

## **HUMBOLDTS COUNTY'S OWN BUSHMASTER**

### **DETAILED INSTRUCTIONS**

**Last Updated October, 2005**

After developing BUSHMASTER for the locals in Humboldt County, several of our customers told us this product had virtually the same effect on their plants as Dutchmaster Superbud but was more potent. Although a lot of people thought that Superbud was God's gift to growers, many people had poor results.

There were several reasons. One was that the instructions were absurdly vague and appear to be specifically for hydro. Most importantly, though, is that there is no "one size fits all" set of directions for Superbud or Bushmaster. They have to be "dialed in" or fine tuned for each particular strain if you want to see the magic results. Of course, the product will work just fine for most people if they just follow the instructions on the label and maybe tweak it a little by adding a little more or a little less. However, most growers I know like to play and this product definitely lends itself well to tweaking!

The following suggestions are the result of about 30 months of experiments by dozens of beta testers out in the hills of Humboldt County. Testing is still going on and updates will be made. Keep in mind that every cultivar is going to react slightly differently.

Don't be intimidated or put off by such elaborate instructions. The purpose is to maximize the end user's success. This is an expensive product and a very powerful product that can drastically alter the whole form of a plant. It would show a lack of concern for the customers to simply hand them a bottle with 1 line of instructions and send them on their way. This product isn't for people who mix their nutrients by eyeball or who turn the jug upside down and add 4 "glugs" or whatever to the reservoir. Other growers treat special products like BushMaster as if they were a lottery ticket. They buy it, throw it in the reservoir and hope they hit the jackpot. If nothing else, the point of these instructions is to impress upon the grower the need to be conscientious, to measure carefully, to be observant and, most of all, to be patient.

### **SOIL**

Most of our testing of BushMaster has been done in soil. The first point that needs to be emphasized when using BushMaster is that the plants should not be under stress at the time of application. If the plants are loaded with mites, for example, get rid of them and give the plants time to recover their vigor. If the plants have been allowed to dry out too much and the leaves appear wilted, water them well and wait till the next watering to apply BushMaster.

### **USE OF KELP**

The use of kelp extract is strongly recommended. It contains a plant hormone called Kinetin as well as other compounds which complement the action of BushMaster. The best time to apply the kelp extract is about 3 days before the BushMaster. If you water every 2 days, apply the kelp 4 days in advance, then water without kelp 2 days later. The kelp should also be used when watering with BushMaster. The best way by far to apply kelp extract is by misting the tops and bottoms of the leaves rather than by watering it into the soil. The

effects are noted much faster and the required amount is smaller. If applied by misting the best time is about 2 days before applying BushMaster and then again about a day or so afterward. If applied by spray start by doubling the manufacturer's instructions on the container. If applied in the water, using at least 4 times the suggested amount is probably sufficient although the optimum amount depends on which brand of kelp that is used. Please refer to my notes concerning kelp and kelp extract at the end of these suggestions. Finally, another dose of kelp extract should be applied about 3 weeks before finish.

#### **OPTIMIZING THE DOSAGE**

Fine tuning the dosage for your particular application can make a big difference in your results. For soil the instructions are to start with 10 ml/ gal. and adjust accordingly. Some aggressively growing or lanky varieties or varieties which are slow to flower after cutting back the light may require up to 2 waterings with 10 ml/ gal. but it's highly unlikely.

For most growers the quickest way to dial in the dosage is to start by watering 3 or 4 plants with 1 teaspoon (5 ml) per gallon; then 3 or 4 others with 1 1/2 teaspoons (7.5 ml) per gallon; 3 or 4 with 2 teaspoons (10 ml) per gallon and 3 or 4 with 2 1/2 teaspoons (12 ml) per gal. Remember to keep a few plants aside that get none at all. Almost all strains give a good response within that range. If, after 2-3 weeks, you don't observe very noticeable differences between the controls and the treated plants, then you are working with one of the exceptional strains that responds in the higher dose range. Don't assume this is a bogus product because it "didn't do anything". This product DOES things. Every strain tested responded well to 20 ml/ gallon or less. If your plants don't appear to be "doing anything" and you want to be daring you could add more BushMaster after 2 weeks but don't go over 20 ml/ gal total. Personally, I would be patient and continue to observe the plants while allowing them to finish as treated. As the ancient Romans used to say, "Festina lente"; make haste slowly. Some strains can surprise. You may think your plants with 15ml. are the best and the ones with 5ml. aren't "doing anything". Then, 3 weeks or so before finish the ones that got the 5 ml. "do something" and surprise you big time. It doesn't happen often but it does happen so be patient. If you finish your cycle and "nothing happened" then repeat on your next cycle using 3, 3 1/2 and 4 teaspoons per gallon.

After dosing your plants, sit back and continue to feed them whatever nutrients you customarily use. Don't pay attention to any nutrient manufacturer that tells you to run their product at 1400, 1600, 1800 or higher ppm. In general, a good rule of thumb is to run around 1000ppm. As mentioned above, you don't want to apply this product when the plants are under stress. For optimum effect you also don't want to subject the plants to stress during the week or two after applying BushMaster. It's best to run your nutrients at less than 1000ppm, raise your lights up a few inches and make sure the plants don't dry out excessively between waterings.

At this point you've dosed your plants with 1 to 2 1/2 teaspoons (5 to 12 1/2 ml/ gal.) and you're observing the effects. What you can expect to see is a slow down and halt to the vertical growth compared to the controls. At the same time the vertical growth ceases, the transition to flower begins.

***In soil, there are 3 different grow strategies where this product can be used to good effect:***

Short cycle grows where the goal is to transition to flower quickly and finish as soon as possible.

Regular cycle grows where the goal is not to finish quickly but to maximize the size and mass of the flowers.

Long veg cycle grows where the goal is to veg them as large as possible without worrying about them getting too tall after cutting the light back.

For strategy #1, we want to find the dosage that gives a fast finish without drastically compromising the mass of the flowers. By observing your plants' life cycle at the different dosages recommended above, you should be able to choose the dose that gives a good balance between time of finish and mass. Generally speaking, the higher the dose the faster the finish the lower the mass. However, life (and growing) is a trade-off. If you want to get, you have to give.

For strategy #2, the important question we need to answer is: What is the smallest dose that makes the flowers develop, fill out and put on the most mass compared with the untreated ones. It may not be obvious until the very end. Don't assume that the ones that start flowering first or look the best in 3 weeks are going to be the best at the end. It's like a horse race; it's not over till it's over. Even if your goal is not to shorten the flowering cycle, you can expect to shave at least a week off your cycle compared to untreated plants.

For strategy #3, the trick is to time the end of the veg so the plants don't grow too tall for the room. It's possible to apply a strong dose of BushMaster and bring the plants to an immediate halt but that dose is probably way over the optimum dose that's needed. The safe way to proceed is to follow strategy #2 and assume your plants will grow another 4-6 inches before stopping. After optimizing according to #2 you should then know exactly how much more vertical growth to expect at your chosen dosage.

An interesting observation with some strains is that the longer the veg period the faster the plants will show flowers when the light is cut back. Plus, the flowers develop mass and finish sooner. So for some strains you can veg longer, apply BushMaster and finish in the same time frame as a short veg and get greater results! As mentioned earlier, this product definitely lends itself to tweaking and playing if you're so inclined.

Getting back to the nuts and bolts of dosing, let's suppose that your reservoir holds enough water for two watering cycles. Instead of filling it half way and using a full dose, it's perfectly fine to go ahead and fill the reservoir up so that the BushMaster is only at half strength and then apply a half dose for two consecutive waterings. Considering the powerful effect of BushMaster, it may even be preferable to hit them twice with a half dose instead of once with a full dose.

While watching your plants to determine the optimum dose, one sign to watch for is the appearance of the "Ram's Horn Effect" where the leaves turn dark green and start to curl under and resemble a ram's horn. That's a sign the dose for your particular strain is too high. You'll want to take a close look at the plants which received about 4-5 ml/ gal. less than the ones with ram's horn. That's probably close to the optimized dose. Remember, what we are trying to do is find the minimum dose that does what we want. That way we gently influence the plant without throwing it out of balance.

Another strong recommendation from the local "hill people" is the use of Banana Manna for a couple of waterings starting about 3 weeks before finish. The claim they make is that it improves the "aesthetics" such as fragrance, etc.

**HYDRO**

BushMaster is particularly well-suited for use in vertical grow hydro systems such as The Cage or Coliseum or the Omega Garden where vertical growth must be controlled to avoid disaster.

#### **OPTIMIZING**

Unlike soil, where a few plants can be given different doses, trying to optimize the dosage in hydro is problematical unless there are multiple reservoirs. There is one observation, though, that simplifies the testing:

It appears that the actual dosage used in hydro is not as important as the length of time the BushMaster is in the reservoir.

The instructions for Hydro state that the best way to go is to cut the lights back and run 3-5 ml./ Gallon of Bushmaster in plain water for 3 days max before switching reservoir to bloom cycle nutrients. This resulted in the fastest full transition to flower we've seen in hydro (48 hours). If you want to play it safe and avoid overdoing it while optimizing, try starting with 3 ml./ Gallon and see if flowering starts within 3 days. If not, run it an extra day or two and check for flowering. Whether you see a full transition or not, after 5 days change out the reservoir and proceed as usual and note the development and massification of the flowers compared to previous runs without BushMaster. What we are doing at this point is the hydro equivalent of Strategy #2 for soil. Next cycle, up the dosage to 4 ml./ Gallon and run for 3-5 days as above and compare results with the previous cycle. If the results are better on the second run then up the dose to 5ml./ Gallon on the next cycle, etc. It's highly unlikely that any strain would need more than 5ml./ Gallon for 5 days. As with soil, watch for the Ram's Horn effect. If it appears, immediately change out the reservoir. Be especially vigilant because the Ram's Horn will appear much sooner in hydro than in soil. That's the sign that you've well exceeded the optimum dose. If you're careful you should never see it because the "Horn" usually appears when you are using 2-3 times the optimum dose or left the BushMaster in the reservoir too long. In one experiment the optimum dose was found to be 5 ml./Gallon for 3 days but after it was allowed to run for 9 days the result was a severe case of "Ram's Horn".

BushMaster may work just as well by putting it in the reservoir with grow nutrients for three days and then switching to bloom nutes. This will eliminate one reservoir change. Of course the light should be cut back to 12 hours at the time the BushMaster is added.

Kelp extract will definitely improve the performance of Bushmaster in hydro. Running kelp and BushMaster in plain water as mentioned above works well as does misting. It's probably even better to run the kelp extract in the grow nutrient reservoir for three or more days before switching to plain water and BushMaster. Also, add kelp extract to the reservoir with the bloom nutrients. As mentioned above, use of Banana Manna or molasses the last 3 weeks works well.

#### **NOTES ON KELP AND KELP EXTRACTS**

Besides the usual N-P-K fertilizers, kelp and kelp extracts are probably the most useful additives on the shelves in hydroponic shops. Unfortunately most products are watered down and/or overpriced so many growers have given it a pass. My recommendation is to bite the bullet and cough up the money.

There's a BIG difference between cold pressed kelp and kelp extract.

Cold-pressed kelp is made by taking fresh kelp and pressing the liquids out. The resulting liquid is rich in plant hormones and contains approximately 60 trace minerals. It may be sold as-is or vacuum evaporated to remove water and form a concentrate.

Kelp extract is made by extracting the macerated kelp with potassium hydroxide (lye) solution. This process results in the nearly complete extraction of the hormones from the kelp. As a result the alkaline extracts contain a much higher concentration of kinetin which is the hormone of most interest to commercial greenhouses using kelp. The extract is then acidified with Phosphoric Acid and bottled. The concentrate in this form has the consistency of cheap catsup and is very potent. 4-5 ml./ gallon and in 2 weeks or less even 6-8 inch plants will have leaves as large as your hand. The trade-off with alkaline extracted kelp is that virtually all the trace minerals are insoluble in the alkaline water used for the extraction so you lose whatever benefit the plants might have obtained from trace minerals.

The point of these notes is to help the grower figure out how much kelp to use with BushMaster since every product on the shelf has been diluted differently.

If you're using Bio-Bizz cold pressed kelp you'll need to use at least two times the recommended dose if it's being sprayed and perhaps 6 times if it's added to the nutrient solution. I'm not really sure on this one because I've only done a few comparison spray tests on plants without BushMaster using Bio-Bizz and North American Kelp's extract.

Maxi-Crop's instructions are to use 30 ml. (one capful) per gallon of water. Nitrozime's instructions are 19-38 ml. per gallon (5-10 ml/liter). However, Nitrozime recommends the same dose whether it's sprayed on or watered in! It's an established fact that kelp extract is more potent when sprayed on rather than watered in so it's hard to know whether their recommendation actually applies to spraying or to watering. The only information I have is from growers who have used both products and they claim that Nitrozime is stronger. I'm going to assume that 19 ml./ gallon is the spray dose and 38 ml./ gallon is the watering dose. However, I don't recommend spraying Nitrozime. Unless they've recently begun filtering their product before bottling, it tends to plug up sprayers because of small pieces of kelp in the liquid.

*The final recommendations for the kelp are:*

Maxicrop: 60 ml./ gallon when sprayed and at least 120 ml./ gallon when watering.

Nitrozime: 19 ml./ gallon when sprayed and 38 ml./ gallon when watering although these numbers might be low.

North American Kelp Sea Crop 16: 1-2 ml./ gallon sprayed and 4-5 ml./ gallon watered.

If you've priced liquid kelp extracts then you're probably starting to groan about how much money you're going to have to spend. Well, before you crawl into a corner and quietly puke in your hat--STOP ! I saved the best for last.

The economical way to go is to buy dried kelp extract. Make sure that it says "water soluble" dried kelp otherwise you're getting clipped. There's less variation in strength with dry extracts so the amount that's needed from one brand to the other is probably similar. Once again, North American Kelp ([www.noamkelp.com](http://www.noamkelp.com)) is my recommended source. Their kelp is the only one I know

of that has been standardized so that 10 oz. of kelp in 1 gallon of water yields a solution that contains 100 ppm of Kinetin. Spray with 10ml. /gallon or water with 20 ml./ gallon. This stuff is definitely "the Kind".

The above recommendations for kelp should put you in the ballpark. However, if you want to seriously optimize your results, follow the above dosages while dialing in the correct dose of BushMaster, then start tweaking the kelp dosage slowly upward either by increasing the amount or by repeated application. Remember, though, "Festina Lente".

#### **UPDATED INSTRUCTIONS BASED ON THE LATEST FEEDBACK**

We've recently received some exciting feedback from experimenters in Southern California that represents a completely novel approach to using BushMaster.

The plants were grown in rock wool. When the starts were approximately 4 inches tall they were watered one time using 1 ml. of BushMaster per gallon. Over the next 2 weeks they were foliar sprayed with 1 ml. per gallon three or four times. After that they were fed as usual. Some were placed in an omega garden for finishing; others were put into trays. The reported results were the best in all respects that we have heard of.