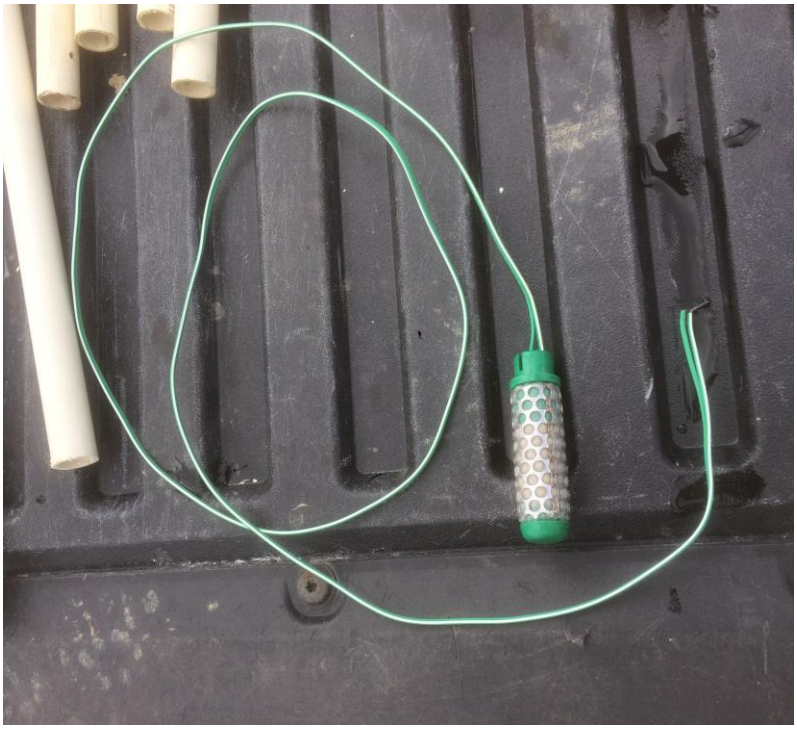
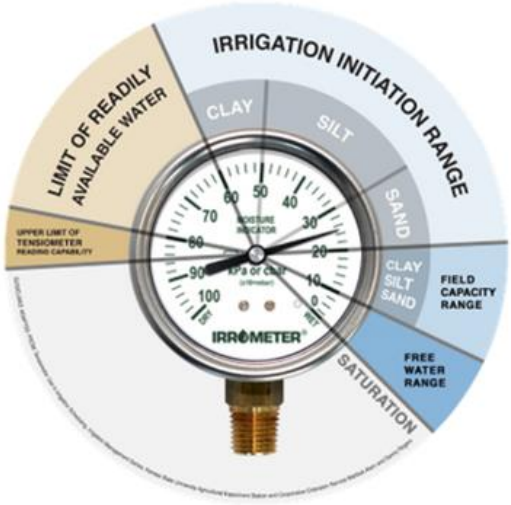
Corn and Climate Change

If you were at Opportunity Farm between July and September this year, you might have noticed that the corn plants had some "accessories" installed amongst the plants. This year, Opportunity Farm was part of a region wide research and networking project to help farms adapt to changing climate and weather patterns, known as the Climate Adaptation Fellows. As part of our participation in the program, we monitored soil moisture levels in our sweet corn with the hope that the farm can reduce irrigation needs while still optimizing crop production.

The "accessories" you saw in our corn plantings are all the locations that probes were installed to monitor soil moisture. Soil moisture is important to manage for crops, much like hydration is important to human health. If plants are grown in soil that is too dry, they will become stressed and wilt or die; if the soil is too wet, crops will be stunted and have a higher chance of developing root rots and pest issues.

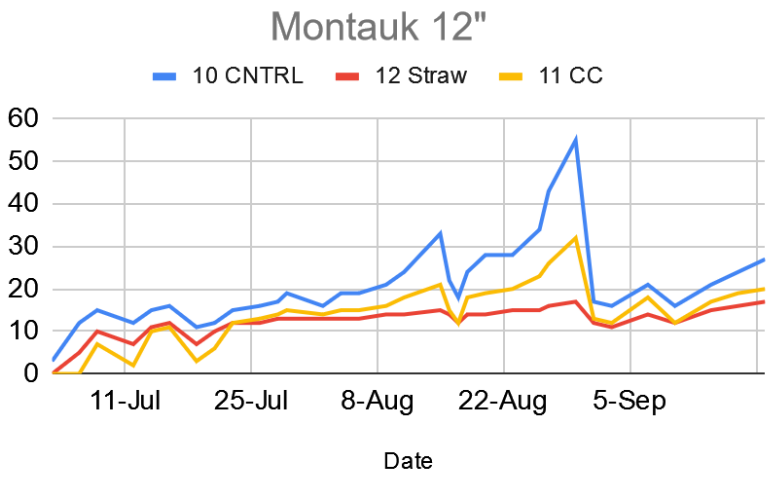


The moisture probe works by measuring electrical resistance in the soil, mimicking the ease or difficulty a plant root has accessing water in the soil. If the soil is wet, electrical conductivity is high, *reducing* the resistance and giving a low reading (below 20 kPa). When the soil is dry, electrical conductivity is low, *increasing* resistance and producing a high reading (above 20, ideally not higher than 60 kPa).



In addition to monitoring soil moisture, we also tested three different methods of weed management to see how they affect available moisture. In the below graph charting soil moisture for the variety 'Montauk', we can see the three weed management treatments and the changes in soil moisture overtime. Our control is

known as “open cultivation”, where weeds are removed on a 7-10 day schedule, with soil left bare and “open”. In the straw planting, corn plants were mulched with a 2-3” of straw when they were planted. “CC” stands for *cover crop*, where a beneficial crop of red clover and assorted grasses were planted once the corn was 4-5 weeks along. Most notable in the below graph is the spike of the blue line in late August/early September. This was one of the last dry spells we saw during the growing season in 2021, and it’s clear from our data that the use of mulch or a cover crop can help reduce plant moisture stress during dry periods. With the use of mulches or cover crops in our farm production, we can further reduce our irrigation needs by delaying how often irrigation needs to be run between natural rain events.



Through this work we were able to test new management strategies, create on-farm data testing those strategies, and develop a plan to reduce irrigation needs without compromising crop yields. These findings are being shared with other farmers in the Climate Adaptation Fellows, featured in an article of the The Maine Organic Farm and Garden newsletter this winter, and presented to fellow Maine farmers at MOFGA’s Farmer-to-Farmer conference in November. If you would like more info on this project, or have questions about the results, please follow up with Ben Crockett (Farm and Greenhouse Manger) via e-mail: bcrockett@morrison-maine.org

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