UMass Agricultural Water Twilight Series

Part I: Water Use Regulations, Water Monitoring Tools, and Efficient Irrigation

9/16/20

RESOURCES and Q&A

Shared by Joshua Faulkner, UVM Extension:

Case study on water use efficiency:
https://www.climatehubs.usda.gov/hubs/northeast/topic/how-much-enough

Case study on economic costs and benefits of irrigation at Intervale Community Farm:
https://www.climatehubs.usda.gov/hubs/northeast/topic/irrigation-pays-protecting-crop-revenues

Shared by Tim Wilcox, Kitchen Garden Farm:

Rain-Flo Irrigation, Kitchen Garden Farm uses wobbler sprinklers:
https://www.rainfloirrigation.com/irrigation/sprinklers/other-sprinklers

Drip Irrigation Guide:
https://www.rainfloirrigation.com/wp-content/uploads/2017/02/Catalog-Page-10-79-For-Web.pdf

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Meeting Q&A – summary of chat questions and answers. See recording for full discussions.

Q: Cost and availability of groundwater vs. surface water for irrigation?

A: (Rachel Schattman) New well will obviously have a higher up-front cost than pumping out of a stream. The regulatory burden for well vs. surface is different state-by-state. Maryland, for example, has a high bar for what a farm has to do to put in a new well for accessing ground water for ag purposes, other states less so. In some states you have to calculate the *de minimis* rate of a stream before you pump. Hard to know about groundwater availability going into the future. It's a tricky science, there are no good forecasts for the Northeast. The USGS Water Center has put together some forecasts for surface water changes (snow pack, stream flow) that are available now for New Hampshire, they are working on the other Northeast states.

Q: What do we know about the rate of groundwater withdrawal vs. recharge in the Northeast?

A: (Rachel Schattman) Haven't seen any assessments relevant to NE. What we can do is be more proactive and look to areas that have been struggling with this, so we can better anticipate what we will need to do if aquifers are depleted. Water districts in California have imposed pumping moratoria in some places, more fallowed land; can watch and learn from other regulatory frameworks and how they can be used here.

Q: Would it be a good idea to measure the height of the water in your ground water artesian well to get an idea of whether there are annual or seasonal changes that could indicate future supply?

A: (Rachel Schattman) Don't know enough about how to measure groundwater availability to be able to answer. What we should be doing to make a future case for the ag industry and ensuring that there will be adequate water availability is getting better handle on what we use. Some calculate use from pumps, but a more accurate way is to stick a water meter on the line. New Hampshire has a reporting requiring, but other Northeast states don't require metering. Would have to look back at my research to know state requirements.

Q: Are there trends you see as far as which crops tend to be over-or under-irrigated? Are drip irrigated crops more likely to be overwatered relative to overhear irrigated crops? Or is it all over the board?

A: (Joshua Faulkner) We haven't done crop to crop comparisons, but in general likelihood of over-irrigation with drip is higher. Drip systems are often on a timer, there is not the same labor associated with drip as with moving overhead, drip is easy to do regardless of the weather, so is easier to apply and over-apply.

Q: How deep should a soil probe be placed and do shallow-rooted plants vs. deeper-rooted plants need different probe depths? Also do cover crops increase or decrease soil moisture?

A: (Joshua Faulkner) Twelve inches is appropriate for most annual crops. Deeper depths are used for perennial crops (e.g., almonds, grapes) in the West. Irrometer has a guide that recommends depth. Regarding cover crops, based on one experience on one farm, I've seen soil moisture decreased in the spring, which was helpful in terms of drying the soil out and getting into the field, but I don't have a lot of data.

Q: How much does the field ET monitor [that you talked about] cost? Does it come with wifi data transfer?

A: (Joshua Faulkner) It's about $150, think you can get a logger, not sure if you can get wifi data transfer system for it. If had pressure transducer, can equip the ET monitor. See etgage.com.

Q: Name of contractor who installed your shallow well?

A: (Tim Wilcox) Bob Tupper from Wash Well