

512 Light signaling and plant competition (Regen Ag News Mar 2023) – Plants Dig Soil Consulting Ltd.

#RealisticRegenAg | The first plant to see the light of day is the one that gets ahead. This has huge implications in crop establishment and in using cover crops to suppress weeds. I'll be covering an article about this and many other things in regenerative ag news in this episode

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Articles mentioned:

<https://www.topcropmanager.com/u-of-g-light-signals-from-nearby-weeds-affect-crop-plant-growth-and-yield/>

<https://wiscweeds.info/posts/waterhempssuppressionwithcerealryecovercrop/>

<https://www.potatoesincanada.com/cover-cropping-strategies-for-the-prairies/>

<https://www.topcropmanager.com/microbial-efficiency-of-crop-residue-decomposition/>

<https://www.topcropmanager.com/pea-cereal-intercrop-improves-forage-production/>

<https://www.topcropmanager.com/whats-the-best-way-to-go-from-forests-to-crops/>

Report referred to:

<https://fableconsortium.org/publications/aligning-regenerative-agricultural-practices-with-outcomes-to-deliver-for-people-nature-and-climate/>

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The first plant to see the light of day is the one that gets ahead. This has huge implications in crop establishment and in using cover crops to suppress weeds. I'll be covering an article about this and many other things in regenerative ag news in this episode

Hi, my name is Scott Gillespie of Plants Dig Soil, the name of the podcast and the consulting company. We're an independent agronomy company. We do not sell products. We provide advice only. We focus on #RealisticRegenAg which has to be proven and profitable. We work in person or remote or a combination of the two. Our pricing is set to be affordable to anyone from a Q&A package to full farm planning. There's no long-term commitments, you can retain our services, do it yourself or hire others. Of course we always love to work with people over the long term.

So this first article is from Top Crop Manager. It's a what a U of G study that looks about signals from nearby weeds and how they affect plant crop growth. Now this is something I've always wondered about with the plant green method because when you're planting your crop into a green cover crop and then killing it later, I've always wondered how this affects the crop. Now, maybe if the if the cover crop is dying or has been sprayed and is giving us signals that it is actually dying. Maybe it doesn't affect it, but it seems like it should. I know in the soybean studies with roller crimping they've never been able to equal the yields of a full tillage system. So I do kind of wonder about this. Now. The article is definitely worth your read to get into the details of it. But the bottom line is that whoever hits the light first wins and also give signals to the crop plants at the other plants coming up that they need to be in defensive mode for the rest of their life. And I have talked about this before in previous podcasts that whoever gets there first can have a huge impact. In their research. They found that if the weeds come up with the first stage of crop growth, the yield loss can be 10 to 20%. But if the weeds come up even just two or three leaf stages later, then the crop loss is only about three to 5% and this is related to the weed free critical period or the critical weed free period in weed management, which is that if you can keep your crop weed free in that initial stage then you're good for almost the rest of the year. And then this is where in my opinion or in my thoughts on this where interceding a cover crop once your cash crop is established, should provide almost no competition to that cash crop because it's the one that's ahead and then as long as you have a cover crop that can handle being shaded and then will take off in the fall your year ahead. So anyways, check this article out. It's a very interesting read.

Related to this is an article about how researchers believe that cereal rye or it's also called fall rye can suppress waterhemp this comes from Wisconsin weeds site. And in it they cover what they have observed and what they think is going on. Now. I've said this before in many other episodes, it's all about biomass. Coverage is almost like interception. And this helps to prevent the waterhemp from germinating. Now, even if they are germinating, if you're covering it, so when the cereal rye covers the soil, there's there is over what they have observed and what they think is going on. Now. I've said this before in many other episodes, it's all about biomass and so when the cereal rye covers the soil, there's there is almost no light interception and this helps to prevent the waterhemp from germinating. Now, even if they are germinating, if you're covering or shading the soil that's going to hold them back or slow them down. There is the physical barrier but they could push through. Now the other key part of it that they do think is that the cereal rye does help to lower the soil temperature and make it less conducive for it to germinate. Now of course the problem with this is that you might also be inhibiting your cash crop growth. So this is where it's not a perfect system, but it is a way that you might be able to get the effects on the main waterhemp but then also get your cash crop growing. So again, it's interesting because it's it's based on scientific evidence, but it is also a little bit speculative in what they think is going on.

And relating to this article is another one on cover cropping in the prairies and it's in the potatoes in Canada magazine. So in this study in the prairies, they put in wheat with red clover, frost seeded or spread onto it to grow. Then they follow the cash crop the next year with canola and precede clover and oats than they had potatoes which were followed with the cover crop of fall rye and then they did pee in the fourth year and they had tillage radish and a mustard mixture. So when they got this results together when they've summarized the four years of using these cover crops they found that these rotations with and without cover crops were not significantly different from each other in terms of their crop yields crop in our nitrogen efficiencies and in season nitrogen. Now they did use normal or recommended rates of nitrogen so they kind of think that maybe that had a factor in in not seeing a difference. So this is it's unfortunate results for putting cover crops into the prairies, but it's not surprising in my opinion, because they did say that the the biomass was not great on these cover crops. And so this is where I've, I've seen a lot again it's it does come to biomass when you when you don't have much

growth then there's not a huge amount of impact on it. And unfortunately, with when you put in economics into this is just not going to pay to put in all these cover crops and then and then end up with no real difference in your cropping system. Now, they have speculated and I have speculated too that this is something that we need to see happen for through many cycles. It might take decades for the effects to start showing up where we do get a more efficient system. Or perhaps we need to just target the cover crops to where they are really going to make the biggest difference like say for example after potatoes rather than trying to get a cover crop after every single crop. So again, it's an interesting study. And I think it's it's well worth your read. Again, it shows that although cover crops have potential, there still needs to be a lot of work to figure out where they're going to fit into our primary system.

Now let's move on to something that could be a little controversial there is a study on the efficiency of microbes to degrade crop residues and this was in Top Crop Manager. It's a long read and so I'd encourage you to check it out. But it's interesting how they checked out this was not related to cover crops this is just the cash crop residues. Different residues seem to stimulate different N₂O which is the very bad greenhouse gas and they they stimulated this in through all their different residues and they have a lot of discussion on how much greenhouse gas emissions commodities. Now, the bottom line is it was mostly related to water so if you had a wet winter or a wet spring coming in, then you're going to have more of this greenhouse gas come out. Now what is interesting is this relates to another big review that I came across and I haven't had a chance to fully digest, but they found that cover crops can actually emit a lot of this into Whoa. When a lot of people put it out as being cover crops mitigate this effect and I think this is because when you have a deep whenever you have decomposing residues you are going to have more potential of these of nitrogen loss. If you don't have something else growing fairly quickly. Now you've heard me talk about the fertilizer emissions reductions. And that's a huge, huge topic of the Government of Canada wanting to reduce fertilizer emissions. But fertilizer emissions are just one small part of the emissions factor. And there are natural emissions of these potent greenhouse gases happening all the time even in in what would be considered natural areas or grasslands or forests. So I think there's a bigger picture here. That we're going to have to start to investigate.

know if you've heard me long enough, you'll know that I am fairly I have a low opinion of multi species mixes or even sometimes it mixes in cover crops because to me, I think you put out the best species and let it do his job. Some interesting work that I did come across in Top Crop manager was a pea cereal intercrop with forage production. Now they only used the gel, just the two they didn't use a cocktail blend. Now, you could argue or some would argue that they should have had that in this year. But I'm going to go into the article. It's amazing how much complication there is even just having two species in a mix. Now the bottom line is that they did find that the mixes did give a much more a better forage. Better for the animals a higher protein which would make sense when the peas are in there. The interesting thing is that year to year there was variation in which one worked or what kind of ratio worked or what they got out of it. Now they didn't cover this in here. But one of the things that I was wondering with this is that how much variation you're going to have field to field year to year or even within a field you could be going through and having different areas making different quality of feed. So maybe this is why although it it has the potential maybe this is why it hasn't taken off the way maybe people think it shouldn't because when you're getting into the reality farm and having to make or having to have consistency in your in your feed. Putting out a mono crop almost will ensure most of the time what you're going to get out of it. So.

For the final article today in this regenerative agriculture news update, this one will be controversial. The title of it is what's the best way to go from forest to crops. So obviously the narrative in in the media is that we need to be putting in more forest land or conserving forests or grasslands but as the climate

changes, there are more opportunities in northern Ontario and I would expect also in the northern prairies. So the question is how do you go from forest to crops in the best way? Now of course many would argue we shouldn't be cutting down forests and converting them to agricultural land, but the reality is it's going to happen and there are people that are working on what the best way is rather than the common way. So again, it's a longer form article. There's lots of detail in it to go through. The main question is whether you mulch the wood products in place or whether you clear everything off the land and start from that and they are looking at whether which way you're going to hold on to Morphe organic matter and mortar carbon in your soil which one's going to give the best nutrient delivery and and make the farm profitable from the beginning of clearing. I would love to hear your feedback on this because it's it's a it's a very interesting topic because even in the regenerative agriculture side of things it is expected that by going to regenerative systems or getting away from it from the conventional way of doing things we are going to need more land because yields do go down even if even if profits go up. And so this could mean that we're going to need more land available to grow stuff on. So the question is do we do more intensive on less land or do we use more land that is done in a more regenerative or sustainable way? So I would love to hear your feedback on this. That was the highlight of what I saw in regenerative agriculture news this month, and I will put together another episode like this next month but next week we'll be back into the podcast again. So I will see you again later.