

DEVELOPING AGRONOMIC PRACTICES FOR COWPEA PRODUCTION AKRON, CO IN WASHINGTON COUNTY

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PROJECT INTRODUCTION

Given the climate and growing conditions of the region of North-Eastern Colorado, the number of alternative crops for cultivation, both irrigated and dryland, are limited. Among the select list of viable alternate crops, Cowpeas are an avenue of focus. A warm-season legume well adapted to hot and dry conditions, the crop can grow well in poor soils, giving it a reputation as a crop that could do well in the future concerning climate change

Despite past research promoting the crop's ability to grow in regions like NE Colorado, little research has been done on the highly potential crop within this specific region of Colorado.

In the past, Pinto Beans have been used as the alternative crop for NE Colorado, however with the production of said crop moving north within Colorado due to declining acres, other crops have been sought out given the crop's irrigation management requiring Full Irrigation. Given this context, Cowpeas have been sought out for study to determine if they can produce similar yields to Pinto Beans while using different irrigation strategies.

INTERNSHIP GOALS

- 1) Determine irrigation management strategies, focusing on timing of limited irrigation strategies for alternate varieties of Cowpeas in order to determine an ideal ratio to water usage and yield when used in the NE Colorado region.
- 2) Assist in Cowpea variety selection for usage in the same Colorado Region.

HOW DOES THIS APPLY TO YOUR EDUCATION

As my degree focuses on Agricultural Sciences, this internship provided me with experiences and a direct window into the work and research people with similar education as I am taking do.

With direct management strategies, learning about properly identifying plant stages, weed management, pest management will not only help further down my educational path, but onwards to my career as before I was unable to gain direct usage experience before in the classroom and lab.

WHAT YOU DID

I joined the experiment just before the actual experiment part was supposed to start. My job was to set up the plots for the experiment's seeds that would be used in the final report. These were Blackeye variety Cowpeas, mentioned before as one of the varieties that could work well in the environmental region of NE Colorado.

After setting up the plots and pre-experimental irrigation system, I would spend the weeks over at the facility managing the weeds in the plots, properly irrigating the plots with the pre-experimental amount, recording the amount of water used, and monitoring the life stages of the plants as they grew and matured to the point to where the actual experiment part of the trial could begin.

With the intermittent data collected, I would compile the data into charts and graphs that would focus on the amount of water in the soil and the water used by the plant in the soil as the weeks went by. This data would be used to determine future actions with the plots and determined future irrigation schedules.

By the time the plants reached the period where experimental irrigation strategies could be performed, I would also assist other projects in the facility as the times needed for the irrigation schedules would be very long. Through the other projects I assisted in, I further learned about aspects of my project through similar data being collected in the other projects, and about other types of data collecting tools and techniques.



Figure 1. Experimental plots and Rainout Shelter

The Rainout Shelter was used in order to protect the experimental plots from any unmeasured addition of water via rain. As the experiment was limited in usage of water, the shelter was needed in order for the plants to grow in uniform.

WHAT YOU LEARNED

Through direct management of the experimental plots and the data collected from said plots, I was able to learn about daily care of a research plot through weeding, irrigation, and pest control. I also gained knowledge and experience in the data collecting tools used by researchers including Neutron Probes, Leaf Area Index scanners and irrigation lines and infrastructure.

Managing the data collected also taught me about proper processing of collected data into usable charts and tables, allowing for quicker decisions to be made from them. I learned about how to properly process the information given to me and how to interpret the data, learning about how water usage rates and volumetric water content relate to the crop plants advancing in their life cycles.

As for the general experience itself, performing my primary and secondary tasks in the research facility allowed me to learn about proper procedures for research projects, tool and machine maintenance, and general etiquette for acting around the facility and towards my coworkers. These combines aspects of my experience here have given me a general first picture into the field of agricultural research, an experience that will continue to aid me future into my career.



NEXT STEPS

The next step for this project is to take the compiled irrigation and yield data in order to determine a proper irrigation strategy and usage-timing of said strategy for the Cowpea variety used in the experiment when used in environments like NE Colorado or other similar areas.

These conclusions will be compared with other conclusions from similar experiments done on different Cowpea varieties to help determine a broad conclusion for ideal varieties of Cowpeas that can be used in dryland environments.