

 **Blumat®**



Aqua Culture Project, Mexico, 1967



Humboldt/Mendocino/Sonoma, 1971-1987



No-Till Mini-Farm, Mendocino, 1982



Unloading, 2016



Boulder, CO, 2019



Designing Systems, 2019

Front cover art by Taylor Clay
Back cover art by Chris Huang



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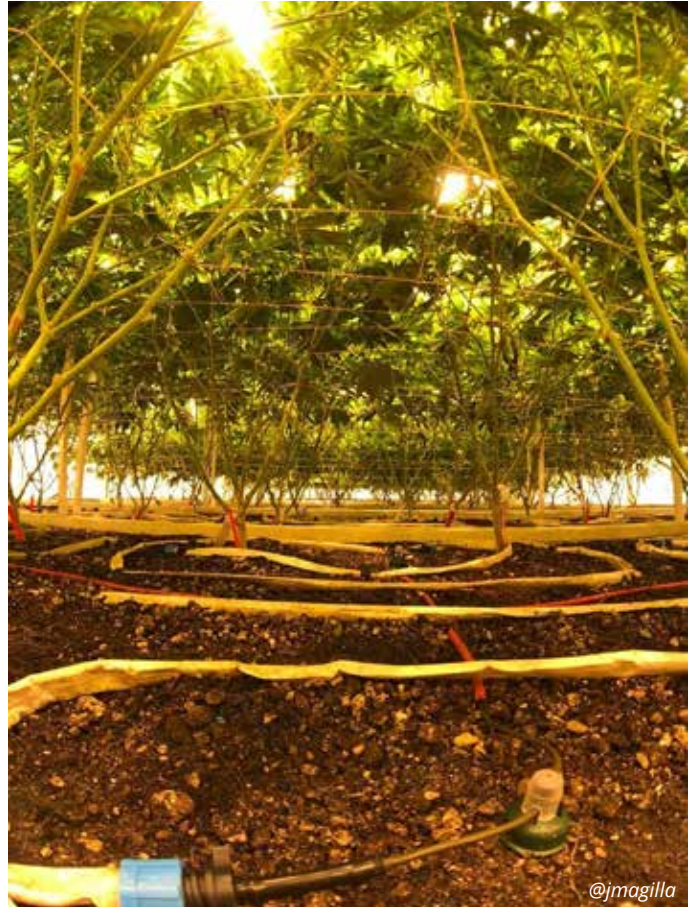
Sustainable Village History

ABOUT US

Sustainable Village has a long and varied history steeped in the small-is-beautiful, sustainability, and appropriate technology worlds. In the 1960's we started working in developing countries, continued working with Emerald-Triangle farmers in the 70's and 80's, and helped launch the solar and renewable energy markets in the 80's and 90's. In 2001, after decades of international poverty-alleviation work, we started focusing on irrigation design and supply. We design custom watering systems for everything from single plants to multi-acre farms. We promote mainly through word-of-mouth referrals, preferring under-promising and over-supplying to glossy ad campaigns. Our strong and happy customer base helps spread the word (thanks!).

CANNABIS CULTIVATION EXPERTISE

We specialize in creating irrigation systems for cannabis and hemp cultivation and can design systems for indoor, outdoor, growrooms and greenhouses. We work with growers who have anywhere from a few plants to large commercial facilities with thousands. Learning from our experiences working with this type of growing since the early 1970's, we can report our own research plus the tremendous experiences our customers have shared. We also listen and learn from customers as they continually find new and exciting ways of using Blumats. Our recommendations and quotes change based on growing styles—Living Soil, Organic, Salt-based, garden, sandy, or clay soil... Send us your details and we'll send you a free quote with recommendations.



HISTORY WITH PERMACULTURE

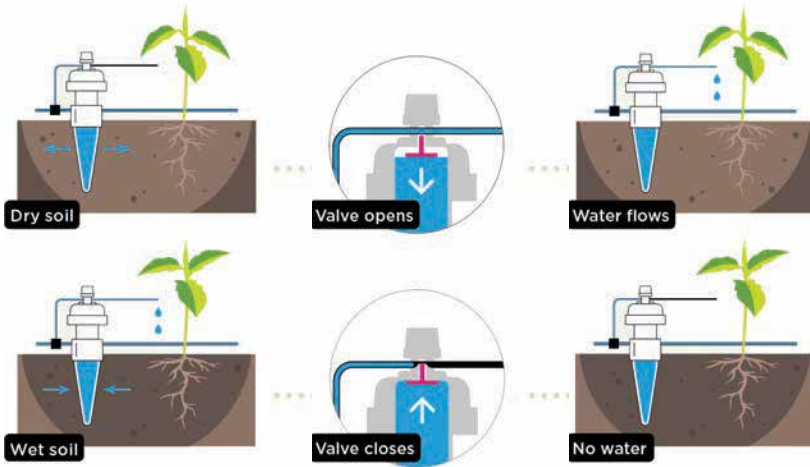
A cornerstone of our business approach, the Permaculture style and methods underlies our system design, product development, and business philosophy. Our founder started farming and gardening with Permaculture methods in the early 1980's and most of our design team have Permaculture Design Certificates. As much as possible, they use this approach to integrate and suggest the irrigation systems they quote for you. We have many local design partners in this field.



OFF-GRID SYSTEMS

We have many products that use no electricity, and are perfect for off-grid living. Low impact, low-tech, and highly efficient products including our rainwater catchment systems, gravity irrigation systems, greywater kits to hook up to your washing machine and composting toilets. By pairing all of these water conserving technologies with our Blumat irrigation systems (which use on average 70% less water than hand watering) you can drastically reduce your water use.

About Blumat Watering Systems



USE BLUMAT SYSTEMS TO:

- Automatically maintain the best moisture levels.
- Help create the most ideal plant growing conditions.
- In salt-based systems typically save at least 50% of nutrient costs.
- Produce higher yields and quality.
- Save huge amounts of time and work, sometimes even marriages!
- Blumats are not expensive, they are an investment that quickly pays for itself and gives an amazing return.

HOW IT WORKS:

Fill the Tropf-Blumat with water (not used for watering but to create a tensiometer connected to a valve). When the soil gets dry, the Blumat releases water onto the soil. The pressure goes down inside the cone as a result and a valve opens. Once the soil is moist enough, the water is drawn back slowly into the Tropf-Blumat through the clay cone and the valve closes. A simple principle of physics but highly effective and reliable for many years.

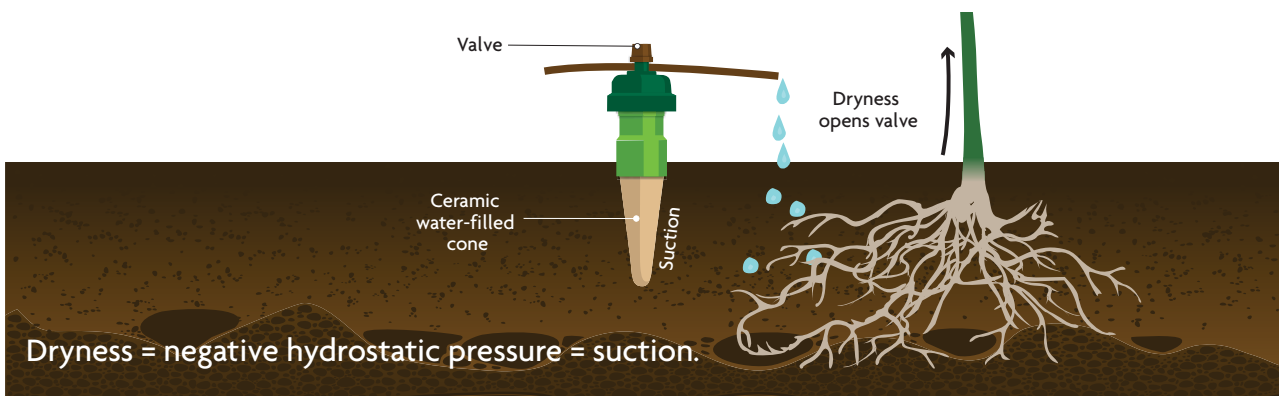


THE DIFFERENCE

The heart of the Blumat products is the clay cone. It is in direct contact with the soil and the roots and measures the moisture exactly where it is important. Each clay cone is a stand-alone sensor that regulates the release of water independently. As a result, every individual plant regulates watering itself, totally individually and as required. You save time and money and enjoy healthy, beautiful plants.

SMART WITH NO POWER

Blumats can work without any power, pressurized water, electricity, timers, or computer. You don't need a water or power mains connection, battery, or computer programming; the clay cone thinks for you.

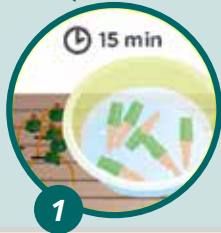


"When you like a flower, you just pluck it. But when you love a flower, you water it daily."

-Buddha (563-483 BCE)

Installing Trof Blumats

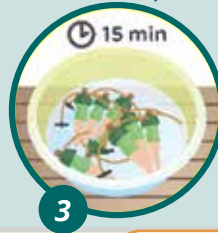
1. Unscrew the dark green top and place the ceramic sensor in the water for at least 15 minutes.



2. Screw the two pieces back together **underwater**, tightening firmly. The sensor must be completely filled with water.

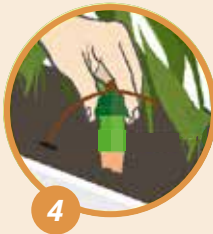


3. Now that the Blumat is filled with water and screwed back together, leave it in the water for at least 15 more minutes.



Preparation

4. Insert the Blumat in the soil, ensuring the ceramic cone is completely covered and firmly anchored.



5. Cut the water supply tubing and insert the Blumat Tee (or elbow end-piece) into the line. Make sure the tubes are firmly sealed over the Tee.



Installation

6a. Open the adjustment knob by turning it counter-clockwise. Water should start running out of the tube.



6b. Now, slowly close the adjustment knob, leaving just one drop of water hanging on the drip tube. Once you have a "hanging drip" dial back the knob two additional triangles clockwise.

Adjustment

1. ADJUSTMENT SCREW

The positioning is the same for all plants. You don't need to worry about the plant's water requirements.

2. DRIP TUBE

This is used to deliver the irrigation water. Just a few drops or many gallons a day according to how much the plant needs.

3. CLAY CONE

It is in direct contact with the soil and the roots and measures the moisture.

1

4

4. WATERING HEAD

The built-in valve opens and shuts off the water supply fully automatically.

2

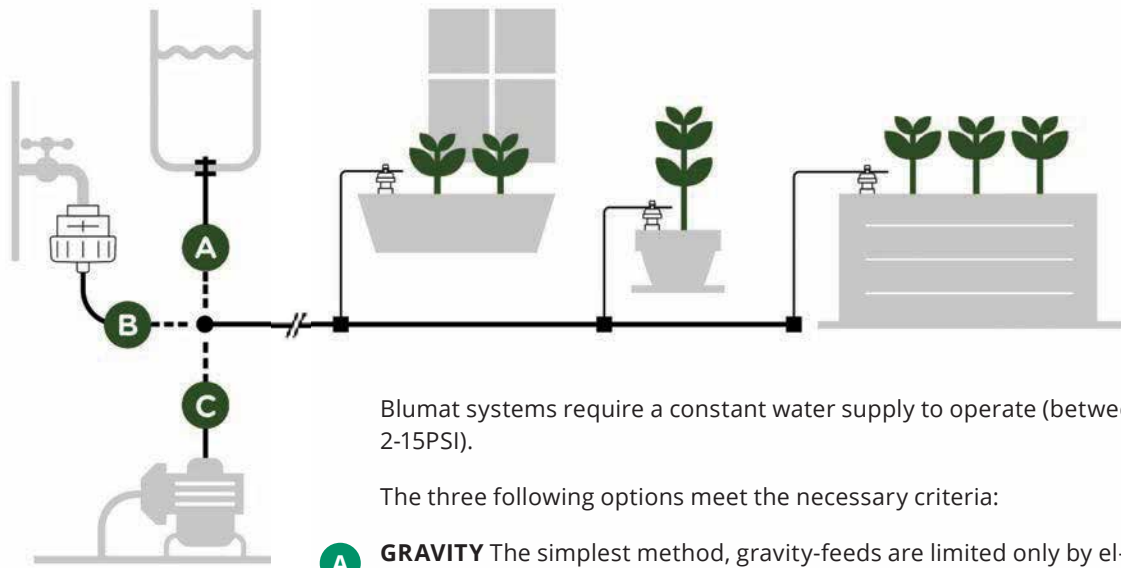
5. T-PIECE

It connects the drip tube with the supply line.

5

3

Water Supply Options

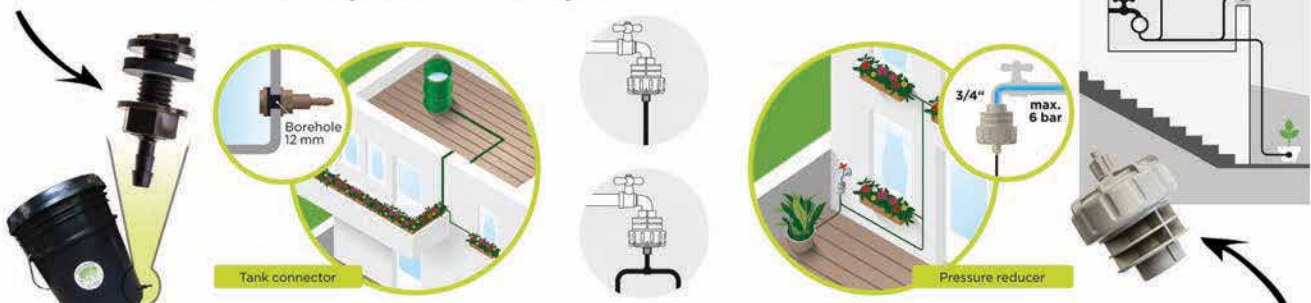


Blumat systems require a constant water supply to operate (between 2-15PSI).

The three following options meet the necessary criteria:

- A GRAVITY** The simplest method, gravity-feeds are limited only by elevation. Water level needs to stay 1 foot higher than the soil surface for every 10 feet of horizontal travel. Ideal for small and/or off-grid gardens.
- B PRESSURE** Directly integrate a Blumat system to a hose bib (or otherwise pressurized water line) using our pressure reducer. Ideal for gardens requiring water only.
- C PUMP** Use our pre-designed pump kits for higher volume/pressure applications, or when gravity/pressure feeds are not possible. Our pump kits can integrate with RO and/or other filtering systems, fertigation systems, automatic nutrient dosing, or just about any other accessory. Capable of servicing the largest scale commercial cultivators, we can design these systems for any quantity of plants.

For use as a Gravity (Barrel) System



Or For a Hose Bib (Garden Hose) System

"Absolutely in love with Blumat watering systems... I went from watering every morning for an hour to just walking in to make sure everyone is happy... it's the biggest relief and saves me so much time! I don't know why I didn't get these earlier!!!"

-King Jay Gardens, 6/13/2019

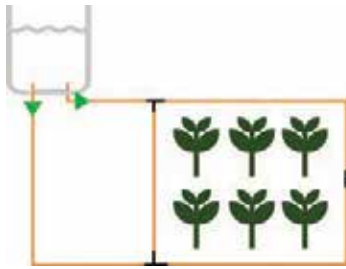
Planning Information

With a wide range of components and all the hard-to-find fittings to put them together, we have the systems and products to best support each grower's individual priorities and growing style.

CONFIGURING GRAVITY vs. PRESSURE/PUMP

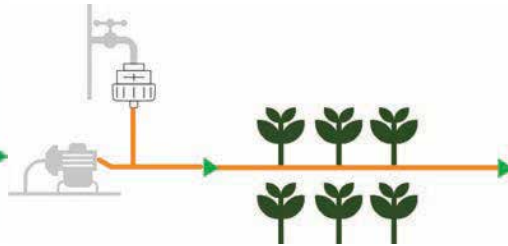
GRAVITY

Utilize two points of input and a loop in a gravity feed to best equalize pressure in your water line.



PRESSURE

A pump OR pressurized water line has adequate and consistent pressure, so equalizing pressure is generally not a priority.

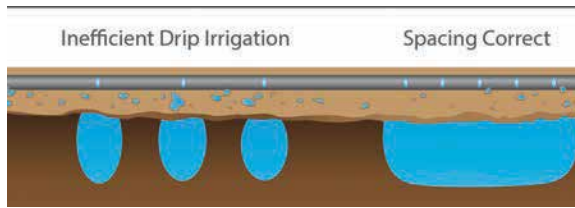


BLUMATS VS HAND-WATERING

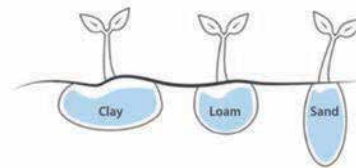
- More exact and effective
- Keeps momentum going
- Doesn't disturb plants,
- Prevents the spread of pathogens
- Allows for more efficient use of space
- Saves water and time
- Saves labor!

BLUMAT VS. TIMERS/DRIP IRRIGATION

- Individually monitors each plant
- Automatically changes with humidity, temperature, plant spurts, and growth stages
- Less expense, less maintenance
- Longer life



How far apart to space your Blumats and distribution drippers?
What type of soil do you have?



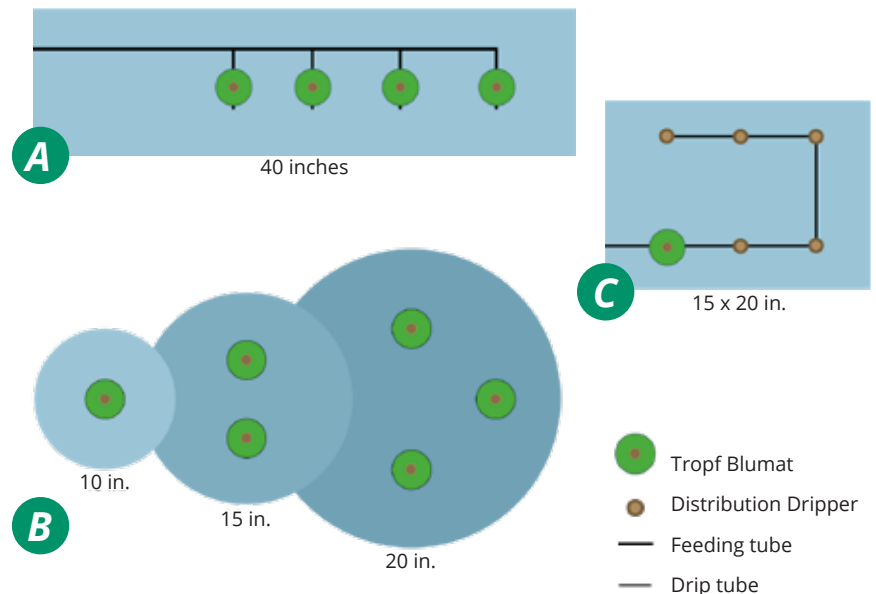
PLANNING AID

1 Trof-Blumat will water a diameter of approx. 8-10 inches of soil.

- A** e.g. to water balcony flower boxes:
40 in. in length: min. 4 Trof-Blumat
30 in. in length: min. 3 Trof-Blumat
20 in. in length: min. 2 Trof-Blumat

- B** e.g. to water pots and planters: Up to 10 in. diameter: 1 Trof-Blumat
10-16 in. diameter: 2 Trof-Blumat
16-20 in. diameter: 3 Trof-Blumat

- C** Distribution drippers can also be used in relatively large pots, containers or beds instead of additional Trof-Blumat inserts. 1 Trof-Blumat and 5 distribution drippers will water an area measuring 16 inches in width by 20 inches in length.



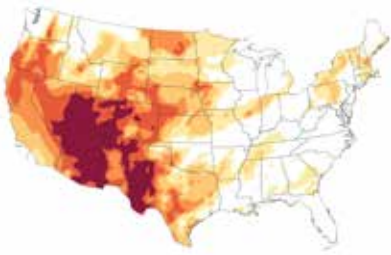
Water Conservation

CANNABIS

Cannabis is a very thirsty plant. According to the California Department of Fish and Wildlife, one plant, depending on its size can drink 5-10 gallons of water per day.

DROUGHT

Dry periods between rainstorms have become longer and annual rainfall has become more erratic across most of the western United States during the past 50 years, according to a new study published by the USDA.



"The greatest changes in drought length have taken place in the desert Southwest. The average dry period between storms in the 1970s was about 30 days; now that has grown to 45 days."

-Joel Biederman, Research Hydrologist

Blumat systems reduce water use by minimizing evaporation and runoff. Because water is applied slowly, one drip at a time, the soil is able to absorb efficiently. This means that your plants can benefit from all the water they are given, and you don't have to waste a drop.



Blumat systems use as little as a 1/2 gallon of water per day per cannabis plant!



HOUSEHOLD

Being based in Colorado, an increasingly drought-prone state, we experience first hand how precious water is. We take water conservation seriously and strive to develop user friendly products that are both convenient and efficient. Many natural disasters such as drought, flooding and forest fires can be lessened by slowing water down and letting it sink into the soil (slow it, sink it, spread it). In developing new products that are either stand alone or fit into our Blumat irrigation systems, we aim to make it easier and more affordable to conserve water in your home.



RAIN WATER

Harvest rainwater from your roof and use it to irrigate your garden! This easy-to-use kit includes a special "no-flow" timer that has no minimum flow rate, which enables you to turn your rain barrel into a Blusoak gravity irrigation system.

SKU: IG18265



Follow for more info



GREYWATER

Use your washing machine's waste water to water your outdoor plants! This simple, easy-to-use kit connects your washing machine's drain hose to a line going to your gardens. The durable brass 3-way valve lets you choose if the water goes to your garden, or to your sewer or septic if the garden doesn't need it. The anti-siphon air valve prevents a continuous flow and all the hard-to-find fittings are included.

SKU: GW17740

Distribution Drippers



@stinkietinkie



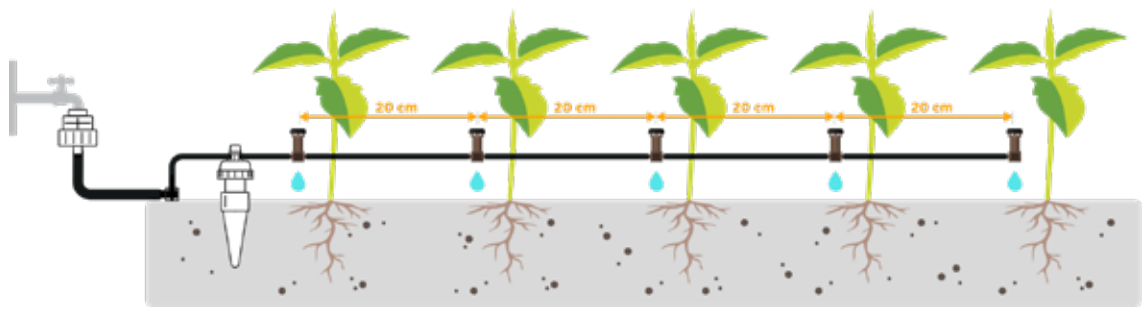
@under_the_canopy420

These drippers spread out the reach of your Troph Blumat. Because they only require 1psi they work really well in gravity systems, requiring you to raise the reservoir only 2 feet to get sufficient pressure.



@the_growing_shrink

- Water efficient irrigation
- Use multiple drippers per Blumat
- Easy to add into any Blumat system, all you need is extra 3mm tubing and scissors!
- Use stakes to keep the drippers off of the soil to reduce the possibility of clogging



Follow for video

BluSoak 2.0



RESULTS

In a side by side test with extruded poly drip tape, BluSoak showed:

- 80% reduction of water use
- 75% reduction of pump power use
- 50% increase in crop yield



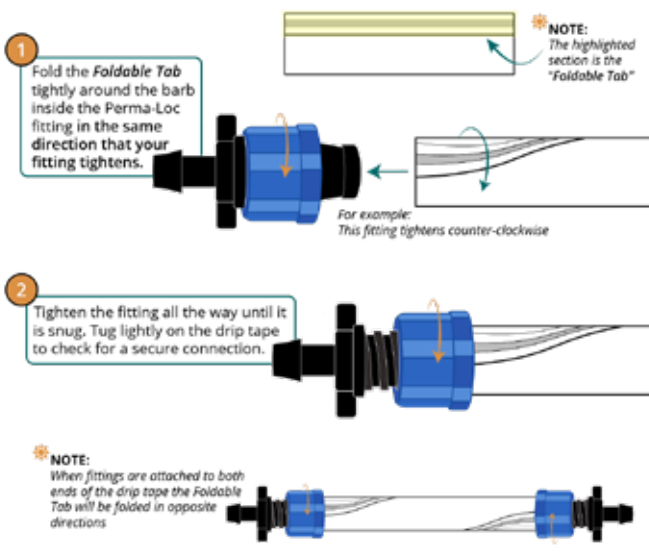
BLUSOAK TIPS

- Make sure the ends of your BluSoak 2.0 are cut straight across and not at an angle.
- Ensure the growing area is flat or has a maximum 5% slope away from the beginning of the system.
- Mulch around the BluSoak 2.0 for increased water efficiency and microbial activity.



New York Hall of Science project "Carbon Sponge" with Blumats and BluSoak

Attaching Fittings to BluSoak 2.0



PRESSURE REDUCERS

Critical components to your pressurized Blumat system, they ensure that the pressure stays at a safe level for your BluSoak. We recommend either our 15psi (IG14606) or 7.5 psi (IG16242) Pressure Reducers.



Follow for video

BluSoak for Home Gardens

Using Blumat sensors to control the water flow in an irrigation tape or soaker hose sounds both simple and obvious. However, it has a few complicated design and installation challenges. We experimented with many different types of products for this purpose, but none worked well until we found the BluSoak irrigation tape. Other styles didn't work because they require a much higher pressure than what comes out of a Blumat. BluSoak only needs 1-2 PSI! A revolutionary permeable membrane ensures even watering. Lay BluSoak tape around your plants in any pattern. You can even bury under soil or mulch! Even dirty water won't clog it!

- Can last for many years if kept away from direct sunlight
- Supplies slow, consistent water so soil always stays in the middle between too wet and too dry
- Lowers cost of pumps, filters, and supply lines while increasing yields and plant health



Connecting Blumat to BluSoak



BluSoak mingles with mulch and cover crop.



BluSoak in Spiral



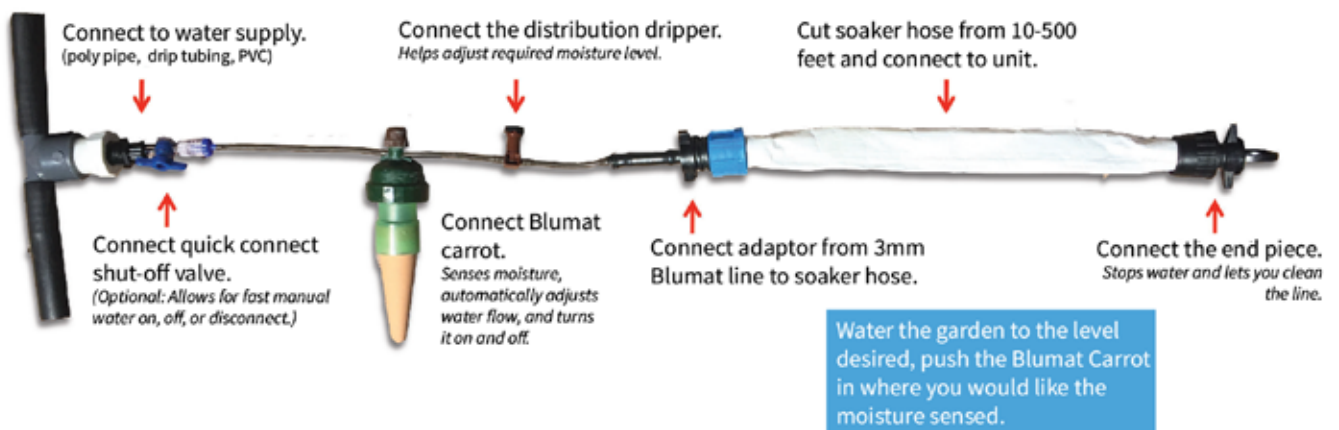
Flexible enough to circle or zig-zag



Almost impossible to clog!



Works on very low pressure



Blumat Irrigation Kits

Carrots and Drippers

COMPLETE BOX KITS

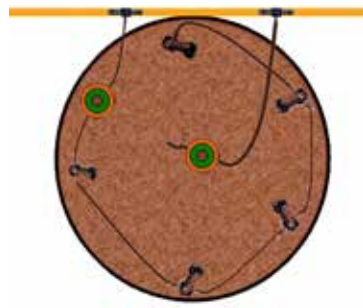
Perfect for beginners and smaller growing areas, these irrigation kits include everything you need to get your system up and running.



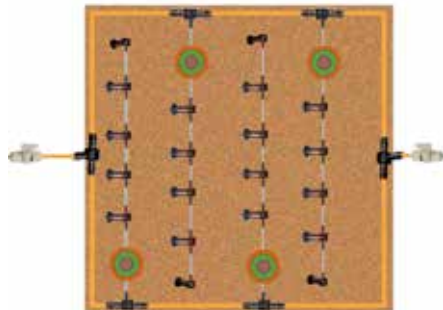
- ◇ Blumat Small Box Kit w/ reservoir (IG16054) w/o reservoir (IG15654)
- ◇ Blumat Medium Box Kit w/ reservoir (IG15615) w/o reservoir (IG14604)
- ◇ Blumat Pressure XL Box Kit (IG15479)



DISTRIBUTION DRIPPER KITS



We have pre-designed Blumat kits for small pots from 5 - 30 gallons that use drippers to distribute water.



You can also use the drippers to irrigate larger growing areas by installing our Steensland Kit. The system below uses 4 Blumat sensors with 5 distribution drippers per Blumat to irrigate a 4'x4' growing area. SKU: IG17007



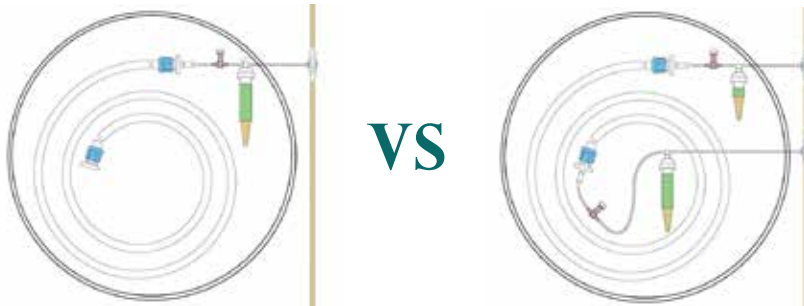
Drippers are a great way to irrigate, especially in gravity systems where you cannot raise your reservoir high enough for BluSoak. Distribution Drippers only need 2 feet of head between the soil and the reservoir, compared to 5 feet for BluSoak.

Blumat Irrigation Kits

BluSoak

BLUSOAK KITS

We have many pre-designed Blumat and BluSoak kits based on the most common sized of pots and raised bed. Modular and easy to install, all you need to buy is the supply tubing and a pressure reducer (for pressurized systems) or a reservoir and bulkhead fitting (for gravity systems).



What is the difference between one and two Blumat Carrots in an BluSoak system?

You can sufficiently water up to a 4'x10' growing area using one Blumat carrot and BluSoak 2.0. It is possible to go longer, but the bed needs to be very level. Using two carrots (one on each end of the BluSoak) will make your system more sensitive and precise, which is ideal for maintaining a more narrow soil moisture range; you can adequately irrigate up to 4'x24'.



GRAVITY SYSTEMS

If using gravity, you'll need the water level at about 5' above the soil, raising it an additional foot for every 10 horizontal feet that the water travels from the reservoir to your irrigation system.



A Double Manifold Kit uses two carrots that are feeding two headers that supply water in straight rows of BluSoak. The manifold is the best method of maintaining constant pressure throughout the system, especially on a large scale.

Grassroots Fabric Raised Beds and Pots



@subtleseedfarm

An alternative to hard plastic, ceramic, or clay pots; Grassroots Fabric raised beds and pots are high quality military-grade, non-woven 9oz geotextile fabric.

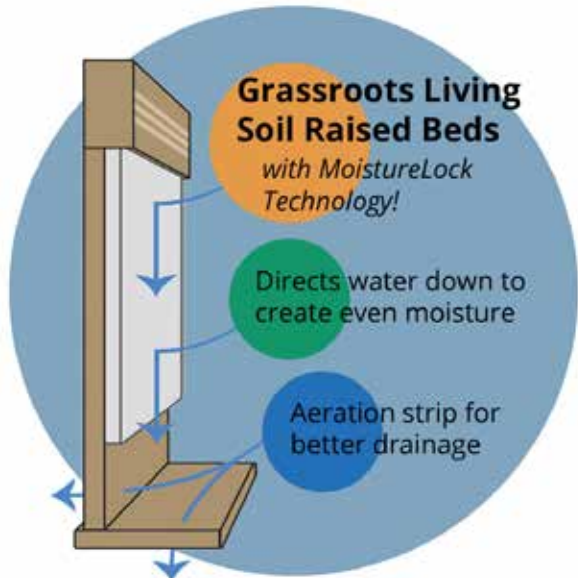
Specifically designed for living soil, the MoistureLock layer ensures that water is directed downward towards the roots of your plants.



- Prevents dry spots
- Promotes healthier roots
- Superior aeration
- Reusable over multiple cycles / seasons



Follow for more info



MoistureLock™ technology is a strip of BPA-free waterproof fabric sewn to the inside of the container that allows for water to go directly down and not out the sides of the pot which helps avoid messes and dry pockets in the soil.



PVC Fittings - Your purchase will come with the fabric bed AND the PVC fittings. Just buy the sticks of 1" PVC pipe to connect everything.



We stock standard sizes (2'x4', 3'x6', 4'x4', 4'x8' and 4'x16'), and can special order custom sizes

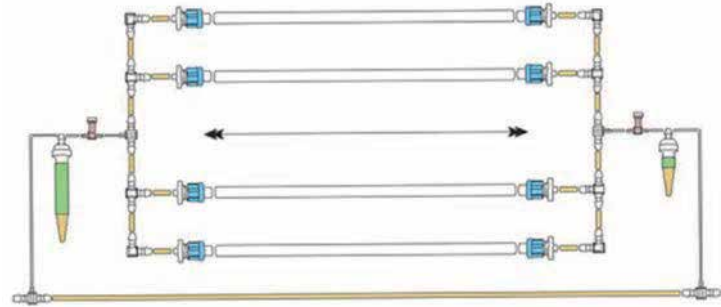


We are now stocking Grassroots Living Soil Fabric Pots!

Living Soil



Compost teas increase the microbial life in your soil, add easy-to-absorb nutrients, and feed the beneficial microbes as well as the plants themselves. This bubbler ensures that your tea will be full of beneficial, aerobic organisms.
SKU: FE17019



Instead of depending on fertilizers, various nutrients, and additives, Living Soil growers rely on beneficial microbes, fungi, and bacteria. Instead of focusing on the plants themselves, they focus on creating healthy soils to take care of the plants for them. Like fine wine from grapes grown in different soil types, many users report major gains in yield and quality, as well as increased pest and disease resistance. Because we're nurturing the soil rather than just a root ball, the irrigation designs need to be a little different. And since microbes go dormant both when the soil is too wet as well as too dry, the benefits of Blumat systems multiply. Mulches and cover crops also become more important with this growing style which also benefit from Blumat and BluSoak systems.



Keep cover crops health without overwatering.



Keep mulch moist and worm-friendly.



Microbes, bacteria, and fungi thrive with BluSoak!



Mushrooms love BluSoak!

Good cover crops also increase soil health while providing great mulching materials. Quality mulching is a key to successful Living Soil systems. If you run a line of BluSoak just under or in the middle of mulch, you prepare a gourmet meal for the worms who come up for dinner, aerate your soil, and give you the highest quality worm castings—one of the best fertilizers!

In living soil beds the roots will tend to grow around the BluSoak, further increasing the plants ability to absorb water. This is especially noticeable when the BluSoak is placed on the soil surface and a mulch layer is applied on top. A wonderful environment is created conducive to decomposition, microbial health and worm activity.

Mycorrhizae will also work in symbiosis with the BluSoak, extracting water as needed and facilitating the delivery of inputs to the plant.

"There is no need to plow, no need to apply fertilizer, no need to make compost, no need to use insecticide... there are few agricultural practices that are really necessary."

—Masanobu Fukuoka, 1913, used "Living Soil"

Living Soil

BLUMATS AND LIVING SOIL

With the ability to maintain a consistent, customizable moisture level throughout your entire soil strata, Blumats are the perfect companion for Living Soil. This access to on-demand moisture allows for a lush, thriving microbiome of beneficial mycorrhizal fungi, nematodes, worms, bacteria and more.

Soil microbes desire a consistent environment to continue to grow and expand within. When the soil is too wet or too dry, soil microbes do not thrive. Research has shown that many soil microbes will go into a state of dormancy or lower function when exposed to periods of extreme wet or dry if they are accustomed to the opposite. Blumats ability to keep the entire soil profile evenly moist allows for these microbes to continue to flourish around the clock. This allows them to continuously perform their beneficial processes such as breaking down organic matter and making nutrients plant available.



@stinktinkie

MICROBES



Use our root-enhancing microbes, or our nutrient-cycling microbes to increase the metabolism and immunity of your plants, reduce pest pressure, and achieve better overall performance.



@teamterpene



@harrisfarms_nevada

MULCHING

- Decreases evaporation by 25 - 50%
- Increases water retention
- Encourages even soil moisture distribution
- Highly recommended with BluSoak



KiS Organics Blumat Study

Measuring the yield of Cannabis sativa as a response to either automated irrigation systems or traditional hand watering methods in a controlled agriculture environment

Dr. Ben Higgins of KiS Organics created an experiment that studied the correlation between constant soil moisture content and crop yield (in terms of aboveground biomass). They hypothesised that the more constant the soil moisture level, the higher the yield.

THE EXPERIMENT

112 cannabis plants were grown for 73 days. The plants were split into two groups:

Group 1. Irrigated with a Blumat and BluSoak system set to keep the soil moisture at 100 mbar

Group 2. Hand watered with expert growers of at least 10 years of experience



The Hand watered test group (left) compared to the Blumat test group (right).

RESULTS

- The Blumat group had a smaller degree of soil moisture variation compared to the hand watered group.
- Hand watered beds were further from the target water potential value of 100 mbar, and had both the highest, and lowest readings.

Blumat:

Average Moisture Reading: 94 mbar
Range: 42-141

Hand watered:

Average Moisture Reading: 114 mbar
Range: 39-211

HOW DID THIS AFFECT BIOMASS?

Their hypothesis was correct. The group that had a more constant soil moisture level (The Blumat Group) also had higher yields!

*"Cumulatively, cultivars grown in living soil beds fitted with **Blumat irrigation systems were significantly larger, averaging 24.7% more AGB** (5.08 lbs. per 8 plant trellis) than did plants grown in identical medium irrigated by hand (3.8 lbs. per 8 plant trellis)."*



[Link to full research](#)

- ◇ Blumats increased yield by an average of 24.7%
- ◇ Blumats kept the soil significantly closer to the target moisture level of 100 mbar

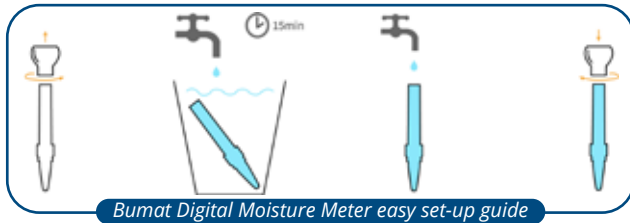
Moisture Meters

Soil moisture sensors allow us to make informed decisions about when and how much to irrigate. They are incredibly helpful for installing and monitoring Blumat systems, ensuring that you set your Blumats at the exact moisture level you want to keep constant. For precision and peace of mind, we recommend these products to all of our customers!

Higher values = dry soil
Lower values = moist soil

DIGITAL TENSIO METERS

The Blumat Digital Moisture Meter is the most popular model. With just the push of a button you can measure the soil moisture content through millibars. This is battery powered, so you must be careful to not get the top wet. *SKU: IG15462*



@stinktinkie

ANALOG TENSIO METERS

Quick reading, reliable, non-electric and elegantly designed. An upgrade to any garden or grow.



SKU: IG16767

ANALOG MOISTURE METER

The manometer is a pressure gauge which shows the suction tension on the tensiometer directly, without any preparation. The instruments are maintenance free and long lasting, when handled carefully.

IRRROMETER

Irrrometers operate on the tensiometer principle, which measures soil water tension, designed to operate in coarse sandy soils and non-soil growing media. There are many options to choose from in this professional line of tensiometers.



Watermark from Irrrometer is perfect for multi-acre farms.
SKU: IG18058



We recommend the Irrrometer Low Tension models if growing in containers
SKU: IG18166

Home Grows

Growing a home garden ranks as one of life's true joys. With busy lifestyles and multiple distractions though, it's all too easy to forget an important watering schedule and see those special plants wilt instead of flourish. Timers can help but they don't easily adjust for periods of hotter weather or unexpected rain. They also rely on undependable batteries or utility power. Blumats take the guesswork out of watering and give you extra time for the more interesting and fun parts of being in your garden.

Home gardens increase sustainability and help improve mental health. Our BluKits and irrigation systems keep your plants healthy, save time and water, and – with little setup or maintenance – maintain even and consistent soil moisture levels – no matter what the weather does! We have decades of experience designing the most simple and efficient systems to care for your favorite plants.



Cultivate your own mushrooms with ease



Keeps small plants without deep roots safe from drying out

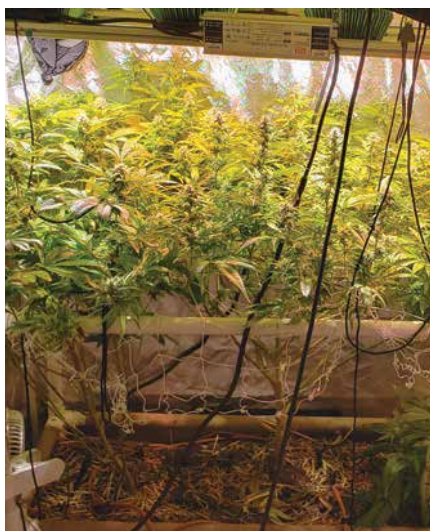


Healthier plants, one drop at a time



Use gravity to supply areas without easy water access

@soilnsmoke



A grow tent garden thrives with only Blumats



Versatile and flexible for non-conventional gardens

"When tillage begins, other arts follow. The farmers therefore are the founders of human civilization."

—Daniel Webster (1782-1852)

Commercial Systems

Indoor and Mixed Light Facilities

Blumat first became known as a system for watering houseplants and—although we had first hand experience with how well they work in commercial settings—it took many years of demonstrating and explaining their commercial applications. Now, hundreds of large-scale Blumat systems make commercial grows more cost-effective, labor-saving, and successful. Salt-based systems typically save 50% of their nutrient costs while significantly cutting back on labor while increasing yields. In scientific, side-by-side tests with Living Soil grows, Blumat consistently increase yields by 20%+. The reduction of inputs (including labor) and increase in production make Blumat systems the obvious choice.



@imgilla

EXPANDABLE

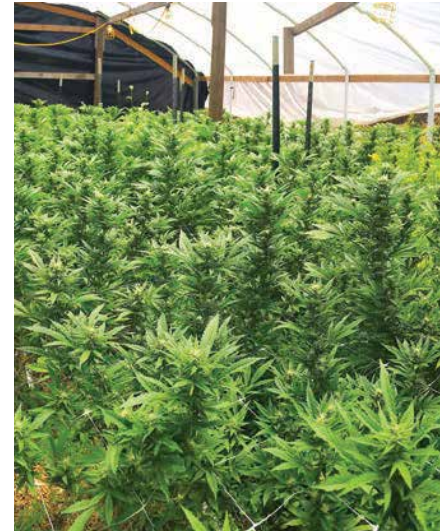


@harrisfarms_nevada

Large greenhouse beds



Small, mixed-use greenhouse



Easy to water dense canopies

VERSATILE

We have capillary mat systems for starts, seedlings, and clones; BluSoak systems for any-length or size of raised-bed systems; Blumat and/or drip systems for large greenhouse grows in pots.



From coco and salt...



@subtleseedfarm

To soil grows in greenhouses...



...to containers in the mountains.

Pump Kits

We make two pump kits designed to pressurize reservoirs for Blumat systems. These kits let you take water from a RO or rainwater storage tank or from a system that loses pressure when nutrients are mixed in a reservoir.



BASIC PUMP KITS

Our Basic Pump Kit includes almost everything you'll need to pressurize a Blumat system connected to a water storage tank. It includes a pressure switch and a small accumulator tank as well as a pressure regulator, filter, and fittings. The ShurFlo pump has a Flow Rate of 1.4 GPM and the Accumulator Tank has a capacity of 21 oz.

SKU: IG15808



HIGH-FLOW PUMP KITS

Our High-Flow Pump Kit almost triples the water flow to 3 gpm and includes a much larger, 5.5 gallon (4 gal. capacity) pressure tank. This kit again includes all the needed fittings and parts. We also have an upgrade to this system for using Dosatrons and other fertilizer injectors.

SKU: IG18238



FOOT VALVE

Mount your pump above your reservoir without losing the prime. This foot valve stops the water from going back down into the reservoir and keeps air from getting into the line each time the pump turns off.

SKU: WP16111



GAS POWERED PUMPS

For larger scale agriculture we have more heavy duty products such as this PowerPro Cast Iron Gas Pump.

PRESSURE ACCUMULATOR TANKS

WHY DO YOU NEED THIS IN A BLUMAT SYSTEM?

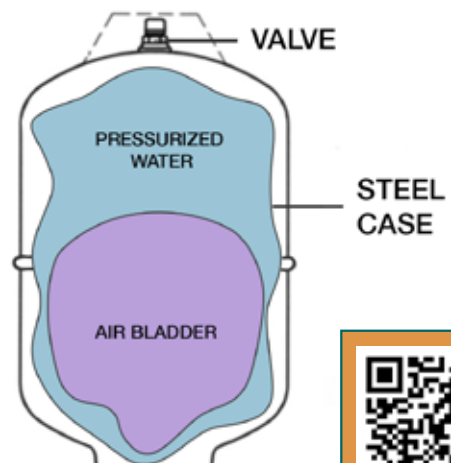
An important piece of all pump kits for Blumat irrigation systems, it allows the pump to turn off and rest without sacrificing pressure in the tubing. This allows for tubing (or irrigation line) with a constant pressure, which is exactly what Blumat Watering Systems need to work properly.

HOW DO THEY WORK?

The pump will switch on and run until it reaches 40 psi, at which point it will shut off.

At this point the pressure is being held by the pressure accumulator tank. As the pump is resting, the accumulator tank picks up the slack—the air bladder squeezes down on the membrane of water or nutrient solution, keeping adequate/constant pressure in the tubing, and giving the Blumat sensors water as they call for it.

When the pressure eventually drops down to 20 psi the pump will switch on again and build the pressure back up to 40 psi before shutting off again.

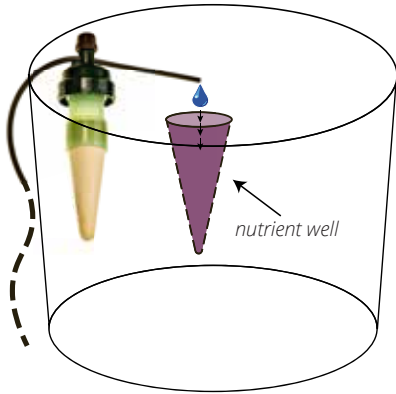


Follow for video

Nutrients with Blumats

Most nutrient programs are compatible with Blumat systems, but appropriate precautions should be taken. The concentration of nutrients (dose) as well as frequency of nutrient application are the first and foremost factors impacting how compatible a nutrient program will be with a Blumat Watering System. When converting from a drain-to-waste style, we recommend using 25-50% dilution rates of nutrient concentrations.

For larger systems, you may wish to install a circulating pump within the reservoir to avoid having nutrients settle over time. Always flush the system once or twice with clean water between cycles.



NUTRIENT WELLS

For dry fertilizers 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”.



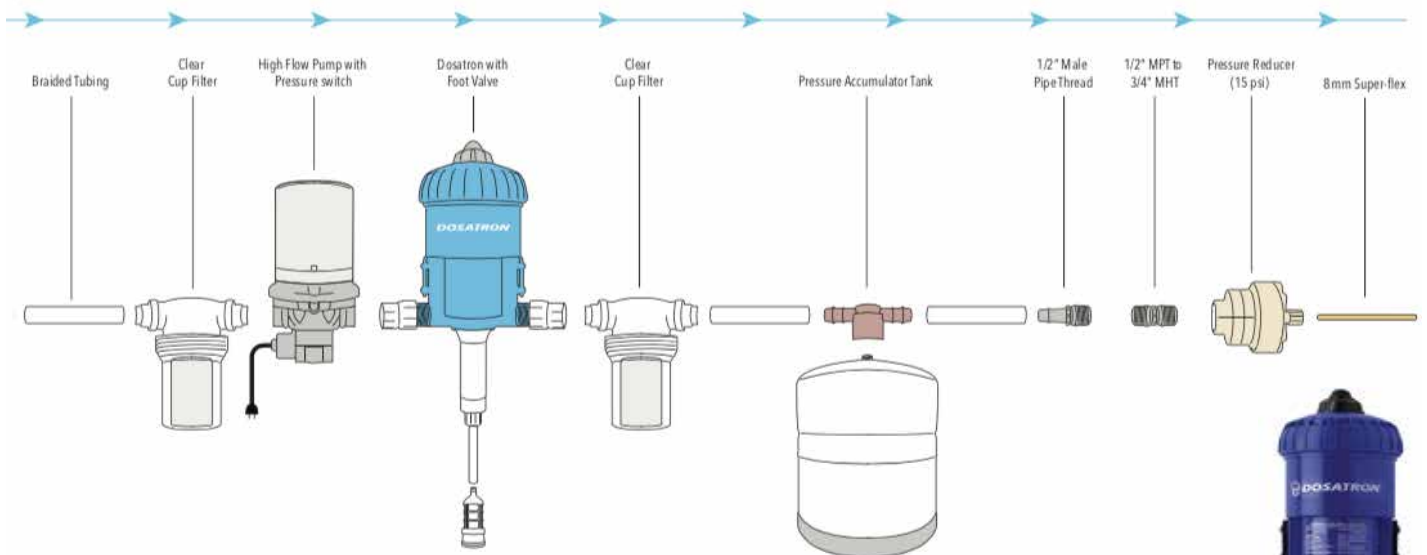
NUTRIENTS

For organic nutrients, drinking-grade Biofilm Buster is recommended. For salt-based nutrients use Drip Clean. Both products assist in solubilize nutrients and reducing risk of clog/biofilms.



Install a purge valve at the end of your supply line to easily flush your system

- The more water-soluble a nutrient is, the more likely it is to be successful in a Blumat Watering System.
- Do your nutrients leave physical particulates? Try using one of our filters!
- Hand water your thicker nutrient solutions. Don't worry, your Blumats will sense the increased moisture and will stop watering until the soil dries out again.



DOSATRON AND AUTOMATIC FERTILIZING

Fertigation with Blumat poses more of a challenge because these systems require at least a 0.5 GPM flow rate. Blumats frequently only output drops per minute instead of gallons per minute. We solved this problem by using pressure tanks and a pressure-sensing pump.



Capillary Mats



Even the strongest and most powerful tree begins as a fragile sprout coming out of a tiny seed. Nurturing that sprout or clone requires much more momentary attention than when it's larger and in a larger container. In general, the larger the container, the less frequently it needs irrigation; the smaller, the more often it needs watering. For this reason, capillary mats frequently become one of the grower's most time-saving tools for starting seedlings and propagating clones. They water plants from the bottom up, preventing many problems while providing many advantages.



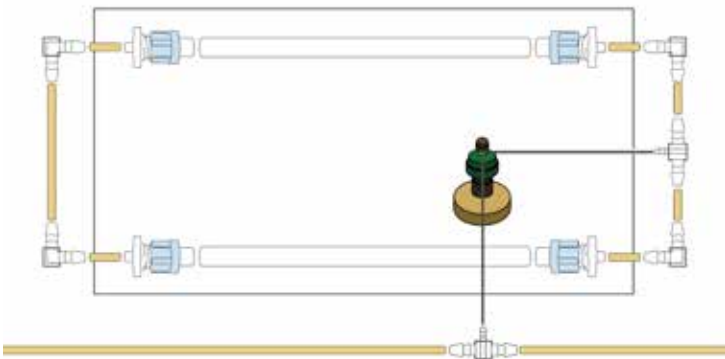
Capillary mat systems have a long history of extensive use in Europe, and are only recently becoming popular in the US. Before these water-holding fabrics became available, people used wet sand beds and even thick layers of newspaper. And even in the USA now; retail garden centers, greenhouses, and nurseries have installed over 8 million square feet of AquaMats, saving roughly 70% of their water use— 889,000 gallons per season! These systems also offer the most cost-effective and economic solutions for roof top gardens.

Capillary Mats with Blumats



Surface Blumat

Blumats for starts and seedlings! These automatically water plant trays totaling up to 5 square yards without electricity or pressurized water (electronic ones available for larger areas and/or thousands of plants). Place on top of capillary mats, attach to distribution drippers or BluSoak and they automatically supply the needed water. Sensitive new roots aren't disturbed and you won't have to worry about tiny plants either drowning or drying out too much.



HOW THEY WORK

The foot of the water-filled clay tensiometer senses the moisture level of the capillary matting. The membrane head regulates directly, and more or less constantly, the water flow of the drip tube via a squeeze valve.

This system is adjusted so that the valve closes when sufficient moisture is present (capillary mat is saturated).



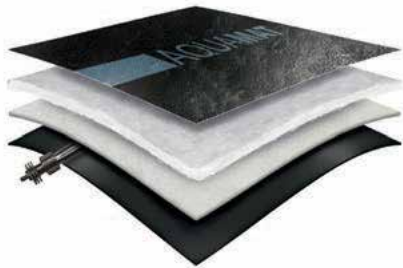
Follow for more info

Propagating with Capillary Mats

The less soil in a pot, the more important and more frequent irrigation becomes. Plants in big pots can go long times without water, those in rockwool cubes or small containers can need water many times a day. Capillary mat systems represent one of the most effective, time and water saving solutions for seedlings, clones, and starts.

If you are germinating seeds in trays or rooting clones in cubes, capillary mats take the guesswork out of it. Our surface Blumat works just like the our traditional carrots, but instead of monitoring soil moisture, it monitors the moisture level of the mat. When it begins to dry out, the valve opens and rehydrates the mat. This maintains a static moisture level in the capillary mat that is available to wick up into the grow medium.

While most commonly used with smaller containers or rooting cubes, this technology can be effective in up to 5-gallon pots. Proven successful and popular in Europe for decades, they are only slowly becoming known in the USA. We carry the cap matting itself for do-it-yourself, cost saving growers as well as top-of-the line complete systems.



COMPLETE SYSTEMS

Our multi-layered capillary mat systems have a layer for the ground (no trays necessary), one with a thicker fabric that stops water transmission when no containers are pressing down, one with standard cap mat, and one perforated foil layer to prevent algae.



BluSoak drip tape feeding capillary mats.



A surface Blumat and capillary mat for irrigating a small number of starts.



A Colorado dispensary keeps clones happy with BluSoak, CapMat, and a surface Blumat.



Capillary mats are arranged on several shelves to automatically service these starts.

MOTHER STOCK

Mother plants – especially rooms full of them – might just be the best use of Blumat technology. Every strain, every pheno type, has its own moisture requirements. When you start taking cuts from them, they begin to vary even more. With a simple Blumat system in place every mom gets exactly what she needs. Give your propagation plants what they really want: consistent irrigation that is never too wet or too dry.



Several mother plants are irrigated by a capillary mat system and a surface Blumat with a gravity feed.

“Don't judge each day by the harvest you reap but by the seeds that you plant.”

— Robert Louis Stevenson (1850-1894)

Growing Styles

Blumats work for almost every kind of growing style but the system design changes a little with the different types.

ORGANIC

Systems for organic growers are normally similar to the ones we use for Living Soil but need less water coverage because the main concern is keeping the root ball wet rather than all of the potting mix.

SYNTHETIC

Systems using synthetic, salt-based nutrients in cocoa and/or high peat planting mixes normally need less Blumat sensors and/or distribution drippers. Since the main concern is keeping the root ball wet rather than all of the potting mix (as Living Soil growers prefer), plants maintain optimum growth with less drip points. Blumats excel and quickly pay for themselves with salt-based fertilizers since you can reduce your nutrient use by at least 50% (because there is no run-out from the bottom of your pots.)

COCOA AND PEAT

Cocoa and peat have high capillary action that spreads the moisture laterally. In general, this means fewer carrots and/or distribution drippers are necessary.

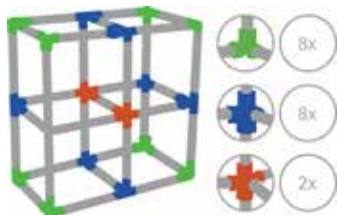
GRODAN AND OTHER ROCKWOOL METHODS

Blumats can work with Rockwool but more care needs to be taken to keep the carrots from drying out. It's important to keep the original wrapping around the sides and it helps to use a plastic top. Capillary mat systems—either alone or with a carrot on the top—can also be a good way to use these.



TRELLISES

Give your plants the support they need to thrive!



TRELLIS KITS

Our pre-configured trellis kits allow you to build single or double layers of trellising for your garden. Great for integrating to PVC raised beds like Grassroots!



BUILDABLE PVC

Use our high quality furniture-grade PVC fittings to construct nearly any 3-dimensional squared frame you can imagine!



Pair the trellis kits with mesh netting to create a "Screen of Green" (SCROG) to train your plants to grow horizontally.

- Receive even light exposure
- Maximize space
- Can increase in size and resin production



Hemp Irrigation



HEMP AND DRIP IRRIGATION

When you're setting up a new field, or expand an existing one, irrigation becomes a primary concern. An efficient, cost-effective, and well-designed irrigation system can determine between a high-yielding success and a heart-breaking failure.

Our design team has years of experience in building hemp field irrigation. In an industry that lacks the advantages of extensive federal R&D support, we can guide you toward the most up to date practices and configurations. We will walk you through all aspects of the irrigation system from pumps, to filters, to fittings and tape, through complicated and unique design questions.

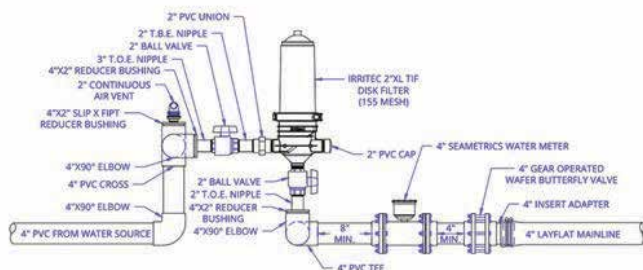
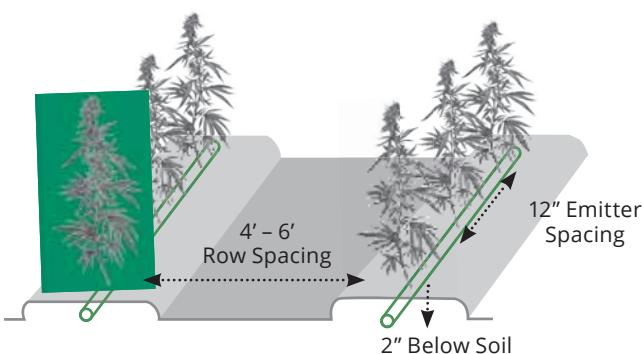
Our longstanding relationships with the top manufacturers of irrigation equipment around the world help bring you the most appropriate and affordable systems available.

We will engineer the most appropriate system for your unique situation. Pressure compensating drip tape, heavy wall supply tubing, or simple disposable tape. We can build for a trial run or a system that will last a decade.

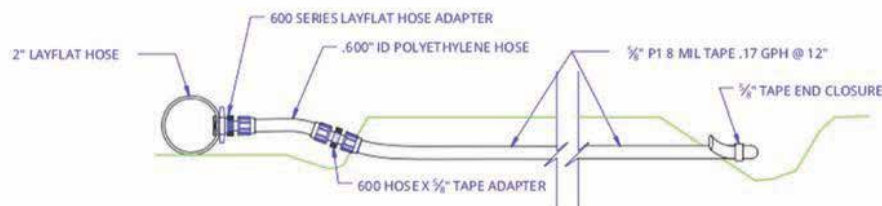
All of our clients receive complimentary consulting services and engineered design. Formed over the last forty years, a vast network of contacts in all aspects of propagation, production, and processing that have been formed over the last 40 years. We are happy to share.

HEMP AND BLUMATS

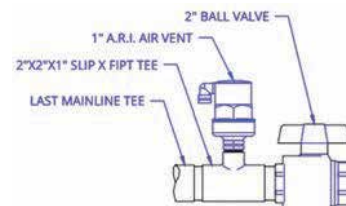
An amazing way to water a boutique field, up to an acre. Blumat tech will offer a premium growing environment. Plants will show improved yield and quality through low water use, perfect soil moistures, and a healthy rhizosphere.



TAPE OUTLET DETAIL



SUBMAIN FLUSHOUT DETAIL



Multi-acre Farms



Blumat systems can connect directly to pressurized water systems; but, if nutrients need to automatically mix into the water, you'll need either a fertigation system or a reservoir to manually mix in the nutrients. With the manual reservoir system, the incoming pressure will be lost and you will need to re-pressurize the water. Our pressure pump system will do that.



Layflat Hose Irrigation is normally the best way to bring water from the source to the field. It's flexible so it can move easily over uneven ground. It is easy to ship, and the fittings, valves, and air vents are much less expensive. We carry all the standard Layflat components and tools as well as the hard-to-find specialty parts.

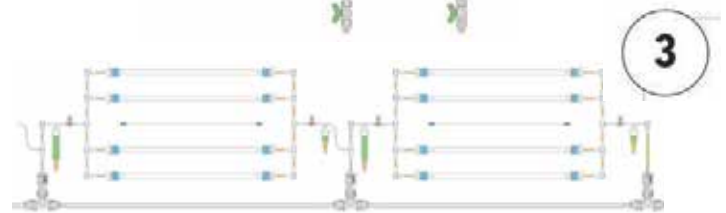
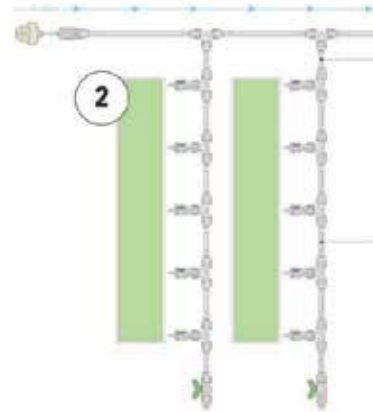
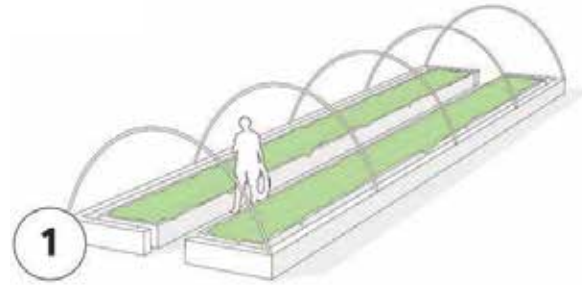


Custom Designs

Like many situations in life, our irrigation choices include complex factors—there always seems to be both an upside and a downside. One of the main upsides to Blumat systems is how versatile they are. You never have to “paint yourself in a corner” and can always easily make changes, even reconfigure the parts into a completely different kind of system. This versatility though can be somewhat of a downside when a new customer is starting out because there are so many different possibilities and products.

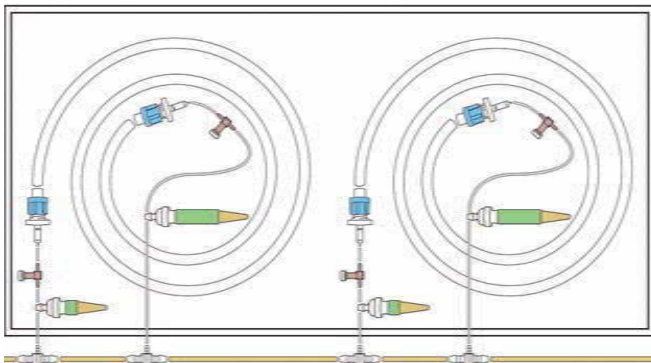
That is why our team of designers is here to build a custom designed system for anyone. Any size system, from 6 plants in your closet, to your 6000 square foot canopy greenhouse, to your 600 acres of hemp. We answer the phone when you call. We listen to your unique concerns. And we design the irrigation system that is right for you.

All designs come with a complete, itemized parts list and a quoted price, along with design drawings. Blumat Watering Systems quotes and designs are always free.

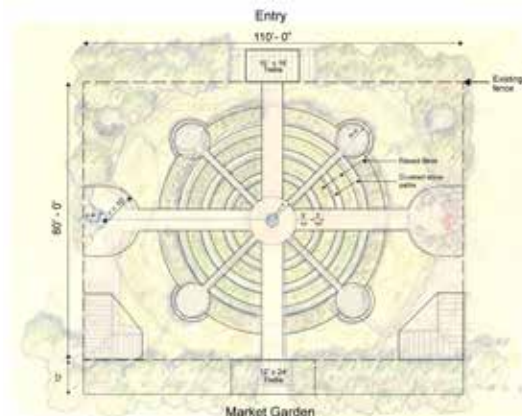


This series of illustrations shows the layout of a raised-bed design. Figure 1 shows a hoop house, while figure 2 displays the irrigation header layout for the beds in the house. Figure 3 shows the detailed configurations of the Blumat-specific equipment in each bed.

4' X 8' KIT DELUXE DESIGN



From paper (above) to practical (below)!



We have a network of experts we co-design with to ensure you get the highest quality system.



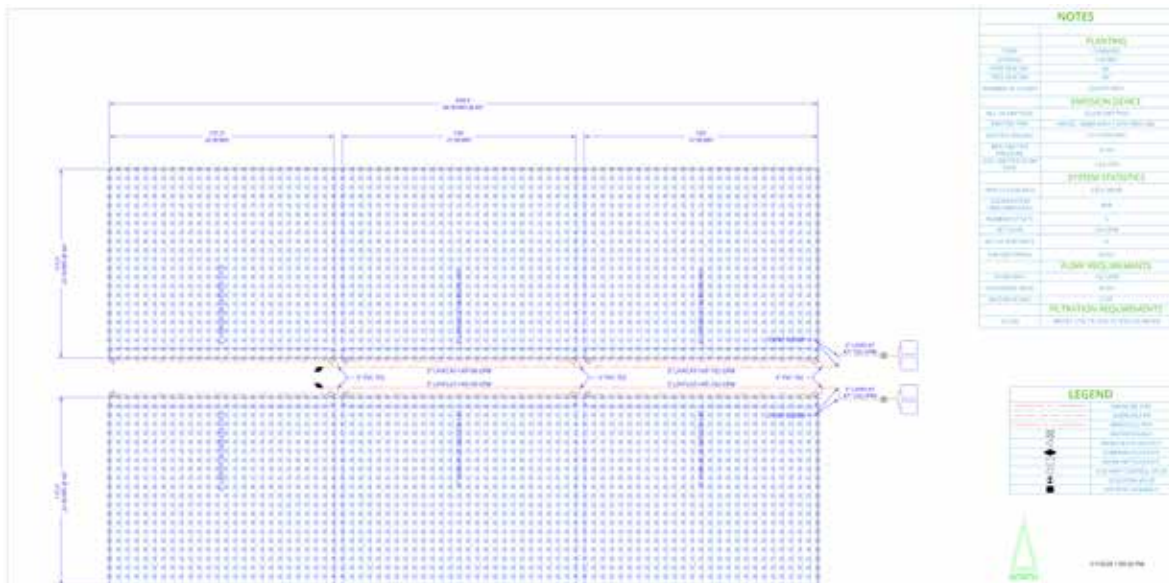
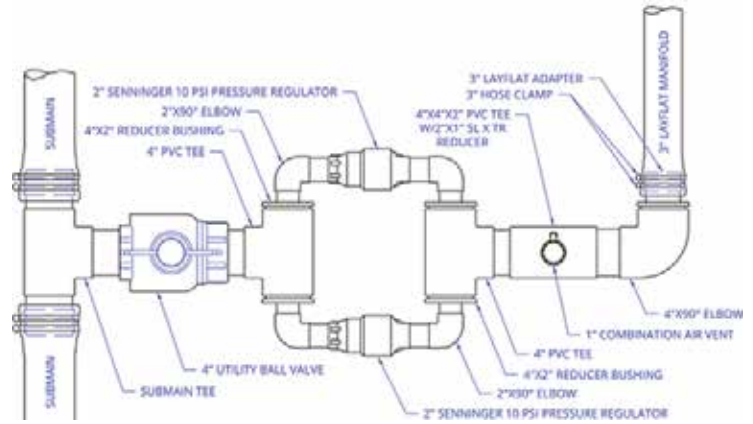
Follow for Custom Quote Form

Engineered Systems

COMPREHENSIVE DESIGN

We provide professional design and engineering for every budget and for the best results. Our in-house design team has decades of cultivation experience, and can intimately understand the best solutions for your unique situation. We can ensure that you'll get exactly the system you need, as well as the knowledge necessary to install, maintain, and operate it for optimized performance. Multi-acre field designs include insured engineering and CAD renderings.

We can also arrange site visits, take measurements, and use that research to make recommendations and quotes. In many places, we can recommend professional installers who can visit your site and are familiar with our watering systems.



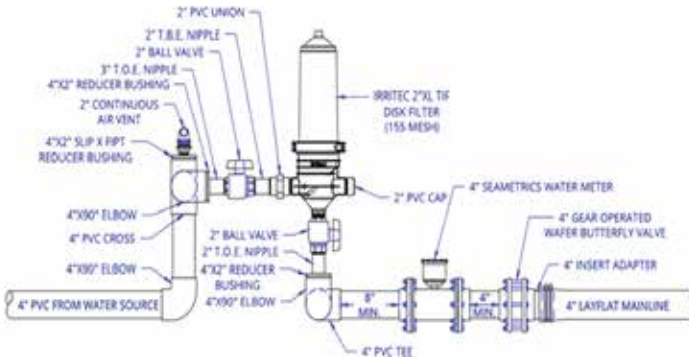
Filters

FILTERS FOR MULTI-ACRE FARMS

We generally recommend sand-media and mechanically-based filters (i.e. disk, mesh, etc.) to minimize complications and ensure consistent reliability. All systems are fully customizable.

MESH DISK FILTERS

Uses 155 mesh. These filters can be installed as a manifold, increasing the output rate. You can take the cover off to easily clean the disks.



SAND FILTERS

Complete filters come standard w/ steel manifolds, 2 back wash valves, a continuous 1" air vent, 0-60PSi liquid-filled pressure gauges, grooved adapters and couplers for back wash valves and installation. Filters 220-325 GPM.

Highly recommended to use with the automatic controller.



INLINE FILTERS

If your water isn't clean or you'd like to use thick nutrients in a reservoir, these filters will keep your Blumat safe. The screen has just the right mesh - not too big that could let clogging particles through or too small that would mean unnecessary cleaning.



The clear bowl on this Blumat Filter makes it easy to know when it's time to clean, and you can remove the bowl without having to unhook your lines!
SKU: WP15726

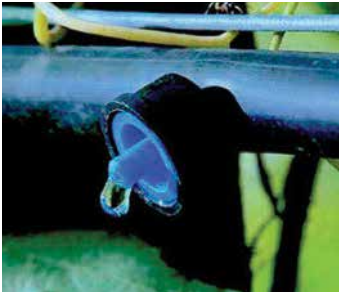


Install this Small Inlet Filter in your 8mm supply line.
SKU: WP16479



This Hose Thread Filter conveniently attaches to your hose so that you can be sure your lines are free of particulate.
SKU: IG17304

Grower Supplies



TRADITIONAL DRIP IRRIGATION

We started supplying drip irrigation systems in the 1970's and gradually upgraded almost entirely to using Blumat's instead. For certain unique applications and large scale production we still supply drip systems. And since we're still grand-fathered into many great importing resources, our prices often stabilize at less than commonly found prices. You can use our supply line and fittings for Blumat, drip, and many other kinds of systems.



EASY SOAK

These systems are like our BluSoak versions but use a flow restrictor instead of a pressure reducer. If incoming pressure is less than 50 psi, you can just hook them up to a constant water supply and let them take care of your plants all season. They don't adjust or turn on and off like Blumat systems, but for inexpensive crops they're less expensive and easier to set up and maintain.



HIGH QUALITY POLY TUBING

Our polyethylene black tubing may be a little more expensive than the kind you'll find at a local hardware store but it's much more than worth the price difference. Less expensive to ship because it rolls much smaller, it's also much harder to kink, lasts longer, and—since it's designed to work with Perma-Loc hose fittings, installing, changing, and repairing becomes a quick and easy job.



FILTRATION

Deciding on the best filtration for a multi-acre farm can get complicated with many factors to take into account: the required water flow, pressure, and—almost most importantly—the cleaning process. Less expensive options save money in the beginning but can get much more expensive as labor costs escalate. We evaluate the total situation, make a recommendation, and offer both economical and luxury options for you to choose from. We supply Reverse Osmosis, large and small particle, and sand filtration systems.



TOOLS

Beyond-conventional irrigation systems often require unusual and hard-to-find tools. And for conventional ones available from local hardware stores, we save you the trip and likelihood of getting the wrong ones.



AIR VENTS

We help you decide why, when, and where to install air vents, valves, and specialty fittings. Because our systems normally use so much less water than conventional options, these calculations differ from conventional rules of thumb.



PERMA-LOC

Once growers try these fittings, they never want to go back to the extra cost and time of using insert fittings and clamps, the near-impossibility of changing or reusing compression fittings, or need to glue permanently into PVC. Perma-Loc fittings easily and quickly tighten on and off.



WATER STORAGE

The shipping costs for large water tanks often become too expensive. We can often drop-ship these from many different locations though; and, for large irrigation orders, we can often add them to a truckload. For smaller systems, our 5 gallon tanks with a float valve work well.



TAPE FITTINGS

These fittings make setting up, changing, and repairing irrigation tape fast and easy. They work with our BluSoak, Pressure Compensating tape, and most thin and thick wall tapes.



BLUMAT CLASSICS

Take a vacation and let your plants look after themselves. Blumat Plant Savers ensure a constant supply of water. They automatically supply just the right amount - never too much or not enough. They won't experience the drying out that stunts growth or the over-watering that squeezes the air out of the soil and keeps them from "breathing" properly.



Our all-metal misters will adorn your home and hydrate your plants better than a bland plastic spray bottle. This 10-ounce brass plated mister gently mists your rose bushes, succulents, air plants, and any other thirsty house plant with a simple press of the plunger. Once you've successfully hydrated your plants, place your mister in the open as a charming decoration. Surely it will receive its fair share of compliments.



XL CLASSICS & BOTTLE ADAPTERS

For larger plants or tropical ones that require much more water, the Blumat Classics XL Bottle adapters provide the same ideal water supply as their smaller version giving about 50% more water. The Classics vary with height of water container and the Bottle adapters release about 10 ounces of water per 24 hours.



Bonsai need special attention. Blumats provide that but the regular ones are too long for most Bonsai containers. This product solves the problem. It can save an immense amount of watering time because this can automatically water the bonsai without needing to submerge it. In dry areas, it helps Bonsai survive those extra dry days when their owners may be distracted or gone and not paying as much attention as they should.



BLUMAT BOTTLE ADAPTER

Cut the bottom off plastic bottle and fill for automatic watering. This adapter fits into almost any standard plastic bottle. To install, fill the bottle with water and push into the soil near a plant. The porous cone will slowly start to distribute water.



This beautiful globe works flawlessly with the Blumat Bottle adapter! Impress your guests and show off your thriving plants with less worry about watering! The Blumat bottle adapters relieve your plant-parent anxieties while you're on vacation time. However, the aesthetic of a plastic bottle is less than appealing. These new hand-blown glass water reservoirs give you the best of both worlds- they both provide the slow-drip plants love as well as looking really good!

Sample Product Overview



Tropf-Blumat

"Carrots"-- include drip tube and T-piece



Tropf-Blumat Maxi

For large plants, or w/ 5" Carrot to monitor top and bottom of soil with



Distribution Dripper

to spread the moisture!



Pressure Reducer

A true pressure reducer, NOT a flow restrictor



Tank Connector

Bulkhead fittings for all sizes, with or without auto-stops



Tape Fittings

Drip Tape Fittings for any configuration



8mm Super-Flex

Silicone, highest-quality, super flexible supply line



Shut-Off Valve

Turn 8mm on or off, use as a flush valve



Greywater Kit

Use water from your washing machine to irrigate your plants



Quick Connects

Conveniently disconnect plants, rows, beds, etc.



Perma-Loc

Best way to connect 1/2 and 3/4" supply line



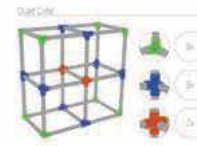
Grassroots Beds

Unique beds and pots designed for living soil



Rainwater Kit

Irrigate with rainwater using BluSoak and a timer



PVC

Trellis Kits for any size with or without beds irrigation kits



Sun-Mar Toilets

Ecological, sustainable, and the best fertilizer!



Bucket Kit

Pre-outfitted reservoir with bulkheads and water-level indicator



Solar Pumps

Move your water using only the Sun



Pump Systems

When gravity isn't enough



Furniture-grade PVC Fittings

Build your own trellis, supports, furniture, almost anything



Dosatron

Automatic Fertigation and Nutrient Dosing



Blumat Classic

Keep your houseplants happy when you're on vacation and away



Raised Bed Kits

Blumat Irrigation systems for all sized raised-beds



Blumat Easy

Use almost any plastic bottle to automate houseplant watering



Pot Kits

Economy, mid-range, and deluxe kits for almost all pot sizes



Blumat Digital

Take the guesswork out of dialing in the best moisture level

Sustainable Village
1001 Lee Hill Dr.
Boulder, CO 80302

Presorted Standard
U.S. Postage
PAID
Denver, CO
Permit No. 5377



info@sustainablevillage.com
303.998.1323
www.sustainablevillage.com

