

Progress Report for Project 5-300430, Yampa/White Roundtable Lysimeter Project: January 2013

Wendy Ryan, Colorado Climate Center

Data collection continues at the HYD01 (Hayden) CoAgMet station located at Carpenter Ranch (Figure 1). Due to the failure of the load cell to adequately weigh the lysimeter plots, there is no comparison to crop consumptive use for the 2012 growing season. However, due to the newly established lysimeter plots the data would have been questionable for this past season as well. The new load cell was received and is being tested to ensure that lysimeter data will be able to be collected this growing season. Once the temperatures have sufficiently warmed, the weather station will be serviced by Wendy Ryan of The Colorado Climate Center to ensure properly working sensors for this upcoming season of data collection. The lysimeter plots will also be examined to ensure the grass is establishing well in the plots. Once we have valid measurements from the lysimeters, crop coefficients will be able to be calculated using the ratio of consumptive use of the grasses in the lysimeter plots to the reference ET from the weather station. These results will be presented to the roundtable.

Lysimeter update from CDWR:

On November 16, 2011, Andy Schaffner and I (along with Frank Schaffner) built the lysimeter area. We took a small area of approximate 0.03 acres on the Nature Conservancy land located at 315187mE, 4485430mN to create our lysimeter plot. It was the first stage of creating the plot area and preparing the area for our lysimeters. On April 3, 2012, Wendy from CSU came over to install the weather data satellite and we built our lysimeter buckets. In each bucket we poured a layer of gravel, then surrounding dirt, four scoops of peat moss, and two scoops of sand. For two of the buckets we labeled as #2 and #4 we took surrounding "sod" and placed them in the bucket. For the other two, #1 and #3 we used a hardy strain of orchard grass seed. Because we thought that the area needed to be dry, we also built up a berm around the fence. We then started watering them from buckets taken from a nearby ditch once per week (Williams Ditch) and tracking the amount of water and weight of each bucket. Unfortunately, the local cows liked our small plots of green grass and ate them about the second week of planting (as well as two other times during the year). The seeded grass didn't grow and once the cows ate the other grass it too was starting to die. Only after the interns from Carpenter Ranch started watering did both the seeded plots and sod plots really start taking off. The interns watered on Mondays and I watered on Thursdays. The scale that we had was only accurate to the nearest 0.5lbs and I'm not really confident in the accuracy of the scale as it tended to bounce around week from week. Starting in May it would no longer measure pounds but only kilograms. After I got back from vacation in the second week in June the scale was no longer functional. Another scale has since been purchased and we received that on August 31, 2012, but has not been used. The reason for this is that we were doing the lysimeter measurements incorrectly. After our expert, Tom Ley came out on an inspection, we were only supposed to water when the crops got water, not supposed to have the berm around the fence line and we are supposed to let the grasses grow around the plots (where I was "weed-whacking"

them down every other week). I have received a document from Tom detailing what I am supposed to be doing, so next season I hope to have all this in place for some good measurements.

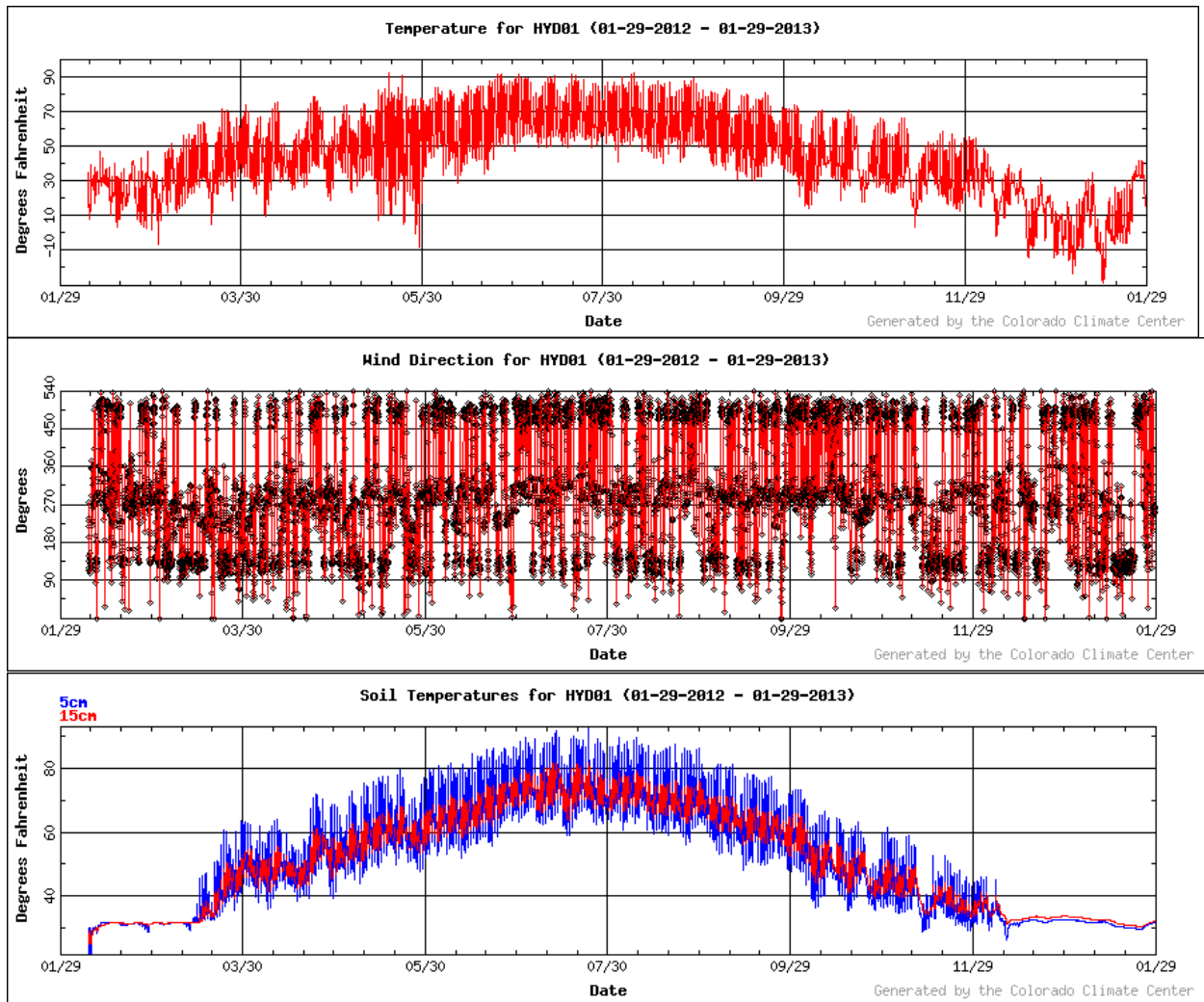


Figure 1: Temperature, wind direction and soil temperature data for the past year at HYD01.

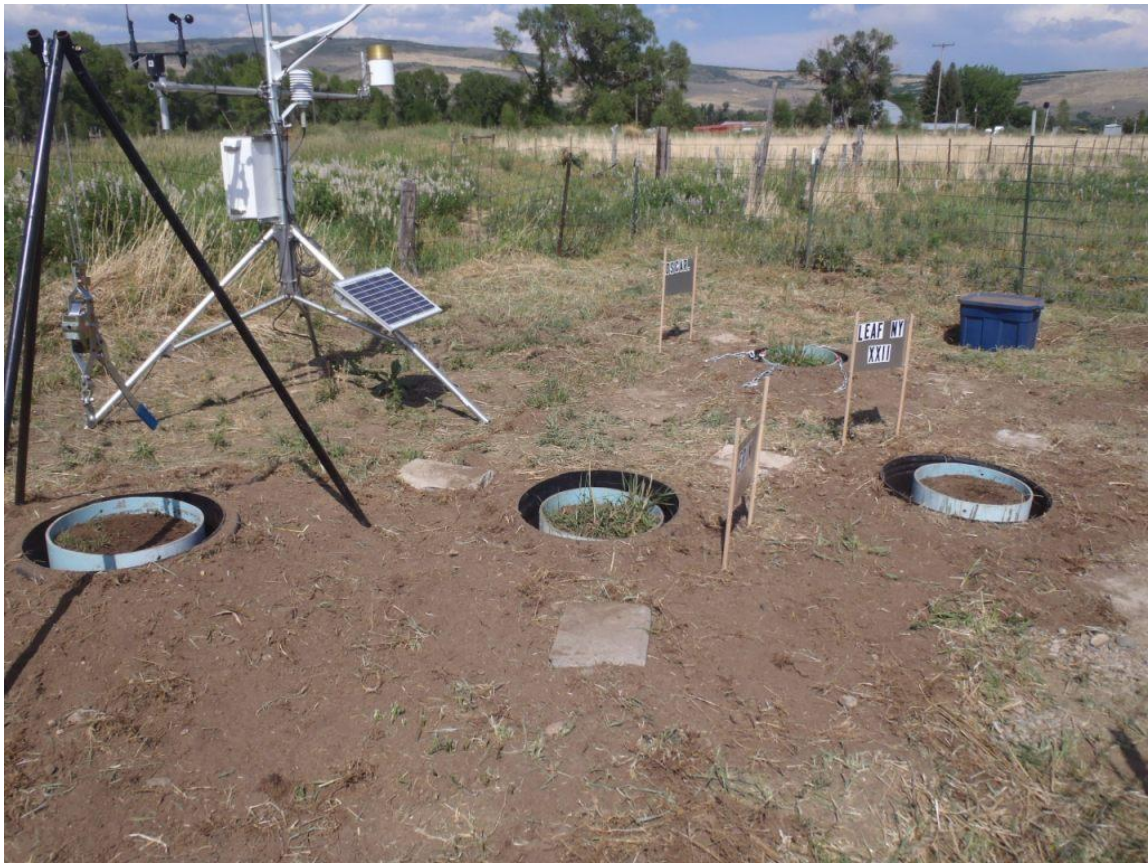


Figure 2: Site layout with lysimeters and weather station shown.