Hard Water in Hydroponics

Hard water is found in various areas of Canada and the United States. Hard water is characterized by high levels of bicarbonates and it poses specific problems to the hydroponic grower.

Hard water usually has a high pH and the bicarbonates need to be neutralized before the pH will come down. The hydroponic grower will usually add Phosphoric acid (H_3PO_4) to lower the pH. With a normal water supply, this is very effective but if the water is Hard it will take a large quantity of acid to neutralize the bicarbonates and lower the pH. This will represent a very significant addition to the phosphate level in the solution. As time goes by there will be further additions of acid to the tank to maintain the pH. Phosphate levels will rise and can easily begin to accumulate. High levels of phosphate will affect the uptake of other nutrients, like Zinc, and a major nutrient imbalance will inevitably occur.

Hard water also tends to contain high levels of certain mineral salts such as Calcium and Magnesium. These may also be in excess to plant requirements and will then begin to accumulate in the nutrient tank.

Fortunately there is a solution to the problems of Hard water;

IONIC HW

A Full Spectrum Nutrient Solution
formulated specifically for Hard water.

IONIC Nutrient solution is available in two separate formulations; Standard and Hard water. The Hard water product has a distinctive HW label on the box or bottle. Unless you have this HW label you have the standard **IONIC** formulation. Please read this leaflet, it should help you decide if you need a Hard water formulation. Please discuss with your nearest hydroponic store if you are still unsure of your water type. Both types of **IONIC** are available in Grow and Bloom formulations.

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Q. How do I know if I have Hard water?
A. Generally speaking there will be clear signs that your water is Hard. Usually you will find that soap fails to produce lather in Hard water. There will also be a mineral build up on fixtures such as sinks and faucets or a film on shower walls, bathtubs, and the like. If you are not sure you can always ask your water supplier, they will send you a full analysis which will include a reading for bicarbonates (alkalinity). Do not hesitate to use the services of your local water company; you are certainly paying enough for them. Any water sample containing more than 120 ppm of bicarbonates (HCO_3) could be considered as "Hard".

Q. If I do have Hard water what should I do about it?
A. We recommend that you try and use a nutrient solution that is specially formulated for Hard water such as **IONIC HW**. This is a top quality Single Pack nutrient solution available in both ***Grow*** and ***Bloom*** formulations.

Q. How does a Hard water formulation differ from a standard solution?
A. First and foremost it is more acidic. This is achieved by careful selection of the component mineral salts. A more acidic solution will neutralize bicarbonates on its own. This will reduce the amount of acid needed to control the pH and thus reduce the chance of Phosphate accumulation. A Hard water solution is also specially formulated to take account of the minerals, such as Calcium, that are usually present in Hard water. By lowering these elements in the nutrient solution it is possible to ensure that the final solution is as close as possible to ideal levels of the major elements. This will reduce the problems associated with Hard water and allow the grower to maintain his tank for longer periods between changes.

Growing with IONIC HW

Making up a Hard water nutrient solution is just the same as making up normal **IONIC** or any other high quality nutrient solution. Just follow the instructions. The first difference that you will notice is that the pH of the working solution will be much lower than you are used to. It may well be that you will not need to add any pH control chemicals at all. If you do find that the pH is still slightly high you will need to add some pH Down to bring it to the desired level of **5.5 - 6**. Be careful, it will not require much acid to drop the pH now that the bicarbonates have been neutralized. Just add a few drops at a time, stirring thoroughly until you have a stable reading of **6**. Make a note of exactly how much pH Down you had to add to your tank. Next time you will know exactly how much is needed and this will save you time.

You may find that IONIC HW will bring your pH below **5.5** without any pH Down being added. In this case you will need to add very small amounts of pH UP. Once again just add tiny amounts until you have reached the desired level of **5.5 - 6**. Make a note of the amount required so that the operation can be standardized.
If you find that your pH is very low after making up the nutrient solution and requires large amounts of pH UP to correct it then you may well find that your water is not really very "Hard". In this case you will be better advised to use the standard formulation of **IONIC** instead.

Summary

Check for Hard water.

Are you using large amounts of acid (pH Down) to control the pH in your nutrient tank? If you are then you may well have Hard water. Check with your water board.
If your water is genuinely "Hard", then we recommend **IONIC HW** the professional solution for Hard water problems.
If you have any kind of problem water you should ensure that the main tank is changed regularly. If your plants begin to exhibit any kind of problems you should always flush them with clean water and then make up a fresh tank of nutrient solution.

To the retailer
If your store is in a Hard water area, or even close to one, then you have an interest in bringing the best possible products to your customers. They will certainly thank you for it. We have lost count of the number of customers who have told us how their problems have been solved by using a properly formulated Hard water solution.

Please feel free to photocopy this leaflet to help your customers understand just what Hard water is, what it can mean to a grower and how easily the problems can be solved.

Growth Technology

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