

## Daily Lesson Plan (DLP)

<b>Topic. Plot your Plants.</b>		Day :1
<b>Grade: 4-5</b>	<b>Lesson Name: What is the weekly water requirement for each crop you are choosing to plant?</b>	<b>Time :(60 Mins.)</b>

Topic	<b>What is the weekly water requirement for each crop you are choosing to plant?</b>		
Weekly key words	Transpiration, evaporation, evapotranspiration, climate factors, arid, humidity, 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

<b>Objectives:</b> ➤ The students will be able to:	➤ Develop knowledge about the water needs of crops ➤ Learn about the influence of climate factors on water needs of crops
<b>Teaching Resources:</b>	Laptop/multimedia, pictures, writing board, notebook, piece of paper, pen/pencil, plants, worksheet
<b>Teaching Learning Strategies</b>	
<b>Introduction: 5 mins.</b> Start the lesson by asking the students to tell if they know about evaporation. Listen to their responses and give feedback. <b>Methodology: (20 mins.)</b> The teacher will discuss that crops need water for transpiration and evaporation. The plant roots suck or extract water from the soil to live and grow. The main part of this water does not remain in the plant, but escapes to the atmosphere as vapor through the plant's leaves and stem. This process is called <b>transpiration</b> . Transpiration happens mainly during the daytime.	

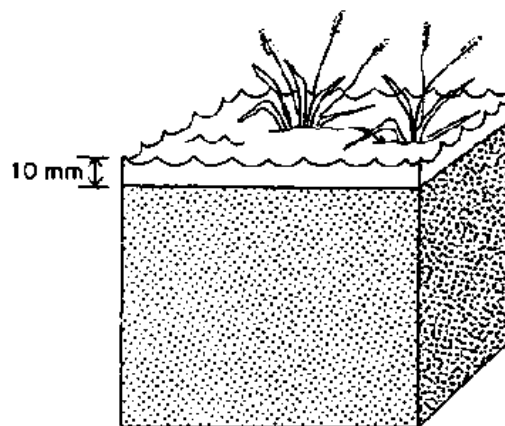
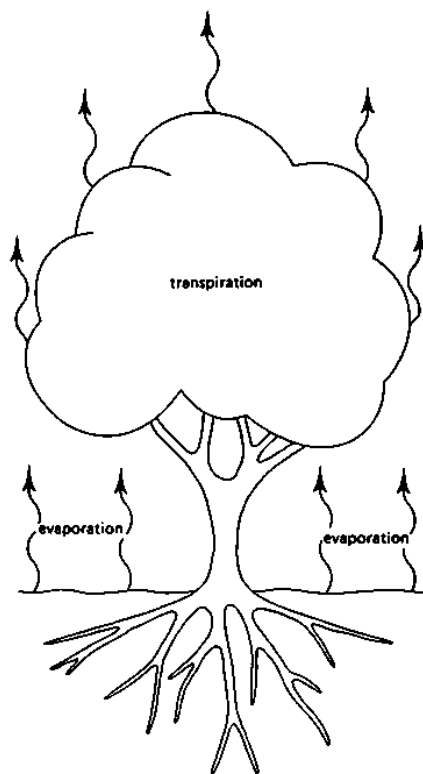
Water from an open water surface escapes as vapor to the atmosphere during the day. The same happens to water on the soil surface and to water on the leaves and stems of a plant. This process is called **evaporation**.

The water need of a crop thus consists of transpiration plus evaporation. Therefore, the crop water need is also called "**evapotranspiration**".

The water need of a crop is usually expressed in mm/day, mm/month or mm/season.

Suppose the water need of a certain crop in a very hot, dry climate is 10 mm/day. This means that each day the crop needs a water layer of 10 mm over the whole area on which the crop is grown. It does **not** mean that this 10 mm has to indeed be supplied by rain or irrigation every day.

It is, of course, still possible to supply, for example, 50 mm of irrigation water every 5 days. The irrigation water will then be stored in the root zone and gradually be used by the plants: every day 10 mm.



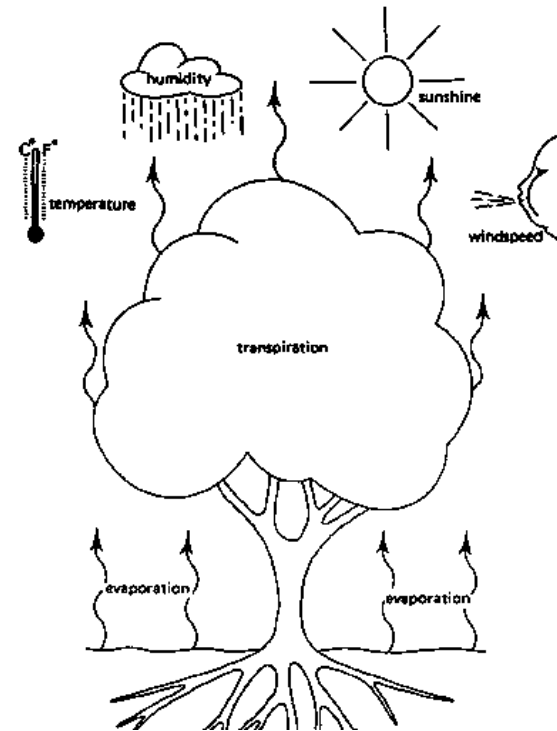
**The crop water need mainly depends on:**

- **the climate:** for example, in a sunny and hot climate crops need more water per day than in a cloudy and cool climate
- **the crop type:** crops like rice or sugarcane need more water than crops like beans and wheat
- **the growth stage:** grown crops need more water than crops that have just been planted

**Activity: (30 mins.) (Group Work)**

**The Influence Of The Climate On Crop Water Needs**

A certain crop grown in a sunny and hot climate needs per day more water than the same crop grown in a cloudy and cooler climate. There are, however - apart from sunshine and temperature - other climatic factors which influence the crop water need. These factors are the humidity and the wind speed. When it is dry, the crop water needs are higher than when it is humid. In windy climates the crops will use more water than in calm climates.



### Effect OF MAJOR CLIMATIC FACTORS ON CROP WATER NEEDS

Climatic Factor	Crop water need	
	High	Low
Sunshine	sunny (no clouds)	cloudy (no sun)
Temperature	hot	cool
Humidity	low (dry)	high (humid)
Windspeed	windy	little wind

The highest crop water needs are thus found in areas which are hot, dry, windy and sunny. The lowest values are found when it is cool, humid and cloudy with little or no wind.

From the above it is clear that **one crop** grown in **different** climatic zones will have **different** water needs. For example, a certain maize variety grown in a cool climate will need less water per day than the same maize variety grown in a hotter climate.

It is therefore useful to take a certain **standard crop** or **reference crop** and determine how much water this crop needs per day in the various climatic regions. As a standard crop or reference crop **grass** has been chosen.

Table 2 indicates the average daily water needs of this reference grass crop. The daily water needs of the grass depend on the climatic zone (rainfall regime) and daily temperatures.

**Table 2 Average Daily Water Need Of Standard Grass During Irrigation Season**

Climatic zone	Mean daily temperature		
	low	mediu m	high
	(less than 15°C)	(15- 25°C)	(more than 25°C)
Desert/arid	4-6	7-8	9-10
Semi arid	4-5	6-7	8-9
Sub-humid	3-4	5-6	7-8
Humid	1-2	3-4	5-6

For example, the standard grass crop grown in a semi-arid climate with a mean temperature of 20°C needs approximately 6.5 mm of water per day. The same grass crop grown in a sub-humid climate with a mean temperature of 30°C needs some 7.5 mm of water per day.

This daily water need of the standard grass crop is also called "reference crop evapotranspiration".

What will be discussed in the next section is "how do the water needs of the crops grown on, for an example, an irrigation scheme relate to the water need of the standard grass".

**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: Plot the Plants

Subject: Science

➤ Define the following terms:

1. Evaporation
2. Transpiration
3. Evapotranspiration
4. What are the major climate factors that affect water needs of crops?

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