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The Complete Guide To Sick Plants,pH and Pest Troubles

Another post that i have found in my travels for information on the net.(gardenscure.com user:MynameStitch)

Again, i hope you all enjoy this as much as i did, and maybe we can source our own (better) pictures someday.



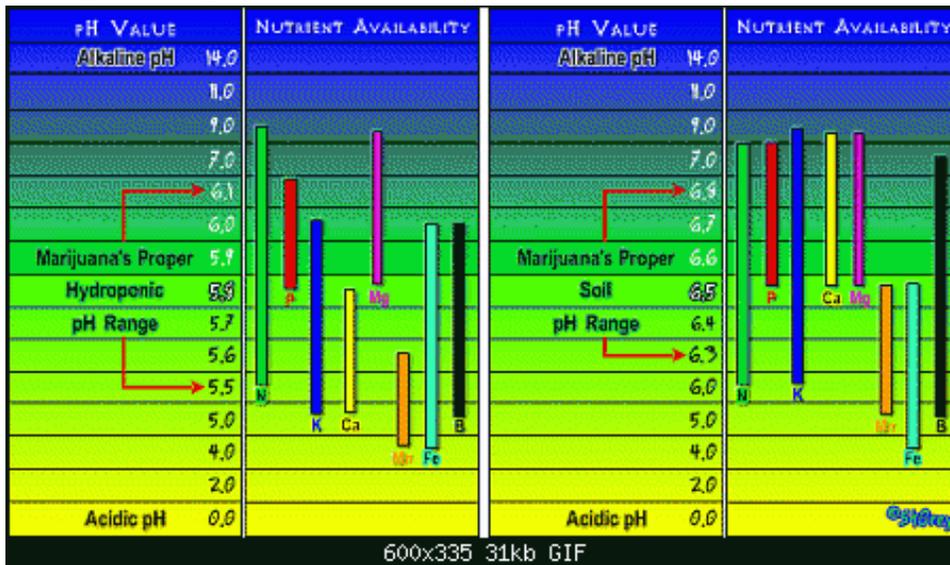
****UPDATE 12/28/08****

All sections have been put into this post.

****Updated 2-3-09****

Cleaned up post (removed duplicate from iron,sulfur,manganese,boron,iron)

Adding this PH picture:



thought since og is down i would post this over here to help out growers

I have put a lot of work into this for those who need it when im not around

I have been doing a lot of research on sick plants and also helping out others a lot on sick plants!

Most of the stuff I have learned is from others and keeping up to date on there problems they are having. Some I have learned on my own, the sick plant troubles I have had was ph troubles! I didn't really think the importance of how ph plays a role with your plants being healthy or dead.

I honestly think one of the most important parts of your growing is having a good solid ph tester, a digital one is the best to have. There are other ones you can buy as well, liquid ph test kits are inexpensive and get the job done if you can't afford a digital ph meter, STAY AWAY FROM SOIL TESTERS, they don't do the job and are not very accurate at all. Ph test strips work well, even if you are on a budget! So if you rely on a soil tester and its tell you your soil is 7 and your having problems, 9 times out of 10 it's going to be your water ph that is messing up the soil ph check the water you are using. Unless you are using additives in your soil mixture like blood bone meal, and Peat moss those will throw your ph off too.

Adding nutes to your water can cause the ph to get low as well, so its best to test your ph of your water before and after you add your nutes. Nutrient deficiencies are mostly caused by human mistakes,along with to much or to little of the amount of nutrients available. The best range for nutrients to be absorbed is between a pH of 5 and 7 and a (TDS) range of 800 to 3000 PPM.

Having these conditions will help making nutrient deficiencies alot easier to

overcome.

Well this guide I am making on sick plants is going to be very detail in helping out as many as possible... I have collected a lot of accurate data and have been putting it together piece by piece... Stuff on what kinda of nutrients can lead to locking out other nutrients as well....

I will be updating this until it gets done, because I have a lot of information but just not on every sick problem that is out there....

Mobile Elements are mostly going to affect the older leaves first then work its way to other leaves and then the nutrients will be taken from old leaves to newer growths...

The following are mobile elements and as well macro nutrients.

First off, we are going to start out with Nitrogen.

Nitrogen (N) Mobile Element and Macro Element

Benefit: Nitrogen plays a very big role in your plants; this one element is directly responsible for production of chlorophyll, photosynthesis, Amino Acids, which are the building block of Proteins. The myriad of enzymes which help the plants growth in leaves stems and the how well the vigor of your plants is.

Nitrogen is the biggest mobile element meaning it can travel anywhere on the plant. Usually the def will start on the lower to middle part of the plant, and then will usually happen to older leaves first. Then the deficiency will work its way up the plant. Your plant can be green on top, then yellowing on the lower leaves when the deficiency is starting out. Yield will be greatly reduced without good amounts of nitrogen in your plants. Sometimes in bad cases the leaves will turn a purplish color along with the yellowing.

Unlike a magnesium deficiency, nitrogen def will start from the tips and work its way back to the leaf node. Nitrogen and Magnesium get confused. The best way to tell them apart is, nitrogen deficiency starts around the tips and works its way to the back of the leaves, where a magnesium deficiency will cover the entire outer part of the leaf and make the entire leaves yellow leaving the veins to stay green. If your plants are having a slow growth rate and have yellowing of the leaves, then most likely it's a nitrogen deficiency.

Towards the end of flowering stages, the plant will show a nitrogen deficiency almost always. Reason to this is, because the plant is using all its stored nutrients in the leaves and dropping the leaves it doesn't need anymore due to them being the oldest leaves.

So don't freak out when your plant starts to yellow a bit in late stages of flowering . Parts affected by a nitrogen deficiency are: Older foliage, going to whole plant, Petioles (rare) cases.

Now for having too much nitrogen in your growing mediums or soil. The plant will have like an overall DARK green look and have delayed maturity. Due to Nitrogen being involved in vegetative growth, too much nitrogen will result in tall plants with weak stems. New growth will be very lively and plant transpiration will be high, but not always. Nitrogen toxicity can be seen when there are very very dry conditions almost as if there was a drought, which may show a burning effect. If you give your plants ammonium based nutrients they may show NH_4^+ toxicity, which will show a smaller plant growth and lesions that occur on stems and roots, leaf margins that will roll downward. Also the big fan leaves will have “the claw” look. The tips will point down but the leaves will stay up as if when you bend your fingers downwards. Leaves can be twisted when growing... mainly new growths. Roots will be under developed along with the slowing of flowering. Yields will be decreased, because too much nitrogen in early stages of flowering slows down bud growth. Water uptake is slowing down from the vascular breakdown of the plants as well. Too much potassium and nitrogen will lock out calcium as well.

Problems with Nitrogen being locked out by PH troubles.

Waterlogged soil and Soil with low organic matter.

Nitrogen is a very important element in the plant, all of them are but some are more important than others. For soil the best pH to have is 6.8. Why? Because at 6.8, that's the best number for ALL available nutrients to be absorbed into the plant without any of them being locked out. For hydro and soil less mediums best pH to have is around 5.8.

Try not to keep your plants too cold, because the cold temps will cause the nitrogen harder for the plant to be absorbed.

pH levels for Nitrogen:

Soil levels

Nitrogen gets locked out of soil growing at pH levels of 4.0- 5.5.

Nitrogen is absorbed best in soil at a pH level of 6.0-8.0. (wouldn't recommend having a pH of over 7.0 in soil) best range to have nitrogen is a pH of 6-7. Anything out of that range will contribute to a nitrogen def.

Hydro and Soil less Mediums

Nitrogen gets locked out of Hydro, Soil less mediums at the levels of 4.5-5.0.

Nitrogen has the best absorption rate at a pH of 5.5 to 8.0

(Wouldn't recommend having a pH over 6.5 in hydro and soil less mediums.) Best range to have Nitrogen is: 5.0-7.0. Anything out of that range will contribute to a nitrogen def.

Solution to fixing a Nitrogen deficiency

Avoid excessive ammonium nitrogen, which can interfere with other nutrients. Too much N delays flowering. Plants should be allowed to become N-deficient late in flowering for best flavor.

A good solid N-P-K ratio will fix any nitrogen deficiency. Any chemical or organic fertilizers that have Nitrogen in them will fix a nitrogen deficiency., Peters all purpose plant food 20-20-20 is good, Miracle grow All purpose plant food, Miracle grow Tomato plant food, (Only mixing at ½ strength when using chemical nutrients, or it will cause nutrient burn!) as well and blood meal! If you need to give your plants a quick solution to nitrogen and you want to use blood meal, I suggest making it into a tea for faster use, where blood meal is slow acting, but when made into a tea it works quicker! Other sources of nitrogen are dried blood, Cotton seed meal which is slow acting, Insect eating bat guano which is fast acting. Bone meal which is a gradual absorption when not made into a tea. (also excellent source of phosphorus). Fish Meal Or Fish Emulsion is a good source of nitrogen and is medium acting. Worm castings, which is gradual absorption. Seabird guano, All purpose Millennia Seabird guano, Original Seabird guano All Purpose, Crabshell , which is slow absorption. Fox Farm Grow Big, which is fast acting. (can bring down your ph as well)

Here are a list of things that help fix a Nitrogen Deficiency:

Chemical Nutrients

Advanced nutrients Grow (2-1-6)

Vita Grow (4-0-0),

BC Grow(1.2-3.2-6.5)

GH Flora Grow (2-1-6)

GH Maxi grow (10-5-14)

GH floraNova grow (7-4-10),

Dyna gro Grow (7-9-5)

Organic Nutrients

Dr. Hornby's Iguana Juice Grow (3-1-3)

Advanced Nutrients Mother Earth Grow (1.5-.75-1.5)

Earthjuice Grow (2-1-1),

Pure Blend Pro (3-1.5-4)

Bone Meal(0-10-0)

Blood Meal(12-0-0)

Fish Emulsion (5-1-1)

Seabird Guano (11-13-3)

Crab Shells(2.5-3.0-.5)

Pure Blend Grow (0.4-.01-.5)

Marine Cuisine (10-7-7)
MaxiCrop Seaweed (1-0-3)
Super Tea (5-5-1)
Mexican Bat Guano (10-2-0)
Sea Island Jamaican Bat Guano (1-10-0)
Kelp Meal (1-0-2)
Seaweed Plus Iron
Neptune's Harvest (2-4-0.5)
Alaska Start-Up(2-1-2)
Bio-Grow (1.8-0.1-6.6)
Age old Grow (12-6-6)
AGE Old Kelp (.30-.25-.15)
Neptune's Harvest (2-4-1)
Maxicrop Seweed(.1-0-1)
METANATURALS Organic grow (3-3-3)
METANATURALS Organic nitrogen (16-0-0)

So adding anyone of these above should fix up your nitrogen deficiency! Nitrogen deficient plants usually recover in about a week, affected leaves will not recover.

Now if you added to much chemical nutrients and or organics, (which is hard to burn your plants when using organics) you need to flush the soil with plain water. You need to use 2 times as much water as the size of the pot, for example: If you have a 5 gallon pot and need to flush it, you need to use 10 gallons of water to rinse out the soil good enough to get rid of excessive nutrients. Soluble nitrogen (especially nitrate) is the form that's the most quickly available to the roots, while insoluble N (like urea) first needs to be broken down by microbes in the soil before the roots can absorb it.

Note: Blood Meal, Dried Blood, Guanos, Kelp Meal, Cotton Seed Meal, Peat Moss, Sulfur and fish meal are all acidic and can bring your ph down, so if you add these please monitor your ph when using those.

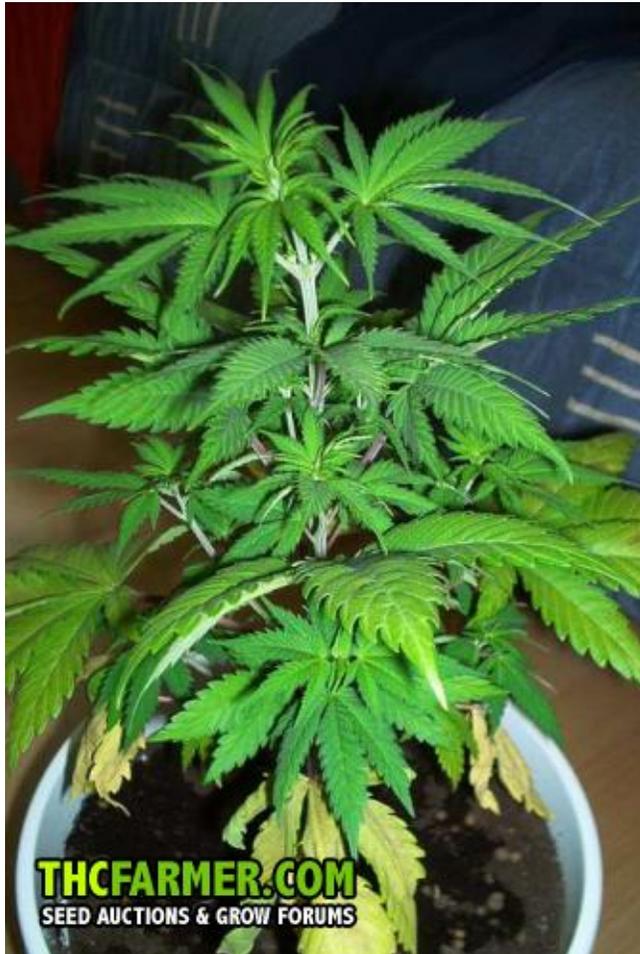
Note: Bone Meal, Rock Phosphate, Wood Ashes pretty much all ashes, Shellfish Compost and Crab Meal are all alkaline and can make your ph go up, so if you add any of these please monitor your ph.

Here are 3 pics of what a nitrogen def looks like.... the first 2 are ones that were dropped from a late flowering plant.. the 3rd one was the start of one on my vegging plants.... and the last picture is one that is caused by TOO MUCH Nitrogen.

(Picture 1 is a Nitrogen Deficiency in veg)(Thanks to m&m for letting me use the pic)

(Picture 2 is a Nitrogen Deficiency in late Flowering)(Thanks to BillyBob for the Picture)

(Picture 3 is Mine)





Phosphorus (P) Mobile Element and Macro Element

Benefit: Phosphorus does a lot of things for the plant. One of the most important parts of Phosphorus is: It aids in root growth and influences the vigor of the plant and is

one of the most important elements in flowering as well helps to germinate seedlings.

Phosphorus is an essential plant nutrient, and since it is needed in large amounts, it is classified as a macronutrient. Phosphorus is a MAJOR important nutrient in the plants reproductive stages. Without this element the plants will have a lot of problems blooming without proper levels of Phosphorus.

When your plants are deficient in phosphorus, this can overall reduce the size of your plants. Not enough causes slow growth and causes the plant to become weak, to little amount of Phosphorus causes slow growths in leaves that may or may not drop off. The edges all around the leaves or half of the leaves can be brownish and work its way inwards a bit causing the part of the leaves to curl up in the air a bit. Fan leaves will show dark greenish/purplish and yellowish tones along with a dullish blue color to them. Sometimes the stems can be red, along with red petioles that can happen when having a Phosphorus deficiency. This isn't a sure sign of you having one though, but can be a sign. Some strains just show the red petioles and stems from its genes.

So pretty much the overall dark green color with a purple, red, or blue tint to the

fan leaves is a good sign of a Phosphorus deficiency. Having Cold weather (below 50F/10C) can make phosphorous absorption very troublesome for plants.

Many people get a Phosphorus deficiency confused with a fungus problem because the ends of the leaves look like a fungus problem, But the damage occurs at the end of the leaves. side of the leaves and has a glass like feeling to it as if it had a ph problem. Parts affected by a phosphorus deficiency are: Older Leaves, Whole plant, Petioles.

Too much Phosphorus levels affect plant growth by suppressing the uptake of: Iron, potassium and Zinc, potentially causing deficiency symptoms of these nutrients to occur def in plants. A Zinc deficiency is most common under excessive phosphorus conditions,

As well as causing other nutrients to have absorption troubles like zinc and copper. Phosphorus fluctuates when concentrated and combined with calcium

Problems with Phosphorus being locked out by PH troubles
Cold wet soils, acid or very alkaline soils, compacted soil.

Soil

Phosphorus gets locked out of soil growing at ph levels of 4.0-5.5

Phosphorus is absorbed best in soil at a ph level of 6.0-7.5 (wouldn't recommend having a ph of over 7.0 in soil) Anything out of the ranges listed will contribute to a Phosphorus deficiency.

Hydro and Soil less Mediums

Phosphorus gets locked out of Hydro and Soil less Mediums at ph levels of 6.0-8.5.

Phosphorus is absorbed best in Hydro and Soil less Mediums at ph levels of 4.0-5.8. (Wouldn't recommend having a ph over 6.5 in hydro and soil less mediums.)

Best range for hydro and soil less mediums is 5.0 to 6.0. Anything out of the ranges listed will contribute to a Phosphorus Deficiency.

Solution to fixing a Phosphorus deficiency

Some deficiency during flowering is normal, but too much shouldn't be tolerated.

Any chemical or organic fertilizers that have Phosphorus in them will fix a

Phosphorus deficiency. If you have a phosphorus deficiency you should use any N-P-K ratio that is over 5. Again Peters all purpose 20-20-20 is a good mix. Miracle

grow Tomato plant food, Miracle grow All purpose plant food (Only mixing at ½ strength when using chemical nutrients, or it will cause nutrient burn!) Other forms of phosphorus supplements are: Bone meal, which is gradual absorption, I suggest making it into a tea for faster use, where bone/blood meal is slow acting, but when made into a tea it works quicker! Fruit eating bat guano, which is fast absorption, Worm castings, which is gradual absorption, Fish meal, which is medium absorption, Soft Rock Phosphate, which is medium absorption, Jamaican or Indonesian Guano, which is fast absorption. Crabshell, which is slow absorption. Tiger Bloom , which is fast absorption.

Here is a list of things to help fix a Phosphrus Deficiency.

Chemical

Advanced nutrients Bloom (0-5-4)

Vita Bloom (0-7-5)

BC Bloom (1.1-4.4-7)

GH Flora Bloom (0-5-4)

GH Maxi Bloom (5-15-14)

GH Floranova Bloom (4-8-7)

Dyna-Gro Bloom (3-12-6)

Fox Farm Tiger Bloom (2-8-4)

Awsome Blossums

Organic

Dr. Hornby's Iguana Juice Bloom (4-3-6)

Advanced Nutrients Mother Earth Bloom (.5-1.5-2)

Fox Farm Big Bloom (.01-.3-.7)

Earth Juice Bloom (0-3-1)

Pure Blend Bloom (2.5-2-5)

Pure Blend Pro Bloom (2.5-2-5)

Buddswell (0-7-0)

Sea Island Jamaican Bat Guano (1-10-0)

Indonesian Bat Guano (0-13-0)

Rainbow Mix Bloom (1-9-2)

Earth Juice Bloom (0-3-1)

BIO BLOOM (2-6-3.5)

AGE OLD BLOOM (5-10-5)

ALASKA MORBLOOM (0-10-10)

METANATURALS ORGANIC BLOOM (1-5-5)

Any of these will cure your phosphorus deficiency. Affected leaves will not show recovery but new growth will appear normal.

Now if you added too much chemical fertilizers and/or organics, (which is hard to burn your plants when using organics) You need to flush the soil with plain water. You need to use 2 times as much water as the size of the pot, for example: If you have a 5 gallon pot and need to flush it, you need to use 10 gallons of water to rinse out the soil good enough to get rid of excessive nutrients.

Note: Blood Meal, Dried Blood, Guanos, Kelp Meal, Cotton Seed Meal, Peat Moss,

Sulfur and fish meal are all acidic and can bring your pH down, so if you add these please monitor your pH when using those.

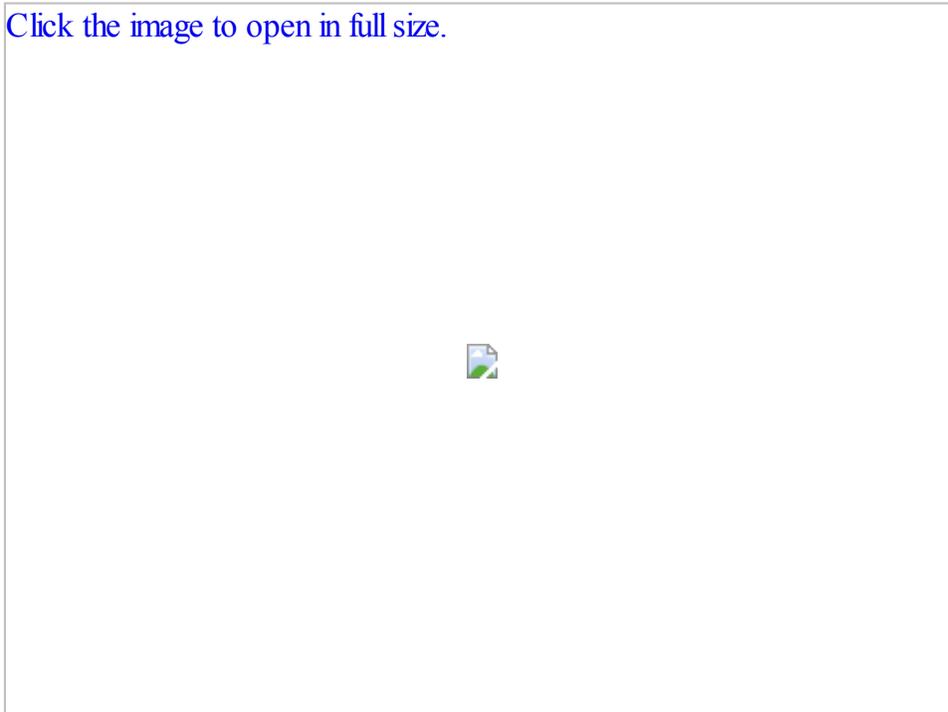
Note: Bone Meal, Rock Phosphate, Wood Ashes pretty much all ashes, Shellfish Compost and Crab Meal are all alkaline and can make your pH go up, so if you add any of these please monitor your pH.

Picture 1 is a Phosphorus deficiency during vegetative growth.

Picture 2 is what a phosphorus deficiency looks like in flowering.

(Picture 1 is Mine)

[Click the image to open in full size.](#)





Potassium (K) Mobile Element and Macro Element

Potassium plays a big role as well. Having good amounts of potassium in your plants helps in having sturdy and thick stems, disease-resistance, water respiration, as well aids in photosynthesis. Potassium is also found in the whole plant. It is necessary for all activities having to do with water transportation. Potassium is necessary for all stages of growth, especially important in the development of Buds.

Having too little of Potassium in your plants causes the plants leaves to show retarded growth and show a scorched tip and edges around the leaves. Plants may stretch and your branches can be easily broken or weak. Don't get this deficiency confused with iron, because it almost acts like iron but to tell the difference in the two is: for potassium the tips of the leaves curl and the edges burn and die. Older leaves may show a red color and leaves could curl upwards. Dead patches (Necrosis) can happen on the margins of larger fan leaves thus, the leaves will eventually die off and turn brown. The Older leaves will show different patches of color (mottle) and turn yellow between the veins, following by whole leaves that turn dark yellow and die. The plants overall growth slows down, mostly when they are in vegetative stage. Too little amount of potassium also slows the growth of buds during flowering stages. Dark edges will appear around the edges of the leaf when the deficiency is starting to happen. When your Relative humidity is low, you can almost bet your going to soon get a potassium deficiency from your plants perspiration.

Potassium can get poorly absorbed when having too much Calcium or ammonium nitrogen, and maybe cold weather. Having too much sodium (Na) causes potassium to be displaced. SO keep those in mind... Parts affected by a Potassium Deficiency are: older leaves and leaf margins.

When you have too much Potassium in your soil, it can lead to big troubles, like salt damage and acid fixation of the root system, as well as too much potassium can cause a calcium deficiency. Your fan leaves will show like a light to a dark yellow to whitish color in between the veins. Due to a molecular imbalance, potassium toxicity can cause a reduced uptake and lead to the deficiencies of Mg, and in some cases, Ca. Also leads to the other nutrients to not be absorbed properly leading to lots of other deficiency such as: magnesium, manganese, zinc and iron and can cause problems with calcium as well.

Problems with Potassium being locked out by PH troubles

Soils with excessive Leeching and High ph soils and or water. Soils that are potassium fixated. An excess of kitchen salts (sodium) in the root system/enviroment.

Soil

Potassium gets locked out of soil growing at ph levels of 4.0-5.5

Potassium is absorbed best in soil at a ph level of 6.0-9.5. (Wouldn't recommend having a ph of over 7.0 in soil) anything out of the ranges listed will contribute to a Potassium deficiency.

Hydro and Soil less Mediums

Potassium gets locked out of Hydro and Soil less Mediums at ph levels of 4.0-4.5, 6.0-6.5.

Potassium is absorbed best in Hydro and Soil less Mediums at ph levels of 4.7-5.3, 6.7-8.5. (Wouldn't recommend having a ph over 6.5 in hydro and soil less mediums.) Best range for hydro and soil less mediums is 5.0 to 6.0. Anything out of the ranges listed will contribute to a potassium deficiency.

Solution to fixing a Potassium deficiency

Any Chemical/Organic nutrients that have potassium in them will fix a potassium deficiency. Again Peters All Purpose plant food 20-20-20, will cure the potassium deficiency, Miracle grow Tomato plant food, Miracle grow All purpose plant food. (Only mixing at ½ strength when using chemical nutrients, or it will cause nutrient burn!) Some other supplements of potassium are: Wood ashes, which are fast absorption, Kelp Meal, which is medium absorption, Greensand, which is slow

absorption, granite dust, which is slow absorption. Sulfate of Potash, Sulfate of Potash Magnesia, Muriate of Potash, which are medium absorption. FOXFARM GROW BIG HYDROPONIC CONCENTRATE, which is fast absorption. (FFGB can bring your ph down as well) Earth Juice Meta-K, which is fast acting. (Can bring down your ph as well) Leaves will never recover, but the plant will show recovery after about 4 to 5 days when using a fast acting nutrient.

Note: Wood Ashes, can make your ph go up a bit, so please monitor your ph when using it.

Now if you added too much chemical nutrients and or organics, (which is hard to burn your plants when using organics) you need to flush the soil with plain water. You need to use 2 times as much water as the size of the pot, for example: If you have a 5 gallon pot and need to flush it, you need to use 10 gallons of water to rinse out the soil good enough to get rid of excessive nutrients.

Picture 1 and 2 shows a Potassium deficiency (Thank You General Ganja for letting me use Picture 1!)





Magnesium (Mg) - Micronutrient and Mobile Element

Magnesium helps supports healthy veins while keeping a healthy leaf production and its structure. Magnesium is significant for chlorophyll-production and enzyme break downs. Magnesium which must be present in relatively large quantities for the plant to survive, but yet not to much to where it will cause the plant to show a toxicity.

Magnesium is one of the easiest deficiencies to tell... the green veins along with the yellowness of the entire surrounding leaf is a dead giveaway, but sometimes that's not always the case here. In case you have one of those where it doesn't show the green veins, sometimes leaf tips and edges may discolor and curl upward. The growing tips can turn lime green when the deficiency progresses to the top of the plant. The edges will feel like dry and crispy and usually affects the lower leaves in younger plants, then will affect the middle to upper half when it gets older, but It can also happen on older leaves as well. The deficiency will start at the tip then will take over the entire outer left and right sides of the leaves. The inner part will be yellow and or brownish in color, followed by leaves falling without withering. The tips can also twist and turn as well as curving upwards as if you curl your tongues.

Excessive levels of magnesium in your plants will exhibit a buildup of toxic salts that will kill the leaves and lock out other nutrients like Calcium (Ca). Mg can get locked out by having too much Calcium, Chlorine or ammonium in your soil/water. One of the worst problems a person can have is a magnesium def caused by a ph lockout. By giving it more magnesium to cure the problem when you are thinking

you are doing good, but actually you are doing more harm than good. When the plants can't take in a nutrient because of the pH being off for that element, the plant will not absorb it but it will be in the soil... therefore causing a buildup. A buildup will be noticed by the outer parts of the plant becoming whitish and or a yellowish color. The tips and part way in on the inner leaves will die and feel like glass. Parts affected by Magnesium deficiency are: space between the veins (Interveinal) of older leaves; may begin around interior perimeter of leaf

Problems with Magnesium being locked out by PH troubles

Light Acid Soils, soils with excessive potassium, calcium and or phosphorus

Soil

Magnesium gets locked out of soil growing at pH levels of 2.0-6.4

Magnesium is absorbed best in soil at a pH level of 6.5-9.1 . (Wouldn't recommend having a pH of over 7.0 in soil) anything out of the ranges listed will contribute to a Magnesium deficiency.

Hydro and Soil less Mediums

Magnesium gets locked out of Hydro and Soil less Mediums at pH levels of 2.0-5.7

Magnesium is absorbed best in Hydro and Soil less Mediums at pH levels of 5.8-9.1

(Wouldn't recommend having a pH over 6.5 in hydro and soil less mediums.) Best range for hydro and soil less mediums is 5.0 to 6.0. Anything out of the ranges listed will contribute to a Magnesium deficiency.

Solution to fixing a Magnesium deficiency

Any Chemical/Organic nutrients that have Magnesium in them will fix a Magnesium deficiency. (Only mixing at ½ strength when using chemical nutrients or it will cause nutrient burn!)

Other nutrients that have magnesium in them are: Epsom salts, which is fast absorption. Dolomite lime and or garden lime (same thing just called different) which is slow absorption. Sulfate of Potash, Magnesia which is medium absorption. Worm Castings, which is slow absorption. Crabshell which is slow absorption. Earth Juice Mircoblast, which is fast acting. (a must buy!! Has lots of 2ndary nutrients).

Now if you added too much chemical nutrients and/or organics, (which is hard to burn your plants when using organics) You need to flush the soil with plain water. You need to use 2 times as much water as the size of the pot, for example: If you have a 5 gallon pot and need to flush it, you need to use 10 gallons of water to rinse out the soil good enough to get rid of excessive nutrients.

Picture one shows a mid grade magnesium deficiency.

(Picture 1 is Mine)



Calcium (Ca) -Macro Nutrient and an Immobile element.

Calcium is another important element that helps the plants cell walls, cell division in making the plants stems, stalks, branches stronger, as well as contributing to root growth, mostly the newer root hairs, Calcium also helps enhancing the uptake of K in the the plants roots. Calcium moves really slow within the plant and tends to concentrate in roots and older growth.

When plants exhibit a Calcium deficiency the younger leaves are the first to show it as well as older leaves. The Leaf tips will die back, the tips may curl, and growth of the plant is stunted. The plant can show a weakness in the stems and branches, as well as a under developed root system that can lead to bacteria problems with roots dieing off. Having slow plant transpiration rates can aggravate the uptake of

calcium. Make sure your soil isn't very acidic, for calcium gets harder to be absorbed through acidic soils, Which leads to having a plant that is deficient in Calcium. The leaf tips, edges and new growth will or may turn a yellow/brown color that happen in spots and often surrounded by a sharp brown outlined edge and then the leaf tips die back. If too much calcium is given at an early stage of growth it can stunt the growth of your plants. Having too much of calcium will also flocculate when a concentrated form is combined with potassium. The parts affected by a calcium deficiency are the roots. Stem or petiole, young or old leaves.

Too much Calcium will lead to other micronutrient deficiencies. Calcium fixation is caused by many types of mediums such as: clay soils, unbuffered coco and humus. The lime tends to bond to these soils very easily. The stems of the plant will not be able to hold the plant up and will exhibit a white brown in between the veins of the leaves when having too much calcium. Also having too much potassium and or nitrogen will cause a calcium lockout.

Problems with Calcium being locked out by PH troubles

Improper watering, (most common cause), very acidic soils with excessive potassium, excessively dry and or wet soil. Lack of calcium in the soil results in the soil becoming too acid. This leads to Mg or Fe deficiency or very slow stunted growth

Soil

Calcium gets locked out of soil growing at ph levels of 2.0- 6.4

Calcium is absorbed best in soil at a ph level of 6.5-9.1 (Wouldn't recommend having a ph of over 7.0 in soil) anything out of the ranges listed will contribute to a Calcium Deficiency.

Hydro and Soil less Mediums

Calcium gets locked out of Hydro and Soil less Mediums at ph levels of 2.0- 5.3

Calcium is absorbed best in Hydro and Soil less Mediums at ph levels of 5.4-5.8 (Wouldn't recommend having a ph over 6.5 in hydro and soil less mediums.) Best range for hydro and soil less mediums is 5.0 to 6.0. Anything out of the ranges listed will contribute to a Calcium Deficiency.

Solution to fixing a Calcium deficiency

To fix a calcium deficiency you can treat by foliar feeding with one teaspoon of dolomite lime or Garden lime per quart of water, Or Any Chemical/Organic nutrients that have Calcium in them will fix a Calcium deficiency. (Only mixing at ½ strength when using chemical nutrients or it will cause nutrient burn!)

Or you can take crushed up dolomite lime or garden lime in a gallon of water and water it in the soil. 1 to 2 teaspoons per gallon of water, which will be slow acting. Garden Gypsum, which is medium absorption. Limestone, which is medium absorption, Rock Phosphate and Animal wastes which are both medium/slow absorption. Note: Caution when using gypsum to an already acid soil (pH that is less than 5.5) can have a very bad effect on different types of plants by effecting the absorption of soil aluminum, which is poison to plant roots.

Now if you added to much chemical nutrients and or organics, (which is hard to burn your plants when using organics) you need to flush the soil with plain water. You need to use 2 times as much water as the size of the pot, for example: If you have a 5 gallon pot and need to flush it, you need to use 10 gallons of water to rinse out the soil good enough to get rid of excessive nutrients.

Pictures 1-2 shows calcium deficiencies. First one shows late, 2nd one shows early development.





Zinc (Zn) Micro Nutrient and an Immobile element.

Zinc plays a lot of roles in the plants, first off zinc aids in the plants size and maturity as well as production of leaves, stalks, stems and branches. Zinc is an essential component in many enzymes as well as growth hormone auxin .Low auxin levels can be the cause of stunting of the plants leaves and the shoots. Zinc is also important in the formation and activity of chlorophyll. Plants that have a good level of Zinc, can handle long droughts. So that's why Zinc plants an important role how it absorbs moisture.

Zinc deficiencies on some plants will have the Spotting and bleached spots (chlorosis) between the veins first appears on the older leaves first, and then goes on to the immature leaves. It will then start to slowly affect tips of growing points of the plants. When the zinc deficiency happens so suddenly, the spotting can appear to be the same symptoms to that of an iron and manganese, without the seeing the little leaf symptom.

Zinc is not mobile in plants so the symptoms will occur mainly in the newer growths. Having a plant that is deficiency in Zinc can cause small crops, short shoots and have a cluster of small distorted leaves near the tips. Between the veins (Interveinal) yellowing is often combined with overall paleness. Pale or grayish, yellowing between the veins; rosetted weak is the signs of a Zinc deficiency.

With a low level of zinc in your plants, your yields will be dramatically reduced. Interveinal chlorosis is present in the small, narrow distorted leaves at the ends of really shortened shoots and the shortening between internodes. Leaf margins are