# HOW TO IMPROVE YOUR SOIL TYPE

### **BEGINNERS GUIDE TO GARDENING**



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# HOW TO IMPROVE YOUR SOIL TYPE

One of the key parts of gardening and starting your own garden is to identify and work with whichever soil type you have. That's not to say that if you have one type of soil you can only ever have plants that will naturally do well in those soil types, though it does help to work with what you've got. This is why we have devised this course, to help you in improving your own soil rather than having to rely on pots and containers to grow your plants, though those are also good options if you have naturally infertile soil.



# IDENTIFYING YOUR SOIL TYPE



Identifying the soil type in your garden is the first step in order to be able to improve upon what is already there. We have created a guide on identifying your soil type previously in this course, so please refer back to this for further information, though the main soil types that you may come across in your garden are as follows:

- Loam these soils are a well-balanced blend of sand, silt and clay (generally 40-40-20)
- Clay these soils have heavy clay particles which compact when wet and under pressure and often retain too much water
- Sand these soils have sand particles which are often very acidic but do not retain moisture very well
- Silt these soils contain particles which are somewhere between clay and sand in terms of size. Silt is rich in minerals but breaks down more easily, these soils are often used in farmlands due to how fertile they are.
- Chalk these soils are quite alkaline and contain chunks of chalk or limestone and water drains through these soils quite quickly they are not very good for water retention.

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## **PH TYPE:**

Other than working out which soil type you have to start with, testing the pH of your soil is also a good way to start if you want to improve your soil and get it ready for planting. The pH scale ranges from acidic to alkaline, with a pH of 1 being very acidic and a pH of 14 being very alkaline. For a neutral soil pH, the reading would be around 6-7 and most plants will generally prefer a neutral soil, though there are some that are acid-loving and some that have a preference for alkaline soils. Some plants, most notably hydrangeas, will even change the colour of their blooms depending on the pH of their soil.

There are a couple of options when you need to pH test the soil. You can either request that a professional tests the soil - you can receive much more conclusive results this way, about the nutrients in the soil as well as the pH. Or, you can purchase at-home test kits. These test kits will usually have a litmus paper which will indicate the pH of the soil by the colour that it changes to when testing. The first step is generally to mix some soil with room-temperature, distilled water and then dip the litmus paper for 20-30 seconds before comparing the test paper to the kit's key. These keys will usually have a scale, with the colours ranging from red (acidic) to purple (alkaline.)

Once you know the pH of your soil, you will be able to use additives to neutralise or increase either the acidity or alkaline levels of the soil. After using any additives, it is a good idea to test the soil again, to make sure that the additives have had the desired effect.



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### **IMPROVING YOUR SOIL**

After determining which soil type you have and testing the pH of the soil, you can begin to improve your soil. This is generally done by adding manure or other organic matter, as well as mulching and using a feed or other nutrient additives. It is always best to plan which plants you want to incorporate into your garden before you begin improving the soil as you may find that some plants will already thrive in the soil you have, whereas other plants may require additional improvements than others. Another thing to consider is the aeration and drainage of the soil, as even plants which thrive in some soils may need some help with their drainage to keep them happy and healthy.

#### Improving clay soils

Clay soils will compact quite densely if allowed, as their particles are heavy and malleable - pressure and moisture will compact the soil and make it difficult for plants to find adequate drainage. This can lead to root rot and other issues. Gravel or grit - coarse grit rather than fine grit - can help to break up the clay soils, though you will need quite a lot to make a difference. Digging in this gravel or grit can help to improve the soil structure, though stay away from too fine grit and stay away from sand altogether, particularly when dealing with heavy clay soils as these can make the clay even harder to work with.

If you do have particularly heavy clay soils then sticking to organic matter is usually the way forward as these will help to prevent the soil surface from drying out or cracking in the heat - if it is too difficult to work with then raised beds may be easier. This organic matter can be used as a mulch around the plants and will help with nutrients as well as stop the soil from drying out.

### IMPROVING SILT SOILS AND SANDY SOILS



#### Improving Silt soils:

Silt soils are somewhere between sand and clay, meaning that they can compact well but also have relatively adequate drainage, unfortunately, they can also erode quite easily. These soils are used a lot in farmlands as they have a high mineral content generally, however, they do not usually have much organic matter. As such, it can be very beneficial to fork in organic matter, or spread it over the soil surface. The best times to do this are either in the spring or autumn. If you choose to spread the organic matter over the top of the soil, a 5-10cm layer is recommended.

One of the best ways to avoid soil compaction is to till the soil, making sure to evenly disperse the organic matter throughout the silty soil. Raised beds are also something to consider as they are easier to work with if the soil is appearing to be particularly problematic - the raised beds would help deter any issues with erosion, etc. in the rain as they will be more closely contained and manageable.

#### Improving Sandy Soils:

Sandy soils can have issues with draining too freely due to the small, light particles in the sandy soil. As such, it can be a good idea to add more organic matter into the soil so that it can act as a sponge and won't let the water drain as freely. This works by binding the soil particles together meaning that they will not wash away as easily and this can help with retaining the water as well as giving a firm foundation for the plants to grow. This is always best to be carried out in the spring and autumn, as with other mulching.

Layering the organic materials on the top is less advisable than mixing it all together, as this will evenly distribute the compost/mulch and the plant's roots will be able to find the moisture more easily than if it were to be simply placed on top. Slow-release fertilisers and less frequent, more deep watering can really aid in improving sandy soils as sandy soils are less rich in nutrients than other types of soils and the deep watering will ensure that there is less chance of the water all simply draining away, especially with the added organic matter.

### IMPROVING CHALKY SOILS:

Unfortunately, with chalky soils, it is very difficult to keep them fertile for very long. If there is any clay present, then this will help but if not then the best route to take is to keep applying compost and fertilisers to improve soil structure. This will also aid in water retention, particularly if there is more organic matter added. Be sure to till the soil to ensure that everything is being mixed in - this will also help to break up the soil if there are any larger chunks of chalk in the soil.





Chalky soils are not as versatile as other soil types, in that it is always best to choose a planting scheme that will work with chalk soils, to begin with rather than relying solely on improving the soil. It is very difficult to change the pH of chalky soils as they will be naturally alkaline as a result of the limestone/chalk. Therefore, planting acid-loving or ericaceous plants will not work as well as planting those plants which thrive in an alkaline environment. Plants to be wary of are those which will change colour in alkaline soils unless that colour is what you desire from your plants - such as hydrangeas.

### **IMPROVING LOAM SOILS:**

Most gardeners and horticulturalists would consider themselves lucky to have natural loam soil in their gardens, as these soil types will generally need the least amount of effort for improving. This is due to their composition, a balanced mix of sand, silt and clay (often 40-40-20.) This means that loam will be freedraining while still moisture retentive, fertile and easy to dig. Some loamy soils will be more clay-heavy, or more sand-heavy depending on the area, but these disproportionate amounts can be worked around if needed.

Adding a mixture of organic matter and a slowrelease fertiliser can help to improve loam soil, ensuring that it is all mixed in and this will give a very good structure for the soil. Most plants tend to thrive in loam soils due to the balanced mix, and fertiliser and organic matter will aid in this. Applying wetting agents can help, as can watering more deeply but infrequently.





#### Notes:

Regardless of the soil type found naturally in your garden, add organic material and fertiliser/plant feed and this will be more than enough generally in improving soil to allow plants to thrive in those environments. Structure, drainage and fertility are the key factors in improving your soil type, so the organic matter is the way to go, mixing it through the soil and mulching on the top layer, as will aid in all of these factors. This will allow you to grow your plants in this healthy soil.