

TORO

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Grower Solutions

Row Crop Growers Using Drip Tape for More Than Irrigation

Reiter Berry Farms, Watsonville and UCCE, Monterey County, CA

Benefits of drip at Reiter Berry Farms:

- Ability to set transplants without sprinklers
- Ability to deliver Inline fumigant via "bed fuming"
- Reduced weed growth
- Reduced water use
- Reduced run-off
- Reduced sprinkler costs
- Less standing water that could harbor E. Coli.



Frank Estrada
Reiter Berry Farms
Watsonville, CA

Row crop growers were among the first farmers to adopt drip irrigation as a production tool rather than to save water. Initially, drip was viewed as a superior way to manipulate plant growth and quality by precisely managing water and fertilizer after germination or plant set. Sprinklers are commonly used to germinate vegetable seed or set vegetable transplants, and in some cases, are still used today to irrigate throughout the crop cycle. But with water, labor, energy, fumigation, organic and food safety issues becoming more important each day, growers are finding that drip provides real solutions, and may be used for much more than just irrigation after plant establishment.

"We stopped using sprinklers over three years ago for anything except pre-irrigation prior to bed prep."

Using Drip Tape to Reduce Runoff and Water, Energy and Labor Costs

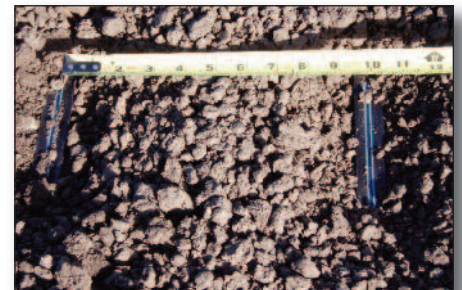
Water is a scarce resource and there are few regions left where it is cheap and plentiful. Wasting water not only wastes money, but creates environmental issues when farm chemicals and/or silts leach into the groundwater or run off into surface water supplies. Bottom line, farmers must manage their water better than ever before.

In fruit and vegetable row crop production, much of the waste occurs during the first couple of weeks of production when sprinklers are used to germinate seed or set transplants. Some



producers are eliminating the need for sprinklers by using drip tape to germinate or set. This has saved them significant dollars in sprinkler pipe and movement costs, and perhaps more importantly, saved a lot of water. The key to successfully setting transplants with drip tape, says Frank Estrada, area manager for Reiter Berry Farms in Watsonville, CA, is soil prep, tape placement and irrigation scheduling.

Estrada manages over 300 acres of strawberries for Driscoll, and is expected to produce some of the highest yields and quality in the industry. "We stopped using sprinklers over three years ago for anything except



"The key to successfully setting transplants with drip tape is soil prep, tape placement and irrigation scheduling."



pre-irrigation prior to bed prep. The key to setting plants without sprinklers is to create square, consistent beds with a top width of 27-29 inches.” For strawberries on 52 inch centers, two rows of tape are placed in the center of a dry bed, 10 inches apart, and buried 1/2 -1.0 inches deep. The beds are then irrigated about 3-4 hours with a high flow Toro Aqua-Traxx drip tape (.67 gpm/100') and marked. Then, transplants are placed 5 inches from each tape line on the bed shoulder and packed in by the laborers, and then machine rolled. The block is then immediately irrigated until water begins to bleed from the beds. In a clay loam, this occurs after about 8 hours of irrigation. In a sandy loam, this occurs sooner, and may require more frequent irrigation for shorter duration. “There is no difference in quality or production in my ‘drip only’ fields versus sprinkler fields. We save in sprinkler equipment and labor costs, and use less water and energy during the first two weeks of production. Since drip runs at lower pressures and wastes less water than sprinklers, using drip for the rest of the season saves water and energy over sprinklers as well.”

Using Drip Tape to Bed Fume

In addition to using drip for setting the crop, Estrada is using the drip tape to deliver the liquid fumigant “Inline” to his conventional beds via a method called “bed fuming”. This is of interest to growers looking for an alternative to applying methyl bromide to 100% of the field beneath plastic mulch that must be removed and discarded afterwards. In bed fuming, a combination of Vapam and Chloropicrin is applied through drip tape and is confined to the bed by using unperforated plastic mulch rather than conventional perforated mulch. “The key to success in bed fuming vs. flat fuming is ensuring the irrigation system is highly uniform, and by making sure the mulch fits tightly around nicely squared off beds.” Estrada measures pressures and flows to ensure irrigation

uniformity is optimized with his Toro Aqua-Traxx drip tape. He applies a heavy irrigation a week before applying the Inline, and another light irrigation 2 days before.

Using Drip Tape to Reduce Weed Growth on Organic Fields

Another reason Estrada prefers drip to sprinklers is the reduced incidence of weeds in his organic fields. “With drip, I’m not applying water in-between the beds, so weed growth is greatly reduced. With sprinklers, weeds germinate everywhere and I am forced to hand weed, which is expensive.”

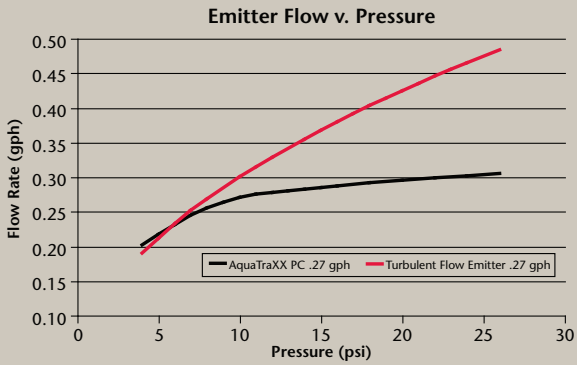
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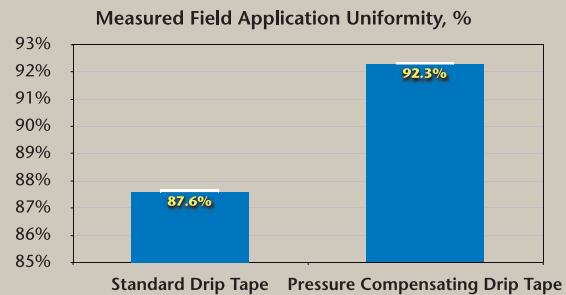
Using Drip Tape to Reduce the Incidence of E. Coli

Michael Cahn, UCCE Farm Advisor for Monterey County, has been working with growers on water issues for years. In addition to conducting research to help growers germinate with drip and improve irrigation efficiency to facilitate bed fuming, Cahn's preliminary research for the Lettuce Board found that strains of generic, non-pathogenic E. coli survived up to two weeks in run-off water from sprinkler irrigated fields, while no E. coli was detected in drip irrigated fields with no run-off. This research will be finalized and presented to the Lettuce Board later this year, and although preliminary in nature, is logical. "E. Coli grows where there is water. In drip irrigated fields, less area is irrigated, and it is likely that less water runs off or is left standing."

To help growers improve irrigation efficiency, Cahn holds periodic workshops. The most recent, "Drip Irrigation on Slopes: Achieving Uniformity" was held at the Kitayama Ranch in Watsonville, and featured a hands-on field workshop for growers, foremen and irrigators. Toro Micro-Irrigation District Manager John Ayres was on hand to help. "Michael did a great job showing workers how to collect and process field data to determine their irrigation uniformity. He also showed how important pressure regulation is on slopes." The workers determined in a side by side comparison that a non-pressure compensating tape performed at 87.6% uniformity, while a pressure compensating tape performed at 92.3%. Both of these uniformity values are considered excellent, but it is noteworthy that product selection alone improved uniformity by over 5%.



In conclusion, drip tape is becoming a much more powerful tool than in the past. The ability to target water applications to prevent runoff or deep percolation, apply water at higher efficiency and lower amounts with minimal labor, germinate seed or set transplants without sprinklers, fumigate beds using existing plasticulture, reduce weed growth in both conventional and organic fields, and perhaps reduce the incidence of E.Coli by better managing water and moisture are new ways drip is helping growers solve new and complex problems. Good management practices are required of course, and high quality irrigation systems that deliver fluids precisely where wanted, and in the right amounts. Thanks to growers and researchers like Estrada and Cahn, consumers continue to enjoy appropriately grown, high quality fruits and vegetables.





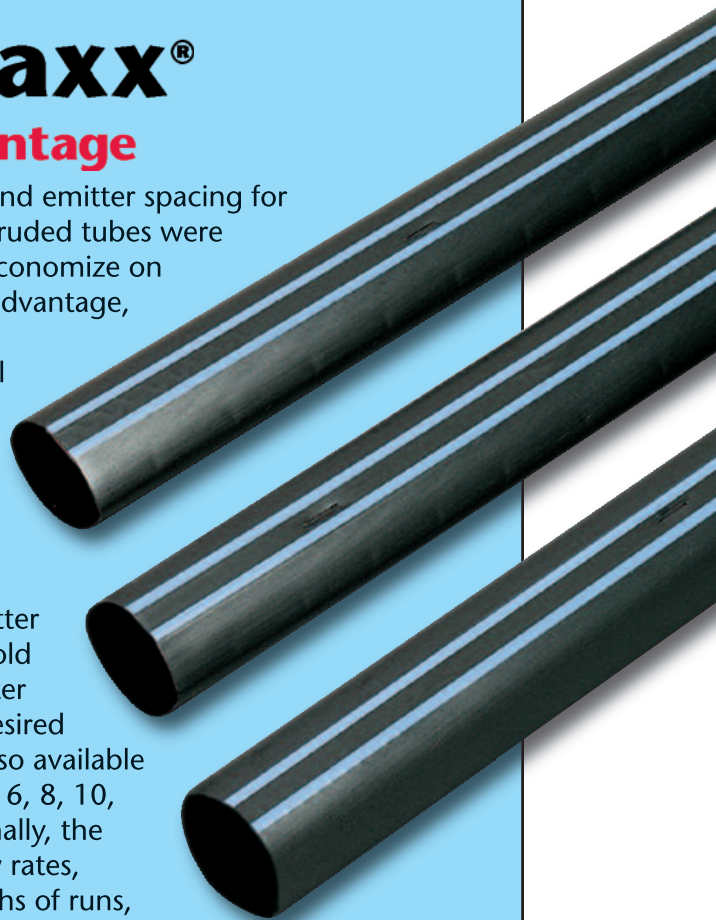
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Aqua-Traxx® with the **PBX Advantage**

Growers no longer need to compromise tape quality and emitter spacing for cost. In the past, high quality emitters in seamless, extruded tubes were expensive, and wider emitter spacing was chosen to economize on cost. Now, with Toro's new Aqua-Traxx with the PBX advantage, high quality emitters in seamless, extruded tubes are available at any emitter spacing without any additional cost. This is because of Toro's manufacturing breakthrough which creates a high precision, continuously molded emitter instead of individual, injection molded emitters that are more expensive. The end result is Aqua-Traxx premium drip tape with emitters that are more clog resistant and deliver water uniformly to every plant, regardless of the chosen emitter spacing. And since Aqua-Traxx premium drip tape is sold by the foot, not the emitter, growers can choose emitter spacings anywhere from 4" to 24" based upon their desired wetting pattern, not cost. In addition, Aqua-Traxx is also available in a more economical 4 mil wall thickness as well as 5, 6, 8, 10, 12 and 15 mil thicknesses for tougher applications. Finally, the emitters in Aqua-Traxx are available in a variety of flow rates, including ultra-low and ultra-high flow, to fit the lengths of runs, soil types and cultural practices found in farming operations across the globe. Don't compromise - take advantage of Aqua-Traxx with the PBX advantage today!



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