Transcript of Episode 024 of the Plants Dig Soil podcast – "Online Course & Season 3 Review"

Hello! This is Scott Gillespie and welcome to the third season of Plants Dig Soil. In this podcast, you will learn how to think critically about regenerative practices as you work to incorporate them into your agricultural, horticultural, and home gardening systems.

[Transition Music]

I am working on a new service, and I would like to get your feedback on this. Currently you only have the option of listening to my podcast or engaging in consulting services with me. I am working at creating an affordable middle ground to this with an online course.

The working title to it is: "Profitable From The Start: Cover Crops for the Prairies & Plains"

The course description is: "By the end of this course you will know when, and when not, to use cover crops in your operation. You will learn to start with the problem to be solved and then look to the solution that provides a positive return on investment (ROI). You will learn the species, the planting methods, the management, and the termination timings that best helps you reach your goal. Just as importantly, you will plan out cash crop and cover crop rotations to avoid future negative economic risks. Adaptability is a key: You will know how to change course as each season presents its unique weather challenges. As new markets develop in regenerative agriculture you will be ready to evaluate your options and confidently capture the ones that bring value to your farm."

This is just the working concept; and this is where you come in: I would like to know what you think of this idea. There is no sense in me making something that is not useful to you. Unlike reading a book or going to listen to a speaker, by completing this course you will end up with a plan. Depending on your style it could be "Do It Yourself" (DIY) or you could have me along for the ride to answer questions and help direct the plan.

What is your experience with cover crops? If it is none, are you interested in trying? What has stopped you? If you have tried cover crops what worked? What did not work? What are your struggles? The link is: https://mailchi.mp/plantsdigsoil/cover-crop-early-feedback. As a thank-you for your feedback you will be eligible for discounted or free first versions of the course to test out if you fill out the form before November 30, 2021.

For agronomists that are taking this course I will be providing Certified Crop Advisor (CCA) Continuing Education Credits (CEU). If you are not aware of the program, it is managed by the American Society of Agronomy (ASA) and is considered the gold standard for agronomy in the United States and Canada. All agronomists that have this designation, including myself, must accumulate 40 hours (or credits) every 2 years to show that they are keeping up with the industry.

Now, let us get to the summary of the past season of Plants Dig Soil. I like to do this in case you want to go back and re-visit them. This is also a helpful review if you are joining in the future and don't want to go through the entire archive.

[Transition Music]

In the first episode[1] of the season, I used a story of discovering barefoot shoes to illustrate what I think regenerative agriculture is trying to accomplish. If you have not heard about barefoot shoes, then the

easiest way to think of them is shoes without all the engineering and design of the typical athletic shoe. They can come in many levels of minimalism, but most allow the foot to move and flex as much as possible. They are usually flat so that they allow the foot arches to strengthen and do what they evolved to do. I have been using barefoot shoes for over two years and never intend to go back to the rigid shoes and boots I used to wear.

From my perspective, the barefoot shoe movement and the pioneers of regenerative agriculture share a common starting point of getting to a point of frustration in the existing paradigm and choosing to go back to the drawing board. Instead of trying to fix a broken system with more technology, they reset the system and watched what nature would do.

However, this does not mean everyone who observes and arrives at a conclusion is correct. Ideas must be tested and allowed to evolve. In both movements, there are people with ideologies that are hard to substantiate. Many times, something appears to work initially, only to be proven wrong later. Instead of learning and making a correction they continue on the same path, not unlike the people that developed modern shoes and kept using more design and technology to solve the problems they created. The problem is that hubris can creep in and cause certain people, and those who follow them, to believe so wholeheartedly in the system that they are unable to see anything working in any other way.

In the next episode[2], I took the long view on regeneration. I returned to 10,000 years ago to trace the development of the soil with which I currently work. If you live outside of the area now known as Southern Alberta, Canada, then you will need to learn about how your soil formed. The soil in this area is young, in geological terms, even though its age is almost unfathomable in human terms. If you were to condense the 10,000 years of soil development down to an hour you would only see agriculture, as we know it, developing in the last minute. Regenerative agriculture would only develop in the last few seconds.

I specifically mention “agriculture, as we know it” for a reason: humans have lived on this land and have been shaping it for millennia. The current type of agriculture has only been around for about 150 years in my area. Not far from where I live and work, in what is now the Dakotas in the United States, agriculture was practiced for nearly seven hundred years before the Europeans arrived. Buffalo Bird Woman was one of the last farmers in the late 1800s to farm this way. Fortunately, her story was recorded before that way of life ended.

Contrasting her story to a first-person account of a settler farmer, Seager Wheeler, showed that there were not many differences in the way that they approached growing crops. Seed selection, weed control, and land preparation, were all remarkably similar. Both ways were extractive – each admitted that when clearing the land, the first crop was always the best. Subsequent crops equaled but usually never surpassed the first crops. Eventually, the land needed to be left alone for a year or two to regenerate.

In my third episode[3] I shared what I think are the three pillars that are propping up regenerative agriculture right now. In that episode I covered:

1) Inflated expectations of microbial mining of soil particles
2) Mining of the legacy nutrient applications
3) Faulty accounting of nutrient flows

Today we hear that cover crops are all we need to provide nutrients to our crops. This is working on many acres, but it is being propped up by legacy nutrients accumulated over decades of fertilization. As the real microbial rates kick in and the export creates too big of a deficit for the import of nutrients, crop yields will decline. It may take a few years to a few decades in the case of cash crop systems. In grazing systems, it could take decades to centuries to see the decline, but it will happen.

In the fourth episode[4] of the season I returned to carbon buildup and put forth my theory on it. Unlike the people that think we can continuously sequester carbon in our soils I argued that regenerative practices are just putting it in its proper place. The most beneficial place for it is near the surface. This is the place where the majority of the roots are. More root exudates end up here. More microbial life grows here. More nutrients end up here. The depths of the soil are for water storage. They are not the best reserves of carbon and nutrients if for most of the time they are dry and cool.

There is a certain amount of organic matter that is needed for the soil to hold it together, and to buffer nutrient cycles. A certain amount is need to buffer energy supplies. Plants provide the energy source to the system – the sugars – but there are times when they can not be providing this energy. It may be too cold to grow, or there may not be enough water. Disease, insects, animals or even hail may have killed them. They also may have completed their lifecycle and have now died with no new plants on the way. It is at these times that the carbon and nutrient supplies are used underground. Sequestering carbon indefinitely is a human concept. To the plants, the soil microbes, and the soil fauna it is not something to be hoarded, it is something to be used.

[Transition Music]

If you are a visual person, you might find that a slide deck that I created for a lecture to be worth looking at. It does not cover everything in this episode but does follow a lot of the concepts. In September I was a guest lecturer at a course on sustainable agriculture at the University of Lethbridge. The slides are on my media page at www.plantsdigsoil.com/media. Be sure to look for the University of Lethbridge ones as they were more comprehensive than a more recent lecture, only a day after this episode drops, at Lakeland College. While still valuable, it doesn't cover as much of the podcast as it was half the time and based on student submitted questions.

In between the two lectures on the media page, you will see a link to check out my appearance on The Agronomists. In that program, I was a panel member discussing cover crops and soil health. The hour went fast, and we covered a lot. I was pleasantly surprised that the researcher also on the panel mostly agreed with what I said. Even though she has spent more than a decade assessing cover crops and tests of soil health, she agreed that we just are not there yet on the tests. The replay is on YouTube so it is easy to access and can even be downloaded and played as audio only on your phone if you have a Premium subscription. Be sure to check it out.

[Transition Music]

The idea that carbon is not accumulating may put people off cover crops, but I argue that they are still beneficial. From the farmer perspective, having the soil covered and having nutrients being scavenged, unlocked, or fixed from the air greatly benefits their land.

The biggest challenge to using cover crops is establishment. There is very little time to grow after harvest in my area and there is a problem of labour and equipment availability as harvest takes

precedence to establishing a crop. In episode five[5] I covered the way I think we can address this: Relay seeding. The concept is to overlap the lag periods that all plants have in establishment and maturity. When the cash crop is established and just about to explode in growth the cover crop is planted. It grows slowly under the canopy but is ready to go as the cash crop matures and lets more light in. Once harvested and it has the full light it explodes in growth. Relay seeding not only makes sense from an agronomic standpoint it also makes sense from a labour and equipment standpoint. It shifts it to a time there is more available.

Episode six[6] was about supercharging the system. These are practices that are best left until you have found a way to keep a living root growing as long as possible. Some examples I covered were to include some diversity in the cover crop, growing a green manure, integrating animals back into the system, bringing some manure or compost to the farm, and using worm castings or biostimulants.

In episode seven[7] I talked about a controversial topic: Tillage and potatoes. It may seem impossible to build soil health with potatoes since there is so much disturbance associated with them, but I think there is a way. In this episode I talked about ways they could be successfully integrated into your system. The concepts are transferable to any crops that requires digging them from the ground such as onions, carrots, and sugar beets.

This episode also introduced some new research that is showing that no-till does not accumulate carbon in the way we once thought. A long-term split-plot trial in Ontario had the disappointing conclusion that, when looking at the entire rooting zone, no-till had no more carbon than conventional tillage. Just like cover crops, no-till does indeed increase organic matter in the surface layers. It is putting it in its proper place. However, when considering the net effect across the full profile, there is no difference.

This is disappointing for carbon sequestration, but it is encouraging because it means that eliminating tillage is not to be the goal of the system. Tillage should be thought of as a tool. If it means more crop growth and the aggregates are maintained, then there should be no fear in doing it. If it means that weeds can be controlled and a more profitable crop is grown, it should be used.

This concept leads well into the final episode[8] of the season. Instead of thinking of practices as being good or bad and just doing them (or not doing them) because of ideology we should be thinking of them in economic terms. Do they do more good than harm? Do they give a return on investment?

When thinking of cover crops, there is really no reason to use them unless the farm expects to get a return on the money spent. Focus on something that gives tangible results to your farm right now. Immediate goals such as holding onto your soil and/or nutrients defend your land. Short term goals such as increasing water infiltration, increasing nutrient availability, and decreasing pest pressure improve your soil. Long term goals of increasing organic matter and water holding capacity may increase with every year that cover crops are used. Their return may not show up for generations, so my advice is to not worry too much about them. Focus on what you can do right now and those benefits will accrue in time.

So, there you have it. The end of Season Three. I expect the first episode of Season Four to be out in February or March of next year. Don't forget to send me some feedback about the online course and to get on the early access waiting list: https://mailchi.mp/plantsdigsoil/cover-crop-early-feedback.
Act quickly as the deadline for this is the end of this month.

Thanks for listening. Enjoy the wintertime. Do some reading. Have some long naps. It is time to re-charge and get ready for next year.

[Transition Music]

Remember to get local advice before acting upon this information. If you do not know who to talk to, get a hold of me and I will help you find someone. If you are in my local area and need help, contact me. It is 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 have not subscribed to the podcast yet please make sure you do that in your favourite app. If you are 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 are still listening, you are 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 clients 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 a 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 e-reader. The information is out there – sifting through it all is what takes the time.

I make my living entirely from consulting. I do not 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.

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[1] Scott Gillespie. Plants Dig Soil. Mar 1, 2021. 016 What is Regenerative Agriculture? https://www.plantsdigsoil.com/podcast/016-what-is-regenerative-agriculture

[2] Scott Gillespie. Plants Dig Soil. Apr 9, 2021. 017 The Long View on Regeneration. https://www.plantsdigsoil.com/podcast/017-the-long-view-on-regeneration

[3] Scott Gillespie. Plants Dig Soil. May 9, 2021. 018 Three Pillars Propping Regen Ag. https://www.plantsdigsoil.com/podcast/018-three-pillars-propping-regen-ag

[4] Scott Gillespie. Plants Dig Soil. Jun 5, 2021. 019 Carbon in its Proper Place. https://www.plantsdigsoil.com/podcast/019-carbon-in-its-proper-place

[5] Scott Gillespie. Plants Dig Soil. Jul 4, 2021. 020 Relay Seeding Cover Crops. https://www.plantsdigsoil.com/podcast/020-relay-seeding-cover-crops

[6] Scott Gillespie. Plants Dig Soil. Aug 4, 2021. 021 Supercharge the System. https://www.plantsdigsoil.com/podcast/021-supercharge-the-system

[7] Scott Gillespie. Plants Dig Soil. Sep 1, 2021. 022 Potatoes, Tillage, & Soil Health. https://www.plantsdigsoil.com/podcast/022-potatoes-tillage-soil-health

[8] Scott Gillespie. Plants Dig Soil. Oct 5, 2021. 023 Cover Crop ROI. https://www.plantsdigsoil.com/podcast/023-cover-crop-roi