Blumat Tips and Trouble Shooting

Like a yin/yang circle, often strengths and weaknesses are closely linked. In terms of Blumats, the "set it and forget it" strength can also become a liability if we stop paying attention. Fortunately, a little bit of maintenance prevents potential problems.

Run-Aways

"Run-Aways" are Blumats that don't turn off. Almost every time this happens, it's because of air. Blumats don't like air – either inside or outside or in the supply line.

When you have the run-aways, here are some basic questions to look into:

Is their air inside the carrot?
Did you tighten them down to the second arrow when you put the tops on?
Have you changed your potting mix?
Do you have much perlite or volcanic rock in it? If so, it's important to put some cocoa or peat in between. If big chunks are touching the ceramic tip, it can fake the sensors out.
Also, please feel free to call and brain-storm with me if the above doesn't help.

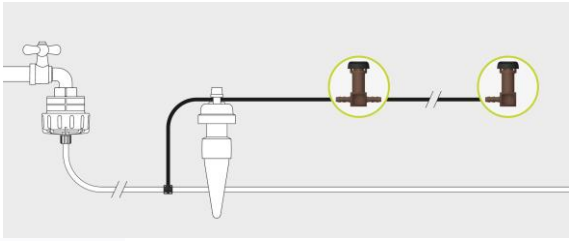
Air Inside - Air can get inside a Blumat or its supply line for several reasons. This happens most often in a gravity system when we forget to fill the res before the water drops below the output port. That can put air in the supply lines and in a very low pressure system, the air can stop water. And if you wait too long to fill the res, the potting mix or soil can dry out enough to suck water out through the Blumat ceramic cone. If this happens, the Blumats at least need to be refilled. If they are dry for very long, they should be re-soaked. A good idea is to have at least one always soaking and ready to exchange in case anything happens.

Air Outside – Air can get on the outside of a Blumat between the ceramic cone and the potting mix if someone bumps hard against a pot or moves it and sets it down too hard. Animals, children, and too-curious friends can cause this. If there is air between the cone and the potting mix, the Blumat will "think" the plant is dry and not turn off. The solution is simple – just push the soil mix down around the Blumat.

Air in Potting Mix – Sometimes big chunks of perlite, hydroton, or small rocks touching the ceramic cone can confuse the sensor making it "think" the mix is dry when it's not. You can prevent this by putting some moist peat moss or cocoa in the hole before pushing the Blumat in.

Air in Supply Line – Besides letting a reservoir get too low, a hose breaking, or water supply getting accidentally turned off; the naturally dissolved oxygen in water can over time form air bubbles. This isn't a problem in most places but in some areas this dissolved oxygen presents a big problem. The easiest preventative maintenance for this is to have an on/off valve at the end of the supply line or better, at the far side of a supply loop that goes back to the reservoir or water source. By opening this valve for a few seconds when you suspect a problem or as periodic maintenance, you can easily let the air bubbles out. This will also flush any unwanted sediment out of the lines.

Water not getting back to ceramic sensor – If the potting soil has lots of sand/perlite/volcanic rock and the first drip point is too far away from the sensor tip, sometimes the water will not get back and "tell" the Blumat to turn off. Solve by pulling the 3 mm input line back so that the drip is closer. This is also a way of adjusting the moisture level for the on and off points.



– Recently we discovered a new way that people can create a Blumat runaway: by having the drip point right up against the

base of the plant trunk. This can make the moisture channel away from the carrot and not let it get back to the sensor. It's much better to have the drip half way between the stock and side of the pot. Pulling the 3 mm drip line closer to the carrot also prevents this.

Maintenance

1. In a gravity system with low pressure, it's good to open up an air purge valve at the end or middle of the supply line for a few seconds every 2 weeks or so. That will let out any dissolved oxygen in the line and also clear our sediment. In a pressurized system this isn't as important but still recommended to do every month or so.
2. The little screen in the input to the pressure reducer can get clogged and stop the water flow. Depending on your water quality
3. Between uses (if for a short time), you can keep your Blumats in water. If storing for a longer time like through the winter, brush off any dirt and let dry. If the dirt or stain won't brush off, you can use light sandpaper but only when dry.

Protection. If you put a saucer under each pot, it's easy to see if you have a run-away before it becomes a problem. In a grow tent or small grow room, you can use trays or pond liners that will hold as much water as the reservoir. We have inexpensive manual alarms that sound if they get wet, sophisticated systems that will automatically turn off a valve, and WIFI connected sensor that will send a message to your computer or smart phone if they sense too dry or too wet conditions.

Important! If you forget to refill a reservoir or for some other reason your sensors dry out, it's important to re-soak them again. Unless you caught it quickly, only refilling them with water may not be enough and can lead to more run-aways.

Blumats and Temperature – With big temperature swings, Blumats can suffer an "airpocket" effect. At low temperatures, the air inside the capsule can contract and draw the membrane down causing a "run away." This starts happening at about 4°C, 40°F. Cold temperatures also harden the drip tube which increases this effect. At hot temperatures, the opposite can occur. This doesn't start happening though until 30° C, 86° F – and doesn't make that much difference only slightly delaying the drip and going back to normal as soon as the temperature drops.

Setting Tips

Besides the normal instructions, here are some helpful hints:

1. Put a pipette or eye dropper underwater and into one of the holes on the inside top of the Blumat cap and squeeze out air bubbles.
2. Make sure top not too tight when soaking in water
3. Sometimes the brown tubing can have a "dent" from sitting too long or from the top being tightened down too much. Pull the tubing a little and check for this, massage back in shape if dented
4. Pre-moisten a container of potting mix without perlite and with extra peat moss and/or cocoa. Put this in the hole before "planting" the Blumat.
5. After putting a plant in a new pot, watering the container and installing the Blumat, wait several hours before turning the Blumat on and adjusting to the hanging drop + 1.5–2 arrows down.
7. The above rule of thumb is for soil mixes though. If you're using pure cocoa or something similar, don't turn down as much, maybe even try not turning down at all after the hanging drop.
6. In an established pot, use a moisture meter while slowly wetting the plant to the best setting. Then do #5 above.

7. It's important to recheck settings after one day as well as after 2-3 days. The first time gives the moisture in the container time to equalize. The second time gives the Blumat membrane time to adjust.

8. Often water supplies have large amounts of dissolved gases and we don't want that inside the Blumat cones when setting them up. For soaking and initial set up, it's best to use clean rainwater or something similar. You can also boil water to dissipate the gases, let cool, and then use that to soak the carrots.

Placing the Carrots

Fabric vs. Plastic Pots: In a plastic pot, in doesn't make as much difference but in a fabric pot; it's important to not place the carrot too close to the side. Fabric pot sides dry out more quickly and if the carrot is too close, the water inside it could be pulled out leading to slower on-off cycles or even run-aways.

Maxis on the Side: in larger fabric pots (10g+), if you put a Maxi horizontal two inches or so above the bottom, you can use one less carrot than the standard recommendation. It's good also though to use at least one short carrot so you are sensing the moisture in both the top and bottom halves of the container.

More suggestions: the most important consideration is spreading the moisture around the surface. If you only water in one place, it will leave places on the other side that are too dry for the tiny feeder roots to survive (one of the main problems with conventional

Reservoirs in gravity systems

If you have too many plants and not enough room for a big, high reservoir, you can use a small reservoir high connected to a large one at floor level. Of course, you can automatically refill it with a pump and timer, a pump and float valve, or a utility water supply and float valve. You could also connect the two tanks with a circulating pump. This has the advantage of keeping the water moving and nutrients well mixed.

Pumping Systems

With systems of over 40 plants, adding a pressure pump to the reservoir makes a huge difference. With each of our pressure pump systems, you can use up to 200 plants. That's based on medium sized plants. The number goes up for small plants, down for larger ones.

How Many Plants per Pump System

The basic max on the Shurflo pumps shows up as on/off cycle: they should to be off 2x longer than they're on. So if on for 10 seconds, should be off for at least 20 seconds before turning on again. They will still work fine if less than that be it can shorten their life quite a bit.

So applying that rule of thumb to how many plants per pump formula, multiply the gpm x 20 (minutes per hour) = gph at this pump rate x 24 = gallons per day pumped without over-stressing the pump. Multiply that # 4 for plants up to 3' tall, x2 for plants 6' plus (assuming 1/4 or 1/2 gallon per day per typical plant use).

So applying above to our 3.3 gpm pump: 3.3x20= 66, 66x24= 1584 gallons per max water available without exceeding this limit. Multiplied x 4 (plants using a qt. per day) = 6636 small plants or x2= 3168 large plants.

The above assumes equal watering throughout the day and doesn't take into account fluctuations based on temperature, lights on and off, purging lines, etc. so to be conservative I normally divide these number in half to get a max of 3300 small plants, 1650 large ones. These are really maximum numbers though and best to do less.

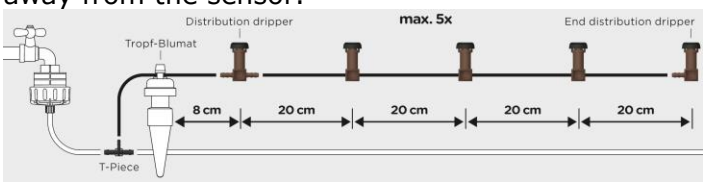
Pressure Tanks

What psi should I set the accumulator and pressure tank at?

Because of federal shipping regulations, we can only ship pressure tanks with low pressure in them. With our regular pump, the recommendation is to set the small accumulator tanks at c. 37 psi. With the high flow pumps though (IG16134), this setting needs to be 25 psi or less.

Distribution Drippers

Distribution drippers require at least 5 psi to work uniformly. In most gravity systems, that normally means only 2-3 per Blumat. In pressure systems with 15 psi, you can use at least 5 per Blumat. Customers have reported successfully using up to 25 per Blumat by opening the top screws on the drippers further away. Adjust the Blumat before hooking these up with the first one about 4" away from the sensor.



Digital Blumats
Make sure to only soak the base, not the top with the digital read out! If you do the standard Blumat setting of turning the top down until just one drop clings to the 3mm tubing and then turn the top knop down 2 of the triangle markings, that in general corresponds to a 120 mb reading on this meter. (Ideal settings for cannabis growing = 120-150 mb in veg, 150-180 in flower; 2-10kPa.)
For resets, best if ambient temperatures between 72-82° F. The more dense the potting mix, the better connection to ceramic cone and the quicker you can get an accurate reading – often within 5-10 minutes.

Blumat Maxis
Sizing. We normally don't recommend using a Maxi unless you have at least a 10 gallon pot or are watering outside a small tree or big bush. Sometimes though, if a grower is planning to use a big pot later, they use the Maxis in the small pot too instead of needing to get both small and large Blumat sensors. This works in most places but in very dry climates (like we have here in Colorado), if too much of the sensor is above the soil level, it can evaporate water out and create air bubbles that slow or even stop the Blumat from working.
Horizontal. If you put a Maxi horizontal instead of vertical in a pot so it senses just under the root ball, you can use less Blumats than are normally recommended. (See our instruction flyer on using Maxi Longs.)

Sizing
The Blumat sizing tables assume a traditional potting mix. Super soils or cocoa only mixes can change those recommendations.
The biggest factor is how much capillary action the potting mix has – how much horizontal pull. In a cross cut soil diagram, there is always a kind of pyramid starting from the drip point at the top and spreading out as the moisture goes lower. Some mixes have bigger angles than others. Besides the type of potting mix, moisture also influence capillary action. For example, cocoa has a broad angle when moist but a narrow one when dry.

Blumats & Nutrients – make your own time-release fertilizer
We have a multi-page list of comments from users of various nutrients with Blumats (request our pdf and we'll email it to you). In general, almost all synthetic nutrients are fine as long as you use PekAcid or Drip Clean (some of our customers believe you only need to use this if you're over-fertilizing). Organic nutrients (even thick ones like molasses) are fine in small dilutions but become a problem if too much used. For thick concentrations, you can make a "Nutrient Well" which is just a hole filled with nutrients under the Blumat drip line. For thinner liquids, you can first fill the hole with vermiculite which acts like a sponge. This is basically making your own "Time-release fertilizer."

Algae. Most problems people think are from nutrients are actually caused by algae growth. Filters will stop sediment from clogging lines but algae can grow after the filter and be a big nuisance. The combination of warm water, light, and nutrients are the best recipe for fast algae growth. You can prevent as much light as possible from getting into your reservoir.

One of our grows has a brown biofilm/algae all over everything. What sort of filtration would you recommend for these locations that would be the lowest/easiest maintenance?

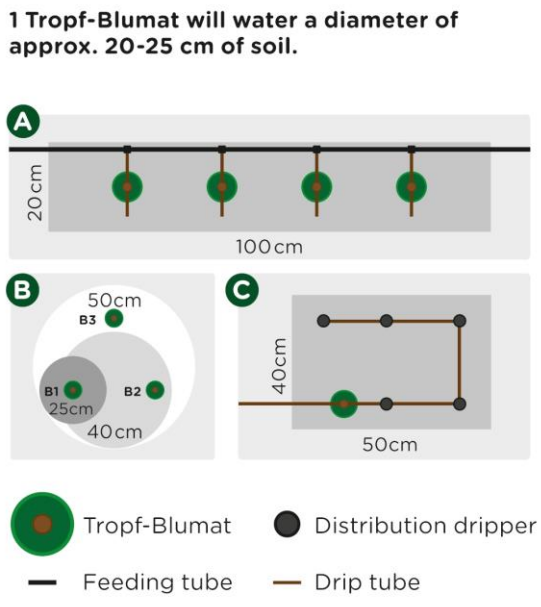
Usually filtering doesn't work for biofilm and algae because the spores are so small they get through filter (even R.O.) and then grow downstream. The cheapest, most effective prevention is using chlorine but that's not good for the soil, especially for no-till. Hydrogen peroxide is better - when you notice algae, use 0.1 oz per gallon of water in reservoir. It dissipates much more quickly and because Blumats have such a low flow, there's a good chance it will be gone by the time the water gets to the plant roots. The best choice is probably Omri listed ZeroTol 2.0 made by BioSafe Systems

FAQ

Do we need to soak and reset the Blumat sensors every time we disconnect them?
No, but it's important to not let them dry out. If the soil gets too dry it will suck water out of the Blumat cone. You can prevent this by hand watering before disconnecting.

Can or should you "flush" with Blumats?
Our most experienced customers tell us that the main reason people need to "flush" water their plants is because they've over-fertilized. In recommended amounts of fertilizers that companies suggest on their products, they're assuming that a high percentage of the nutrients will wash away with over-watering. In a properly dialed-in Blumat system, you won't lose any of those expensive nutrients and will not have to flush. You will use 50-75% less nutrients and this could pay for your total Blumat system in just a few weeks.

In medium pots, is it better to add a second Blumat sensor or distribution drippers?
If you're only at the point of adding one, it's better to use two Blumats as insurance. If everything is dependent on just one and something gets clogged, crimped, or stuck; your plant wont get any water at all. A second sensor acts as an insurance policy." In larger pots though, it's better to add distribution drippers rather than a 3 sensor.



Do you adjust Blumats with distribution drippers differently than ones without them?
Make the adjustment without the distribution drippers attached and start with only a one-arrow turn down instead of 1/5-2. We recommend the first dripper to be 3-4" from the Blumat carrot.

Can you use PVC or another material and convert regular and Maxi Blumat sensors into longer versions?
Yes, you can make them up to about 19".

What does "Tropf" mean?
Tropf means drip and is a way of differentiating these from Blumats designed for houseplants. (Blumat is just a made-up name without any special meaning

Do you need to soak the Blumat bottle adapters?
No, since they have a constant pressure, no need to soak.

If Blumat Juniors get air inside, do you need to re-soak them?
No, you can just refill with water.

What is the minimum pressure required for a Tropf Blumat system?
To be safe, we recommend at least 2.9 psi.

Can I use Blumats with tropical and desert plants?
Yes, you can use Blumats with both tropical and desert plants. The best way to adjust for the difference is to extend or decrease the distance between where the Blumat drips and the sensor. The further away it is, the longer before the water will turn off. So for tropical plants, it's best to have it further away (4-5") and for desert plants you would want it much closer, maybe only 2-3." You can also adjust by turning the screw on the top

Does it matter if the 8mm feed line is above or below the drippers?
No, it doesn't matter. Pressure is only dependent on the distance between the water level in the reservoir and the point where the water comes out of the Blumat sensor or dripper

How do Blumats work for plants in hanging baskets?

Putting Bllumats in hanging baskets may be one of their best uses. In high-wind, hot environments it's almost impossible to give plants enough water with any other method short of watering by hand many times a day. Hanging baskets are also more vulnerable because easier to overlook and forget watering cycles. And if forgotten, the surface easily crusts over and when you do water, it tends to quickly run off and fall into your face!

It's obvious that we don't want our plants to be too wet or too dry but how do you know what that means exactly?
The Blumat Digital Meter will definitely help but different strains, different potting mixes, different environmental conditions all create a somewhat unique situation for everyone. The best way is to experiment and fine-tune your Blumat settings (remember to make only very small adjustments though using the lines between the arrows on the top adjustment cap.) In most situations, after determining the best moisture level, the next hardest job is maintaining that level. With Blumats though, you won't have to worry about that!

In a 3 gallon pot how far down into the soil should the ceramic tip be placed?
The moisture reading comes from the ceramic tip so it's best placed where you want the reading. In a 3 gallon pot, you can't put it that deep so some of the meter will be in the open air. If a dry climate, water can get sucked out and you may need to refill - if air gets inside, the meter will give inaccurate readings or stop working

What is the problem with over or under watering?
Too Wet. Most people understand that letting plants dry out too much hurts them. It kills the tiny feeder roots and being too dry for even a few hours can set a plant's growth back several days. If too dry, beneficial bacterial and microbes will die.
Too Dry. Being too wet can also create major plant problems. Studies have shown that most houseplants that die were victims of over-watering. Root rot is an extreme consequence but being over-watered for even short times squeezes out the small air particles in the soil or potting mix and prevents the roots from absorbing nutrient. For anyone trying to create a "living soil," maintaining an even moisture range is essential.
Blumats vs. DTW. The above explains why growers consistently tell us that they get much, much better results with Blumats than Drain-To-Waste systems.

Does the larger feed line need to be above the Blumat sensors?
No, not as long as you have enough pressure. In a gravity system, you need to make sure the water level in your reservoir is above the Blumats and you don't want to have your supply line longer that 10' for every 1' drop below the lowest you let the water drop in the res. In pressure systems, you can go long distances. In order to walk between rows without dripping, most people put the supply line on the floor and run the 3mm line to the Blumats up the side of the pots.

How do Blumats do in SCROG, sea of green systms?
Great! Because these systems tend to be so full and compact, it's hard to get watering cans back to the plants. Blumats let you fill up the space with green and not disturb the plants.

What does it mean if the top adjustment knob is difficult to turn?
That probably means that the threads are cross-threaded. This can stop the Blumat from turning off and create a flood. Try taking the knob off and putting it back on straight. We have both extra knobs and the whole top available if this doesn't work.

What kind of plastics are the Blumat components made from?
The Blumat black hose is made of LDPE, the 3mm brown drip hose (and the red "Super Flex) is made of silicone. The brown Blumat hose used
on Blumat Juniors is made of PVC. The fittings are made from polyamide and the sides of Blumat bottle adapters PE. All materials are made in Europe and comply with the REACH act (Regulation concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals).

How do Blumats work in Cocoa and Peat/Perlite mixes?
Great! Especially in fabric pots, cocoa and peat moss tend to dry out much more quickly

than with soil mixes. It's very difficult to hand water and not have potting mix moisture much too dry. The peat/cocoa capillary action (horizontal spread of moisture) tends to be much better than with soil if moist but much less if dry.

Will Blumats work with Rockwool Grodan Cubes?

Yes but not too well if you just put the Blumat sensor directly into the RW. If you first put in a layer of wet cocoa or peat moss or sawdust mix in between the ceramic cone and the RW, the Blumats work about the same as in regular potting soils or peat/cocoa mixes.

Not all Rockwool is created equal though. When they pull the basalt into fibers and press into a mat, sometimes there are bigger air gaps between the fibers. There can be big differences between different manufacturers and even from the same company. If the fibers are too separated, the moisture will too quickly go down to the bottom keeping the top much dryer and cause run-aways.

Using caps on the cubes can help retain some of that moisture and let the Blumats function better. An even better option with smaller cubes is to use a capilarry mat system to feed from the surface.

The easiest solution is to get the Blumat ceramic sensor deeper. One way to do this would be to mount the carrot horizontally with a slight tilt downwards (so any air bubbles that grow from dissolved gasses float up to the plastic part of the carrot rather than resting against the ceramic sensor part) near the bottom of the Rockwool. If you can't install from the side, you could use a longer carrot or cut a wider hole around where the carrot is pushed in so that you could push it down more.

Fertilizer Injectors

Will fertilizer injector systems work with Blumats?

Yes, but because Blumats use such a small amount of water most won't work because the minimum flow rates are too high. **Dosatron** make a very low flow model though but to work directly with the plants, you need to have about 200 carrots in your system. For systems smaller than that though, you can use a Dosatron or another brand to fill up a reservoir and then gravity or a pressurized Blumat system from there to your plants.

What's the difference between your Blumat Dosatron and the regular models like the D25F1?

Both the D25F1 and the "Blumat Sized"(D25RE2) have an 11 GPM capacity. The main differences are that the D25F1 has a fixed ratio mix of 1:100 and with the D25RE2, you can adjust the nutrient mix from between 1:500 or from 1:50. We call this one "Blumat Sized" because Blumat use such a small amount of water per minute and this one has the lowest flow requirement, only 0.025 gallons per minute.

You have parts for connecting to drip or other kinds of tubing as well as the 8mm line that comes with the kits. When do you recommend one, when the other?

By using the 3mm tees or straight connectors and drip or vinyl pipe, you save some costs over the regular Blumat 8mm tube. But the Blumat carrots already include the connectors for 8mm tubing so you gain some expense by having to buy the extra connectors if you don't use the supplied ones. Depending on how many Blumats you're using, that could make the total cost more even though the tubing is much less expensive. The bigger pipe gives you more flow potential and less friction loss but it's not nearly as flexible and you'll probably need to use more tees and elbows. And Blumats have such a low flow rate, you don't need the extra water unless you're growing many hundreds of plants. It's also much easier to install the carrots with the 8mm line - you only need scissors or a knife. With the 3mm tees or connectors, you'll need to punch a hole in the supply line and replace the connectors.

Lots of other factors but in general, here's how we would summarize the bottom line:

1. If you're upgrading an existing drip system, definitely just use the 3mm connectors or a 1/4" to 3mm reducer.
2. If you're using less than 50 carrots, better to stay with the standard 8mm supply tube.
3. If you're using more than 500 carrots,

definitely go to at least 1/2" supply line.
4. If between 50 and 500, it would be good to look into other factors like the distance between the water supply and the plants (the further away, the more reason to use bigger pipe). And probably the closer to 50, the better to stay with 8mm; the closer to 500 the more reason to use bigger line.

Please tell me why you think the pump system would be better? What are the pros and cons?I like that the gravity system is passive and I really like that I don't have to use electricity and/or rely on a pump with mechanical parts. Plus it's much more inexpensive.

For the 4 plants inside, you don't at all need a pressure system. For the outside ones, you can get the same pressure by having the reservoir up at least 30' higher than the plants. With low pressure, there's more that can go wrong. For example, if air gets in the line the pressure might not be high enough to push it out and that could clog the supply lines. Same thing with sediment, bacterial water slime, algae..
Depending on how high you can get the res, gravity also limits the number of distribution drippers you can use - normally 2-3 per carrot instead of 5-10 with pressure.
It's more of a concern for people who leave their plants for long stretches of time. If you're most often there though to watch, gravity should be fine for you.
You can also start out with gravity and easily add the pressure system later if the gravity system isn't work as well as you'd like.

I've heard that the soil should get very dry before watering. Can you do that with Blumats?
To an extent. Since they are adjustable, you can even use them on dry-soil loving plants like cactus and succulents. With most other plants though including mj, you should be careful. If the soil gets too dry for too long, the tiny new root hairs will die, it can lead to hermie-ing, red stems, reduced yield, quality, and potency. Best if they never dry out to the point of wilting and ideal if they stay in the 120-150 mBar range in veg, a little higher during flowering. The other side is just as important – if the potting mix stays too wet, the roots can get "lazy," rot, air in the soil gets squeezed out leading to many other problems.

What's the best way to deal with algae, water slime and other nasties that grow in water and could clog my system?
Warm water with nutrients in it plus light creates an ideal environment for bad things to grow in your water. A filter or strainer is great for getting rid of sediment but may not be effective for things like this. The best preventative is to keep light from shining into the water. Chlorine or Hydrogen Peroxide are good for killing the nasties but could also hurt the beneficial micro-organisms you want to nurture instead of kill.
An advantage to hydrogen peroxide is that it quickly dissipates with heat. And because Blumats let the water out so slowly, there is normally lots of time for that to happen before the water gets to your plants. A good commercial product for this is OMRI listed ZeroTol 2.0 from BioSafe Systems.

If I am doing 125 of them at a time is there an easier way to get the air out other than a pipette?
Yes, while underwater you can push the flat part of your thumb into the inside of the top and quickly pull it out.

I filled up the blumat under water and then capped it right away and then let it sit for an hour. Would this be detrimental to the blumat functionality?
If you mean letting it sit out of the water, yes - the water can leak out and create air bubbles inside. If you leave it in water though, no problem.

With a 20-30 gallon pot, I use 1 Blumat and 1 Maxi in each pot, each one with 5 drippers on it. Is there any reason to not use so many drippers on the maxi? - Jake
Especially in a 30 gallon pot, I would use two 5" and one 9" carrots, less distribution drippers. Lots of things work really well though and each person's situation is different... And it does seem logical to use less drippers with a 9" and more with the regular 5" version.

Two of the main factors in sizing the distribution drippers are the kind of potting mix and the type of pot. In general, the more

cocoa/peat in a mix, the less drippers needed. In a plastic pot, you need less than in a fabric one. The rationale regarding the soil type is that there is more horizontal capillary action in peat/cocoa blends. With more soil, there tends to be more channels and a more narrow water cone below the surface. Without as many drippers, plants will still do fine but use much less of the potting mix. (If it doesn't stay somewhat moist, the tiny feeder roots will die off and not make much use of the dry potting mix. So a 20 gallon pot with distribution drippers might have about the same amount of useable potting mix as a 30 gallon pot with only the carrots.

What are the advantages and disadvantages of using distribution drippers?
The most obvious advantage is the lower cost – they're much less expensive than adding another carrot. The disadvantage is that the water outlet is smaller and more easy to clog. It's easy to clean them (just by unscrewing the black ring) but that's one more thing to do and watch out for.
This is more of a concern if you're using nutrients in a reservoir. With water only, it shouldn't be a concern.

The black screws can also be used to even out the flow. In a gravity system, you can normally use 2-3 per Blumat carrot and 4-5 in a pressure system. We have some customers who are using 25-30 per carrot by loosening the screw – the further away, the more loose. This can also be helpful in a gravity system.

Why use more Blumat sensors and/or Distribution Drippers?
Another advantage (and also a reason to use more carrots than necessary) is to make more of your potting mix available to the roots. If you only drip in one or two places, there is normally lots of your potting mix that will be too dry for roots to grow into. By using more carrots and/or distribution drippers, it's the same as the plant being in a larger pot. (This can pay for the extra cost.) So a plant set up this way in a 5 gallon pot might be able to grow as big as one in an 8 gallon pot with less drippers.

Blumat Juniors

1. Any tips for priming the blumat cone before insertion in plant? Should tip be place in water source before or after placing Blumat cone into plant, or does it matter (suction component?)

I always like to soak them first with the top off, put them back together under water, and then make sure the potting mix is packed tight to the ceramic cone.

2. When using the extend-a-kit, what is the maximum recommended length of hose between plant and water vessel?

It depends on how high the water reservoir compared to the plant surface - the higher the reservoir, the farther you can go. For the outdoor version of these the ratio is 1:10 (every vertical drop down of 1', you can go 10' horizontally. I haven't tested this but it's probably similar, maybe 6-8' for every 1' drop.)

3. Can more than plant pull from a single line in the water vessel? Or should each plant have its own tube in the vessel?

You can do more but it depends on the plant's water requirements. You probably want one per plant if tropical plant that loves lots of water, maybe up to 3 per line if cactus or succulents.

4. Can you tell me more about the size/capacity difference between Blumat Junior and Blumat Junior XL?

The Junior XL gives about 50% more water - for either a pot with at least a 12" diameter or a smaller tropical plant that likes lots of water. But for a succulent or cactus, better to use the smaller ones even in a bigger pot.

BluSoak / Soaker Hose

How does your Soaker Hose compare to T-tape, DuraFlo and other kinds of tape and inline drip systems?
We tested many kinds and this is the only one that worked well with Blumats. The others all needed either higher pressure or more flow. This one also works much better even on it's own. In a side-by-side test with T-tape, it saved 80% of the water, 75% less of the

water pumping power use, and the crops were 50% more productive. And those numbers are much better adding Blumats!

Are there more ways?

1. Longevity - this tape can last over 20 years
2. Even distribution of water - because so many micro-output holes, the water will spread out much more evenly
3. Less water use - this could use 75% or less water than what you're using now
4. Better productivity - because the soil will be more evenly watered, the plants will be able to grow thicker and more dispersed root systems.
5. Less likely to get clogged and less of a problem if that happens - because there are so many tiny holes and the pressure is so low, they don't easily get clogged. And if they do, there are so many other places that can take over. With systems that only emit the water every 6" or 12," each blocked orifice leaves a big patch of too-dry soil.
6. Less evaporation - because this can be buried, there is little or no evaporation.
7. Cooler water - because black irrigation hose heats up water more, it can wilt and even kill plants in hot locations. Because our tape is white and buried, the water stays much cooler

How long of rows can you make with this?

**There are multiple tape sizes, for BluSoak we most often use the MegaW*

With the "S" tubing size – 200'
With the "W" tubing size – 400'
With the "Mega W" tubing size – 500'
With the "XW" tubing size – 6-800'

How can such low pressure and such a low water flow go so far and water so much?

It's the power of time. Like investment charts that show how compounding a small interest rate over time can produce a huge return, a very small flow of water at low pressure over a long period of time can water a surprisingly large area.

What are your pressure reducing flow controllers and how should they be used?

Blumats perform this function and in a much more efficient and accurate way. In pressure systems though, when the pressure is between 8 and 15 psi and the rows are 50' and more, we like to include these as a safety precaution. In case an animal or empty water tank disturbs the Blumat, you won't get a flood and water use will only be the standard designed for this soaker hose. We include these in our connecting set-up like the IG16190 – just be sure to specify how long your rows are, we install different controllers based on the row length.

How much water will the Blu Carrot Soaker hose use?

For the first several hours while the soaker hose is "conditioning the planting or potting mix, it can use quite a bit of water – much more than normal. After that, if it's hot and the plants are growing fast, at 2 psi it can use up to 1 pint of water per foot of tubing per 24 hours, at 4 psi a quart per foot and at 8 psi, ½ gallon per foot. These are only rough estimates though and many other variable influence these rates: temperature, plant growth rates, type of soil, if buried or not, etc.

Is it okay to bury this soaker hose?

Yes, it actually works better if buried. That's when the root demand action kicks in. The root exudates pull on the water supply when the plant needs water, stops pulling when they have enough. Also being buried prevents UV from making the tubing crack and split. If buried, it can last over 25 years. Burying it

also lets you plough or rototill over it in the spring. Don't bury more than about 8'' deep unless only covered with mulch, not soil. If installing under athletic grass, make sure it's at least 4" under to prevent sogginess.

What is the best pressure to use?

The minimum pressure is about 2 psi so if using gravity, you'll need the water level at about 5' or more above the ground. If over 8 psi, sediment can be forced in the hose and cause clogging. If over 10 psi, the tubing can split. If adjusting with a Blumat sensor without a pressure gauge, squeeze the tubing and adjust so that it's full of water but the tubing is not hard. You should be able too can pinch it together.

What is the purpose of the y connectors?

Those are for if you're using the quick connects with 2 carrots in the same pot so you can use one QC for both carrots. Some people also use them instead of the distribution drippers
to save some of the cost.

Using a sump pump?

I currently hand water my plants using a hose attached to a sump pump. I use 32 gallon Brute trash cans as my reservoirs. Is there a way to just use my sump pump hooked up to a pressure reducer and just feed the plants that way without having to purchase the pump system initially? I rather spend the money on carrots and tubing because money is a little tight for the next few weeks until i can get it. FYI i cannot do the gravity fed because i dont have the ceiling height to raise reservoir.

The problem is that Blumats need water 24/7 and sump pumps aren't designed for continuous use. If your ceiling was higher, you could use the sump pump to fill a reservoir and then just gravity for the plants.

Which way should the quick-connect with stops be installed?

We like to use the side with the clear lock-nut fitting on the supply line side. That way if someone trips over the line or it gets pulled loose, the side going to the carrot comes off and you can more easily stop the water flow by just turning the valve. If the other way, the water keeps pouring out until you get it reconnected.

Will the pressure tank give then consistent pressure across all the carrots?

In a small system and short distances, the pressure will be even across all the carrots. In a larger one with longer lengths of supply line, the closer ones will have more pressure in the beginning, the ones farther away may not get any water or pressure at all. But when the first carrots close off, the next ones will get the water and pressure, and down the line. So while there isn't an even-watering at a particular point in time, it evens out during the course of a day so all the plants are watered equally - depending on the setting and what they need.

What is the best pressure setting for your accumulator and pressure tanks?

The higher the pressure in the tanks, the less water they hold and the more often the pumps come on. When you have less pressure though, you also have less pressure going through your supply lines. For the small, black accumulator tanks, the recommended pressure is 37 psi more or less. For our bigger, 5.2 gallon tanks, the range is much less – between 7 and 10 psi.

Can a Blumat system be converted back and forth from a drip system? Or just a simple watering system? If so will the gpm rate be the same across all pots.

Yes, you can fairly easily switch back and forth between blumats and drip emitters. Blumats equalized the watering over time as described above but the drip system won't - the emitters with less pressure due to friction loss will always give less water.

How many carrots are required for each 25 gallon?

Carrots per 25 gallon pot: the standard recommendation is two 5" and one 9" or one of each with 5 distribution drippers coming from the 5" one. You can use less though,

even just one but then you might be using only 15 gallons of the 25 gallons potting mix.

In larger systems, which size supply line pipe should we use?
½" Drip Tube = up to 240 GPH, 4 GPM
¾" Drip Tube = up to 480 GPH, 8 GPM
1" Drip Tube = up to 780 GPH, 13 GPM
(¼" line up to 30 GPH, 0.5 GPM)

Tubing Sizes
Polyethylene Tubing:
1/8" - .125" ID x .187" OD
¼" - .170" ID x .250" OD
3/8" - .375" ID x .500" OD

½" polyethylene tubing is available in three different configurations:
½" - .520" ID x .620" OD
½" - .600" ID x .700" OD
½" - .615" ID x .710" OD

¾" - .820" ID x .940" OD
1-inch - 1.060" ID x 1.200" OD

Drip Tubing:
¼" - (5mm) with .170" ID, 4.3mm x .240" OD
1/8" spaghetti .125 ID, 3mm?

½" drip tubing is available in two different configurations:
1/2" - .550" ID x .640" OD
1/2" - .570" ID x .670" OD

Flow Restrictors

IG16326	Flow Controller, up to 50' BluSoak, Green
IG16327	Flow Controller, up to 100' BluSoak, Blue
IG16328	Flow Controller, up to 200' BluSoak, Red

BluSoak flow rates
@2 psi – 1 pint per foot per 24 hours
@4 psi – 1 quart per foot per 24 hours
How much does water use effect heating costs?
Because of the effects of latent heat loss, reducing water use by 50% can decrease air conditioning costs by 25%. (Jerry

4 & 6 psi pressure reducers, ¼ min. - 1 acre max; 6 psi same parameters but 50% more water

Ideal pressure for small systems 3-5 psi; for systems over ¼ acre 4-6 psi.

Friction loss with Mega W – 25% psi drop at 500'

What are your ½" bulkhead and quick connect fittings made from? Are they FDA and/or potable water rated?

These fittings are mainly used for medical purposes so they have lots of tested ratings including FDA and NSF compliance. The regular versions of these are polypropylene and the "O" rings are also food grade, FDA and NSF. We also have these made with polysulfone. They're also FDA/NSF but more expensive and rated up to 125 psi (the regular ones only up to 60 psi).

How much BluSoak can we use per system?
That's actually a very complicated question and depends on lots of factors like the psi, the friction loss, the distance from water source to plants, etc. As a general, rule-of-thumb, you can use up to 500' of BluSoak with our 15 or 19 psi pressure reducer and 8 mm supply line; at 5 psi with 8 mm line and a max of 5 tees, 100' BluSoak. With more than 500' of BluSoak, it's good to go from 8 mm to ½" supply line which at 30 psi and using flow restrictors can do at least 1000' of BluSoak. With more than 1000' of BluSoak, it's best to use either 1" supply line and/or more than 30 psi pressure. With 1" line and enough pressure, you can use between 5000 and 10,000' per system. As long as the last lateral coming off your main supply line has more than 10 psi, you're good.

How long do Blumats last?
We have customers that are still using the same Blumats after 15 years.I've been using the same ones for about 5 years now. I did have problems with some I left outside all winter though... it gets down to about 15° below 0 here. Also, when I've dropped them, sometimes they get tiny cracks that you can't always see.

More questions? Contact us below.

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