

Daily Lesson Plan (DLP)

Topic. Planting Space		Day :1
Grade: 4-5	Lesson Name: Topic: Planting Space	Time :(60 Mins.)

Topic	How large will your beds be to accommodate each crop?		
Weekly key words	Commercial raised bed, mulch, plastic layer, tractor, tiling, etc.		
Seating plan	<input type="checkbox"/> Individual	<input type="checkbox"/> Pairs	Group of 4
Skill development	<input checked="" type="checkbox"/> Reading <input type="checkbox"/> Reflection <input type="checkbox"/> Other (Specify)	<input checked="" type="checkbox"/> Writing <input type="checkbox"/> Illustration	<input checked="" type="checkbox"/> Discussion <input type="checkbox"/> Presentation <input type="checkbox"/> Collaboration <input type="checkbox"/> Observation <input type="checkbox"/> Research

Objectives: ➤ The students will be able to:	➤ Learn about the length of plant beds to accommodate each crop
Teaching Resources:	Multimedia/projector, laptop, YouTube, writing board, notebook, piece of paper, pen/pencil, plants, worksheet, samples of soil
Teaching Learning Strategies	
Introduction: 5 mins. Initiate the lesson by talking about the plant beds. Take their responses and link them to the topic. Methodology: (20 mins.) Introduction to commercial raised bed What is raised bed farming? Raised bed farming is the agricultural technique of building freestanding crop beds above the existing level of the soil. In some cases, raised beds are covered with plastic mulch to create a closed planting bed. Raised bed can be rectangular in shape or irregular in shape. It can be formal or informal in their design. Raised bed farming doesn't need to be very deep to be productive. Raised beds produce multiple benefits.	

It extends the planting season, reduces the growth of weeds

Since there is no chance of anyone walking, therefore, the soil remains compacted.

The roots have an easier time growing.

The use of compost and the close plant spacing in the raised beds result in higher yields.

You can create a raised bed by simply heaping soil up into a pile, or by using boxes to enclose and contain garden soil.

Raised beds are easier to maintain, especially for people with limited mobility, and have less perennial weed pressure.

However, the main disadvantage of a raised bed is they tend to need more frequent irrigation and have a high initial cost of construction.

By keeping such obstacles aside, the raised bed can be a great choice for almost anyone interested in vegetable gardening.

Commercial farmers living in colder regions also benefit a lot from raised beds than traditional techniques.

A raised bed lifts the soil out from the hard ground into smaller piles with trenches in between. In spring, this allows more airflow that make it warmer. You can grow vegetables, herbs, or fruits in the raised beds of your choice. Any industrial agricultural will get benefits if work incorporates a raised bed.

1. No tiling is better for the soil:

A Raised bed is a way of setting up your soil for the easiest possible gardening. Instead of tiling up the soil from year to year to add changes and fertilizers, gardeners maintain their raised beds by simply adding materials on the top.

Compost, manure, and mulches can go directly onto the top few inches of the soil without the need for backbreaking work.

The soil is capable of doing its own tiling as worms and roots push their way through. Frequent tiling by human hands tends to deplete the soil structure, doing nothing builds up the organic component of your soil over time.

2. Superior Soil:

Raised beds let you control the soil. Whether you better clay soil or have experienced a soil-borne disease in your garden, raised beds to provide perfect soil conditions. Because of the framework of the bed, you can control the content and structure of the soil, ensuring a nutrient-rich environment for your crops. It's easy to test the soil each season, by adding the necessary missing nutrients or compost to keep the soil healthy and productive.

3. Healthier harvests:

When several raised beds are dedicated to your kitchen garden; you can easily plan and practice crop rotation. Rotating crops can help to maintain soil health and thwart pests that overwinter in the soil. As newly hatched pests emerge in the spring and find that their food source moved to another bed, they also attempt to relocate to the new bed. Fortunately, most of the pests will die along the way, victim to birds or other predators.

4. Raised beds look nicer:

Raised beds seem like pure vanity, but having nicer beds can have a practical purpose. Raised beds also make pathways just a little bit easier to maintain because there's a definitive line between the path and the bed.

5. Raising your soil means better drainage:

Mainly, the areas prone to flooding, or in marshy yards, a raised garden bed may be the only way to have a full growing season. The most popular depth for a raised bed is 11 inches, which is one inch below the sides of a 12 inches high garden box. For maximum crops, this is

enough drainage and gives plants almost a foot of extra breathing room above wet conditions. Raised beds also tends to drain better in general, even in heavy rains.

How is Raised Bed Farming More Efficient:

1. Raised bed farming is a key component of climate-smart agriculture.
 - a. Furrow irrigation saves water because irrigating the crops by letting water into the furrows and making it seep into the beds feed the roots of the crop well and decreases evaporation.
 - b. During periods of heavy rains, extra water is drained easily from the field, thereby, saving the crop from flooding impacts, and at the same time collecting the extra water in a pond for use later to irrigate the crops in summer seasons or during dry spells.
 - c. Furrow irrigation also makes the water seep into the soil profile thereby recharging groundwater in adjacent areas.
 - d. Raised bed farming helps the growing of 2 or 3 crops in the same field; planting crops like maize, millet, sorghum, or wheat on raised beds and water-loving crops like rice in furrows. This is the main advantage against vagaries of weather and farmers can good yields from both crops in years of good rainfall or from at least one of the crops during periods of draught or heavy floods.
2. Overall crop yield is more in raised bed farming because farmers can grow 2 crops in a sequence with minimal land preparation and with a small amount of water, if available, for additional irrigation.
3. Permanent raised beds and furrows are maintained and reshaped once a year, within minimum labor, and with minimum disturbance of soil on the beds.

The other option for farming with raised beds in an urban environment, which is often considered preferable, is to build permanently raised beds, which can be organized in a variety of ways. Permanent raised bedding has been generally used for centuries in certain parts of the world where the rainy season is short and heavy, where extreme water can cause flooding and be harmful.

Machinery to work with commercial raised bed farming

The best machinery to work with commercial raised bed farming.

Farmers use tractor attachments such as plastic mulch layers and bed shapers to create raised beds on anything from small family farms to commercial farms with thousands of acres. Bed shapers are used to arrange soil from flat land into raised crop beds, turning the soil as it shapes the bed. The size of the bed mainly depends on the crop being farmed.

As the bed shaper runs throughout the field, the soil is mixed and pulled up for the bed press pan to shape the soil into a tight even raised bed. The bed creates a set number of raised beds mainly depending on the number of press pans on the implement.

Farmers also use a plastic mulch layer to install a layer of plastic on top of the raised beds. This plastic layer helps as 'mulch' to keep the soil from washing away when it rains and to give farmers improved control of moisture levels by keeping the rain out and using a drip irrigation system to water the crop plants from inside the plastic mulch. Farmers can also use fertilizers and fumigate the soil when shaping and prepping the beds before laying the plastic mulch to make rich soil and prevent weeds.

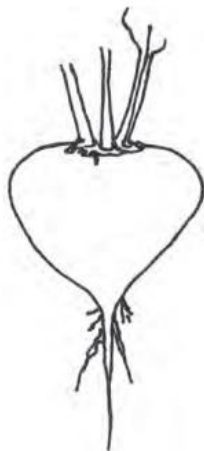
Activity: (30 mins.) (Group Work)

1. Use the Roots or Tubers? Worksheet (page 209) to help students guess which vegetables are roots and which are tubers.
2. Divide the vegetables into two piles, according to which category they decide.
3. Discuss those vegetables that are difficult to decide.
4. Have the learners fill out the worksheet according to their decisions.
5. This activity may be followed by the Root

Vegetable Tasting (page 105) activity. Discuss the following topics: • Is the potato a root or a stem? • What do these big roots do for the plant? • What do they do for people? Note: do not eat sweet potatoes, cassava, taro or yucca raw. They have indigestible or toxic compounds when raw.

Tap Roots

- Have a core
- Are the main support of the plant
- Have side (lateral) roots



Beet-Tap root

Tubers

- Are starchy and fleshy
- Are underground storage
- Stem tubers have eyes and are part of the plant stem
- Root tubers are the thick part of a fibrous root



Potato-stem tuber



Sweet Potato-Root tuber

List plants that are tap roots:

List plants that are tubers:

Wrap up (5mins.): Wind up the lesson by asking the students randomly to share their findings.

Home Assessment:

The students will do the worksheet as homework.

Worksheet

Lesson Evaluation:

- Teacher was able to accomplish all aspects of the lesson well ☐
- Teacher was not able to do warm up activity ☐,
- develop lesson plan well ☐,
- do the learning activity ☐,
- do wrap up ☐,
- accomplish lesson objective ☐,
- manage time well ☐,
- manage class well ☐

Worksheet Day

Name: _____

Class: _____

Topic: Planting Space

Subject: Science

➤ **Write down at least four characteristics of raised beds.**
