BLUEBERRY

metzer

Growing blueberries
using drip irrigation

With special demands comes great potential

Blueberries are a species of small-to-medium bush native to North America. They come in two varieties – lowbush and highbush – both massively cultivated around the globe. Considered a superfood, they have been in ever-increasing demand worldwide, making them a cash crop of choice for growers able to meet blueberries' unique demands.

The challenges – and how metzer can help

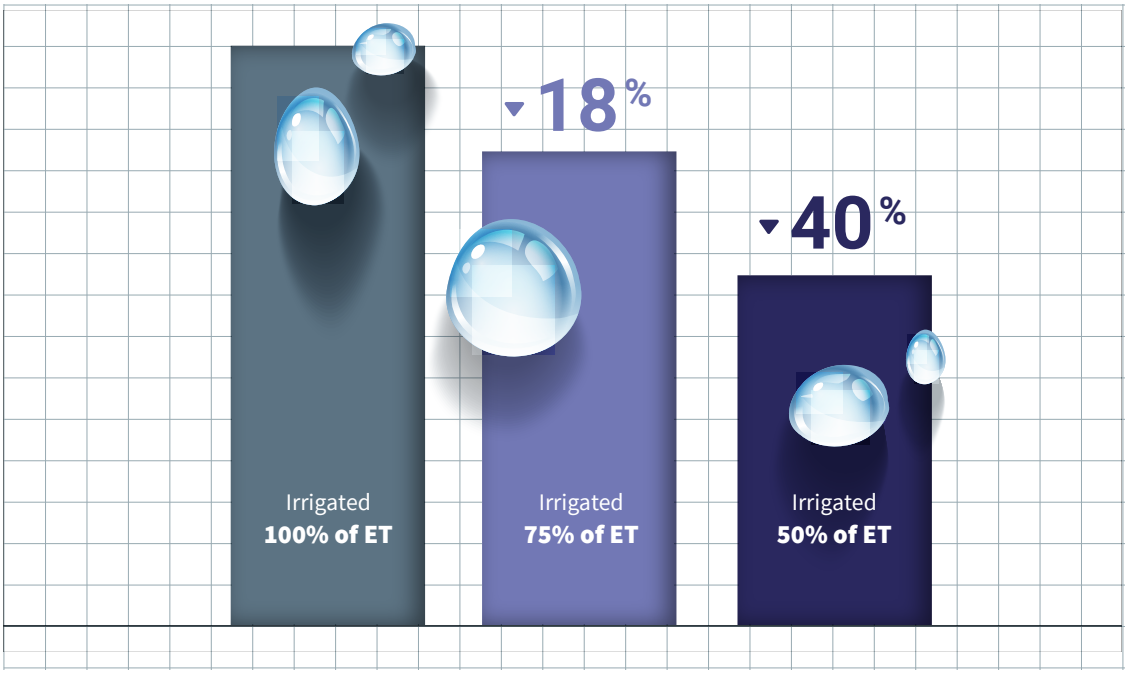
Blueberries are exceptionally fussy when it comes to growing conditions, with a lifecycle that demands constant monitoring and precise operation in order to reach commercially viable yields.

Blueberry challenges

Water stress

The combination of a high evapotranspiration (ET) rate and a relatively shallow root system makes blueberry crops notoriously vulnerable to water stress, especially during hot seasons.

Effect of water stress on yield of Highbush blueberries



Source: Institute of Botany, Jiangsu Province and Chinese Academy of Sciences, Nanjing 210014, China

Your irrigation system

Strike the right balance

Giving blueberries the right amount of water under varying conditions requires an accurate irrigation system that's both flexible and robust. The effective method for optimizing water content at the blueberry root zone has proven to be short pulses several times a day.

To achieve an ideal balance, use Metzer's INBAR non-drain PC drip and advanced control & automation system.

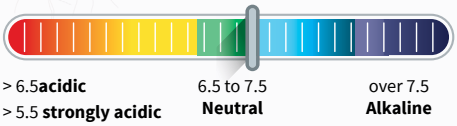
Blueberries unique challenges

Waterlogging

Blueberries are quick to develop root anoxia under waterlogged conditions, leading to dramatic decline in all plant parameters, which may affect the plant for years.
One solution is growing on raised beds or ridges instead of soil – however, this increases drainage and the risk of water stress.

PH sensitivity

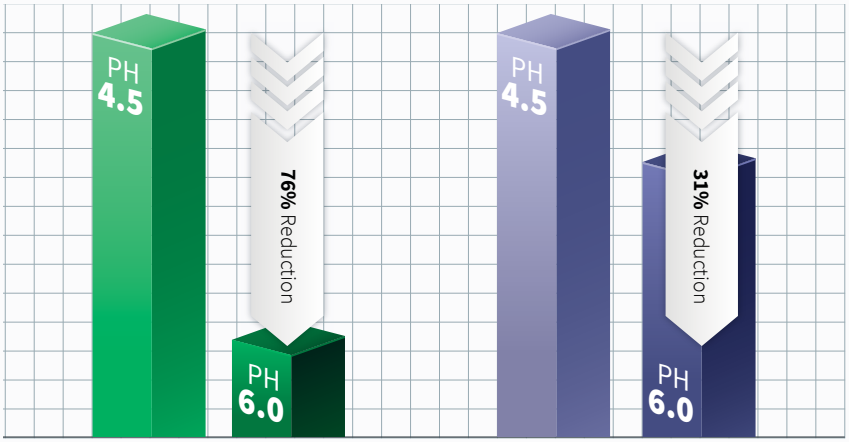
Blueberries require a much lower PH then most plants, with PH level at the root zone affecting the availability of other soil nutrients to the plant – and thus its development and yield.



> 6.5 **acidic**	6.5 to 7.5	over 7.5
> 5.5 **strongly acidic**	**Neutral**	**Alkaline**

Effect of soil PH on yield - Hybrid ‘Chaoyue No.1’ cultivar

Source:Tomás E. Lobos,. et, al. Irrig Sci (2018)



Your irrigation system

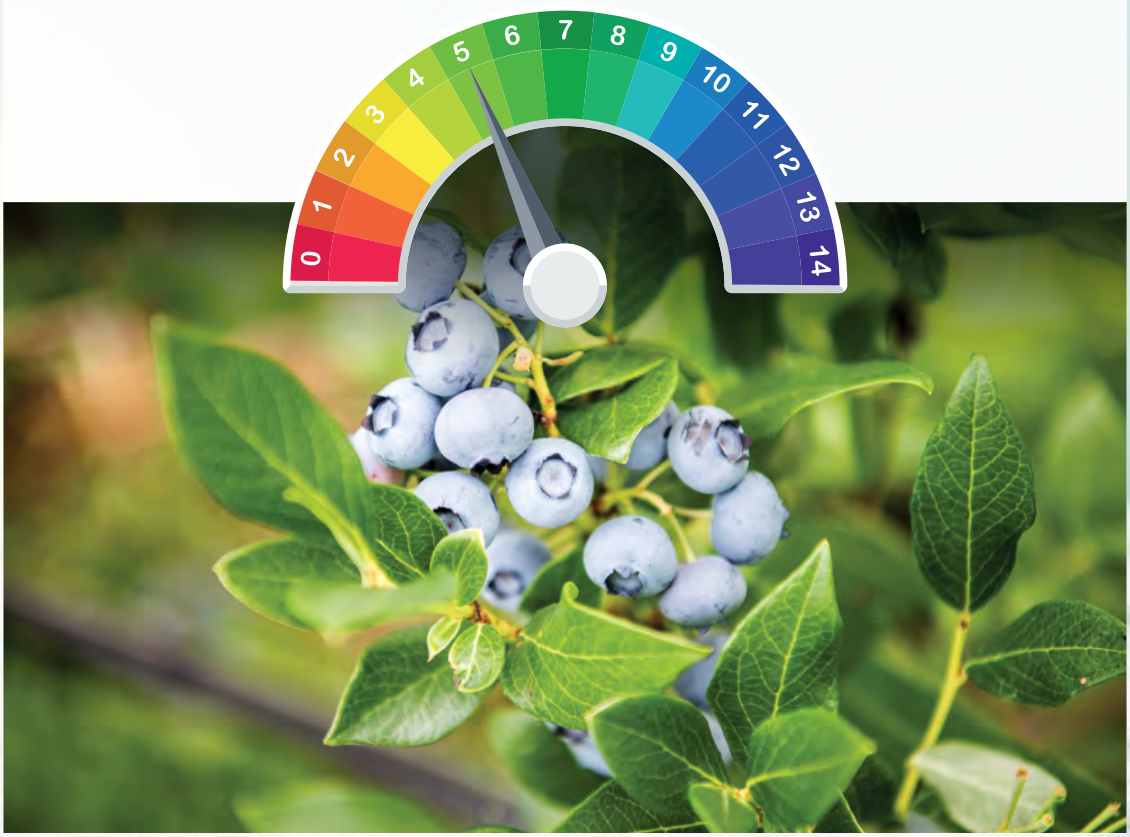
Your irrigation system should be able to maintain the right soil/water/air ratio, providing blueberries just enough water to avoid water stress, but not enough to cause waterlogging.

Metzer's advanced solutions enable you to walk the fine line between "too much" and "too little", allowing for sustainable and profitable farm operations.

Keep at 5 to stay alive

Your irrigation system should supply blueberries with a PH of around 5 at the root zone. Optimizing your fertilizer to this end requires careful implementation.

Combine Metzer's fertigation machines with our EC/PH monitoring and advanced irrigation controller to give your blueberries the precise PH level they crave.



Soil vs. Soilless
Find the right solution

While various areas around the world do allow for optimal blueberry cultivation in soil, many others don't – instead using soilless culture in pots and grow bags to grow this lucrative cash crop.

Growing blueberries in soil

For growing blueberries in soil, raised beds are customary in order to improve aeration and root structure. With one row of plants per bed, the rows are approx. 1 meter wide and 3-4 meters apart, with 0.8 to 1.5 meters between plants, depending on variety. Mulch is commonly used to cover the soil and maintain favorable conditions for the roots, and certain kinds of fabric are also used for weed control.

1 Lateral or 2 per row?

To promote larger and more evenly-spread root systems in blueberry soil cultivation, two laterals (one on either side of the plant) are recommended. One-sided irrigation has been shown to result in significant differential growth and as much as 15-17% yield reduction .

Using pressure-compensated drippers allows for uniformity along the row, with drip spacing determined by soil type and plant spacing – but in all cases maintaining even, continuous water distribution. Since the laterals in soil-grown blueberries are often buried under the mulch or soil, using an anti-siphon drip model is recommended in order to protect against dirt suction into the drippers.

1 Lateral per row

2 Lateral per row

Metzer solutions for soil cultivation

Vered & Adi

Heavy duty PC drips for long-term accuracy and reliability

Vardit

Cost-effective high-performance PC drip

Assif

High-performance PC drip with anti-siphon mechanism for extra protection against dirt suction

Inbar

PC and non-drain drip ideal for pulse irrigation

Growing blueberries in substrate
(pots/grow bags)

Growing blueberries in soilless media has its benefits – primarily the ability to control most factors in the substrate towards optimum conditions for the root zone and the plant as a whole. However, handling soilless media requires knowledge and skill.

Various substrates are made of various materials, some inert and others organic. While offering improved aeration and less risk of waterlogging, these various materials are limited in their capacity to hold water, and require constant monitoring of water levels. Unlike soil, substrate lacks a buffer capacity, meaning that factors like PH, EC, salinity, moisture level, and others can easily fall out of the desired range.

Get your pulse (irrigation) up

To maintain in-range parameters for blueberries in substrate, the best method has been found to be pulse irrigation: close intervals of several irrigation cycles a day.
Pulse irrigation requires specially-engineered equipment, including high-quality PC drippers with a non-drain mechanism, solenoid-controlled valves, and an advanced automation system for irrigation and fertigation control.

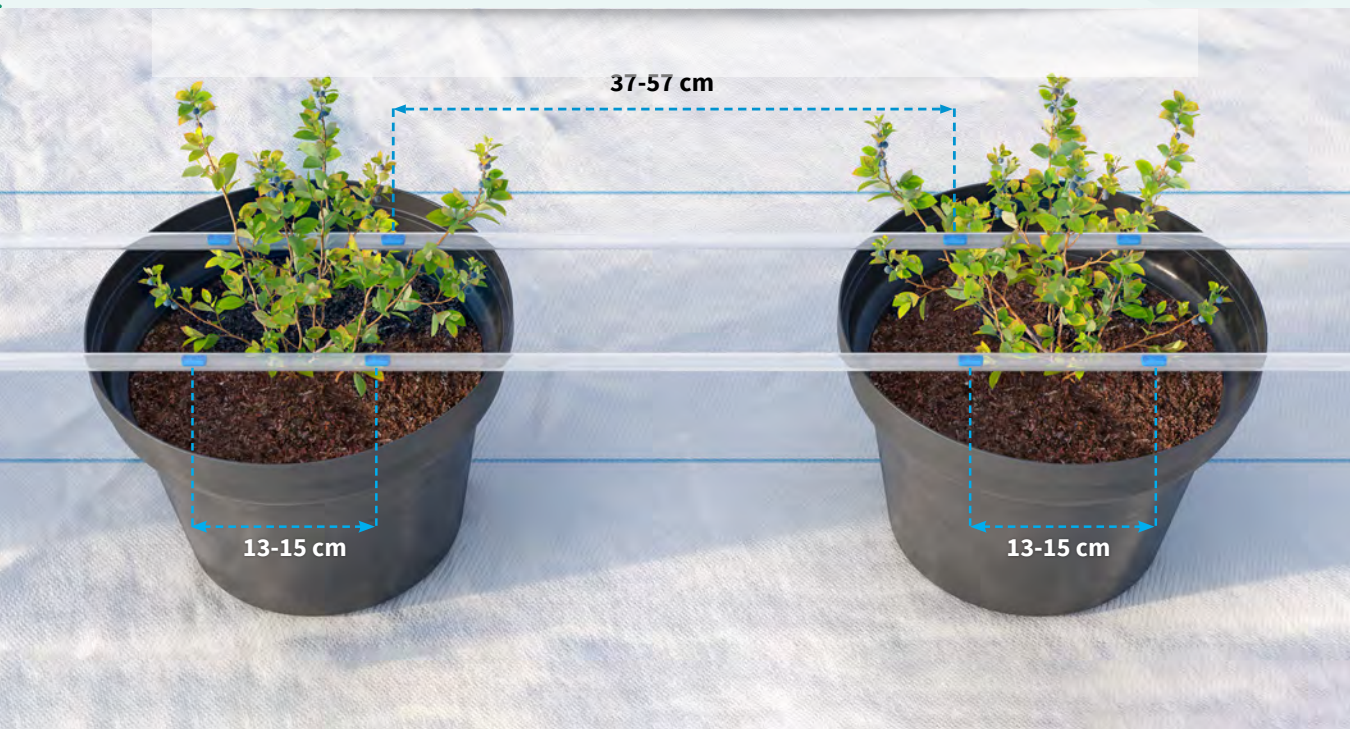
Metzer solutions for soilless cultivation

The cluster drip enables high water uniformity within the substrate while keeping the investment costs low and maintenance easy. Using drop stoppers is recommended to prevent drops from sliding along the lateral out of the pot / bag location.

INBAR ClusterDrip

PC non-drain drip with dripper clusters spaced to match pot sizes and locations. Easy to install and maintain.

- **Significant development of the root system,** compared to plants irrigated by button drippers + micro-tubes + stakes



Metzer solutions for soilless cultivation

Gali

Another common method of irrigation in pots / bags is using button drippers with 2 to 4 tubes and pegs delivering the water to each plant. This option comes with higher cost, but allows higher flexibility in bag locations and easy replacement of irrigation accessories when needed.

PC non-drain on-line dripper, assembled with 2 or 4 tubes and stakes per plant.

- Highly reliable dripper
- Unique and accurate regulating labyrinth mechanism
- Wide water passages along the labyrinth
- Self-flushing operation at the beginning and at the end of each irrigation cycle
- Compact multi-optional button dripper
- Accommodates 1, 2, and 4 outlet adapters

1-Outlet Adapter

2-Outlet Adapter

4-Outlet Adapter

Maintaining the optimal conditions for the Blueberries while combining PH monitoring and pulse irrigation requires a carefully designed system, including specialized control equipment. These components are included in our range of irrigation solutions, offered to our customers, as well as design assistance and consultancy by our experienced design engineering department.

Control valves

For pressure regulation and accurate control of pulse irrigation.

Help optimize water usage, maximize energy efficiency, reduce costs, protect water supply and distribution systems, and keep water system downtime to a minimum.

Fertigation machines

For accurate, proportional fertilizer program application while maintaining preset EC and PH levels. Controlled by the irrigation controller, which synchronizes irrigation shifts with fertigation, keeping the crop within optimal growing range.

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