



AgSolutions

A U S T R A L I A



Products & Advice for a Sustainable Future in Agriculture

Understanding Your Soil pH ...

What is pH ...

pH is the best known but often least understood part of a soil test. It is sometimes referred to as the soil reaction or sweetness / sourness of the soil, which is a measure of acidity or alkalinity of the soil using a pH scale.

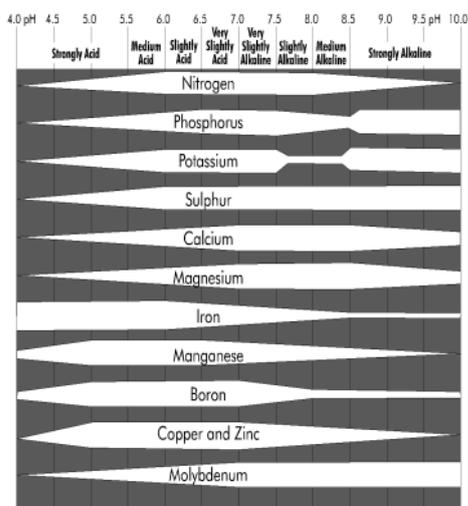
The scale ranges from 1 (very acid) to 14 (very alkaline) with 7 described as neutral. Soil with a pH 5 is ten times as acid as soil with pH 6, and one hundred times as acid as one of pH 7.

Influence of pH on Nutrient Availability ...

A slightly acid soil will give the greatest availability of nutrients as seen on the chart below.

As the pH falls (more acid) the availability of Nitrogen, Phosphorus, Potassium, Sulphur, Calcium, Magnesium and Molybdenum is reduced and nutrient deficiencies can occur. On the other hand the availability of Aluminum and Iron increases and can become toxic.

When the pH rises (more alkaline) the availability of Phosphorus, Potassium, Manganese, Iron, Zinc, Copper and Boron is reduced and deficiencies can occur.



Maximum availability is indicated by the widest part of the bar.

pH Testing method ...

There are two common methods of measuring soil pH.

1. Water test.
2. Calcium Chloride (Ca Cl₂).

Some labs which only perform the CaCl₂ test suggest that this test is only 0.2 to 0.4 units lower than a water test. We have found a variation of up to 1.2 units between the two methods.

This means a pH of 5.0 in Calcium Chloride may in fact be 6.2 in a water test.

Beware of variations ...

Always check on the type of tests performed. You may be applying Lime or Dolomite to raise the soil pH when it is not required. Variations in pH can also occur due to changes in weather conditions.

FREE pH Test (Water Method)

If you are concerned about your last pH test results, send a soil sample (1 cup full) and we will perform a water pH test for you.

Reasons for pH problems ...

The parent material from which the soil is formed and the climate under which the soil formation occurred both have an influence on soil pH.

Farming practices that lower pH ...

1. Water logged conditions - lack of soil aeration.
2. High use of Ammonia type fertilizers. (Urea, Ammonium Nitrate, Anhydrous Ammonia, Sulphate of Ammonia, MAP)
3. Organic matter accumulation with a subsequent production of humic acids.
4. Leaching of Nitrate Nitrogen and basic salts (Calcium, Magnesium and Sodium).
5. Sulphur based fertilizers.

Note: Sulphur lowers pH. This may be O.K. on alkaline soils. Be careful of excessive use on acid soils.

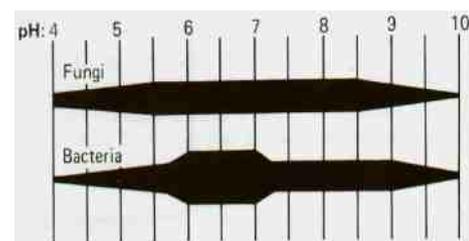
Calcium Sulphate (Gypsum) generally will not alter pH on acid or alkaline soils.

Factors that raise soil pH ...

1. Natra Min and Natra Min HI-Phos.
2. Lime and Dolomite.
3. High levels of Calcium, Magnesium and Sodium in soil.
4. Better drainage and aeration of soil.
5. Alkaline fertilizers ie. Sodium Nitrate
6. Irrigation water rich in Bicarbonates, Calcium, Magnesium and / or Sodium.

Biological Activity ...

Less well-known but of great importance is the requirement for a neutral to slightly acid soil for microbial activity to proliferate. (see chart below)



Width of bar indicates level of activity.

A pH of 6.0 to 7.2 would be close to the ideal for soil microbes.

The Power of Soil Microbes..

When acid or alkaline organic matter is digested by microbes and worms the pH of the humus produced will be very close to neutral.

Most plants will tolerate a fairly wide range of pH, however a pH of 6 to 7.2 provides maximum microbial activity and maximum nutrient availability, resulting in healthier plants.

Excessive Use ...

It is vital to avoid the high use of Lime, Dolomite and specific mineral fertilizers. Excessive use of specific nutrients will effect availability of other nutrients.

High Calcium can reduce Manganese, Potassium, Iron, Phosphorus, Boron, Zinc and Magnesium, while high Magnesium will effect Calcium, Zinc, Potassium and Nitrogen availability.

For Soil Management Advice...

Fertile soil can **INCREASE** your production and **SAVE** you money.
Fax your soil test or phone us for practical advice on how to restore balance to your soil

PHONE 1800 81 57 57
FAX 07 5482 7219
Ag Solutions Australia Pty Ltd
8 Wadell Road, Gympie 4570

Turn the page...
Find out how Natra Min can improve your pH

Natra Min corrects pH in both acid & alkaline soil ...

Treating pH as a single factor independent of soil fertility in general, can be a repetitive and expensive exercise. In acid soil, the repeated use of lime and ammonia type fertilizers tend to simply balance each other out with no real improvement in pH.

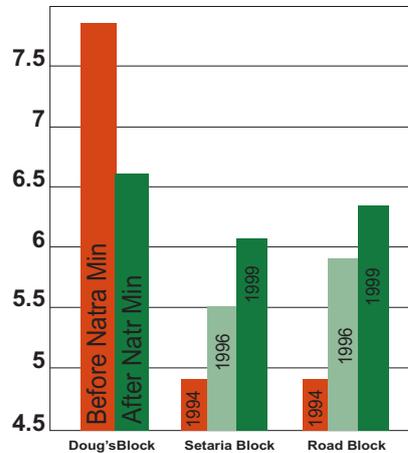
pH levels are influenced by biological activity, soil texture, structure, drainage and aeration with all being fundamental to soil fertility.

When Natra Min or Natra Min HI-Phos is used, there is a two fold benefit that has a strong influence on soil pH levels.

Firstly, Natra Min stimulates the proliferation of Biological Activity. This microbe and worm activity improves soil structure, drainage and aeration and therefore indirectly improves pH in both acid and alkaline soils. (See chart at right)

Secondly, the application of the broad spectrum of mineral elements allows for a reduction in the use of acidifying fertilizer, eliminating the repetitive cycle of using Lime to balance the effect of water soluble fertilizer.

PH CORRECTION ACID & ALKALINE SOIL



Alkaline Soil (Doug's Block) had one application of Natra Min.

Acid Soil (Setaria Block and Road Block) Despite the application of 1 tonne of lime (\$50/ac.) every third year for over 20 years, the pH still remained at 4.9.

Following yearly applications of Natra Min (\$15.50/ac.) and reduced amounts of water soluble fertilizers, a substantial pH improvement has resulted.

With a stronger legume growth, the level of fertilizer used now is approximately 15% of the amount used in previous years.

The increased worm activity and improved soil structure has resulted in less irrigation requirements and reduced tillage costs.

Improve PH & SAVE \$\$\$

The use of Natra Min or Natra Min HI-Phos for pH correction is economical compared to the use of Lime. It has the additional minerals and cost saving benefits that allow you to reduce the amount of water soluble fertilizer needed.

Call 1800 81 57 57 NOW for advice on using Natra Min to correct your pH, and for your FREE pH test.



Complete Mineral Supplement for Animal Health & Production ...

MINERALS - Vital for all Animals ...

Vital mineral elements have been leached and depleted from the soil which has led to an ever increasing need for mineral supplements for animals.

Superior provides a complete mineral balance for optimum health, growth and productivity and is suitable for all animals.

Following the use of Superior, many farmers have reported outstanding results...

Cattle - Better conversion of grain and fodder, less smell and quicker breakdown of manure, less acidosis, eliminates the need for bicarbonate soda and bentonite, eliminates copper deficiency, improves conception, increases protein and production in dairy cattle.

Horses - Improves coat color and shine, less shin soreness, eliminates seedy toe and split hooves.



Impressed with results...

When I purchased this 10 month old doe, she was in a very weak, score 1 condition, with a dull harsh coat, her head colour was dirty yellow, typical of copper deficiency.

To a simple diet of corn, copra and lucerne hay I added 5 grams of Superior per day.

After one month the doe was in score 3 condition, coat was sleek and shiny, her head a rich brown color. She is now much healthier and gaining weight rapidly.

After 30 years of feeding stud stock for shows and sales I have never seen such a dramatic and rapid improvement.

Ken Sykes, Stud Breeder and Animal Nutrition Consultant, Stanthorpe.

Your local Agent



AgSolutions
A U S T R A L I A

8 Wadell Road Gympie. 4570
PH: 07 5482 8044 1800 81 57 57

NEXT ISSUE...

Natra Min has a rich source of Silica. Next issue we will look at how Silica can improve your crop production and reduce fungal problems.

MINERALS - the Building Blocks of Fertile Soil