How to Work out Your Garden's Microclimate

Many gardens tend to have variations in climate due to shade, sun, and varying depths. It is like walking through different rooms of the house, some warmer than others, some cooler; a garden is no different.

Discovering your garden's microclimate can help you to make the most of it and to grow the plants in the best placement within your garden; this enables sustainable and waterwise gardening. While much of your general garden climate is dependent on your latitude and local weather, the microclimate remains an essential aspect to take into account when gardening, especially with respect to frost, temperature, air circulation, and shade.

Steps

1 **Check which way your garden faces.** If this isn't evident to you, look for the direction in which the sun rises and sets. Look for the shadows cast by neighbouring buildings and trees, plus your own house, and be especially interested in the shade conditions at the height of winter when you get the least sun.

- In the northern hemisphere, plots facing south-west are always warmer in northern hemisphere countries like Britain than those facing north-east aspects, whereas in southern hemisphere countries like Australia, north-western areas can bake in the sun.[1]

2 **Look for frost-prone parts of the garden.** If you live where frosts occur, it is worthwhile assessing the frost-prone areas of your garden, as there are bound to be some parts that are more at risk than others. This matters when determining where to plant frost-fragile and frost-hardy plants.

- Look for frost pockets. These occur in depressions, dips, dells, downhill, lower valley areas, hollows, or where blockages occur, such as where there is a wall, hedge, or a building that stops the downhill movement of cold air and causes it to pool in one place.[2] Avoid growing early flowering plants in frost pockets.[3] If there are barriers such as fences or walls, small holes in them can help to allow the air to keep circulating rather than pooling and becoming frosty.[4]

3 **Check the materials or surfaces used in your garden.** Some materials or surfaces retain heat while other materials lose heat. A garden with lots of bricks will soak up heat and act like a storage heater. On the other hand, a sparse hedge will allow heat to escape, as will low or no fences.

- Hedges can act as filters and walls can act as funnels. Few new plants establish well in a wind tunnel.
- Small areas of lawn can act as a cooling effect.[5]
- Paving or concrete can act as a heat bank.[6] Garden beds close to these will be warmer than garden beds next to soil or grass/lawn.
- Areas situated under eaves tend to be hot and dry or cool and dry, depending on the time of year.

4 **Consider where you live.** The urban heat effect impacts city gardens, making them several degrees warmer than gardens found in the surrounding countryside or small towns. As well as more heat, urban gardens experience more pollution and often more acidic rainfall. Building heat can radiate onto gardens in urban environments.

5 **Look to your garden soil.** Soil can impact the microclimate through how moist or dry it is; clay soil tends to hold more moisture than sandy soil, while loam soil makes moisture easily accessible to plants.[7] Check other sources of water in the soil, such as local water like streams, local precipitation levels, etc. Adding compost and mulch to soil can increase its moisture-retention capacity.[8]

- Does the water drain away or is it impeded by the soil texture or terrain?

- Is overhead foliage blocking precipitation from reaching the soil beneath?
- Is the soil sheltered or exposed?
- Is there an area where water never seems to drain? This can be ideal to turn into a bog garden.

6 **Consider the air circulation within your garden.** Where do prevailing winds come from? What kinds of protection could you use in those parts of the garden most affected by them?

7 **Consider modifying your garden's microclimate to eliminate problems and to improve your garden.** One you have worked out what the garden's microclimate is, you can work to change it. At the very least, choose plants that suit each microclimate best, create shelters where they're needed, and remove heat banks or frost-accumulating objects where possible. Improve soil condition to create better water penetration and retention. Walls, pergolas, hedges, fences, etc., can all be used to create more microclimates to your advantage.

- A really good time to check for microclimate is after purchasing a new house or prior to landscaping, to give you the opportunity to make the most of your new or changed garden.

Tips

- Fine gravel spread across soil can insulate it; this can be useful for a flower bed or other ornamental area.[9]
- In a hot climate country or zone, less heat, more shade, and better wind protection will save water.
- The higher a garden is above sea level, the more exposed it is.[10]
- Slopes accentuate light and warmth, and enhance drainage.[11]

Warnings

- Walled gardens don't always offer protection; they can serve as heat traps.
- Paths and pavers risk being slippery and growing unsightly moss, etc., in shaded areas.[12] Use different materials for walking areas under permanent shade.

Things You'll Need

- [ ] Soil testing equipment
- [ ] Suitable structures and surfaces
- [ ] Plants suited to each microclimate

Sources and Citations

- Sally Cunningham, *Ecological gardening*, p. 93, (2009), ISBN 978-1-84797-125-8 – research source.

1. http://www.abc.net.au/gardening/stories/s2646836.htm
2. http://apps.rhs.org.uk/advicesearch/Profile.aspx?pid=689

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