

Questions and Answers – Irrigation Water Management Plan – September 30, 2015

What are the payment in regards for soil moisture equipment to manage irrigation scheduling?

It varies depending on the payment schedule scenario selected. I don't have the \$ amounts, but that can be easily determined for all states. Email me specifics and I can provide more detail on cost share programs and scenarios with soil moisture monitoring.

How does salinity or TDS in regards to fertilizer dissolved in the water impact EC reading when using EC as a soil moisture probe as irrigation guide?

Effect of salinity is important on sensor readings, but I don't recall this being an issue in the type of sensors that use EC, like Watermark.

Can soil tension be the center baseline of determining irrigation schedules?

Yes, definitely if you mean: can tensiometers be the main soil moisture sensing equipment for irrigation scheduling.

Is look and feel okay method?

I am not a big fan of it in this era of water scarcity. There are much other and better methods as look and feel is crude and difficult for some people. I would use a simple tensiometer or watermark sensors instead. States and others may have their opinion about this. Look at the state standard, and ask your state irrigation engineer. I advise against using this method as the sole way of determining timing.

Is adding water from a Waste Storage Facility an appropriate consideration... i.e. a way to add nutrients to IRR H2O, or would the suspended solids cause clogging issues?

Yes, it is appropriate if getting rid of the waste is part the goal and if there is inadequate water supply. Also irrigating with waste water is common and they are ways to mitigate clogging with larger nozzles and filtration in sprinkler irrigation.

Does soil tension range vary with the type of soil?

Yes, tension and moisture content are soil type dependent.

Does field capacity based on soil tension differ with soil type?

Yes. Field capacity is about 1/10 bar for sandy soils and higher at about 1/3 bar for medium to heavy (clay soils). Some people do assume it is 1/3 bar for all soils.

What is the soil tension range ideal for 50% MAD and FC for sandy loam?

50% MAD in a loam soil is about a tension of 1.5 to 2 bar. Tension at field capacity in a sandy loam is about 1/3 bar.

Is the irrigation scheduler (Washington State Irrigation Scheduler) an app or website?

It is a website, not an app. If you access the site from a small screen device, it remains readable. One advantage of this is you can access from your home office's desktop, then from the field, and the data does not need to be re-entered.

Consider a 40 acre irrigated field - typically how many soil moisture sensors would be required to adequately assess soil moisture?

My best engineering answer: it depends. But two sets of soil moisture sensors (i.e. a set is a site with soil moisture sensors at several depths) is almost always enough. And a rule of thumb is one profile set for every 20 acres.

Can IWM be based strictly from soil probe measurements?

Yes, that's true for the national practice standard. Usually, we like to see the irrigator tracking the ET AND have soil moisture sensors.

The water meter app from University of Nebraska mobile app is a great tool some of our producers have been using to record flow meter data

Thanks! I'll look into it. [Water Meter Calculator](#)

Comment: The water meter app from University of Nebraska mobile app is a great tool some of our producers have been using to record flow meter data

Arkansas has website, but producers want an app to keep up with all fields more user friendly

More and more online schedulers are available. I think in the next 5 years we'll see a lot more, and I hope some that can meet the needs of Arkansas farmers.

Can any Conservation Planner from NRCS complete the IWMP?

Check the Job Approval Authority for the planner. JAA is based on the acres of the field, so most can do an IWM Plan for a small field.

Where does the WSU app pull the ET ref data from?

This is the cool part of the WSU scheduler. It can access most of the ET networks in the US. If your state has an ET network that the WSU scheduler does not access, they can add it. Most of the West is covered.

Should we require two soil moisture sensors on shallow rooted crops to determine deep percolation?

Yes. Soil moisture sensors provide the best info when there are several depths of placement. Placing one below the root zone indicates deep percolation. Whether you require it is a state decision, but I think it's appropriate.

Being that ET is after the fact in regards to replenishing soil moisture be already losing yields versus upstream monitoring from the soil and would the loses be representative?

If ET is tracked daily (recommended), then the trend will indicate the day irrigation is required. Incorporating daily ET values into your schedule keeps it up to date.

In some areas, the research data being requested in an IWM Plan. Consumptive Use for crops (Seasonal or Annual Crop Demands). Since NRCS is not a research agency, we are limited in using such tools in determining water demands and projecting seasonal water demands. ET for crops is also another area without data.

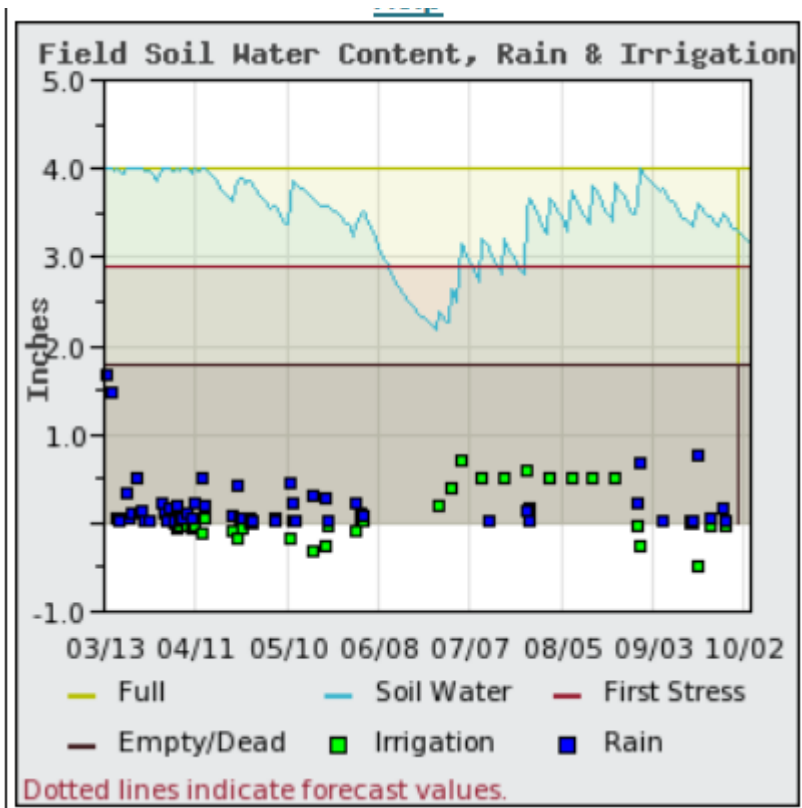
Thanks for that comment! Often states have a state irrigation guide where the data has been developed. If not, IWRpm (NRCS software) can develop this data. It is a one-time thing; once it is done, you don't have to use IWRpm again (until the climate changes). Contact the presenters if you want some more info on IWRpm.

In my office we are starting to push IWM as a management tool. This has been by far one of the best presentations i have seen regarding IWM. Could I borrow some, or all, of the presentation as we continue to develop a local program for our producers???

It is available for [download](#) on the conservation webinars.net website.

Comment: Suggest that irrigation "records" be discussed and specified as the producer being the primary user (to manage water). Documentation for EQIP payment should be a secondary purpose.

--- makes an important point that I wasn't to cover here: Below is the soil moisture graph for this year for my lawn. If you were a planner, I hope you'd think I did an OK job of documenting my irrigations and following the IWM Plan. I hope you'd approve my EQIP payment (there was no EQIP contract on my lawn, BTW). As the irrigator who doesn't want to spend more money on water than I have to: this provides to me all sorts of information. I can bore you for hours talking about how happy I am that this chart is meaningful to me, that I learned something from it, and that I'll make changes next year to make my irrigation management better. I can look at it and remember my decisions, and can judge whether they were right or wrong. That's the goal of an IWM plan.



I used MAD and have found that MAD as low as 3 - 10 percent for new almonds and strawberries result in irrigation timing that makes sense larger seemed to result in more stress

Wow! California is always pushing the envelope. Micro systems don't really use MAD, they just replace the ET each day (as you describe, an effective MAD of less than 10%)

So, with a good irrigation water management plan, we will have minimal tailwater and minimal nutrient and erosion migration from the site?

Yes! That's the goal.

This sounds like we are moving closer every day to precision agriculture?

We're getting closer. Lots of technology is moving to farms.

With climate change, do you think that we need Irrigation Water Management more than in the past?

It's not so much climate change as growing competition for a scarce resource

How finding SM last time - assuming starting season at full?

Yes, for instance after a heavy rain or first irrigation.

What are the possibilities for the use of drone aircraft and GPS with Irrigation Water Management Systems?

There are possibilities and have been getting testing past few years. One challenge is detecting soil moisture status. Still in its early days, but soon may offer some potential.

Our NRCS office has a library of ET references for different crops but they differ from university ET references, what would you recommend to use??? Would it really matter??? The differences are not by much.

That's not unusual to get small differences. It wouldn't matter much if small, and I tend to go with the university estimate if they are newer dates.

Please send me the links to these tools, as I have been working with ENG's and no one has mentioned tools

where we can generate this for our crops. Crops are not common: Papaya, Lychee, Longan, Mango, ornamental plants, etc.

Here's a link to [the IWM SharePoint site](#) (NRCS intranet). Email Peter Robinson if you have further questions.
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