



## FACT SHEET

# Trickle Irrigation: How long do I trickle?

*John Lewis, Horticulture*

Trickle irrigation is a great irrigation option for many horticultural crops and has many advantages over traditional overhead systems.

In berries, our most serious pest is fruit rot, which requires wet bloom and/or foliage for infection. Where overhead irrigation can add considerably to this disease, trickle irrigation adds water directly to the soil without any wetting of the crop plant.

Also, concerns over irrigation, water quality and food safety are minimized with trickle irrigation since the water is not applied "over" the crop where it may potentially contaminate the part we harvest.

Lastly, previous years of drought have made water use efficiency much more important and this relatively inexpensive irrigation option is designed specifically for increased water use efficiency. Water is applied only where it is required with little waste between rows, or through evaporation from exposed plant surfaces, as would be the case with overhead systems.

With these advantages in mind, trickle irrigation is now the irrigation method of choice for crops like raspberries, peppers, cantaloupes, tomatoes, and many other horticultural crops. However, it is a relatively new technology to this area and many basic questions about its proper use are being asked. One of these is "how long do I run my trickle?" This article will try to provide a process to allow you to answer this question.

Firstly, we must start with an understanding of how much water a crop requires to maximize its growth and yield potentials. In general, most horticultural crops require an inch to an inch-and-a-half of water per week. This may come from Mother Nature, our irrigation systems, or a combination of the two.

Next, we need to know how much water is in an acre-inch. Without going through the math, an acre-inch of water amounts to 27,152 gallons. However, with drip irrigation we seldom irrigate the entire acre, only the root zone of the row crop we are growing. In the case of raspberries planted in rows 10 feet apart, we would be watering no more than a third of an acre. As such, we would require only 9050 gallons/acre/week to provide one inch of water to the crop.

Now, assuming all of this water comes from our trickle system, how long must it run to provide this volume of water? Well, we need to know two more things: first, we need to know what the output rating is for the trickle tape we are using; and, secondly, we need to know our trickle emitter spacing and how many emitters there are per acre of crop.

Here's an example. A producer's trickle tape has emitters every 16 inches and each emitter has an output of 0.23 gallons per hour. Assuming rows are ten feet apart, 16" emitter spacings would translate into about 3276 emitters per acre (to see how to determine emitters per acres, see explanation in next paragraph). With each emitter applying 0.23 gallons per hour, the system would put out a total of 753.5 gallons per acre per hour. Using this figure we can calculate how long we would have to run our trickle to give the full one-inch of water per acre per week. It would be 9050 gallons/acre/week divided by 753.5 gallons per hour = 12 hours per week. From my experience with trickle this sounds very reasonable for a week without any rainfall and could go higher in hot windy weather during sizing and harvest, or on a very light sandy soil.

Here is how you can determine emitters per acre: an acre is 208 feet by 208 feet which translates into 21 rows of raspberries (10 feet apart) that are each 208 feet long. This equals 4368 linear feet of trickle, which at 16" spacing (or 1.3333 ft) means there will be 3276 emitter per acre. Other examples: if emitters were 1 foot apart there would be 4368 emitters; if rows were 5 feet apart and emitters were 16 inches apart there would be 6552 emitters per acre.

Another question is whether you should irrigate all at once or break it down into several portions. I would favour a couple of six-hour events every three to four days. Also, I would recommend a two-hour break in the middle of every six hour trickle cycle to give time for lateral movement of the water.

Of course, this is a very analytical way of determining how long you should trickle, but you should watch and assess closely to see if it works in practice. To do this, you should be prepared to do a little digging before and after a trickle cycle. Dig down six inches or so and assess soil dryness, by color and feel, before and after you trickle. If you are overdoing it you will find the soil moist before you trickle; if you are undertrickling you will find the soil is not wet to the full six-inch depth.

I hope this helps debunk the mystery of “how long do I trickle”. I encourage all who have, or are planning to use, this technology to go through their own calculation process and convince yourselves how long you should be watering. You may be surprised with the results and it may lead to better production. Happy trickling!

For more information contact:

*John Lewis*  
*Horticulturist*  
*(902) 678-7722*  
*j.lewis@agrapoint.ca*

*The Resource Contact Centre*  
*(902) 896-2345*  
*info@agrapoint.ca*