Getting the best from your testing kit

What is pH?

pH is measure of how acid or alkaline the pond water is. Water exists as negatively charged hydroxyl ions (OH^-) and free positively charged hydrogen ions (H^+). pH in basic terms is the measure of the proportion of one to the other. At a ph of 7 all the ions are of equal proportion and is classed as "neutral" below this down to 0 the water is termed as "acidic", above pH 7 up to 14 the water is classed as being "alkaline". The pH scale is logarithmic so a shift of "1" on the scale represents a ten fold change. This is in fact a significant change. Koi have evolved in to fish that prefer slightly alkaline conditions from ph 7.0 to 8.5. With an ideal level at pH 7.5.

The "effect" of pH on Koi

pH level is important to fish as it has a direct effect on the acid/alkaline level of the blood. Too acidic and rapidly changing pH conditions can make fish jump, or behave with a rapid swimming action, gasping, excess mucous production and in extreme cases can be fatal. pH that is too low or "swinging" widely, will create stress leading to health issues like susceptibility to parasitic infestations or bacterial disease. If pH is too high gill and fin erosion is possible and will increase the toxicity of the deadly pollutant Ammonia. Koi can tolerate minor swings of Ph 0.5 with no ill effect, however "swings" of pH levels at readings below 7.0 or above 8.4 should be and investigated.

Daily influences on pH

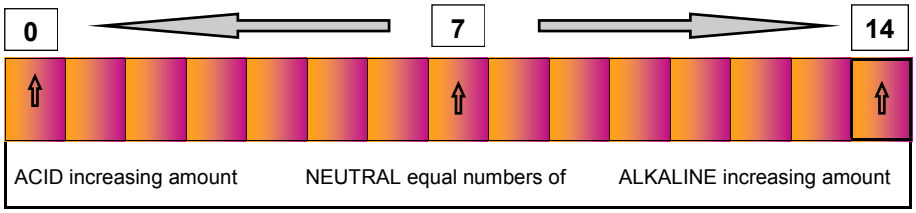
As mentioned pH can swing and does naturally on a daily basis, even in an enclosed body of pond water. Pond pH tends to rise during the day and the highest level of pH is normally recorded late afternoon or early evening. This is due to photosynthesis, as plants/ algae consume carbon dioxide causing a "daily swing" and respiration of fish then produces carbon dioxide that lowers pH value. Test water at the same time of day for the accurate evaluation of pH. Test morning and evening to check for excessive swing.

Your test results and problem solving.

Any readings not within the 7.0 to 8.4 range should be addressed, 8.4 is acceptable providing it is not swinging much higher over the small daily natural swing. pH of 6.8 or lower must be increased . The main cause of low pH is due to natural acidification of very mature ponds, that over time, the nitrification cycle produces nitric acid, this leads to carbonate levels becoming depleted in water which directly effects the buffering capacity (the carbonate hardness of water). This adjustment can be easily achieved by increasing the buffering level (which will raise pH) by adding a high source of calcium carbonates. Oyster shells or Kusuri products Lithaqua filter media, which are high in calcium carbonates and will neutralise acid water. Add to filter bays or where pond water can flow over & through these materials. pH up or down additives sold, normally only produce very quick but only very short term results. The method described is the long term cure.

Ponds with high pH problems are in reality the reverse, hard water areas tend to have high permanent hardness and high levels of mineral salts as this again contributes to the "buffering" levels (temporary hardness). New ponds in hard water areas tend to only suffer this symptom. The natural nitrification cycle will lower pH over time, as levels of nitric acid increase. Let nature do the job. Avoid changing excessive amounts of water. Artificial additives are rarely long term cures. A stable pH is the best for all pond fish!. For further advice call Kusuri on 01626 836600

The pH Scale



HOW TO USE THIS PH TEST KIT

(Read thoroughly before testing)

1. Rinse test tube with pond water.
2. Fill the test tube with 10 ml of pond water using the syringe supplied.
3. Add one pH Phenol red tablet and replace cap.
4. Shake the test tube for 30 seconds or until tablet has fully dissolved.
5. Determine the ph reading by matching the colour of reacted sample with the colour card supplied.

   For best results put test tube behind the clear centre section of the colour test card and offer up to natural daylight. TIP: A plain white background, similar to this instruction sheet offered behind the test tube & colour strip may help enhance the colour match reading.

YOUR TEST RESULTS

(Colours on this paper chart are not colour matched and are for guidance only)

pH
8.4
8.0
7.8
7.5
7.2
7.0
6.8