# VERDESOIL™, A GLYCEROL-BASED PRE-PLANT SOIL AMENDMENT FOR STRAWBERRIES

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Verdesoil™ is a soil amendment product based on glycerin as a highly available, liquid deliverable, carbon source for microbial growth. The formulation also includes other key nutrients such as N (urea), P and K and also propionic acid. It has recently been approved as a fertilizer by CDFA. Verdesoil™ has now been field tested in California and Florida for three seasons. In the 2016/17 season there were 12 locations – 9 in California and 3 in Florida – at which comparisons could be made between yields in Verdesoil™ treated plots and yields in plots treated with the local, grower-standard fumigation method. The goal was to explore how results might vary by soil type, pest pressure, temperature and cultivar.

The California growing season was extraordinarily wet, and the picking season in Florida was somewhat shorter than average. Even so, progress was made in understanding how to deploy this new option for the strawberry industry. As in the 2015 and 2016 picking seasons, Verdesoil has continued to perform well in Florida fields with high Sting Nematode pressure. The best treatments nearly doubled the yield vs the untreated control and were higher than those in the commercial, fumigant standard.

There was no yield effect of propionic acid when that formulation component was tested alone at a rate equivalent to its level in the normal 800 GPA treatment. This information confirms the hypothesis that Verdesoil benefits are the result of microbiome feeding effects rather than toxicity to pests.

It was hypothesized that efficacy could be limited by temperature - particularly in Northern California sites. At a Watsonville, CA site, beds were treated in August, September and October using either standard green tarp or clear tarp. Substantial temperature differences were seen between these treatments during the post-application period. However, the differences were generally smaller in the Verdesoil treatments, presumably because of the thermal mass of the water used to distribute the material through the bed (approximately 1 acre-inch/treated acre). Contrary to the hypothesis about higher temperature benefits, the best Verdesoil effects on yield were seen with the green tarp and the latest, October application timing. Since all

the treatments were planted at the same time in November, the earlier treatments may have been too early to retain the benefits until planting (46 and 73 days vs.17) Overall the clear tarp results were poorer than green tarp, primarily because of higher weed pressure. With the cultivar Monterey, the October and September applications of Verdesoil with green tarp achieved 89% and 83% of the yield seen in the grower standard fumigation treatment respectively.

During the 2016/17 growing season, Verdesoil was tested in 12 sites distributed throughout California and Florida. The performance of Verdesoil relative to the grower standard yield at these sites correlated fairly well with the percent sand in aggregate site-by-site soil samples. The correlation between relative yield and sand content is even stronger among the California plot locations. The 2017 growing season was unusually rainy in California and this could also have played a role in these observations. The soils with the lowest sand content also tended to have lower overall temperatures during the post-application period, but these cooler sites were also in more Northern California locations. There was also some correlation between post-application temperatures and relative efficacy.

Continued research and limited commercial use is anticipated for the 2017/18 season.