

Transcript of Episode 014 of the Plants Dig Soil podcast – “Giving up on Drip”

Hello! This is Scott Gillespie and welcome to the second season of Plants Dig Soil. In this podcast, you will learn ways to transition from conventional to regenerative practices in agricultural, horticultural, and home gardening systems.

[Transition Music]

Back in 2014, I came across a video on YouTube¹ from Utah State University Extension that showed how you could make your own DIY (Do-It-Yourself) drip irrigation system out of PVC pipe. (I’m not even going to try saying the full name of PVC – but for those that don’t know it is a kind of plastic pipe.) I love making my own things; so, it seemed like the perfect thing to do.² It would also address two of the problems that I had been having with conventional drip hoses. The PVC wouldn’t be blown around by the wind and it could handle the low-pressure water from my rain barrel water collection system.³

My first design was to just lay the pipes out in long rows at 90 cm (36”) apart. I decided to plant perpendicular to them to maximize the amount of space that I could use. I reasoned that the plants furthest from the pipe would still be able to get the water because the roots would grow towards them. I thought this was working but later learned that when drier years hit, and there was no rain to supplement the drip, the outside plants suffered.⁴

My next idea was to lay the pipe out in more of a grid pattern and have the pipes 60 cm (24”) apart. I knew this was still not enough space to fully wet the area since the water only seeped about 15 cm (6”) on either side of the pipe. This left a large area – 30 cm (12”) that wouldn’t get water. You might be thinking: Why not put more pipe in there? The main issue was cost. I had already spent a lot of money on the pipe and I didn’t want to have to buy even more. The other issue was aesthetics: it was starting to look more like a bed of pipe than a garden bed.

I knew from observing the plants that they would fill in the area eventually. The dry areas might even be easier to keep weed free because I would only be watering where the vegetable plants were. In time, I found that this dry interrow area was a great place to establish a rely cover crop.

For the past two years, I’ve established my vegetable crops near the pipe. Then, in June, I’ve planted my cover crops in the dry area between them. I’ve used cool, rainy weeks and supplemented with overhead irrigation to get them going. They grow slowly but that’s the point. I just want them established enough so that they sit under the canopy and are ready to grow once my vegetables have been harvested.⁵

For a more in-depth description of the process and to see some associated pictures, check out the link in the show notes for the transcript. In it I will have listed all the links to my older writing on Medium where I detailed the process as I went through the many iterations of my design.

Back to the topic at hand – why have I given up on drip irrigation? In theory, this system should be working well but in practice it has not. One of the factors that I had not considered was topography. My garden is mostly flat with a very slight slope to it. In the original YouTube video, the presenter mentioned that it was good to be as level as possible. I thought I was level

enough, but this proved not to be the case. In the video, the water comes out evenly across the entire pipe. In my garden, I found that the low areas were getting more water and the higher areas were getting less. It didn't take much difference in height for this to happen. A pipe only a few centimetres (~1") lower could be putting out a lot more water than its neighbour.

The reason this is happening is because there are no pressure regulators. I just drilled small holes in my PVC pipe. Where there's more pressure, more water comes out. Where there is less pressure, less water comes out. Drip systems with emitters have pressure regulators so that constant pressure can be put on the line. Each emitter will only let a certain amount of water out. My system only gets its pressure from the rain barrels. When they are full, there is lots of pressure. When they are near empty, there is almost no pressure. I know that if I made more sections I could get the pressure right on each pipe but there are two issues – time and money.

I'd need 30 valves to separate each drip pipe and the cost alone makes it prohibitive now. It would take years to even pay for them for the produce I get. However, the main issue is time. I know that the 9m (~30') run will almost work at the pressure I have. If I could run half of it at a time and divide the other two sections into 4 sections, then I'd have 10 zones. The problem is that to get 10 minutes of drip/day, I need almost 2 hours to water the garden. If I had stuff I could do near the garden, or in the garden, each day this could work. But during the summer I'm out checking fields for clients and likely to be out early in the morning. The last thing I want to do is to come home and spend two hours watering the garden. Evenings aren't much cooler and by then I just want to rest.

[Transition Music]

At this point I should clarify that I'm only giving up on the drip in the annual side of the garden. I have a small perennial side of raspberries, strawberries, and herbs with shorter runs of pipe per valve and less frequent placement of the holes. The drip is working better there. I know part of the reason is because perennials have much bigger and longer established root systems. I can run the water less frequently and for longer times, and it works just fine. I can tell it's working because I see the raspberries that have escaped the fence are only half the size of those remaining in the garden.

Another reason for giving up on drip irrigation is water storage; I have six 200L (~50 US gal) barrels so that gives me about 1200L of water. An 8mm (3/8") rain will fill the barrels. In the heat of July & August, I can empty the barrels in a week. In a summer where there are frequent thunderstorms, I can refill them every week or so. During most summers, however, the rain stops in July and only resumes in late August. I'd then need to get a lot more barrels to make it through the summer.

Instead of buying more barrels and trying to capture more water, I want to try using my soil as the reservoir. In other words, I want to make my soil better able to capture rainfall when it comes. As I've already mulched most areas of my yard, the main way that I determine using it is to redirect the water that normally overflows the rain barrels into areas that can hold it and release it for later. This is one of the basic principles of permaculture.

So what will I do with the drip pipe? I planted a bunch of haskaps and Saskatoons this spring in response to the pandemic. If you've never heard of these, then don't worry. I didn't know a lot about them until I started looking for drought and cold-tolerant berry bushes that would survive here.

As these establish, I'd like to be able to set up a drip system around them: I think the PVC pipes I'm currently using in the garden will work well for this goal. The only issue is that last fall I moved the rain barrels closer to the garden. However, now that I'm not using them there, I may need to move them again! Live and learn, I guess.

I'm still happy to have the rain barrels. If they are not being used for growing plants, they could be an emergency water supply for me and my family. We would have to do some filtration and purification, but it could be made potable. In the very least it could be used for grey water stuff like bathing and flushing toilets. The barrels themselves were originally used for apple juice concentrate so I know they are food safe. I bought them directly from the canning factory and they still had apple juice residue in the bottom. As such, I'm very confident they never had toxic substances in them. They wouldn't work for the winter but if it came to it, we could collect and melt snow.

[Transition Music]

I said earlier that I live in a semi-arid area and that water conservation is important. Going back to relying on the municipal water supply may seem counter productive. The reality is that, at least for now, we have abundant water.

The town reservoirs are just behind my house; they are fed by massive reservoirs that collect the annual runoff from the Rocky Mountains. The reservoir and distribution systems are world class and helps to irrigate hundreds of thousands of acres. It's just been announced that an expansion will be happening to add hundreds of thousands of more acres in the coming years.

In the decade and a half that I've lived in the town, it has never had water restrictions. If it ever did, I'm very confident that I would be able to live within them. I don't water my lawn in the summer. I let it go brown and dormant. The amount of water I save in that alone is enough to re-distribute to my vegetable garden.

The overhead impact sprinkler is wasteful and there's no doubt about that. I see water blowing off target all the time with it and it always seems to throw some over the fence. However, it's fun to watch, especially early in the morning when the sun catches it just right. It can be tough to get the water even across it. Still, with a bunch of tuna cans, and careful adjustments, I was able to get it pretty close.

The thing is, for right now, it's better than the drip. I can put the time and the money into the drip system, but the payback just isn't there. When the economics change, I know that I can adapt. This could mean more cost or restriction on using overhead water sprinklers or a cheaper drip system, or both. If you have any suggestions, please let me know. I always love to hear from you. My email is scott@plantsdigsoil.com. The link will be in the show notes along with my social media handles if you prefer that.

[Transition Music]

Remember to get local advice before acting upon this information. If you don't know who to talk to, get a hold of me and I'll help you find someone. If you're in my local area and are in need of help, contact me. It's always free to chat. If we get to the point that the scope broadens to consulting work, we can work out a plan that fits your budget.

Would you like to keep up with me through a free monthly newsletter? Go to www.plantsdigsoil.com/contact and select the newsletter option. If you haven't subscribed to the podcast yet please make sure you do that in your favourite app. If you're a long-time listener – will you consider leaving me a review? This helps others discover the podcast. If you know of someone that would enjoy this, please be sure to share it with them directly or through your social networks.

If you're still listening, you're probably like me and like to know what the catch is. Why am I putting out this information for free? The reason is that I love to learn, and I love to share the information. My knowledge has been built up from experiences in my own garden, advising farmers and agronomists in my consulting business, and from reading the latest books and articles on agronomy and regenerative agriculture.

I have a B.Sc. (Agr.) with an agronomy focus and an M.Sc. with a focus on Plant Science. Beyond my formal education, I have attained, and maintained, my Certified Crop Advisor designation and am a member in good standing with the Alberta Institute of Agrologists.

Nearly everything I talk about is from free resources posted to university and research organization websites. Books that used to be hard to track down are available to buy or borrow for nearly anyone with an ereader. The information is out there – sifting through it all is what takes the time.

I make my living entirely from consulting. I don't sell any products, software, or systems. I strive to be as independent and as unbiased as possible so I can provide the best advice to my clients and help as many people as possible move from conventional to regenerative agriculture.

[Transition Music]

¹ Jeff Banks, Utah State University Extension. 2014. How to Build a PVC Drip Irrigation System. <https://youtu.be/NOpvLFwjS1g>

² Scott Gillespie. 2015. PVC Pipe Drip Irrigation. <https://medium.com/@scottcgillespie/pvc-pipe-drip-irrigation-9d6504ea75fc>

³ Scott Gillespie. 2015. Rain Barrel System. <https://medium.com/@scottcgillespie/rain-barrel-system-424f526a4746>

⁴ Scott Gillespie. 2017. Drip Irrigation Design 3.0 <https://medium.com/@scottcgillespie/drip-irrigation-design-3-0-8429d312289d>

⁵ Scott Gillespie. 2019. 006 Lessons Learned in 2019. <https://www.plantsdigsoil.com/podcast/006-lessons-learned-in-2019>