GREENHOUSE GROWERS WORK TO MANAGE WATER:

Spring 2017

Feeding greenhouse plants: An Introduction to Irrigation

The large majority of modern vegetable greenhouse operations use hydroponics, a production system where plants are grown in inert media, also called substrates, instead of soil. These substrates are often composed of Cocoa coir (ground up coconut husks), or Rockwool (rocks that have been melted and spun like cotton candy). Greenhouse farmers no longer rely solely on the soil beneath them to grow their crops. These alternative substrates give the growers more control over the root environment and help to minimize soil borne diseases and pests. Nutrients are delivered to these substrates through drip irrigation, giving greenhouse growers the opportunity to provide the plants with exactly what they need when they need it. This process of watering and delivering nutrient to the plants is called fertigation. By giving the plants only what they need to grow and produce, growers can minimize the excess nutrients leaving the substrate in water. This is good for both the grower, from a cost perspective, and the environment.

In the greenhouse there are tanks that hold a variety of nutrients and nutrient mixes that the plants need to grow, like calcium, nitrogen and potassium, for example. These nutrients are concentrated and flow from these tanks to be mixed at a calculated rate with disinfected water before they are delivered to the plants. The water, now called nutrient feedwater, flows through a series of pipes and tubes directly to the roots of the plants through drippers. The growers have complex computer systems that determine how much nutrient feedwater needs to be given to the plants and how often. The amount and timing of water delivery is dependent on a number of variables including temperature, humidity and light level.

The majority of Ontario's greenhouse vegetable famers also recycle any water that is not used by the plants. This water is collected in troughs under the plants and directed back to a holding area. From here the water is treated, most commonly using filters to remove debris and either ultraviolet radiation, ozone or pasteurization to kill any microorganisms. Without this important step, viruses and diseases could destroy crops very quickly. Once the water is disinfected, it is mixed with fresh water and nutrients and again put through the irrigation system. This process is continued, and nutrients are refreshed through each cycle. Very little, if any, nutrient feedwater needs to be discarded, making this an environmentally-friendly growing process.

Water Smart Farming Project
ONTARIO GREENHOUSE VEGETABLE GROWERS
FLOWERS CANADA ONTARIO
FARM & FOOD Care ONTARIO