Growing Orchids 5 - Understanding pH draft by Jim Brydie

On the pH scale, 7 is neutral, below 7 is acid, and above 7 is alkaline. As you go further away from 7 lower the solution becomes more and more acid, the further away from 7 higher becomes more and more alkaline.

> ***Definition of pH –*** You will probably find this of absolutely no interest, but pH is a measure of the potential of Hydrogen ions in a solution. At a technical level, In pure water, which is neutral (neither acidic nor alkaline), the concentration of the hydrogen ion is 10^{-7} gram-equivalents per litre, which is expressed as a pH of 7.

However, the pH scale is logarithmic, meaning that an increase of one whole number represents a tenfold change in the acidity or alkalinity of the medium. For example, a pH of 3 is ten times more acidic than a pH of 4, and one hundred times more acidic than a pH of 5. This means that what may seem relatively small changes in pH can be important.

> ***Having a grasp on expected pH –***
> You don't need to understand what 'gram-equivalents per litre' means.
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> You don't need rush out and buys a pH measuring kit. It is rare to need to actually check the real pH of a solution as part of your orchid growing culture.
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> If you would like to obtain a meter or testing kit to give you confidence in your understanding of which potting mixes may be most appropriate or how pH changes under a particular circumstances, our society (KU-Ring-Gai O.S.) actually owns a pH meter that can be borrowed. Full instructions are supplied with it. Alternately, basic testing kits which use special litmus papers can be bought quite cheaply.
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> What I do want is that should understand the importance or otherwise of pH when reading articles or in discussions with other grower concerning pH.
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> Most importantly, ***the following common pH measures and information should be locked in your head as a basic functional understanding.***
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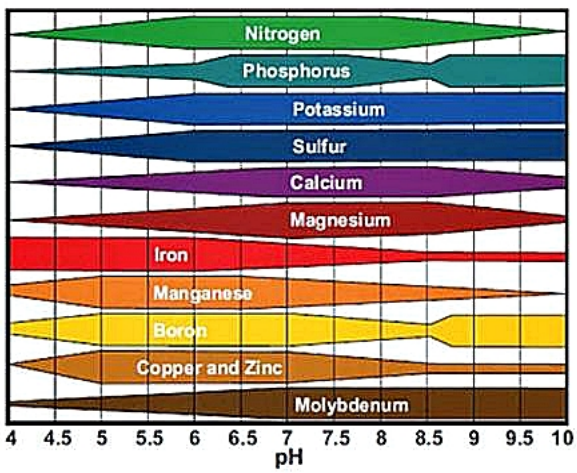
> - Pure distilled water is more or less 7 depending on the process creating it.
> - Sydney tap water is somewhere just above 7 so is just a fraction alkaline. This means it will not meaningfully alter the pH of whatever is already going on in your potted orchid
> - Water on a hillside that has likely leached through limestone might be around pH 8 (many Paphiopedilum species come from areas with this level of mildly alkaline pH water)
> - Water in an orchid pot potted in a mix predominately composed of Pine bark will be around pH 6
> - Water from that same orchid pot 3 years later (where no lime/dolomite has been added) will have dropped pH 5 or lower.

Why pH is important? The importance of pH to plants (and to animals) is that the various natural mineral elements they need for growth and to make new tissues (minerals like nitrogen, potassium, phosphorus, carbon, magnesium, iron, zinc, etc), are only available to a living organism from the water they take up, and they take it through a chemical interchange within their cells.



That uptake process is affected by the pH of the solution in which the uptake occurs. At different pH levels, different elements become unavailable or much less available, and some others become more accessible. If you google pH scale there are table graphs that show these relationships.

The recommended pH range for orchids is 6.0 to 6.5 as this is the range at which there is the best balance of the availability of all the nutrient elements in the fertilizer you provide. Orchids will of course tolerate a much wider range of pH than this and some orchid may even prefer slightly different. Some orchids are touchier than others and the roots of some orchids (such as Paphiopedilum and Odontoglossum and a few others), will only live and thrive in environments within a narrow range of pH. In my experience, their roots decline rapidly as the potting mix ages and I think this is because it gets way too

acid and stays too wet.

It is important to note that the pH of any potting medium will change over time. Mediums invariably contain organic materials that decay over time. As they decay, and as a pot becomes filled with roots (another organic material) the nature of the environment in the pot changes. T he most common xxxxxxxJB: not sure what is missing here. See original medium discussion doc

Many different potting medium combinations will work well enough if matched with factors like correct light, sufficient water, and regular fertiliser, but to improve on 'well enough' or 'adequate' I think? you need to focus on the root system.

The bigger and more vigorous the root system, the bigger and more robust will be the rest of the plant. Roots are the key to maximizing growth. To maximize root growth and development, you need to fine tune the potting medium to the requirements of each plant. To do that you need an array of different potting materials to give you options. JB- maybe move this bit to mediums discussion?

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