

What is Soil acidification and what affects it?

Soil acidification is a natural process in high rainfall environments where hydrogen cations (H^+) build up; reducing soil pH. Thus, many tropical (high rainfall area) soils are acidic.

Soil acidification can speed up if practices remove cations (like calcium and magnesium) from the soil – e.g., increased leaching due to irrigation, removal of nutrients in produce or addition of fertilizers.

Why would we care?

Changes in soil pH affect the availability of many nutrients and the activity of soil microbes (See Figure).

Do Fertilizers affect Soil pH?

Nitrogen is the main nutrient that can affect soil pH. Soils can become more acidic depending on which nitrogen fertilizer is used. See [here](#) for more.

Most acidifying. Ammonium-based fertilizers have the greatest potential to acidify soil.

Least acidifying. Nitrate-based fertilizers have less capacity to acidify soils.

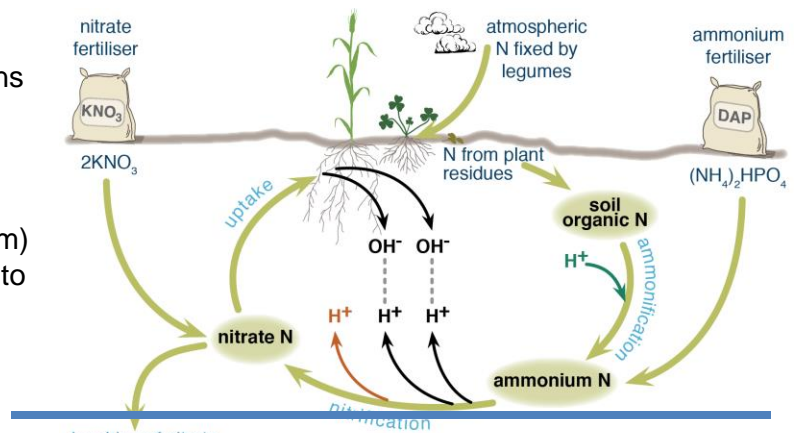
Phosphorus fertilizers have less effect on soil pH than N as lower rates of P are applied and acidification per kg phosphorus is less than for N. Phosphoric acid is the most acidifying phosphorus fertilizer.

Potassium fertilizers have little or no effect on soil pH.

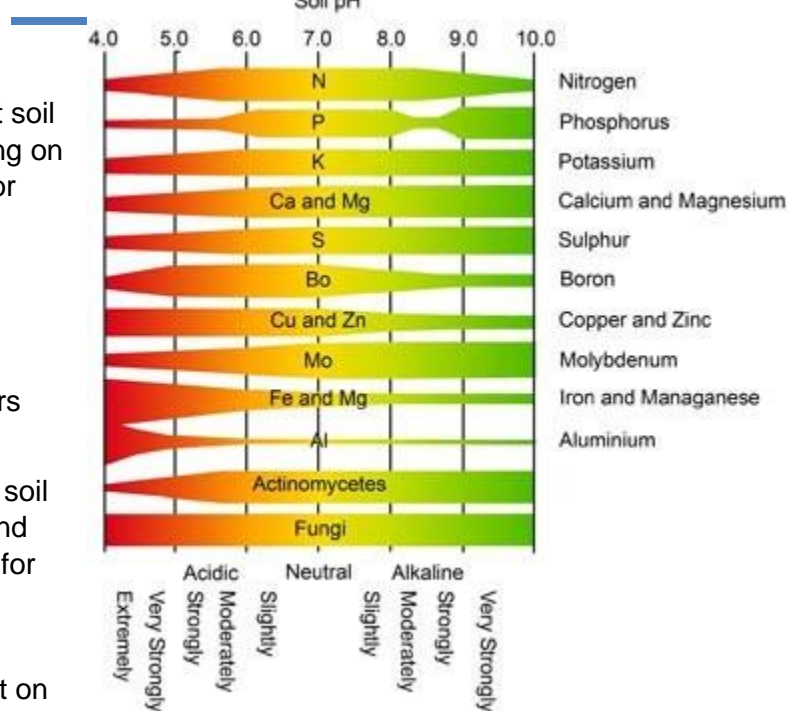
Compost has little effect on soil pH.

Animal manures can raise soil pH because they often contain calcium and magnesium.

Resource: Fertilizers and Soil Acidity. Mosaic Fertilizer Technology Research Centre - April 2013 Source: Fertiliser Technology Research Centre, The University of Adelaide, Australia



Soil acidification - Increase in H^+ over time, (Photo DAFF Western Australia)



Soil pH affects nutrient availability, elemental toxicity, and microbial activity. (Pic Fairway Green Inc)