# Soil Microbial Health Initiative

## Description

Soil biology is a key factor in both short and long term crop productivity, disease susceptibility and crop quality. This *Soil Microbial Health Initiative* is intended to be a community-wide effort to advance scientific and practical knowledge about soil biology through a greater understanding of the millions of microbes in the soil. This improved knowledge will help us identify tools and strategies to protect and enhance the health of soils, towards the goal of preserving and enhancing crop productivity and quality.

Trace Genomics will work closely with growers to collect samples of soils from fields with varying levels of productivity. The Trace Genomics test provides insights on the microbial composition of those soils to growers through personalized reports. Comparisons of microbial composition from fields with differing levels of productivity and agronomic history delivers metrics for measuring the effectiveness of tools and practices for reducing disease-causing microbes and increasing beneficial microbes. While sample reports are confidential and the property of individual collaborators, a write up at the conclusion of this initiative will provide industry wide insights from anonymized and aggregated data. This write up will also be made available exclusively to all participants in this initiative.

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## Project Details:

1. Samples collected for this initiative should fall into one of the following comparison projects.
    a. **Disease Discovery.** Submit samples from a high producing or non-diseased field and samples from a low producing or diseased field. Samples can also be from differentially performing areas of the same field.
    b. **Operational Impacts on Soil Health**. Submit samples to compare cropping practices, including but not limited to:
        i. Cover cropping and fallow practices
        ii. Organic vs. Conventional fields
        iii. Dry-farming vs. Irrigation farming
    c. **Treatment Response Time-Course**. Submit samples before and during soil treatment**. Soil treatments can include but are not limited to the following:
        i. Fumigant
        ii. Fertilizer
        iii. Soil conditioner (for example, compost)
        iv. Growth stimulant (for example, beneficial bacteria)
        v. pH adjustor (for example, lime)
        vi. Pesticide
        vii. Fungicide

**Before = On day of scheduled application. After = 2, 6 and 12 weeks after application

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## How to Participate

1. Enrollment into the initiative is free. Enrollment into the initiative requires involvement in at least one of three projects (above).
2. All participants will receive a complimentary view into microbial diversity and biomass shifts for their samples.
3. Additionally, participants can request an in-depth analytics report for a fee of $349 per project ($150 for Western Growers members). These reports will provide detailed insights on microbial identities of the soil microbiome community and will provide data and understanding on soil microbial communities change with the variables of interest in the project (e.g. Disease, Operations, or Treatment).
4. Samples for the initiative will be accepted from November 2016 to July 2017 but participants can send multiple samples under any or all of the three projects during the duration of the initiative.

## Sampling Instructions

1. For each category you'd like to send for testing, submit three soil replicates (each a composite of 3 cores). For example, if you are interested in comparison project c(i), please submit three soil replicates before fumigant application (preferably on day of intended application) and three replicates after fumigant application (preferably at 2, 6 and 12 weeks after application). Only one composite sample will be processed, but replicates will be retained for validation in case of discrepancy.
2. Save one bag for soil chemical testing, and put one tablespoon of soil into two sample tubes. Trace Genomics will provide kits for sample collection as well as sampling instructions. If you require help with sample collection, please let them know.
3. Identify location for every sample collected and record crop in field, organic/conventional, and any other soil treatments. TG will provide forms for recording this data.

## Focus Crops

Trace Genomics is specifically interested in the following crops: strawberries, lettuce, almonds, walnuts, citrus and grapes but welcomes the opportunity to work with growers of any California or Arizona specialty crop.

For more information about how to get involved, please email Trace Genomics at soilhealth@tracegenomics.com.