70% of the oranges sold in Israel are imported.

The implications of agricultural cultivation far removed from the consumers

How do the fruit and vegetables arrive from the fields onto our dinner plate?

In order to bring the food from the fields to the consumers, it needs to be packed and transported. The costs of packing and transport in Israel total approximately one billion Shekels per year.

- **Give an estimate: on average, how much time passes from the moment the fruit and vegetables are harvested in Israel until they arrive on the market or grocery shelves?**

  a. Half a day

  b. A day or two

  c. 3-4 days

  d. About a week

  (The answer is: c. 3-4 days)

- Due to the long journey they undergo, and due to storage problems, part of the agricultural produce spoils.

  Give an estimate: what percentage of fruit and vegetables gets thrown away before it reaches the consumer, due to the long journey and the storage problems?

  a. About one percent

  b. Between 10 and 20 percent

  c. Between 35 and 55 percent

  d. Almost 90 percent

(The answer is: c, between 35 and 55 percent)

We have seen that most of the fruit and vegetables we eat have a long journey before they reach us, the consumers.

What are the implications?

- We almost never get to eat fresh produce due to the fact that there are so many steps between growing and marketing.
- Fuel used in the process causes air pollution.
- Use of packing materials pollutes the environment.
- When food spoils in transit or in storage, it causes waste of the resources invested in it (water, fertilizer, pesticides, fuel). This also increases environmental damage.
- Food prices increase: someone has got to pay the costs of the shipping, packing, storage and wasted resources - and that someone is us.

Industrial agriculture and Its Environmental Impact

The agricultural produce we buy has been grown mostly using industrial agriculture practices, meaning:

Growing very large quantities of plants.

Use of farming machinery: tractors, harvesters, spray planes, etc.

Use of advanced pesticides.

Use of effective fertilizers.

Industrial agriculture is highly efficient and is vital to the supply of sufficient food for the entire population. However, at the same time, it causes several **environmental problems:**

- Water losses in the irrigation process.
- Groundwater pollution with fertilizers and pesticides.
- Soil salinization: the evaporating irrigation water leaves behind a salt residue, mainly in the world's arid regions.
- Depletion of soil nutrients due to continual cultivation.

Urban Agriculture

Urban agriculture is the cultivation of agricultural produce in small patches of land in an urban setting and inside towns and villages.

United Nations reports have pointed to small-scale growing of food inside cities as one of the solutions for the environmental impacts of industrial agriculture and for the problems of food cultivation worldwide.

Urban agriculture is intended not as a substitute for industrial agriculture, but rather it is intended to complement it.

Group Activity: Studying Urban Agriculture

In order to better understand the meaning of urban agriculture, how it can be done and its advantages, we shall now conduct a research activity in groups. The class will be divided into three groups.

Each group will:

- Study **one aspect** of urban agriculture (each group studies a different aspect).
  The study will be done by searching for information and pictures on the Internet and searching for relevant videos on YouTube.
- Summarize the information in 2-3 slides.
- Prepare a presentation to be delivered during the lesson - duration: 2 minutes.

The aspects the groups will study are:

1. What areas within towns can be used for urban agriculture?
2. What are the main cultivation methods in urban agriculture?
3. What are the advantages of urban agriculture?

To search for information, we recommend the use of words that appear in the aspect the group is studying, plus the following keywords: urban agriculture, community agriculture.

Recommended time for the group study: 20 minutes.

Information for the teacher, which can be added after each group has presented the outcome of its study:

Areas that can be used for urban agriculture:

- Gardens on the grounds of buildings and in backyards
- Balconies in apartments or in public buildings
- Roofs
- Walls of buildings
- Unused public spaces

Main methods of urban agriculture:

- Furrows on small areas
- Vertical garden (making use of a small patch of land or of a wall
- Detached substrate (cultivation inside a container)
- Hydroponic cultivation (soilless agriculture based on nutrient solutions)

Main advantages of urban agriculture:

- Proximity to the population is conducive to fresh produce.
- Less food wastage - harvesting can be done on an as-needed basis, with no spoiling in transit.

- No need for transport, packing or storage, resulting in reduced environmental impact.
- Some of the cultivation methods enable growing food in places lacking arable soil (for example hydroponics or detached substrate cultivation)
- In addition, community gardens also contribute toward the welfare of the community and society.

However, there are also drawbacks:

- The amount of food produced is significantly less than industrial agricultural output.
- Requires relevant knowledge and investment of time and effort.
- If the garden is not properly maintained it can cause a health hazard (producing waste, and odors from fertilizing).
- Urban air pollution might contaminate the produce.

Summary: Where can a small garden be set up near you?

Suggest suitable places for urban agriculture in your town, school or home.