

AeroFarms Annual Report for NCERA-101 2019

Last year we announced that FFAR awarded a Seeding Solutions grant to AeroFarms. The grant allows us to examine how to use our control of the growth environment to demonstrate the phenotypic plasticity of cultivars. In the first year of the project four leafy green varieties were chosen and exposed to six abiotic stressors, including light and nutrient conditions. Using our own internal analysis and that of Rutgers Dr. James Simon's biochemistry lab and Dr. Beverley Tepper's sensory lab, we have been able to document methods to alter color, taste, texture, and phytochemicals. In the next year of the project, we are focusing on 3-4 of the most interesting stressors. We will expand our knowledge of control range and will combine multiple stressors towards creating bespoke growth algorithms that can make our produce more attractive, nutritious or tasty. Below is the research flow (Figure 1) and selected results (Figures 2 to 4).

Figure 1 Research Flow

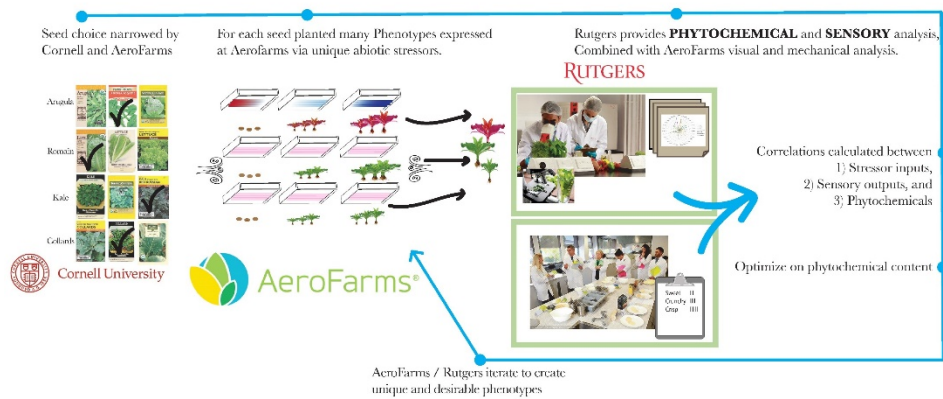


Figure 2 Brix and Penetrometer are objective measures that may be correlated to a sensory profile.

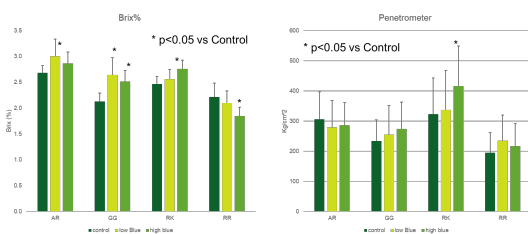


Figure 3 AeroFarms collects phenotyping and lab-based data to learn impact of various environmental conditions on the Hue, NDVI, greenness indices, and height as measured by Phenospex PlantEye. Below is average greenness and height.

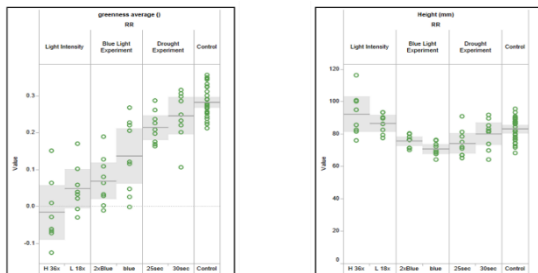
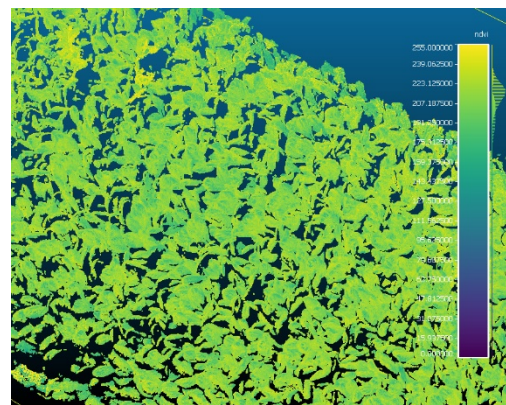


Figure 4 NDVI image of leafy greens



AeroFarms is grateful for the NCERA-101 meetings for sharing valuable insights into current research and for providing a gathering where meaningful discussions happen on timely topics.