Does the reduction in water withdrawals a result of increased irrigation efficiency?
* Leigh: Good question, there could be a number of factors including system changes to more efficient types, cropping changes, better scheduling of irrigations, and of course water, power and labor costs.
Hamid: One other reason could be reduced acreage.

It appears that micro irrigation is the most efficient method?
* Clare: Not true. If managed correctly any of the systems can be very efficient.

Why do we irrigate plants on mounds, and not ditches??
* Leigh: Probably the biggest is to keep from saturated roots (drainage) next to, have a channel for the water to go down through in furrows.

So, it appears that a goal for any irrigation systems is to reduce the amount lost to the atmosphere?
* Clare: evaporation, deep prec, and runoff all need to be reduced.

How can I get information about Zero-Gravity Drip Irrigation Polyethylene Drip Tape?
* Clare (privately): Contact the manufacture and then see if you can contact anyone who has installed the product.
Hamid: If need a kit, try Chapin bucket kit which appears to still be out there at:
http://growerssolution.com/PROD/chapin-irrigation-bucket-kits/BucketKits

How well has the sub irrigation systems been working in northern climates? Problems with freeze thaw in the systems?
* Clare: it can work in northern climates as well but it is more dependent on soil conditions. It needs some kind of an impermeable barrier to make it work.
Hamid: Haven't heard much complaint about freeze/thaw in such systems. Missouri is doing good deal of these, so may wish to contact extension faculty at Univ. of Missouri.

How does one keep SDI from being destroyed by subsurface gophers, voles, mice, etc?
* Clare: it's tough. Depth and keeping the soil moist seems to help. Encourage predators also

Which is the best and most accurate method to determine irrigation timing and scheduling?
* Clare: There is many. All work, depends more on the user and what they are comfortable with
* Hamid Farahani: I would say soil moisture monitoring, at least in many sub and humid regions

What is the typical design life for lay flat hose and is that a pipe type we would pay for through incentives?
* Hamid Farahani: Yes, we pay for it. As for life, Clare says 10 yrs.

How often to filters need to be changed and where are used filters deposited?
* Leigh: Normally they are flushed with the irrigation water so they are not removed, just cleaned. Usually there are controls that monitor pressure drop though the filter and flushes the debris when needed.

At what depth are SDI lateral typically installed?
* Clare: depends on the crop and tillage practices
* Hamid Farahani: 8 to 12 is typical, but as Clare said it depends on rooting depth and any hardpans or clay pans.

Can fertilizers be added to the SDI system?
* Hamid Farahani: Yes. That is in fact a selling point used by many. The fertilizer must be water soluble

Is this something one would look to install in a critical groundwater area? If the well goes dry there seems to be a materials that would go to waste
* Hamid Farahani: adequate long term, and reliable water is better secured before investing in a system such as SDI

Where can I find a copy of the NRCS micro irrigation design worksheet?

* Leigh: It is maintained (latest version) on the WNTC web site. https://ems-team.usda.gov/sites/NRCS_ST_WNTSC/coreteam/engineering/WME/ISoft/_layouts/15/start.aspx#/Excel/Forms/AllItems.aspx

What is the most efficient irrigation system for rice crops?
* Hamid Farahani (privately): Not sure about efficiency, but rice fields are mostly flooded to control weeds. I have also seen them dry planted.
Clare: Contour levees are the most often used.

How much water is lost through evaporation with furrow, flood, basin, and contour levy systems?
* Hamid: 20-30% or even more. Certainly it is more than in other systems of irrigation like drip.

Any innovations to reduce the amount of water evaporation?
* Hamid Farahani: in soils, it would be some kind of cover like residue in reduced or no-till. Best method is not to wet the entire soil surface if not needed.

What kind of remote sensors seem to be working well?
* Hamid Farahani: soil moisture and temperature or rainfall using telemetry works well if the sensor is in line of sight. Also, data from remote sensors can be sent anywhere with cellular modems or even via satellites.

What does PAM stand for?
* Hamid Farahani: polyacrylamide.

Apart from paddy rice, at some point are we going to see restriction on use of surface irrigation to reduce water losses to evaporation?
* Hamid Farahani: that's a possibility if water scarcity and drought becomes very severe. I don't think soil evaporation concerns would promote a change from surface to other systems. It would be efficiency, uniformity, and most likely limiting water resources.

Is PAM a chemical you add to the water?
* Hamid: yes
* Clare: it can also be placed dried on the soil at the head of the furrow

What kinds of soil moisture sensors were shown in the slide?
* Hamid Farahani: which slide? The one I showed was a generic pic and no brand.

Where is the link for NRCS surface irrigation site just spoken of?
* Hamid Farahani: I will have Clare reply to this.
Clare: For those in NRCS, the programs are available through IT and our manual is available from the National bulletin site. For those outside NRCS, contact me Clarence.prestwich@por.usda.gov

Wireless internet soil moisture system www.hortau.com
* Hamid Farahani: thanks

Program/planning question - does a bucket/spot irrigation system qualify as an existing irrigation system?
* Hamid Farahani: tough question!!! Some say yes some say no. Depending on the state.

Is PAM biodegradable?
* Clare: Yes PAM is biodegradable

Is it possible to get national guidance on what qualifies as an existing irrigation system?
* Hamid Farahani: we can perhaps ask programs or engineering at NHQ to define it, which I think they have. The current definition I think says need to have evidence of irrigation in the field.
Clare: For programs it needs to be irrigated 2 out of the last 5 years.

Is soil moisture monitoring systems cost shared under eqip and what practice would it fall under efotg
* Clare: Yes most times it is cost share through the 449 water management standard

Are there any solar pumps adequate for irrigation pumping?
* Hamid Farahani: yes
* Clare: generally for very small system though

What type of fertilizer is used in fertigation?
* Hamid Farahani: in liquid or soluble form, if that's what you mean.

Is there a source in NRCS for Manufacturers pump efficiency information?
* Clare: No. We rely on the manufactures information for pump efficiency. We do sometime evaluate existing installation.

So solar was included in the 71% electric group on slide 4?
* Hamid Farahani: I don't think so, the amount of solar energy used for irrigation pumping is very small and not included in the electric group.

Many growers with SDI systems, especially new ones, experience expensive/excessive rodent damage. Rodent control measures often promoted for in-system SDI delivery are highly questionable, if not also in violation of the pesticide label directions and state laws (drip vs SDI). Are there products labeled for specifically for this (SDI) use and pest(s)? I encourage irrigation associations, irrigation equipment manufacturers, etc. work with chemical companies to develop a rodent repellent that is registered (receives environmental evaluation) specifically for SDI systems.
* Hamid Farahani: good point and good suggestion. Rodents are a a problem. You may contact Dr. Phene at Netafim or Dr. F. Lamm at Kansas State University; they know much more about this issue than I do.

I have worked with solar pumping, anything is possible in terms of size of system. The key is always storage, in the form of a battery bank, grid tied or water tank. Sorry just a comment more than a question.