

Experimental Design for the InvenTeam

Invention Statement:

Existing technologies today allow agriculturalists to use multispectral imaging to analyze the needs of their fields. Unfortunately, it is often expensive and requires from a couple weeks up to three months to get the images analyzed. To solve this issue, the invention will be an easy way to collect and analyze multispectral images for under \$3000, for the first launch, and about \$100 for each additional launch. AIRSS, or Aerial Imaging Remote Sensing System, will have two multispectral cameras (one with an infrared filter) mounted on a ten-foot diameter helium filled tethered balloon launched to approximately 960 feet. The field of view for the camera will be approximately 1320 feet and each pixel will be about the equivalent of $\frac{1}{2}$ a foot. The balloon will have two lines that will simultaneously launch. The images will be analyzed on Scion Image using Normalized Difference Vegetation Index (NDVI) to determine areas of high and low vigor. This will offer an alternative to expensive existing technology already in use today. What sets this invention apart from current technologies is that it will be repeatable, inexpensive, portable, and accessible.

Procedure: Test the invention by launching a balloon with two lines, see if both cameras work, and the analysis using NDVI works.

Hypothesis: The invention will work, but there will be some “bugs” to work out of the system. We will be able to see vigor in crops, the two stations will be stable and the two photos will line up.

Test of Hypothesis: If the radio equipment will work and doesn't go out of range. The batteries don't run out, the camera will be stable if the photos don't blur. If the analysis works and makes sense, then the two photos line up.