

**UCCE - Water Resources Experiential Learning/Internship for USDA Careers**

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### **Acknowledgements**

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**Dr. Ali Montazar** - Irrigation and Water Management Advisor

**Daniel Buentrostro** - Research Lab Assistant

**Jorge Celis** - Research Lab Assistant

**Levi Duran** - Research Lab Assistant

**Angel Caro** - Student Assistant

**John Tamayo** - Student Assistant

**Yongzong Lu** - Student Assistant

## **Overall Summary**

This internship consisted of different methods and areas of collecting data and samples, which have both led me to become more knowledgeable on the importance of accuracy and hard work. The beginning of my internship began with work on an Alfalfa irrigation project Dr. Montazar was getting ready to begin early in the year. I had began on the final stages of installation of drip tape to flat hoses in order for water to pass through the field. The next step was to install an irrigation line in order to have a source of water supply for the alfalfa in order to grow. The reason the use of drip tape was used in Dr. Montazars project was to see how to better manage water usage using a drip system rather than the usual flood irrigation in order to better conserve water and see how the drip system can be beneficial over time.

Once the alfalfa project was set to begin we let the water run and checked for any signs of flooding or possibilities of leaks. The importance that I learned for this was in order to be able to notice if the water pressure was too high and if there were any tears in the drip tape or faulty connections during the installation of the drip tape to the valves. It was important to do this in order to avoid any further and unwanted issues as the project progressed as it can lead to complications and faulty data readings. After fixing the minor issues we let the water run on certain hours in the day in order for the Alfalfa to get the nutrients it needed to grow.

From there on we began the next project which was making soil moisture sensors in order to collect data on the next work site. The work site took place in Coachella near Date Palm Sites and Palo Verde in fields of Alfalfa, installing soil moisture sensors of sizes of 6", 12", 18", 24", and 36" into the soil in order to see how deep the moisture goes into the ground. Using this data we can see if the soil is too dry or if it has enough moisture for the Date Palm Trees and Alfalfa to grow well or sufficiently. We had also set up solar panels to power batteries for weather stations with thermocouples and heat canopy sensors in order to tell us how the climate is around the area and to show us if the Alfalfa growing around the area are stressed. The process of setting up the weather stations was interesting as well as important to know how they function to collect the data needed.

Once the soil moisture sensors and weather stations were installed we then began work on collecting data on Alfalfa fields from Watermark boxes and going to areas out of the station to collect data and sampling on Onions, Olives, and Sugarbeets. These were also an interesting process due to never having seen what produce looks like in the growing stages. To begin collecting data on onions we would start off by collecting the onions Biomass from a two foot section and weight it and record the data. We then counted the amount of onions produced within the two foot section and weighed them. Overall the data collected from the onions averaged about the same in weight of biomass and amount of onions produced in the sections. As for sugar beets we had to collect the Biomass as well and weight it before we counted the amount produced and recorded the weight. We collected samples of the sugar beets in large bags in order to take for processing at Holly Sugar near the Brawley CA area. The sugar beets varied in sizes

which to my surprise I had never known they could grow so big. When it came to collecting data for Olive trees and Alfalfa we had to walk into the area and locate a watermark box and transfer the data onto a laptop and into a USB for Dr. Montazar to review.

Issues we found on certain occasions when collecting data was finding chewed wires from the soil moisture sensors to the watermark box which were caused by either gophers near the area or other animals roaming around. To fix this issue we would have to have back up soil moisture sensors depending which one was damaged and dig it out and bury in the new one and rewire to the watermark box.

For the majority of the remainder of the internship we would be taking samples of Alfalfa in the Palo Verde area. We would take samples on both types of irrigation: flood and furrow irrigation. The sampling process was a lengthy and tiresome one, but we needed the data to be accurate throughout. We would gather samples from the beginning, middle, and farther end of the field to see how consistent growth and weight was. We would use a quadrant to guide us on the exact amount of alfalfa needed to gather. Weights were taken and then gathered into paper bags to be put into the oven for drying. Once the drying stage of the alfalfa was completed we would then grind the alfalfa into a fine powder and sent out for testing.

### **Approaches**

My approach towards the tasks I was given throughout this internship was with full attention and applying what I was taught. There were small things that needed the most attention

in order to prevent further complications, as well as a lot of hands on work. I was taught how to use heavy machinery as well as hand tools to put things together for certain projects and gathering data. The thing that helped me out most and tested my knowledge on what I have been taught were certain days that I had to be in charge or watch over certain tasks. It was then up to me to carry out the task and ensure the job was done and done efficiently. I feel that those moments are when you truly know that you are progressing in knowledge and experience. This internship has really helped me out on how to approach tasks in my everyday life, like a feeling of maturity in a sense as well as being reliable for getting things done. Every project I was given I gave it my all and ensured it was done to the standards set for accurate outcomes and results.

### **Reflections**

At the start of the internship I was intimidated, I had not known what to expect on my first day. I was welcomed and guided by the caring lab assistants there that had made my entire experience a great one. They made the hard work filled days fun and showed me the importance and strength of teamwork. They shared a wide range of knowledge and skill sets along the way that I know I will carry with me in the long run. Although my time there has come to an end, learning work in agriculture and the sciences behind it and the hard work that is put in it was a great opportunity and insight. I now have a better understanding and appreciation for those who work in this field of work. This internship has helped me grow as a worker and as a person, and I would gladly like to give a gracious thank you to Dr. Montazar and the research lab assistants.

This internship and it's hard workers have helped given me experience and memories I can recall and rely on as I continue forward on my career path.



Here is a look at the flat hose lines going along the aisle of the alfalfa field in order to feed Water to the drip tape laid flat out into the field.



In this photo we are at a Date Palm site we are setting up soil moisture sensors, water mark box, and a weather/solar panel station up above the scaffold for data collection.





In the photo above is a watermark box we set up to connect the soil moisture sensors of different depths to gather data in the alfalfa fields.



In the photo above is a pulled back view, the soil moisture sensors were dug underneath the soil in order to not get trimmed by the truck that harvests the alfalfa.



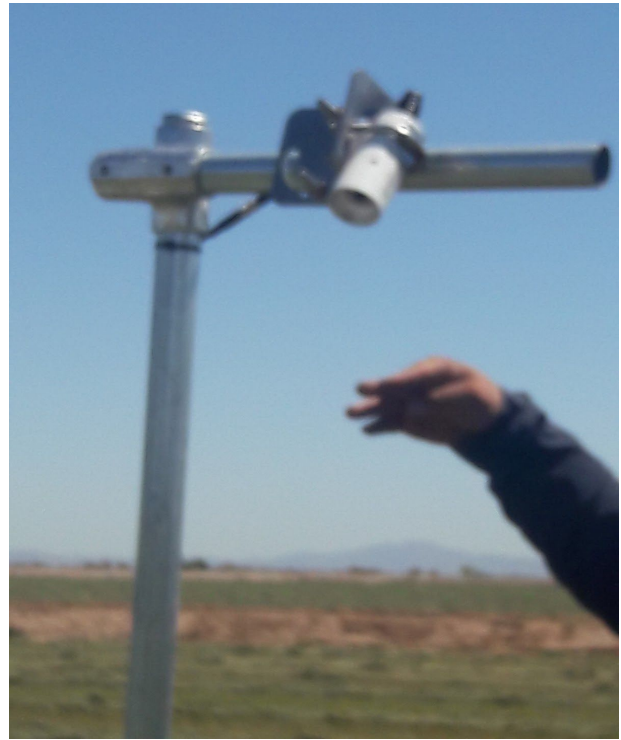
In the photo above we are gathering samples of sugar beets beginning with biomass then Product using (lbs) measurement.



In the photo above we are measuring a length of two feet of onions to gather biomass and product. We kept all samples within 2 ft in length to gather accurate readings.



In the photo above after gathering the biomass of the sugar beets we unearthed the sugar beets and weighed them before being bagged. Here we also followed the 2 ft length rule.



In the photo above is a canopy temperature sensor. It measures the temperature of the canopy in the alfalfa in order to see their conditions under the weather



In the two photos above are examples of some issues we faced during installation. At times when we are trimmin around the weather stations in the alfalfa fields we ran into accidental wire cutting which is unwanted but things occur. We would have to unwire the cut wires from the box, dig out the rest of the other half of the wire and reinstall a new one. It is a bit of a time consuming matter, but an easy fix.