

525 Regenerative Research Results

#RealisticRegenAg | I've noticed more and more research that is directed at solving real world problems with regenerative practices. Stay tuned for this and other news in regenerative agriculture this month.

Welcome to Plants Dig Soil, where I, Scott Gillespie, an agronomist specializing in climate-smart agriculture, discuss scientifically proven practices that benefit both the planet and farmers' economic sustainability. Be sure to visit my website, www.plantsdigsoil.com, for resources and information about the services I offer.

Articles mentioned in the podcast:

<https://www.potatoesincanada.com/slow-release-fertilizer-research-shows-no-reduction-in-potato-yield>

<https://canadianagronomist.ca/urea-fertilizer-strategies-for-winter-wheat/>

<https://www.topcropmanager.com/how-the-legacy-of-phosphorus-can-assist-farmers-reduce-fertilizer-applications/>

<https://www.topcropmanager.com/making-the-most-of-a-bug-eat-bug-world/>

<https://www.topcropmanager.com/whats-in-a-wetland/>

<https://spudsmart.com/starting-with-seed-for-regen-ag/>

<https://spudsmart.com/new-research-finds-gene-editing-can-aid-fight-against-potato-blight/>

Transcript is available:

<https://www.plantsdigsoil.com/podcast/regenerative-research-results>

My course: Profitable From the Start: Cover Crops for the Prairies:

<https://plantsdigsoil.thinkific.com/courses/cover-crops-prairies>

My funding service offerings:

<https://www.plantsdigsoil.com/pricing/#paperwork>

SCAP - <https://www.alberta.ca/sustainable-cap.aspx>

OFCAF - <https://rdar.ca/ofcaf/>

My consulting packages:

<https://www.plantsdigsoil.com/pricing/#consulting>

Newsletter signup:

<https://mailchi.mp/plantsdigsoil/newsletter>

Email: scott@plantsdigsoil.com

Twitter (Scott): <https://twitter.com/scottcgillespie>

Twitter (Company): <https://twitter.com/PlantsDigSoil>

LinkedIn (Scott): <https://www.linkedin.com/in/scottcgillespie/>

LinkedIn (Company): <https://www.linkedin.com/company/plants-dig-soil>

YouTube: (Company): <https://www.youtube.com/@scottcgillespie>

Podcast Subscription Apps: <https://podcasters.spotify.com/pod/show/scottcgillespie>

So let's get started on this first article that I have here: 'Slow release fertilizer research shows no reduction in potato yield.' And I find this interesting because this is something that is both climate smart because we are using the fertilizer that times the release better to when potatoes need it, and it also has a benefit to the farmers because there's, as they say, no yield reduction. And in my experience in using this, you can actually have a better quality product. So it's very interesting how this research is actually starting to show where we can have win-wins for the farmer and for the climate.

So that's one of my first articles that I want to discuss in this episode.

Now let's move on to one where maybe the benefits aren't quite so distinct or not quite a win-win, but still interesting. They were looking at whether there was a benefit to the farmer to applying these nitrogen stabilizer products. So the article is called 'Urea Fertilizer Strategies for Winter Wheat.'

And in this one here, the main takeaway is that when you're in a high rainfall or irrigated production system, there can be benefits to applying these products and to do a split application. When you're talking dry land, which is what I deal with most of the time, then there may not be a benefit in this because we have very few loss mechanisms. So I'll put that article up for you to take a look at as well.

Now, on the topic of nutrient loss mechanisms or what happens to nutrients in the soil, I found this one a very interesting one. It's called 'How the Legacy of Phosphorus Can Assist Farmers to Reduce Fertilizer Applications.' Now, I have talked about this a lot in the past many years over the podcast in that what I see a lot of is the cover crop early successes in is grabbing this legacy phosphorus and making it available for the producer. So, now this article is talking about how maybe we need to look at different ways of using this phosphorus.

So legacy phosphorus is that fertilizer that has been applied over decades or maybe even generations, and it's lightly tied up in the soil and it slowly shows up over the years back to the producer. So they were looking at ways that maybe we can access this and reduce our rates right now by just placing our phosphorus better and using what is already there. So of course, if you think about this over the course of a generation, you will need to be replacing what you're putting down, but maybe for a while, especially under low phosphorus availability, high prices, then there might be ways that we can do better in the entire system.

Now, this research also makes sense to me. I've followed Alberta Agriculture guidelines for fertilizer recommendations for basically my entire career. And what I remember seeing a lot of the time is that our probability of a response in using phosphorus is low once we have a moderate soil test. So this is just another way of looking at things. I think it fits into regenerative because it's looking at ways that we can use our nutrients in a better way. So again, I'll link that article. I thought it was an interesting one.

Now let's focus on some stuff that's up and coming or just getting going. This is an interesting one: 'Making the Most of a Bug-Eat-Bug World.' And in this, it's talking about a project where they're going to start quantifying and categorizing all of this, what Haley Catton calls the unpaid army of beneficial insects. This is something I've referred to over the years too. There are a lot of beneficials out there that a lot of times we're missing or we don't really know how to account them or how to know how much stock to put in their presence or whether they're doing much. And I think probably a lot of the time they're doing a lot of work and we're not even seeing it.

In this project, they're going to be looking at finding out what's already known about all of these insects and species, spiders, and anything else that's out there, what they do, and then put together what they call a roadmap for future research. This is just things that can be done for how we look at researching these in the future. I think this is going to be exciting to have because right now there are resources, but there's not a ton of resources, and I think in a generation, agronomists instead of just looking out and looking for pests will be looking at the ratio of pests to beneficials and then making their decisions based on that. So to me, this is exciting research that's getting going.

Next, I want to talk about an article called 'What's in a Wetland.' And this is a shift in thinking that I think is just starting. It is something that has been changing for me. Even up until a few decades ago, I think there were lots of policies in place to drain wetlands and get rid of them in the prairies. Now we're seeing the benefits that they provide. There's so much there that we don't even see. And I guess draining wetlands can be good for a farm, but in a lot of years, they just become the hard place to plant, the hard place to seed, and then they do risk becoming a salinity issue. So if we can just leave these wetlands in place, they can actually be the places that absorb huge rains and allow the other areas to be farmed in a better or more timely manner. And they also, if they're small wetlands or ethereal ones that move in and out, they could be a source of feed in years when it's very dry. So there are tools out there for farmers and agronomists to learn more about them and learn their value in how different species use them and what their benefit is in the landscape.

Now, let's move on to something that's a problem. It's a very tough insect to study. It's all about wireworm behavior and how to manage them. There's some great work going on in the East Coast on this, the East Coast of Canada. Wireworms are really tricky to study because they can

sit dormant for years. They can go deep, they can move up and down, they'll feed a little bit, they'll disappear. But there's a lot of good research in learning their behavior and then coming up with ways that we can deal with them without using insecticides. This is a case where the insecticides that we did have that were developed post-World War II were in the '60s, '70s, they worked really good, they killed them, but they killed a lot of other things too, and they are not good for the people that have to use them and for the environment as well. So, this fits into what I talk a lot about with cover crops and finding the ones that actually make sense to use, not just using what are the trendy ones or throwing a bunch into a big cocktail mix or following some formula. There's some really good research showing how buckwheat and brown mustard can actually diminish these populations and lead to less damage in potato crops, in particular, in this research. But I think they can have huge effects. So, this is where I think over time, if we can have a definitive thing or know what we're doing, we can put in the right cover crops or companion crops with cash crops and have the benefit of luring or killing these insects and having a better crop. So again, very interesting work, and I highly recommend you to read this article.

Next, I want to talk about seed for regenerative agriculture. This one is in particular about potato seed or potato varieties. Different potato varieties respond very differently to nitrogen fertilizer. Typically, potatoes have to have a slow, steady supply of nitrogen throughout the year so they don't grow too vigorously and slow down their tuber development. But there are varieties where you can almost starve them of nitrogen and they'll still make a tuber or still make what we're looking for. This article goes through the different things that a seed farmer has been doing, but then also talks about the work that McCain is doing in promoting regenerative agriculture and how the conversation is finally there where they can start going to their end customers like McDonald's or any of the large fry buyers and say, "Look, I know that your specs are good for russet Burbanks, but they're not maybe the best ones for the land." So, it's very interesting. Check that out.

Finally, I want to touch on something that may be a little controversial, but I'm going to put it out there. This is where gene editing, which has been hitting the news a lot recently, comes into play. There's a lot of debate about how it should be regulated, labeled, or used. There is gene editing that might be able to get rid of or at least highly diminish late blight. Late blight is an ongoing fear in the potato industry. It's the same disease that caused the Irish potato famine, which killed millions of people. Late blight gets into the foliage, moves through the stems, and can even reach the tubers and rot them either before they can be harvested or in storage.

There's a lot of spraying done for it, or in organic systems, it's very tough to control. So with this new technology like CRISPR, there is potential for helping potatoes resist late blight. Decades and decades of plant breeding have not been able to overcome it, or at least there's still a long way to go. This technology might jumpstart the process and make a huge change in the amount of fungicides that are needed. However, it's controversial because many people are still

hesitant about gene editing or genetically modified organisms, especially in things like potatoes that they directly consume. So, it's very interesting and something to think about. I think it has the potential to help out in the regenerative agriculture movement, but there is some controversy surrounding it.

Thanks for joining me. I'll talk to you again next week.