Soil solarization and cover cropping as alternatives to soil fumigation for pineapple growers in Hawaii

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A recently completed EPA SAI project revealed promising results on the use of sunn hemp cover cropping and soil solarization (SH+Sol) to suppress nematode and weed pests on pineapple in Hawaii. Four field trials were conducted on pineapple fields.

Sunn hemp established well as a preplant cover crop in pineapple fields if the soil pH was adjusted to 6.0. While most pineapple farms or plantations in Hawaii do not adjust soil pH, some fields routinely adjust soil pH. Solarization only increased soil temperature at the top soil layer (5-cm). SH+Sol slightly increased soil temperature in the deeper layer as compared to solarization alone.

Although SH did not suppress nematode pests as efficiently as Telone, it suppressed reniform nematodes below its threshold level prior to crop planting. SH+Sol reduced two thirds of the weed pressure as compared to untreated plots.

We used nematode community analysis to evaluate soil health conditions. Three months after pineapple planting, Telone treated soil showed severe soil disturbance, nutrient depletion, and stressful conditions. However, planting of sunn hemp, with or without solarization, enhanced soil biodiversity and microbial activities involved in nutrient cycling. We continue to evaluate the impact of SH+Sol on pineapple growth in a NRCS CIG program.

A downloadable handout related to research outcomes of this project can be found at: http://www.ctahr.hawaii.edu/sustainag/Downloads/2009_pineapple_SHSol_project.pdf

Sunn hemp planted (in the back ground) in a pineapple field.

An extension article related to this project is published through Univ. Hawaii CTAHR Cooperative Extension Services: http://www.ctahr.hawaii.edu/oc/freepubs/pdf/SCM-29.pdf.

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