

LEAFY VEINS IN MY GARDEN

By Harriet Byrne
Auburn South Primary School

AIM

My aim is to discover veins in common garden plants and to understand the function and design of veins, and how important veins are to plants.

METHOD

At first, I started taking these pictures on my iPhone 8 plus, but the pictures were blurred and unfocused although some picture 1 and 3 looked quite nice. I attempted using my Mum's iPhone 13 and there was a huge difference: pictures looked much clearer and brighter, so I continued taking photos on her phone, for example, picture 2, 4 and 5. It was sometimes hard to get the focus correct and it took a lot of patience, but I finally got the results I wanted! All the photos are original. There are no enhancements involved.

SCIENTIFIC CONTENT

WHAT IS PLANT VENATION?

If you look closely on any leaf, you will notice that there are little lines that go through the leaves. Those lines are called veins. Plant venation is the veins in the leaf. There are many different types of plant venations, such as parallel, which is when the veins are vertical and going straight up. The way veins work is that the veins are like human veins, passing nutrients through the body, except a leaf's veins pass nutrients through the plant.

PICTURE 1: MENTHA SPICATA 'ENGLISH LAMB'

Mentha Spicata, commonly known as English Lamb Mint, is a type of mint that is often used in soups and stews. My family and I took this mint from my grandma's garden. We placed the cuttings in a jar of water until the cuttings were rooted, and then planted the mint into soil.

I took this photo in my veg garden at home. I chose to use mint because we have a large quantity of them and they are very healthy. The veins were very vivid and drew my attention. This mint's venation shape is reticulate, which is smaller veins crossing over each other and forming a network and forming a web-like structure. The smaller veins spread out of midrib (a large strengthened vein along the midline of a leaf), like

roads coming off the freeway. Other plants like pear trees, tomatoes and China roses all share the same venation: reticulate venation.

PICTURE 2: PUMPKIN, CUCURBITA PEPO

A pumpkin is a winter squash that comes from the Cucurbita family, more commonly used for mashes and salads.

I took this photo in my backyard, the leaves just hanging over the edge of the vegetable garden box. It was very sunny and the sun was shining through the leaves, exposing the veins. I was attracted by the strong veins and instantly took a photo of the leaves.

I chose pumpkin because of its bold, pale veins. I was wondering why they were white. It turns out that it is completely normal to have white venation on pumpkins! Pumpkins have palmate leaves, which means their veins come from the base of each leaf, the veins fanning outwards like a hand. There are many plants with the same venation as pumpkins, such as Maple leaves, Grape leaves and Ivy leaves.

PICTURE 3: TOMATO, SOLANUM LYCOPERSICUM

A Solanum Lycopersicum or a tomato, is an edible berry that is very common in backyards and gardens.

At my house, I have lots of plants growing in my backyard. One of them is a tomato. This tomato's veins were bold and the shadows made them look highlighted/bolder. It was very interesting because of the contrast, since the shadowed area's veins were brighter and the sunny area's was darker! If you look closely at the picture, in the shadows, you can see tiny little hairs all over the leaf! The cherry tomato's venation type is reticulate, which is a smaller vein connected to a bigger one. There are many, many types of garden plants that have the same venation, such as mint, coriander and roses. Reticulate venation looks a lot like a map, with paths and hills scattered everywhere.

PICTURE 4: DWARF LEMON, CITRUS LIMON EUREKA DWARF

A dwarf meyer, or a dwarf lemon is a small citrus that is used as salad dressings and beverages.

This lemon's venation is pinnate. Lemons share the exact same vein type as avocado leaves, chestnut leaves and oak leaves. I took this photo in my backyard when the weather was really sunny and the sun was shining through the leaves, projecting the venation very clearly. Pinnate venation is where there is a midrib and the smaller veins that are attached are diverging from the midrib. A midrib is the thicker line down the centre of the leaf. I noticed that there were small white dots on the leaf and I couldn't find the answer to why though!

PICTURE 5: BAMBOO, BAMBUSIA

Bamboo are a unique group of plants that are evergreens that are from the family of Poaceae. A bamboo leaves venation type is parallel, meaning the veins go up and down, instead of growing left to right or diverging. There are many plants with parallel venation and banana and coconut are some of them. I had to get under the leaf to get a good picture. It took many tries but I finally got the picture I wanted. I found it difficult to focus on the one leaf and make sure that the others were still in the background. Quite a lot of the photos were really dark because I was taking the pictures from above but then I changed to below and so in the shooting of the main photo, I managed to capture the sunlight. In the picture you can see the many individual veins that are brightened by the sunlight over it.

FEEDBACK

I think next time, I need to work on capturing the veins so that it looks clearer and brighter. I also need to work harder on getting the photo right, instead of going straight into taking photos. Next time, I think I might use my Grandma's camera to take the photos because the traditional camera's photos are clearer and capture the light better.

ACKNOWLEDGEMENTS

1. Thank you to my parents for helping me research information.
2. My Mum for letting me use her phone to take pictures.
3. Ms Joanne Kretsis who registered me into the STS program.

BIBLIOGRAPHY:

Difference Between Parallel and Reticulate Venation (Updated 20-06-2024)
<https://www.vedantu.com/neet/difference-between-parallel-and-reticulate-venation>
(Accessed: 09-06-2024, 11.27am)

Exploring Parallel Venation (Updated 31-07-2023) <https://testbook.com/key-differences/difference-between-parallel-and-reticulate-venation> (Accessed: 08-05-2024)

Illustrated Definitions of Plant Problems (Updated 03-2016)
<https://extension.purdue.edu/extmedia/ID/ID-319-W.pdf> (Accessed: 70-06-2024)

Leaves - Leaf Structure and Arrangement
[https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/General_Biology_\(Boundless\)/30%3A_Plant_Form_and_Physiology/30.08%3A_Leaves_-_Leaf_Structure_and_Arrangement](https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/General_Biology_(Boundless)/30%3A_Plant_Form_and_Physiology/30.08%3A_Leaves_-_Leaf_Structure_and_Arrangement) (Accessed: 11-06-2024)

Structure of a Typical Leaf
[https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/General_Biology_\(Boundless\)/30%3A_Plant_Form_and_Physiology/30.08%3A_Leaves_-_](https://bio.libretexts.org/Bookshelves/Introductory_and_General_Biology/General_Biology_(Boundless)/30%3A_Plant_Form_and_Physiology/30.08%3A_Leaves_-_)

[Leaf Structure and Arrangement#:~:text=The%20arrangement%20of%20veins%20in,spiral%2C%20opposite%2C%20or%20whorled.](#) (Accessed: 02-06-2024, 11.15am)

What Do Plant Veins and Leaves Actually Do? (Updated 22-06-2018)
<https://www.plantsnap.com/blog/plant-veins/> (Accessed: 21-05-2024, 8.15pm)