CONTINUED DEVELOPMENT OF VERDESOIL™, A GLYCEROL-BASED PRE-PLANT SOIL AMENDMENT FOR STRAWBERRIES

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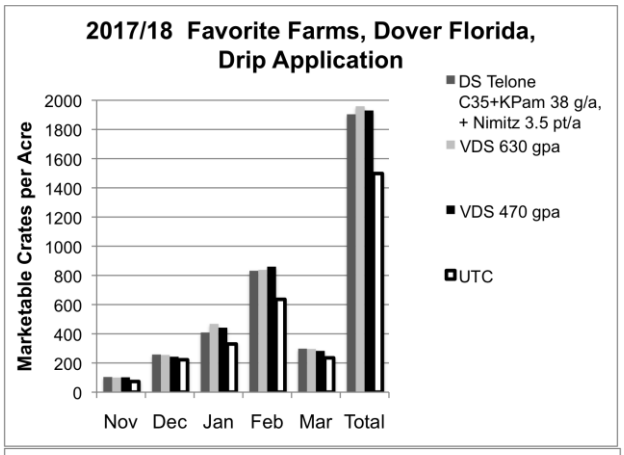
2017/8 marks the fourth season that the glycerol-based soil amendment, Verdesoil™ has been tested for strawberry yield enhancement based on it's role as a highly available carbon source for microbial growth in treated soils. In addition to carbon, Verdesoil™ also supplied N,P and K and also included propionic acid. The product is now available for sale in California and Florida.

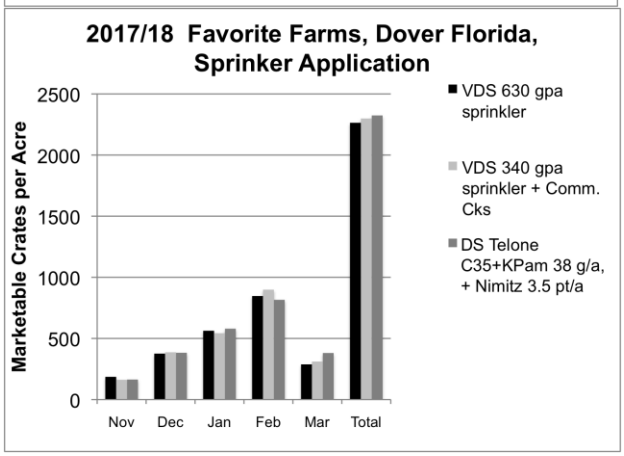
The mode of action of Verdesoil™ is not pesticidal, rather it appears to bring about a shift in the soil micro-biome that favors strawberry growth and thus yield. This shift was studied using the Trace Genomics sequencing analysis. Various shifts are seen, particularly an increase in organisms associated with increased nitrogen availability.

The testing program in 2017/18 included four replicated trials conducted by Plant Sciences, Inc – two in California, one in Florida and one in Baja, Mexico. Verdesoil™ treatments were also included in public experiments conducted by UC Extension, University of Florida and FSGA.

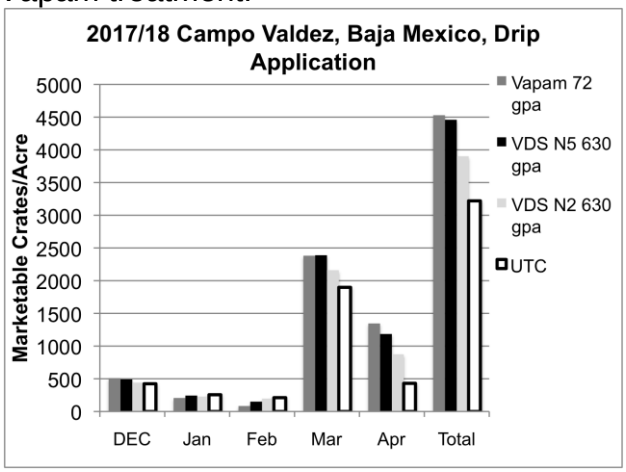
As in earlier seasons there were very promising results in a site in Florida called Favorite Farms which is well known for high sting nematode pressure (see two charts below).

Yield in drip-applied Verdesoil™ treatments at 470 or 630 gallons/acre were statistically equal to a three-way commercial standard treatment combining Telone, KPam and Nimitz. In the same trial other treatments suggested flexibility in glycerol sources and in the possible use of acetic rather than propionic acid in the Verdesoil™ formulation. In an associated trial a pre-bedding sprinker application also facilitated yields comparable to the commercial fumigant standard. The feasibility of the sprinker application alternative was confirmed in a public trial at the FSGA research farm.





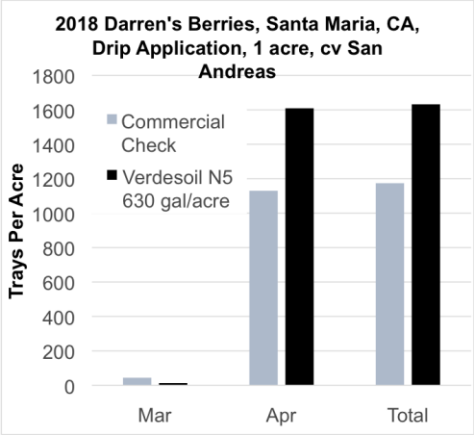
For the first time, Verdesoil™ was tested at a site in Mexico. In a field in which *Fusarium* and *Phytopthora* have been detected, the Verdesoil™ treatment at 630 gallons/acre had yields statistically equal to that in a Vapam treatment.

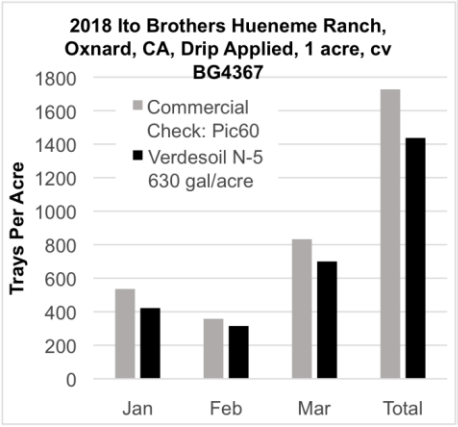


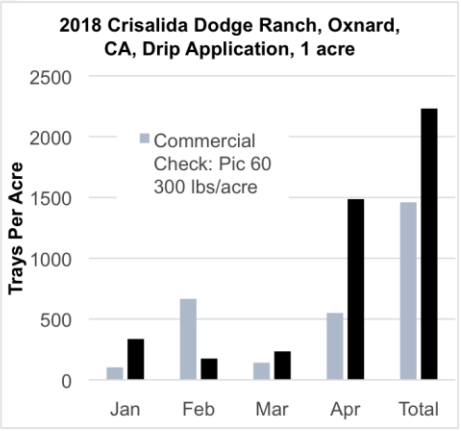
In a replicated study conducted near Santa Maria, California, there was only a small, but statistically significant difference in yield between the commercial standard (7%) and the untreated check – apparently because of lack of yield-effecting agents. The best Verdesoil result at that location had a 1.5% higher yield than the untreated check, but that was not

statisically different except in the first month of picking in February when it had a thirteen percent greater yield then the untreated area. A replicated trial in Watsonville in northern California was placed in a portion of a field with very low sand content. In the 2016/17 season it was found that Verdesoil was most beneficial in sites with high sand content, but unfortunately that relationship had not been recognized by the time the 2017/18 tests were initiated. There was no benefit from the Verdesoil™ treatments in that trial.

Since Verdesoil™ was registered in 2017, one acre demonstration trials were conducted in cooperation with 4 California and 1 Florida growers. For three of the grower sites it was possible to capture detailed picking data. At the Crisalida site in the same region the Verdesoil yield was 53% higher than that in the commercial standard. At Darren's Berries in Santa Maria, the Verdesoil™ treatment out-yielded the commercial standard by 39%. At Hueneme Ranch in Oxnard the Verdesoil™ treatment yielded 83% as many trays as the commercial standard.







All of the participating growers have indicated an interest in continuing to test Verdesoil™ in the 2018/19 season and it is anticipated that there will be at least 20 such tests including larger commercial implementations up to 12 acres, and new growers who have not tried it before.