

Transcript of Episode 010 of the Plants Dig Soil podcast – “Plant Green? Plant Brown?”

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.

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Over the past few years, I’ve noticed the practice of planting into a green cover crop gain momentum. In some circles it’s seen as the holy grail of cover cropping. In this episode I want to take a step back, look at what it is trying to accomplish, and look at where it fits and where it does not.

To start, let’s look at what planting green looks like. One example is the practice of growing cereal rye through the fall & winter in advance of a soybean crop. The system was studied intensively among farmers and researchers in organic agriculture as a way to grow no-till soybeans.¹ The goal is to create a mat of residue over the soil surface to suppress weeds and still allow the soybeans to grow.

Roller-crimping at the pollen shed time was found to work well to kill it and have minimal re-growth. In the original system the soybeans were planted after the roller-crimping. With this sometimes not happening until mid-June the yield and the maturity of the soybeans was impacted. An alternative system plants the soybeans in the standing rye and rolls them once the soybeans are emerged and not susceptible to death by rolling. It can work well but the growth stages need to be well timed and rainy weather could mean timings are missed.

A very common method that is seen all over Twitter is planting corn into cereal rye. Herbicide may be sprayed just prior to planting, just after, or, in the case of RoundUp Ready crops, it could be sprayed after corn emergence. The goal in this case is usually not complete weed control, as herbicides are an option, but it may help to suppress some of the weeds so that less herbicide is needed. The usual goal in this case is to fulfill the soil health principle of having a green cover at all times.²

I live and work with farmers in the South Western area of the Canadian Prairies – 60 miles north of the Montana border for those of you state side. Should we aspire to plant green here? If you are asking that then I think you are asking the wrong question. The practice is being confused with the goal. The better question is: What can I do to have the soil ready to plant at the proper time and have the crop establish quickly?

In both the examples I started the podcast with there needs to be a long off-season to grow the cereal rye and there needs to be ample moisture leftover to grow the crop. The soil typically freezes up here anytime from in early November and usually does not thaw until late March. We have Chinook winds from the Rocky Mountains that occasionally warm the winter months to above freezing temperatures, but this is not enough to thaw the ground. The top may melt but deeper down it will usually be frozen – sometimes to 1m (a little over 3’).

In the springtime, the race is on to get onto the ground as soon as it can be seeded. Often, there is still frost deeper down when the early crops are going in. The other race going on is to chase moisture. Getting the seed into moisture and having that moisture stay around long enough to germinate and allow a seedling to establish can be a challenge. Growers with irrigation may counter that they have the water, but the canals usually are not filled until later April or early May. That's a lot of time to wait to get the crop going.

I advocate for thinking through system and designing a cropping system that has the best chance of a timely establishment of the crop. Let's start with one of the earliest seeded crops there is – spring wheat.

An on-going project here in the Canadian Prairies is to look at ultra-early seeding of spring wheat.³ Instead of looking at the calendar to decide when to seed, the idea is to look at the soil temperature and conditions. In trials and in farmer experiences so far, there has been no penalty to seeding when the soil temperature is as low as 0C (or 32F), which is, of course, the coldest you can seed because frozen ground does not allow for seeding equipment to plant the crop.

In this case, planting brown is going to be your best option. We should not be using another cereal (such as fall rye) to nurse a cereal crop due to green bridging of pests.⁴ Also – if there were already a cereal established – why would you uproot it to plant another one? So far, there are not many good options for overwintering broadleaf cover crops. Hairy vetch may be the only option and it will be patchy as best. It may be possible to spray it out but most herbicides need +10C temperatures to work and actively growing plant material. It would be too early for roller-crimping to be effective.

[Transition Music]

Before we move on to more examples, I want to take a short break and highlight a talk I was able to give earlier this month as a part of Environment Week. As anyone who listened to the first episode of this season will know, I was supposed to talk about plants that gardeners could start using in addition to, or instead of, soil amendments to a Seedy Saturday gathering in March. As restrictions were being put in place to limit the spread of Covid-19, the event was cancelled. Since I'd already put the work into the presentation, I decided to turn it into a podcast, and I posted it here⁵. Environment Lethbridge decided to go digital, as most groups have, and I was able to present it online. If you want to watch the presentation to be able to see the pictures that are part of the presentation check out the link in the episode description⁶ for the YouTube replay or go back in your podcast player to episode 007 to listen.

[Transition Music]

While planting brown may seem against the soil health principles it's best to look at the surrounding area to see what happens in nature. By the end of the winter the grasslands are brown. Even the most cold hardy plants have gone dormant. In a lot of ways we are mimicking nature – a small leaf of a cereal coming from a brown field is very similar to a new shoot poking through a brown grassland.

The Chinook winds over the mountains can blow extremely hard here in the spring. It's not uncommon to have days on end of winds blowing at 30-50 km/hr (18-30mph). A few weeks ago, we had a day of winds sustaining at 60km/hr with gusts up to 80km/hr (36-48mph). Cereals will have some of their leaves torn in this but will usually come through it because the growing point is below ground. If they are no-tilled there will be the previous years stubble in place to protect them as well. But what about the more sensitive crops with their growing points above ground?

Let's look at canola. Planting brown can work well if there is sufficient stubble from the previous crop to protect it. If there isn't, a nurse crop could be planted a few weeks to a month ahead of time to help hold the soil in place and act as protection for the crop. In this case planting green is an option if there is a way to kill the nurse crop once the canola is established. We must be sure of this because we don't want the nurse crop taking away from the canola or setting it back so much that it affects yield.

To maximize the growth of the nurse crop, a winter cereal such winter wheat, winter triticale or fall rye (cereal rye) could be planted in the fall prior to canola with the plan of terminating it and planting between the rows. In this case there may be enough growth on it to kill it prior to seeding the canola and still be planting brown. Herbicides will likely be the only option because it will not be big enough for roller-crimping to be effective.

On to the final example: In my area there are specialty crops that are not planted until June. Fresh vegetable processors have farmers staggering the planting of their crops so that they can time the harvest and get the most amount harvested at peak flavour as possible.

There is a huge opportunity in the time leading up to planting, and even in the fall prior, to be working on the soil. Perhaps a multispecies blend that has some overwintering plants could be planted in the fall and allowed to grow until planting time. Care will need to be taken to be sure that the plants added to the mix will not become weeds in the following crop or hurt it in some other way. It's possible it will make it to the stage where a roller-crimper will terminate it. If not, you need a plan to terminate it.

If you are using herbicides you could establish the soil crop in rows that are wide enough to allow the planter to go in between the rows in the spring to plant the crop. This way the soil crop could be sprayed in advance of planting so that you are either planting brown or planting green. If planning to spray after the crop is planted be sure there are chemicals, you can use to terminate the soil crop if your cash crop emerges before you get a chance to use RoundUp.

A non-chemical way to make this system work may be to use a row-mow. This is a newly emerging practice and so I'd use caution trying it out. The basic idea is that you could use individual mowers that run between the crop rows and mow the soil crop down.⁷ It may not kill it but repeated mowings and one final one before the cash crop takes off may be enough to suppress it.

Strip till could be used where a solid seeded soil crop is established. The strip tiller could go in advance to prepare the cash crop seedbed and the soil crop could be managed either by herbicide or mow-rowing. Full field tillage to turn it into the soil may be an option too. I know that tillage

and soil health are not usually mentioned together but there is lots of evidence that it is not as destructive as once thought. I'll be addressing this in depth in a future podcast.

So, what do you think? Is planting green the holy grail of cover cropping or is it best to judge on a case by case basis? You know where I stand – but I'm always up to discuss ideas and learn new things. Send me an email scott@plantsdigsoil.com.

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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. New podcasts come out once a month so, just like the newsletter, you won't be overwhelmed with information.

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 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 a 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 Erin Silva. 2018. Organic No-Till Production.
<https://youtu.be/d1v2hROGVVE>

² Jay Fuhrer. Soil Health: Principle 4 of 5 – Continual Live Plant/Root.
<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/nd/soils/health/?cid=nrseprd1300919>

³ Alberta Barley. 2019. Early bird gets the germ: Spring wheat trials at CanolaPALOOZA.
<https://www.albertabarley.com/early-bird-gets-the-germ-spring-wheat-trials-at-canolapalooza/>

⁴Stephen N. Wegulo et al. 2008. Managing Wheat Streak Mosaic.
<http://extensionpublications.unl.edu/assets/pdf/ec1871.pdf>

⁵ Scott Gillespie. 2020. 007 Plants as Soil Amendments.
<https://www.plantsdigsoil.com/podcast/007-plants-as-soil-amendments>

⁶ Environment Lethbridge. 2020. Environment Week Virtual Symposium - Afternoon Sessions
<https://youtu.be/Cv7f7p1YD6s?t=3639>

⁷ NCRCRD. 2018. A new weapon for farmers: Inter-row mowing for problem weeds in row crops.
<https://youtu.be/XgU1t-w94Jl>