

SAVE Water and OPTIMIZE Crop Yields *Written by Colleen Tocci*

Water is typically a hot topic of conversation in the region. This year, however, it has reached a whole new level. Water is one of the most critical components to growing healthy plants. Over the years irrigation systems have been improved to increase their efficiency, and we strive to find ways to reduce the amount of water we use. **Integrate™** soil surfactant is a tool available to farmers who seek to improve the efficiency and the movement of water - and what moves in water- throughout the soil profile. But did you know **Integrate** can actually help you reduce irrigation volumes and *SAVE* water?

Integrate improves the movement of water.

Soil surfactants are typically formulated to reduce the surface tension of water. **Integrate**, however, also aids in the lateral movement of water in the soil profile.

Dave Holden, PCA, incorporated **Integrate** into a trial in 2013 in the Oxnard, CA area. The trial was being conducted on 40 inch beds, with a single line drip tape on some heavy clay loam soils. "I was told that it might not work well in heavier (clay loam) soils but it did! It moved the water laterally through the soil profile which is what the growers are looking to achieve."

Holden noted that soil surfactants such as **Integrate** have a real potential in the area of water conservation efforts. He has seen the product work on a variety of soils on row crops, vegetables, as well as permanent crops (avocado). Weekly irrigation is typical on avocados, Holden witnessed that irrigation intervals were able to be extended by up to three days between the weeks, resulting in an extension of 7 days over the course of a month. The extrapolated data from the vegetable and row crops show a trend in the same direction. "This data suggests that growers can reduce irrigation volumes by up to 30%."

Integrate optimizes yields with reduced irrigation volumes.

Integrate has been evaluated over the years to determine its effectiveness on water requirements as well as its impact, if any, on crop yields. Dr. Bielinski M. Santos, previously with University of Florida, now a product development manager for Marrone Bio Innovations, has worked with **Integrate** for several years. Working with small plots, Dr. Santos applied **Integrate** via drip and sub-surface irrigation. He varied irrigation volumes from 100 % to 60% evapotranspiration (ET) on tomato production in order to simulate deficit irrigation requirements. Plots treated with **Integrate** showed an increased yield of 15%, and 14%, respectively. Dr. Santos also noted the increase in soil moisture at a greater depth which implies that **Integrate** was improving the soils ability to retain the water that was applied, thus making it work more efficiently.

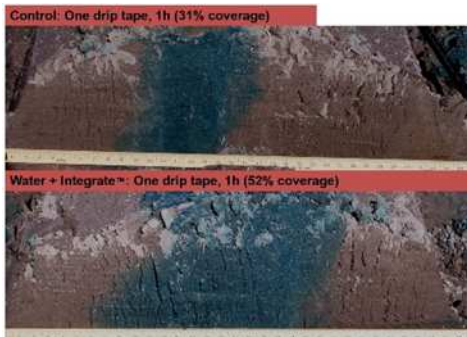
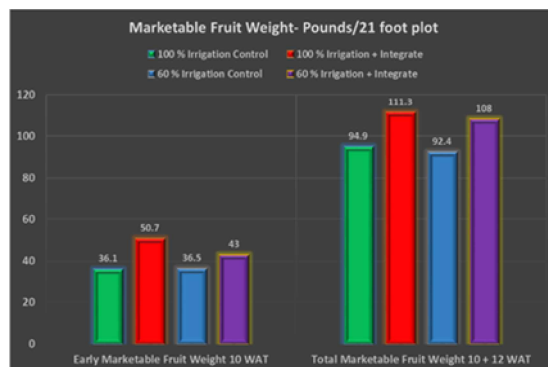


Photo above was taken by Dr. B.M. Santos. The top photo shows an untreated bed with single drip tape. The photo on the bottom shows a single drip tape bed treated with Integrate.

INTEGRATE™

- Excellent initial wetting of agricultural soils
- Penetration and lateral movement
- Maximum uptake of water and irrigation efficiency
- Long term residual re-wetting in the soil
- Encourages improved rooting
- Maximizes nutrient input
- Reduces risk of drought stress
- Cuts down on irrigation costs



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