

## 6 basic soil problems and their solutions

Soil problems are a major cause of low production levels in many cropping ventures. Farmers with little or no knowledge of the basic soil problems, apply ineffective remedies raising the cost of production without any resultant benefits in both the short and long term, to the farmer. The post presents the basic soil problems and simple and most effective ways of an amendment.

### 1. Soil lacking organic matter

Common to soils that have been continually farmed using less-sustainable methods.

Soil without organic matter may have poor water retention, drainage issues, little to no organism activity, failing crops, among others. This condition makes it almost impossible to crop on such soils.

You can remedy this by incorporating compost into the soil. Spread 3-inch-deep compost layer and incorporate it into 3 to 6 inches of soil. You should apply fully decomposed compost to prevent the decomposition process from depriving crops of certain nutrients. You can additionally grow cover crops during fallow periods to encourage soil biota activity. Moreover, you can practice crop rotation and conservation agriculture. Do not till a wet soil to avoid compaction.

### 2. Soil too dry

This, as one of the basic soil problems, is common to sandy soils. If your soils dry out too quickly, you can add compost. This will add both nutrients and increase water retention capacity of the soil. recommend applying mature compost. Compost that is not fully decomposed may harm your plants as it continues to break down. You can practice no-till under conservation agriculture. This will also help to improve water retention and reduce water loss by evaporation. No-till agricultural technology also improves your soil's structure in the long-term.

### 3. Soil too wet

This condition is common to low-lying areas, clay soils and areas with high water table.

This is usually caused by the compact nature of soil particles which do not allow good drainage of water. You can amend this by incorporating sand or gravels into the soil. The addition of sand or gravels will also require that you add organic materials to address soil nutrients problems. Avoid adding sand to clay soils. This mixture can set up like concrete. It is recommended that clay soils should be amended with approximately 0.8 cubic meters of gravel or compost per 100 square feet. However, the rate for non-clay soils may vary depending on the choice of the amendment and the soil type.

Additionally, you may also dig around crop areas to allow the water to drain from the crop areas. Again, practice no-till on such soils.

### 4. Soil acidic

Common to areas of high rainfall, poor drainage, heavy nitrogen fertilizer uses and high evergreen-tree population.

Many farmers use lime to address the issue of soils with low pH (acidic soils). In an already established area, lime can be incorporated by rainfall or irrigation. The application rates may vary depending on the soil's pH and soil type. The advice of the soil-testing expert may be required. Wood ash should be applied more cautiously as an excess of it can raise the potassium level in the soil and prevent plants from absorbing other nutrients. It is recommended that you use not more than approximately 1kg per 9square meters.

Moreover, you can grow acidic-soils tolerant crops like potatoes and sweet potatoes.

## **5. Soil alkaline**

Common to clay soils, arid and semi-arid climates.

For soils with high pH from soil test results, apply elemental Sulphur and iron sulphate. The rate of application depends on the type of soil and you may need the recommendation of a soil-testing expert. Apply the elemental Sulphur about a year before planting because the elemental Sulphur reacts slowly with the soil.

Alkaline soils require continual buffering, so you must monitor soil pH each year and apply the necessary amendment. For perpetual alkaline soils, you can also grow crops which are tolerant to high pH.

## **6. Soil with excess salinity (salt content) or sodicity (sodium content)**

Common to arid and semi-arid climates, low-lying areas near salt water.

If you confirm that your soil has excess salinity after soil testing, you can apply gypsum and elemental Sulphur. The rates of application for gypsum and elemental Sulphur may vary depending on the type of soil. The rates of application, therefore, must be recommended by the soil testing expert. Be careful not to apply to gypsum to sandy or acidic soils. This can cause mineral deficiencies in plants.

Apply the elemental Sulphur about a year before planting because the elemental Sulphur reacts slowly with the soil.

Poor drainage may also be a cause of sodic and saline soils. In this case, you may apply compost, sand or gravels as in soils that are too wet. Drain off water that is logging.