Modeling the Impacts of Daikon Cover Crop Water Storage in Dry Farming

Sato, Grace (School: West Linn High School)
Kolesnikov, Alan (School: West Linn High School)

Climate change is wrecking the agricultural sector, with summer water availability decreasing while water needs are increasing worldwide. UC Merced estimates that over $3 billion in agricultural revenue was lost to drought over the past two years in California alone. Dry farming attempts to combat food insecurity due to lack of water by growing drought tolerant plants in water-retaining soil. A novel daikon radish water storage method was explored to increase the yield produced in dry farming. The feasibility of using decomposing daikon radishes as a water source was tested by growing AstroPlants with water from a daikon and comparing the results to controls raised with tap water. Plants watered with daikon water reached maturity and formed multiple flowers and seed pods. Plants watered with tap water were stunted and showed signs of drought. These results were applied in a program that estimated the additional yield gained from the daikon water in various regions along the West Coast. In key regions like Sacramento and Fresno, the program estimated over 10% increases in yield when daikon water storage is applied. Overall, this novel strategy proves to be a viable solution for the future and deserves to be further investigated for its potential to mitigate yield loss in large scale agriculture.

Awards Won: