Drought impact on soilborne fungal pathogen of tomato

Background Information:

California's climate is highly variable both spatially (from temperate rain forest conditions on the North Coast to the extreme aridity of Death Valley) and temporally. Records for maximum annual precipitation range from more than 90 inches on the North Coast to a little over 2 inches in Death Valley.

Droughts and floods can occur in close proximity. For example, the flooding of 1986 was followed by six years of drought (1987-92). At the beginning of the state's historical record the so-called "Noachian" floods of winter 1861-62 were followed by two severely dry years, a combination became the death knell for much of the cattle rancho economy.

Hypothesis:

Overview: If farmers continue to plant during a drought then the pathogens will be affected because of the change in conditions (i.e. salinity, less water retention, etc.).

1) My hypothesis is that under drought condition, soilborne pathogen are more virulent because salt build up in the soil increases rapidly in the heat.

2) My second hypothesis is soil composition affects water rention therefore affecting the pathogen population to harm the plant.

Abstract:

First, I will be testing plants in different soils from the UC Davis Facility, these will be placed in a **“drought simulation”. While that will be occuring, I will test the dry/wet weight of the soils, as this will give me a good estimate of how much water the soils can retain. This is very important because if the soil retains too little or too much water the plant has a higher chance of dying. Next, other labs will be completed to test the pathogens in the soil, now this is very important because pathogens are a biological agent that causes disease or illness to its host, and my goal with this project is to determine if they increase or decrease in a drought. My next step after this has occured would be to determine how to eliminate them.

** Less water, every couple of days.