



Best irrigation system ?

Posted by [Joanne Patton](#)

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[Joanne Patton](#)

[Best irrigation system ?](#)

February 02, 2016 11:57PM

What orchard irrigation systems have you used that you like the most? the least? Why?

Registered: 7 years ago

Posts: 62

My new orchard is teeny tiny but irrigating it will still be an expense and effort and I only want to do it once. Do you like soaker tape? drip emitters? other?

I'm leaning toward a tape type application but would really value input based on your experiences. I am going to be purchasing something within the next couple of months as trees are going in in April.

Many thanks in advance!

Joanne Patton, Squire Oaks Farm

Zone 6A, Northern Virginia

[Reply](#) [Quote](#)

[Paul Weir](#)

[Re: Best irrigation system ?](#)

February 05, 2016 01:54AM

Hi Joanne,

Registered: 11 years ago

Posts: 187

A couple questions . . .

1) What is your soil type, soil depth, and its AWC (available water capacity)? -- this is important if you are not planning on doing a daily watering to "top off" the trees daily needs as most drip designs do. If you are planning on doing daily drip irrigation to just meet the trees daily needs, than the AWC is less important and the daily water amount needed is most tied to the weather and the size of the individual tree in question.

2) How many trees, what is rootstock and what is the spacing?

3) What is your water source to irrigate with?

In my experience, drip tape will likely cause you some grief with mowing, string trimming, scything and occasionally with rodents nibbling too. Plus it has a fairly short life span (relative to the longevity of your orchard) depending on the quality you decide to go with.

Most studies and reviews I have read on conversion of traditional irrigation practices (impact, overhead, flood) to micro irrigation call out "micro sprayers" as clearly superior to drip for yield, fruit sizing, tree vigor, function, etc. Again, your soil type is going to be an important factor in this selection.

Here is a quality study that [compares surface drip, subsurface drip and microsprayers with Almonds](#) here in California. Much of this information, between the three options, will carry forward and should be useful to your orchard planning.

A product I have used quite a bit in the last 3 years to provide a gentle "rain" irrigation effect, under lower pressure, is made by Senninger and is called the [Xcel Wobbler](#). They work down to 10psi! and almost never clog up (the wobbler use has meant less cost and less maintenance for filtration than that which would be needed for a pure drip system). they are available in numerous configurations too. If you need a smaller configuration, check out their [mini-wobbler and micro-sprinkler lines](#) too.

Good luck and let us know how it goes!

[Gopher Hill Apples](#)

Zone 8 in California

[Reply](#) [Quote](#)

[Joanne Patton](#)

[Re: Best irrigation system ?](#)

February 05, 2016 07:23PM

Registered: 7 years ago

Posts: 62

Thank you Paul for the excellent response and questions - very very helpful!!! Below are some answers to your questions as well as some additional info:

1) What is your soil type, soil depth, and its AWC (available water capacity)? -- this is important if you are not planning on doing a daily watering to "top off" the trees daily needs as most drip designs do. If you are planning on doing daily drip irrigation to just meet the trees

daily needs, than the AWC is less important and the daily water amount needed is most tied to the weather and the size of the individual tree in question.

I have no idea what the AWC is. However, the soil is described by the county as "well to moderately well drained, deep to very deep soils, the best agricultural soils in the county and have good potential for most agricultural uses. Yellowish-red silty, yellowish-brown loamy. Depth to bedrock to 6".

This exactly describes our soil, silty loam. Is daily watering typical for an orchard? I was taught that deep infrequent watering is more desirable than frequent watering. Paradigm shift here?

(As a side note, our A horizon is only a couple of inches and the B and C horizons are barely discernable and no sign of parent material. When we built our house in 2011, we put in a dry well and it's easily over 6' deep - not a rock to be found and pictures of that excavation provide a clear view of the soil profile. The orchard site is very gently sloping. It was previously pasture land and then farmed. Our extension agent suggests running a subsoiler 3' down the middle of the rows because at some point all this land was tilled. I have no plans to till any part of the orchard. In the fall I seeded daikon and hairy vetch. OM 4.5% and pH of 6.7.)

2) How many trees, what is rootstock and what is the spacing?

In comparison to 99.999% of the orchards represented here, ours is a kindergarten playground and I'm embarrassed to even say how many. But... the new orchard will have 25-30 apples and about the same number of pears. We will also have over 50 blueberry plants in 2017. Outside the orchard, in our ornamental beds, we have about 30 espaliered apples, pears and a few peaches. The majority of the apples will be on EMLA7 and a few on the Geneva series (G30, G41, G222, G935). Pears on OHxF87. I was going to plant everything (except G-series trees) 10-12' apart. Rows are 15' apart.

3) What is your water source to irrigate with?

From our well, but filtered as we have a lot of mica. All water to exterior of house does not pass through our water treatment system.

I spent some time last night looking at the Senninger site and at sprinkler systems in general. I like the micro sprayers and could easily go that route if that's the best way to go. I will read the Almonds study too. Who ever knew there was so much that went into selecting an irrigation system!

Thank you again for your help!!!

Joanne Patton, Squire Oaks Farm
Zone 6A, Northern Virginia

Edited 1 time(s). Last edit at 02/05/2016 08:35PM by Joanne Patton.

[Reply](#) [Quote](#)

[Peter Fisher](#)

[Re: Best irrigation system ?](#)

February 07, 2016 04:37AM

Registered: 10 years ago

Posts: 82

We also have a small orchard (150 trees in 9 200' rows on a slope). We often need to irrigate in the dry period, usually August, and I purchased 1/2" polyethylene tubing from Dripworks and punched holes and inserted emitters. This lets you put the emitters where the trees are instead of watering the entire row. So its really economical in terms of water (we have to use well water.)

But there are problems. I have to uncoil the line down the 200' row, then go back and try to curve it around the trunk to get the emitters where they need to be. I do this in every other row. Then when the odd rows are irrigated, I drag the line across the aisle to the even row in the other side. That way I can mow where the irrigation line was just removed. If you don't do this, you can't mow at all (and I've mowed over the line more than once) and then when you do need to move it the line has become entwined in the weeds and grasses, and is a pain to drag out. And the lines kink. And they are a pain to coil up again in the fall. And I am not convinced I get the water down to enough of the root system because the emitters just drip at a point.

I am thinking of running the tubing on top of landscape fabric strips (with wood chips on top, or run the tubing under the fabric) between the trees, leaving a large circle of mulched area under each tree free of fabric, so I could leave the lines in place and the mowing and moving problems would disappear. And then either adding many more emitters, or switching to the mini sprayers.

Turkey Creek Orchard
Solon, Iowa (zone 5A)

[Reply](#) [Quote](#)

[Joanne Patton](#)

[Re: Best irrigation system ?](#)


February 10, 2016 02:47AM

Registered: 7 years ago

Posts: 62

Hi Peter and thanks for the response. Sounds like you have a hassle to deal with and I really want to avoid that! Your input was great, and very helpful.

So, from your input and Paul's, I think I'm leaning toward burying the supply line down each row and using micro-sprayers mounted some distance above the ground. They will be visible and easy to avoid during maintenance tasks and the supply lines will be a non-issue (out of site, out of mind)

 smiling smiley

Thank you again for your help gentlemen, I really really appreciate it!

Joanne Patton, Squire Oaks Farm
Zone 6A, Northern Virginia

[Reply](#) [Quote](#)

[Paul Weir](#)

[Re: Best irrigation system ?](#)

February 18, 2016 04:44AM

Hi Joanne,

Registered: 11 years ago

Posts: 187

Here is a link to a USDA NRCS document that explains AWC "Available Water Capacity"

[\[www.nrcs.usda.gov\]](http://www.nrcs.usda.gov)

AWC is an important factor to take into consideration for determining the best irrigation systems to optimize your crop potential to your soil's water storing capability . . . and ultimately your irrigation interval. Sorry for the confusion on the daily watering vs longer intervals. Some growers out here in California will use drip irrigation and "top off" the soil profile with daily watering plans. I prefer longer intervals, myself, and my system is not based on drip irrigation. For example, if I fill my soil AWC, with each irrigation cycle, I am able to extend out my watering to once every 7-10 days in the peak of summer (July & August). Knowing your soils AWC will be an important item to help you to determine the interval you can go between irrigations too.

A regionally available source of free Agricultural technical support is the NRCS. They have field offices across the USA and most importantly to you, in Virginia. They can make a no cost site visit to your farm to help explain your soil components, your AWC, and irrigation recommendations too . . . all in person. It is well worth a call to see if they could make a plan to come see you, in the future.

[\[www.nrcs.usda.gov\]](http://www.nrcs.usda.gov)

Your OM of 4.5% is a great place to be starting your orchard from. Continued success in increasing that value in the seasons to come . . . though it can take some time, make it a goal to get it over 5%, 6% and even up to 7% if possible, in the future -- heightened OM% values are a genuine badge of honor. I am a big fan of vetches for soil building. I like Lana Woolypod Vetch over Hairy Vetch, in my own previous plantings, as it has been more vigorous. If you get a chance to try it sometime, see if it works better for you too.

A 6 foot deep silty loam soil being called out as "the best agricultural soil in your county" is worth raising a glass too and your pH of 6.7 sounds good too. . . all is sounding like the stage is set for a real nice orchard planting for you in 2016!

[Gopher Hill Apples](#)

Zone 8 in California

[Reply](#) [Quote](#)

[Joanne Patton](#)

[Re: Best irrigation system ?](#)

February 18, 2016 05:03PM

Registered: 7 years ago

Posts: 62

I had no idea the NRCS people make site visits - I will look into that today. Their site has an overabundance of information, worth bookmarking for sure. Thank you Paul for the information!!!

Happy to say the OM% where the espaliered trees are is over 8% with a 100% base saturation but I need and want to better understand CAC and Base Saturation. This year they are going to start getting the holistic spray regimen and I soon will try my hand at activating my microbes.

After 30 years, I'm back in school to get a Horticulture degree and this term, as serendipity would have it, I'm taking a Soils class. Just had a test last night on the hydraulic gradient, field capacity, gravitational water, etc. I'm learning so much about our soils from a perspective that really matters. Next January I am hoping to do start my internship out in Woodside, CA at one of the most incredible properties I've ever seen and they have an heirloom orchard that is supposed to be one of the best in the US, originally planted I think over 60 years ago. Cummins family is another possibility and I'll be meeting with them when I pick up my trees. Sorry for rambling....

I am in awe of all of you! Your knowledge, experiences, willingness to share and help others really is so very much appreciated!!!

Joanne Patton, Squire Oaks Farm
Zone 6A, Northern Virginia

[Reply](#) [Quote](#)

[Chris Vlitias](#)

[Re: Best irrigation system ?](#)

February 26, 2016 09:34PM

Edited for brevity

Registered: 10 years ago

Posts: 47

Edited 1 time(s). Last edit at 09/30/2022 05:46PM by Chris Vlitias.

[Reply](#) [Quote](#)

[Joanne Patton](#)

[Re: Best irrigation system ?](#)

February 27, 2016 05:37PM

Hey Chris,

Registered: 7 years ago

Posts: 62

I can't imagine watering the trees individually, throughout the season, manually, for the life of the trees. I really need to put something in and have it work automatically.

Our Extension Agent and a VERY helpful man from the USDA both suggested drip irrigation and it's what they see in orchards here in VA. If I bury the lines I won't have to worry about damaging them.

BTY, the man from the USDA gave me this info about a new online application that is so interesting!!! If you're interested about your soils, check it out. There is MUCH more information than what you can find on your county .gov website:

Quote

Roger Flint, NRCS, USDA

As for information on soils for your site, use the WEB Soil Survey on line. Using a search engine such as Google type in "Web Soil Survey" . click on the Big Green Radio Button , and fill in you site's address. This will take you swiftly to your site. Click on Area of Interest icon "aoi" to outline your site. Then click soils map tab. You can obtain further specific information about soil types by selecting other tabs.

Joanne Patton, Squire Oaks Farm
Zone 6A, Northern Virginia

[Reply](#) [Quote](#)

[Paul Weir](#)

[Re: Best irrigation system ?](#)

February 27, 2016 10:59PM

Registered: 11 years ago

Posts: 187

I have been regularly using the online NRCS [web soil survey](#) for about 7 years now (since it first went online). A phenomenal FREE resource that is the result of soil and agricultural scientist efforts across our entire country . . . 95% of all counties in the US that have substantial AG production histories, likely have had formal soil surveys completed.

The online program is not the easiest (most intuitive) for folks to use, if you are not familiar with GIS mapping programs, but give yourself 15-20 minutes with the help and how to files and you will be off to the races -- prepare to be impressed with the soil data therein.

[Gopher Hill Apples](#)

Zone 8 in California

Edited 1 time(s). Last edit at 02/27/2016 11:01PM by Paul Weir.

[Reply](#) [Quote](#)

[Mike Biltonen](#)

[Re: Best irrigation system ?](#)

February 28, 2016 12:39AM

Registered: 10 years ago

Posts: 298

I love the USDA site. Been using it for years. Has way more functionality than I use most of the time.

[websoilsurvey.nrcs.usda.gov]

Mike

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

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