Soil health research for Idaho vineyards

We are seeking cooperating vineyard operations to participate in original research with the University of Idaho to improve soil health in vineyards. Improved soil health can improve yield and fruit quality, reduce the need for soil amendments like fertilizers and pest suppression materials and increase water holding capacity of the soil.

Our overall objective is to develop tactics to improve soil health and thereby long-term economics in Idaho vineyards. We will investigate three low-fertility amendments that have been shown to have significant, positive impacts on soil health: biochar, mustard seed meal, and a food-hydrolysate based fertilizer. We seek to optimize combinations of these three materials with the aim to (1) improve soil qualities that affect water holding capacity, (2) boost soil carbon content, (3) reduce pest nematode and arthropod populations, and (4) improve soil biodiversity. We will begin field trials in vineyards in April 2023 using optimized material combinations and application rates that have been determined in greenhouse experiments over the past six months. During the first field season and through the following off-season months, we will assess effects on soil health and soil pests. We will monitor soil parameters in the vine rows and inter-rows through the growing season, and plant metrics at the end of the season. Plant data will include number of clusters per vine, cluster weight, 50 berry weight, pH, Brix, titratable acidity and pruning weight.

Our second field season will be conducted in the same plots as the first, including reapplication of the materials to half of the treated plots.

Participating vineyards would host field trials for the next two years, with potential follow-up visits after this period to assess soil conditions. Field trails will compare the 4 best combination rates derived from the greenhouse trials with the conventional nutrient/soil management of the vineyard, for a total of 5 treatments per vineyard. Each treatment plot will include at least 10 vines and be replicated 4 times per vineyard (twenty 10-vine plots per vineyard). Treatments will be separated by one untreated row or by at least 5 vines if two treatments are applied to a single row. Biochar and mustard seed meal will be applied to the inter-row of the vineyard, and then mechanically incorporated to a depth of 0.3 m. Food hydrolysate will be applied directly to the base of the vines via irrigation lines using a backpack sprayer. Applications will be conducted once per year for the mustard seed meal and the biochar; hydrolysate will be applied 2 times per year per manufacturer suggestion.

For further information, please contact:

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