

Agricultural Innovation Board Meeting  
April 24, 2023 1pm-3:40pm  
Transcript Text

0:0:0.0 --> 0:0:1.10

cc198c43-b550-4aed-b186-e126b5902cea  
Welcome to the.

0:0:6.990 --> 0:0:7.490

cc198c43-b550-4aed-b186-e126b5902cea  
All good.

0:0:8.630 --> 0:0:20.460

cc198c43-b550-4aed-b186-e126b5902cea  
Anyway, welcome to the April 24th meeting of the Agricultural Innovation Board. We're here in Williston, and we got three of our Members here.

0:0:21.960 --> 0:0:23.150

cc198c43-b550-4aed-b186-e126b5902cea  
The four of our Members, I guess.

0:0:24.210 --> 0:0:26.560

cc198c43-b550-4aed-b186-e126b5902cea  
And we got folks signed in.

0:0:29.410 --> 0:0:29.580

Griffith, Morgan  
Yep.

0:0:30.430 --> 0:0:33.10

cc198c43-b550-4aed-b186-e126b5902cea  
It will let Morgan OK the road.

0:0:32.60 --> 0:0:33.350

Griffith, Morgan  
Sure. Yep, I can run that.

0:0:34.410 --> 0:0:35.250

Griffith, Morgan  
Are you ready?

0:0:34.190 --> 0:0:40.260

cc198c43-b550-4aed-b186-e126b5902cea  
Yeah. Morgan, why don't you go ahead and fall on? Well, let's let's go around. Do introductions here. First in the room.

0:0:40.680 --> 0:0:40.920

Griffith, Morgan  
Sure.

0:0:41.100 --> 0:0:51.170

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So Roy osbert. Sure. Roy Beckford, University of Vermont Extension I'm associating with positive attitude. Sure. And director of extension.

0:0:52.750 --> 0:1:0.200

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Steve Dwinell, director, Public health Resource management division Sarah Owens, state toxicologist health department.

0:1:1.70 --> 0:1:3.80

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Jonathan Chamberlain. Correct quickly.

0:1:5.50 --> 0:1:12.20

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Stephanie Smith, deputy director within public health and agricultural resource management management at the Agency of Agriculture.

0:1:16.40 --> 0:1:20.760

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Joseph Flow, goth feed seed fertilizer specialist with the agency.

0:1:22.220 --> 0:1:36.390

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Yeah. And I actually, Stephanie, I don't know if you do, we have a Wi-Fi that folks can get on here in the room. There's always that up there on the wall. Yeah. Up there. OK. Sorry. OK, we go ahead and do the introductions online.

0:1:37.610 --> 0:1:40.220

Griffith, Morgan

Ah, sure, we have, Ryan, go ahead.

0:1:41.690 --> 0:1:44.300

Ryan Rebozo

Ryan Rebozo from the Vermont Center for Eco Studies.

0:1:46.650 --> 0:1:48.300

Griffith, Morgan

Thanks, Ryan. Uh, Wendy sue.

0:1:49.720 --> 0:1:55.290

Wendy Sue Harper (Guest)

Wendy Sue Harper. Umm, I'm a soil scientist and I hold the soil biology position on the board.

0:1:58.640 --> 0:1:59.640

Griffith, Morgan

Have a Andrew.

0:2:2.820 --> 0:2:6.470

Andrew Munkres VBA

Hi, I'm Andrew Monkas and I'm with the Vermont Beekeepers Association.

0:2:9.120 --> 0:2:10.0

Griffith, Morgan

And Fred?

0:2:11.980 --> 0:2:17.250

Fred Putnam (Guest)

Yeah. Hi, Fred. Hi, Fred Putnam with the Vermont Beekeepers Association and also soil scientist. In a past life.

0:2:20.380 --> 0:2:20.850

Griffith, Morgan

Dave.

0:2:24.740 --> 0:2:31.870

Huber, David

Dave Huber, draft Debbie, director of the public Health and Agricultural Management Division with Nancy of Agriculture.

0:2:35.10 --> 0:2:37.740

Griffith, Morgan

Thanks Steve and Clark.

0:2:40.410 --> 0:2:46.630

Parmelee, Clark

Yep, Clark Parmley with the Vermont Agency of AG. I'm a AG resource management specialist.

0:2:49.500 --> 0:2:55.790

Griffith, Morgan

Great. And I'm Morgan Griffith. I'm with agency vague, and I'm sorry I'm not there with you in person today, but.

0:2:57.300 --> 0:3:2.870

Griffith, Morgan

Think we're gonna work this? So thanks for all of you who came, and I'm sorry to see you through a screen.

0:3:3.940 --> 0:3:8.350

Griffith, Morgan

Umm, so I think that's all I have on line.

0:3:10.530 --> 0:3:13.870

Griffith, Morgan

But if somebody comes on, we'll make sure to grab them so.

0:3:14.870 --> 0:3:15.690

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The.

0:3:15.520 --> 0:3:33.110

Griffith, Morgan

Uh, first, I sent out the meeting minutes from the end of March. I didn't hear any adjustments or anything, but if anybody does, anybody have any changes that they wanna make to the minutes or do we accept them as they were shared?

0:3:38.60 --> 0:3:39.590

Wendy Sue Harper (Guest)

I'll move to accept them.

0:3:40.720 --> 0:3:41.310

Wendy Sue Harper (Guest)

As written.

0:3:42.590 --> 0:3:43.750

Griffith, Morgan

Thanks, Wendy.

0:3:49.910 --> 0:3:50.300

Griffith, Morgan

OK.

0:3:54.960 --> 0:3:57.750

Griffith, Morgan

Umm. And then.

0:3:58.650 --> 0:4:6.310

Griffith, Morgan

We have a few, just we to go over the action items from those minutes. Uh, we're gonna talk about. We have the action item to.

0:4:8.530 --> 0:4:8.880

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Ohh.

0:4:7.970 --> 0:4:9.290

Griffith, Morgan

Look into some.

0:4:10.40 --> 0:4:10.510

Griffith, Morgan

OK.

0:4:11.200 --> 0:4:11.500

Griffith, Morgan

Yep.

0:4:10.330 --> 0:4:12.300

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Morgan. Morgan, before you do that.

0:4:13.380 --> 0:4:21.60

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I think we should talk about the Clara stepping off the Board and Amanda being appointed.

0:4:23.900 --> 0:4:24.160

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Yeah.

0:4:22.590 --> 0:4:24.270

Griffith, Morgan

Sure. So.

0:4:25.440 --> 0:4:41.740

Griffith, Morgan

Clara for a while. Uh clear air has been juggling a lot of things and show she asked to see if we could have a substitute to fill the conventional dairy spot for her and so.

0:4:43.340 --> 0:4:50.370

Griffith, Morgan

Steve, you can talk to it, but so we went through and we have Amanda Saint Pierre that's going to join us on the board.

0:4:50.970 --> 0:4:56.420

Griffith, Morgan

And I know she was gonna come today and hopefully she had some.

0:4:57.140 --> 0:5:17.10

Griffith, Morgan

Things to attend to at the farm that came up last minute, so hopefully she'll be able to join us, if not later. Looks like she's not on yet, but so hopefully then we'll be able to introduce ourselves to her and her to us as well. So we're welcoming Amanda and saying a very appreciative goodbye to Clara.

0:5:19.670 --> 0:5:21.170

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And also I think.

0:5:22.470 --> 0:5:24.240

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Clarice Cutler has joined.

0:5:24.700 --> 0:5:28.950

Griffith, Morgan

Yep, Yep, queries. If you wanna do a quick introduction.

0:5:33.760 --> 0:5:36.990

Cutler, Clarice

Hi, I'm Claris Cutler and I'm with agency and natural resources.

0:5:38.980 --> 0:5:39.630

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Thanks.

0:5:39.260 --> 0:5:44.250

Griffith, Morgan

Thanks, Clarence. I'm also Zach. I see you. You can give a quick intro.

0:5:46.20 --> 0:5:53.270

Szczukowski, Zach

Hi everybody. I'm Zach Schikowski, agricultural resource management specialist with the agency of our culture.

0:5:57.360 --> 0:5:58.110

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OK. Thanks.

0:6:0.480 --> 0:6:0.760

Griffith, Morgan

Yep.

0:6:0.630 --> 0:6:8.670

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Can we go back to the Minutes? Yes. Yes. I just wanted to let Morgan know I did review them and just sent 1 short edit.

0:6:10.450 --> 0:6:12.360

Griffith, Morgan

OK. Are they is it on teams?

0:6:14.640 --> 0:6:15.560

Griffith, Morgan

Or he sent it to me.

0:6:14.900 --> 0:6:15.700

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I sent you an e-mail.

0:6:16.370 --> 0:6:17.100

Griffith, Morgan

OK. Thank you.

0:6:27.170 --> 0:6:32.970

Griffith, Morgan

OK, so we'll we'll edit those and then then the newest version will be on teams for us to access.

0:6:35.200 --> 0:6:35.710

Griffith, Morgan

Thanks Sara.

0:6:40.570 --> 0:7:3.560

Griffith, Morgan

Action items. I was just gonna say we're gonna get to them. So one of them was for us to do the EPA ecological versus assessment. So we are going to talk about that later on. And then another one was us to look into kind of the research of the planter modifications. And we're not presenting on that today, but we kind of have a teaser and we're going to talk about it during the work plan review.

0:7:4.240 --> 0:7:5.490

Griffith, Morgan

Later on today.

0:7:8.0 --> 0:7:12.370

Griffith, Morgan

And we're also going to talk about, uh, the survey during our farm update.

0:7:13.90 --> 0:7:16.510

Griffith, Morgan

So that's kind of our action items. I think we'll be able to.

0:7:18.130 --> 0:7:18.900

Griffith, Morgan

Move those along.

0:7:20.200 --> 0:7:22.820

Griffith, Morgan

So with that, I think.

0:7:24.0 --> 0:7:35.150

Griffith, Morgan

And just if I can't see you or just just holler at me and I can change things, but I think we are OK to do a farm update. So Stephanie, I think you can.

0:7:36.550 --> 0:7:37.230

Griffith, Morgan

Go for it.

0:7:36.130 --> 0:7:38.470

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You will share that screen.

0:7:39.760 --> 0:7:44.410

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I'm so we're first gonna discuss. Admitted Amanda. This is popped up.

0:7:44.490 --> 0:7:46.920

Griffith, Morgan

Yep, she I just brought in some. Hi, Amanda.

0:7:47.240 --> 0:7:47.810

Amanda St.Pierre

I.

0:7:47.780 --> 0:7:50.710

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It's. It's that her introduce yourself.

0:7:52.660 --> 0:7:55.50

Griffith, Morgan

Go ahead. And Mandy, you can introduce yourself.

0:7:55.430 --> 0:8:0.430

Amanda St.Pierre

Sorry, sorry, I'm running late. Hi, my name is Amanda Saint Pierre. I'm a dairy farmer in Berkshire.

0:8:2.140 --> 0:8:5.610

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Well, well, welcome. You appreciate you being willing to serve on the board.

0:8:6.450 --> 0:8:7.20

Amanda St.Pierre

Thank you.

0:8:7.370 --> 0:8:8.630

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Looking forward to working with you.

0:8:9.300 --> 0:8:11.870

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So go ahead, Morgan.

0:8:14.560 --> 0:8:16.360

Griffith, Morgan

Yep, I think Stephens up, yeah.

0:8:14.710 --> 0:8:18.200

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So. So yeah, I think, yeah, we're gonna.



0:8:19.600 --> 0:8:24.210

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Jill, actually. Jill Goss was gonna review the updated seed report.

0:8:25.780 --> 0:8:38.10

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This is with respect to information that the agency was waiting on. I believe we gave until the end of March to get information from seed companies and I'm gonna let Jill talk about the information that we got.

0:8:39.650 --> 0:8:40.470

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So take it away.

0:8:41.760 --> 0:8:44.310

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So if you can advance, yeah.

0:8:45.350 --> 0:8:45.900

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Umm.

0:8:46.840 --> 0:8:54.950

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We did have an update. Couple of large distributors did report their seat as treated and untreated.

0:8:55.620 --> 0:9:19.110

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Unfortunately, they were unable to quantify exactly what they treated it with and have asked for a little more time to do that. So this is what we have just acknowledging that while we have new numbers in the treated and untreated category, I don't have any major changes as we advance on as to what treatments were applied to what.

0:9:21.170 --> 0:9:24.480

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So here are new numbers and one more downstep.

0:9:25.570 --> 0:9:26.130

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Thank you.

0:9:27.970 --> 0:9:36.80

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Overall, not much. This train changed in the head, referring categories a little bit of a bump up in turf.

0:9:36.840 --> 0:9:57.830

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And overall, the same amount of treated seeds in the major categories, which would be corn legging,

forage and pasture, and soy bean. And so I've broken it out on the next slide as to the treated versus the untreated props for the state.

0:9:58.640 --> 0:10:0.10

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So the soybean.

0:10:0.120 --> 0:10:14.920

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Umm has the least amount of treated to untreated in the total volume sold. Legume forage and pasture almost entirely treated, and corn nearly universally treated.

0:10:18.690 --> 0:10:36.150

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And next just with the updated seed report, just to give people a picture of what were the top categories of seed. So your top three are corn, soybean and cereal, grain with earth and flour, vegetables closing out the top five.

0:10:39.240 --> 0:10:52.790

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But overall it doesn't change the picture of the primary treated C categories. It's still corn, soybean and cereal grains or, excuse me, legging forage and pasture, being that top three.

0:10:55.380 --> 0:10:56.510

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And on the next?

0:10:57.230 --> 0:11:10.170

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So they treated seeds sold to dealer is about 11140 tons and the treated seeds sold to farmers is about 467 tons.

0:11:11.40 --> 0:11:24.310

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Untreated seeds sold to dealer is about 574 tons and untreated seeds sold to farmers is about 54 tons. So again, in both categories primarily.

0:11:25.650 --> 0:11:29.840

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The dealers are responsible for the seat sold in the state.

0:11:33.620 --> 0:11:52.310

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And on the treated seeds, untreated seed reports, we have a total reported of 2232, almost 233 tons of seeds. Total seed ton is reported for the state. So the amount of seed.

0:11:52.470 --> 0:11:57.970

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Ohm, we're punished fees were paid is 3289 tons.

0:11:59.20 --> 0:12:8.180

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They treated to untreated is about 72% treated seeds reported and then the remaining is untreated.

0:12:9.830 --> 0:12:11.130

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If you go into the next.

0:12:12.280 --> 0:12:25.420

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So primarily the treated seed is a combination of multiple products versus there's only a small percentage like a 1% that actually has a single product applied to it.

0:12:29.110 --> 0:12:39.880

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And on the next, primarily, if we were to break down the treatments and tons is primarily insecticides followed by fungicides and biologicals.

0:12:40.590 --> 0:12:41.180

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Next.

0:12:44.720 --> 0:12:52.150

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And so the the top three treatment categories were fungicide, insecticide and nematicide.

0:12:52.840 --> 0:13:4.760

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With less than 1% on everything else reported, so that includes I had one reporter that actually reported a poem. They're quoting on the feed without anything else.

0:13:5.920 --> 0:13:11.860

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And then biostimulants or biologicals and herbicides were all under 1%.

0:13:15.840 --> 0:13:30.500

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And this reflects that group of treatments that we don't know what was actually applied. So I can't tell you whether they were in the innocuous noise or not in the anarchists noises. So that's 16% of the total fees support.

0:13:31.320 --> 0:13:41.550

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I've got 75% of the treatments reported as being in neonicotinoid and 9% as being a non neonicotinoid.

0:13:44.130 --> 0:13:49.690

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Currently, these are the reported chemical treatment agents that are applied to the seeds for ported.

0:13:50.500 --> 0:13:51.920  
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The next slide.

0:13:52.500 --> 0:13:53.820  
cc198c43-b550-4aed-b186-e126b5902cea  
Sorry, could you do that for a second?

0:13:57.460 --> 0:13:59.60  
cc198c43-b550-4aed-b186-e126b5902cea  
This one. Yeah. Thank you.

0:14:2.520 --> 0:14:8.460  
cc198c43-b550-4aed-b186-e126b5902cea  
Then the next slide is the reported biological treatment agent supplied.

0:14:9.910 --> 0:14:15.910  
cc198c43-b550-4aed-b186-e126b5902cea  
And finally, I haven't an other slide of just anything else that people have reported in.

0:14:19.540 --> 0:14:24.640  
cc198c43-b550-4aed-b186-e126b5902cea  
That is the update for seed. Does anybody have any questions I might be able to answer on the slide?

0:14:31.160 --> 0:14:53.130  
cc198c43-b550-4aed-b186-e126b5902cea  
Yeah, the the state. Do you of all the seed that's sold in Vermont, do you feel like you've captured most of it or do you feel like there's still some portion of C distributed that you didn't get reports on? I think there's a fair number of people that I did not get reports from.

0:14:54.280 --> 0:14:58.350  
cc198c43-b550-4aed-b186-e126b5902cea  
Reflected. I can just go back into the total tonnage reported.

0:15:2.30 --> 0:15:3.90  
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Through find the number.

0:15:8.10 --> 0:15:22.460  
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Just, well, she's looking the so we do have a comprehensive Cedar report that's not just abbreviated slides here that we intend on posting on the agency's website. So there will be more information available to multiple pages narrative form.

0:15:23.960 --> 0:15:24.530  
cc198c43-b550-4aed-b186-e126b5902cea  
So.

0:15:28.830 --> 0:15:32.850

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Find that on the side we just had is that it? Is it less slide back?

0:15:33.770 --> 0:15:38.180

cc198c43-b550-4aed-b186-e126b5902cea

Umm, it's in my notes. OK on the slide alright. Yeah.

0:15:40.330 --> 0:15:46.360

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OK. So the total seat tonnage reported that people paid tonnage fees on was 3000.

0:15:47.30 --> 0:15:58.430

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289 almost 290 tons, and the total reported seed fund, again speaking to the last time that I delivered it.

0:15:59.190 --> 0:16:28.720

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A lot of this might be redundant, so if the same container of C passed from 1 distributor to another or from one place point of sale to another, they're required by the law to report their individual sales. Not that same, even though it's the same seed that somebody else reported. So I think that there is a little bit of redundancy in the total feed report that I have of 2233.

0:16:29.540 --> 0:16:32.600

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Fun. So I think there's about 1000 tons.

0:16:33.430 --> 0:16:35.450

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Was outstanding.

0:16:37.20 --> 0:16:39.180

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Then somebody needs to report on.

0:16:41.0 --> 0:16:41.460

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OK.

0:16:43.340 --> 0:16:48.310

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So we have 1000 tons floating around out there that we don't know if it was treated or not treated or.

0:16:49.90 --> 0:16:53.510

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See any idea what crop it is? Or no idea but.

0:16:54.570 --> 0:17:19.10

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We could extract, extrapolate and look at the rest of the data we wanted to. However, it would be an extrapolation of, you know, we mostly sell corn, right, primarily primarily in the state. So I'm just wondering if we have good, good number of the the good value of figure for the number of acres planted versus the amount of seed sold so we can figure out if.

0:17:20.570 --> 0:17:30.820

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It's still saying, you know, we know how many acres of corn, how many acres of soybeans, how many acres of cereal grains and then we can look at the seed sold, see if we're missing.

0:17:31.690 --> 0:17:36.30

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I think primarily if we looked at the tonnage reporting and what.

0:17:36.700 --> 0:17:42.970

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What companies reported selling tonnage and we might be able to backtrack it through a different department.

0:17:46.20 --> 0:17:49.90

cc198c43-b550-4aed-b186-e126b5902cea

Well, do you know, they keep track of do we have been acreage numbers?

0:17:49.730 --> 0:18:0.180

cc198c43-b550-4aed-b186-e126b5902cea

What I feel is fairly good acreage numbers. Ohh I don't have it's been compiled, I don't know, but I'm sure I can actually tell them just seeing.

0:18:1.380 --> 0:18:12.100

cc198c43-b550-4aed-b186-e126b5902cea

OK, I think if you would compile, I think it'd be worth comparing the what we know is planted versus how much seed we're getting reported and see if we got it.

0:18:14.420 --> 0:18:16.400

cc198c43-b550-4aed-b186-e126b5902cea

So Morgan, maybe that should be an action item.

0:18:18.920 --> 0:18:20.390

Griffith, Morgan

Yeah. So I'm hearing for.

0:18:18.770 --> 0:18:20.740

cc198c43-b550-4aed-b186-e126b5902cea

Compare packages.

0:18:22.270 --> 0:18:22.950

Griffith, Morgan

Sorry, go ahead.

0:18:26.630 --> 0:18:26.870

Griffith, Morgan

Yep.

0:18:23.870 --> 0:18:27.950

cc198c43-b550-4aed-b186-e126b5902cea

Well, I'm just comparing wages versus C numbers and see if we're.

0:18:28.780 --> 0:18:29.970

cc198c43-b550-4aed-b186-e126b5902cea

In the ballpark or?

0:18:35.70 --> 0:18:36.880

cc198c43-b550-4aed-b186-e126b5902cea

So is it just me or?

0:18:39.530 --> 0:18:45.500

cc198c43-b550-4aed-b186-e126b5902cea

Does your bro bro kind of follow a little bit when you hear about the treated seeds but you don't know what?

0:18:46.280 --> 0:18:48.490

cc198c43-b550-4aed-b186-e126b5902cea

Treat with a treated with those.

0:18:49.470 --> 0:18:51.690

cc198c43-b550-4aed-b186-e126b5902cea

This is sounds like a small one amount but.

0:18:52.910 --> 0:18:53.560

cc198c43-b550-4aed-b186-e126b5902cea

This is.

0:18:54.760 --> 0:19:8.870

cc198c43-b550-4aed-b186-e126b5902cea

Primarily new reporting, so I'm new to the agency as of January. So I'm learning the ropes of my understanding is this is the second year that distributors have had to actually report the seed treatments applied and there are.

0:19:11.370 --> 0:19:41.280

cc198c43-b550-4aed-b186-e126b5902cea

A lot of different ways of reporting. Some people will just come back and say we applied to Nematicide and I've been asking, well, what? What are the active ingredients of that? And I've got limited response on that. The major reporters that that's marked that 12% have promised to send me what those are so at a later date the agency will have the numbers but currently I just can't tell you what they are because they broke it down into fungicides medicine.

0:19:41.370 --> 0:19:44.870

cc198c43-b550-4aed-b186-e126b5902cea

Right. Insecticide. And that's all I have. Yes, I get it. Yeah.

0:19:46.610 --> 0:20:0.910

cc198c43-b550-4aed-b186-e126b5902cea

We'll be doing this annually every year and driving home and asking the same questions. We hope that our reporting will improve over time because we have, we have a new employee who's helping us with that work. So we're hopeful.

0:20:2.100 --> 0:20:2.830

cc198c43-b550-4aed-b186-e126b5902cea

It'll get better.

0:20:4.410 --> 0:20:18.810

cc198c43-b550-4aed-b186-e126b5902cea

Yeah, I mean it's it's good to know that because I mean, I was kind of worried that the information was unavailable versus, you know, we're we're, you know, looking for the data is new isn't new approach and we will eventually get there. Yeah.

0:20:19.490 --> 0:20:19.840

cc198c43-b550-4aed-b186-e126b5902cea

Doesn't.

0:20:21.750 --> 0:20:27.390

cc198c43-b550-4aed-b186-e126b5902cea

I think everybody has intended on reporting it accurately that he could, I think is the right.

0:20:28.70 --> 0:20:29.70

cc198c43-b550-4aed-b186-e126b5902cea

It's difficult to.

0:20:30.270 --> 0:20:33.260

cc198c43-b550-4aed-b186-e126b5902cea

I think we're the only one asking for it this way currently.

0:20:36.840 --> 0:20:41.210

cc198c43-b550-4aed-b186-e126b5902cea

OK. Is that the any other questions about the scene report?

0:20:44.450 --> 0:20:46.260

cc198c43-b550-4aed-b186-e126b5902cea

OK, right.

0:20:47.370 --> 0:20:48.90

cc198c43-b550-4aed-b186-e126b5902cea

So.



0:20:49.80 --> 0:20:55.970

cc198c43-b550-4aed-b186-e126b5902cea

So I as well are going to give an update. Let me.

0:20:58.210 --> 0:20:59.370

cc198c43-b550-4aed-b186-e126b5902cea

Sorry, I'll share my.

0:21:0.240 --> 0:21:1.390

cc198c43-b550-4aed-b186-e126b5902cea

Screen back to the.

0:21:3.710 --> 0:21:6.910

cc198c43-b550-4aed-b186-e126b5902cea

I'm driving here as well. I apologize there with me.

0:21:8.150 --> 0:21:11.40

cc198c43-b550-4aed-b186-e126b5902cea

Alright, back to the agenda, so.

0:21:13.70 --> 0:21:17.130

cc198c43-b550-4aed-b186-e126b5902cea

The in interesting. I'm sorry our internal.

0:21:21.230 --> 0:21:30.200

cc198c43-b550-4aed-b186-e126b5902cea

Camera what we're seeing here isn't actually showing what you all are looking at, so I don't understand why that's working that way. So I apologize everyone in the room specifically.

0:21:34.620 --> 0:21:59.610

cc198c43-b550-4aed-b186-e126b5902cea

Again, I'm trying to show. Am I alright? I'm just going to move on. So last time we met of the AIB discussed and agreed that it would reach out again to get greater participation in the agricultural inputs survey just to go back the numbers we got from the last survey, we had 49 respondents and.

0:22:0.360 --> 0:22:18.910

cc198c43-b550-4aed-b186-e126b5902cea

They did represent a producer or a farmer from every county. So we we met that bar. However, 49 respondents is in the significant number, right? We did. I did not look into what constitutes a statistically significant response rate on this particular survey. So I don't have that information for you.

0:22:20.410 --> 0:22:45.330

cc198c43-b550-4aed-b186-e126b5902cea

But it was generally agreed that we would go back and ask for more assistance, and so the agency went through, discussed how we might be able to improve the approach, to try to get better participation. And so the decision or the proposal that we're providing is that Anson Secretary Tebbetts will do direct outreach to technical service providers to ask for their assistance.

0:22:45.930 --> 0:22:49.960

cc198c43-b550-4aed-b186-e126b5902cea

And get a specific answer back saying yes, we would love to help you.

0:22:51.200 --> 0:23:7.270

cc198c43-b550-4aed-b186-e126b5902cea

And then once we get that answer back then we would, you know, produce an e-mail and send it out to those technical service providers who would then do outreach to their list. We have a fair number of organizations that we were working with before.

0:23:9.620 --> 0:23:10.520

cc198c43-b550-4aed-b186-e126b5902cea

I just wanted to.

0:23:11.520 --> 0:23:14.80

cc198c43-b550-4aed-b186-e126b5902cea

Bring them. We have the Farm Bureau.

0:23:14.160 --> 0:23:23.620

cc198c43-b550-4aed-b186-e126b5902cea

Uh, we have. I was thinking that I PM outreach group with the pesticide Safety Education program.

0:23:24.800 --> 0:23:55.250

cc198c43-b550-4aed-b186-e126b5902cea

There's apparently an I PM group of folks that participate in that the Vermont Tree Fruit Growers Association, dairy Farmers of America, Agri, Mark, Vermont organic farmers, Vermont Dairy Producers Alliance, Connecticut River Watershed alliance, and then a couple of other alliances, Franklin, Grand Isle Farmers, Watershed Alliance, the the Vegetable and Berry Growers Association, northeast Organic Farmers Association, Vermont Sugar Makers Association.

0:23:55.680 --> 0:23:59.120

cc198c43-b550-4aed-b186-e126b5902cea

Northern green Growers Vermont horse council.

0:23:59.850 --> 0:24:26.300

cc198c43-b550-4aed-b186-e126b5902cea

Vermont Sheep and Goat association Young Farmers Coalition of Vermont, Champlain Valley farmer coalition, Vermont farm Agriculture health and Safety Alliance of the Vermont Association of Conservation Districts, the New Hampshire, Vermont Christmas Tree Association, Christmas Tree Growers Association and the Vermont Grass Farmers Association. So those are all the associations that we would seek a commitment from via an e-mail from Anson.

0:24:28.280 --> 0:24:37.810

cc198c43-b550-4aed-b186-e126b5902cea

And then we would send it out again to those to those organizations after they've given us the commitment and then they would provide a link to the survey and then hopefully you know.

0:24:38.550 --> 0:24:53.140

cc198c43-b550-4aed-b186-e126b5902cea

We, with the survey, will be open for another two weeks and we would go for there so that that's our proposal at this point in time. And I have Anson, Anson is red is ready. He's like just let me know when I need to hit send so I can confirm that Hansen's gonna help us.

0:24:54.950 --> 0:24:58.830

cc198c43-b550-4aed-b186-e126b5902cea

Any comments or questions about that approach?

0:25:6.750 --> 0:25:8.130

cc198c43-b550-4aed-b186-e126b5902cea

That sounds like way to go.

0:25:8.890 --> 0:25:9.950

cc198c43-b550-4aed-b186-e126b5902cea

Yeah. OK.

0:25:11.10 --> 0:25:16.920

cc198c43-b550-4aed-b186-e126b5902cea

OK, I I thing else Stephanie, as far as an update, that's all I have for an update.

0:25:19.160 --> 0:25:24.830

cc198c43-b550-4aed-b186-e126b5902cea

Nothing else for me. I don't know if this. Dave. Dave. You're on the call. Do you have an update for us?

0:25:26.520 --> 0:25:35.30

cc198c43-b550-4aed-b186-e126b5902cea

He just texted he he's gonna. He's lost reception because of travel, so if he comes back in, we'll we'll bring it back in.

0:25:37.420 --> 0:25:38.870

cc198c43-b550-4aed-b186-e126b5902cea

Why don't we go ahead and?

0:25:40.390 --> 0:25:44.160

cc198c43-b550-4aed-b186-e126b5902cea

Move on. Andrew, Are you ready to proceed?

0:25:49.920 --> 0:25:50.170

cc198c43-b550-4aed-b186-e126b5902cea

I.

0:25:49.320 --> 0:25:52.510

Andrew Munkres VBA

I am Steve. Sorry it took me a minute to get on muted there.

0:25:53.100 --> 0:25:54.540

cc198c43-b550-4aed-b186-e126b5902cea

That's OK. Well, welcome.

0:25:55.540 --> 0:25:56.190

Andrew Munkres VBA

Thank you.

0:25:58.920 --> 0:26:6.420

Andrew Munkres VBA

So I'm pretty familiar with zoom, but not overly familiar with teams, so somebody is gonna need to talk me through how to share a screen.

0:26:7.350 --> 0:26:13.750

Griffith, Morgan

So right up next to your big red leave button, there should be a box with an arrow pointing up.

0:26:16.300 --> 0:26:16.480

Andrew Munkres VBA

Yep.

0:26:17.520 --> 0:26:17.890

Griffith, Morgan

That's.

0:26:16.560 --> 0:26:18.910

Andrew Munkres VBA

Yeah, says open share tray.

0:26:20.990 --> 0:26:30.320

Griffith, Morgan

Uh, mine doesn't say that, but should say share something. Share. So if you press that, yeah. And then you should have an option to share your screen or a certain.

0:26:32.210 --> 0:26:33.10

cc198c43-b550-4aed-b186-e126b5902cea

Window. Yeah.

0:26:33.290 --> 0:26:34.560

Griffith, Morgan

Window of your screen.

0:26:33.810 --> 0:26:37.180

Andrew Munkres VBA

OK, well, Yep. Give me a second.

0:26:37.750 --> 0:26:38.650

Griffith, Morgan

And I think.

0:26:39.690 --> 0:26:43.840

Griffith, Morgan

You should be able to be a share if it's.

0:26:45.680 --> 0:26:51.350

Andrew Munkres VBA

OK, give me a second. It looks I had my window already and it looks like maybe it closed while we were.

0:26:53.930 --> 0:26:54.720

Andrew Munkres VBA

Waiting.

0:26:56.90 --> 0:26:59.690

Griffith, Morgan

Umm, that's fine. Well, I have a question. So why you're going? I'll ask my question.

0:27:0.990 --> 0:27:8.60

Griffith, Morgan

Steve, just because I didn't see any nods in the room or anything, so are are the board members?

0:27:8.890 --> 0:27:11.440

Griffith, Morgan

In agreement with that proposal for the survey plan.

0:27:12.30 --> 0:27:12.480

cc198c43-b550-4aed-b186-e126b5902cea

Yes.

0:27:12.950 --> 0:27:13.240

Griffith, Morgan

OK.

0:27:37.870 --> 0:27:39.960

Andrew Munkres VBA

OK, I'm gonna try that again.

0:27:50.280 --> 0:27:51.510

Griffith, Morgan

Yep, we can see it.

0:27:51.180 --> 0:27:52.610

Andrew Munkres VBA

Can you guys see that now?

0:27:53.190 --> 0:27:53.460

cc198c43-b550-4aed-b186-e126b5902cea

Yep.

0:27:53.190 --> 0:27:53.500

Griffith, Morgan

Yep.

0:27:54.300 --> 0:28:4.810

Andrew Munkres VBA

OK, so I can't see any of you, and I'm not gonna, I guess, struggle to try and get the little gallery that zoom gives you. So if anybody has a question.

0:28:5.650 --> 0:28:6.860

Andrew Munkres VBA

Just sing out.

0:28:9.120 --> 0:28:10.370

Andrew Munkres VBA

That sound like a plan.

0:28:11.90 --> 0:28:11.630

cc198c43-b550-4aed-b186-e126b5902cea

Yes, Sir.

0:28:11.710 --> 0:28:12.290

Griffith, Morgan

Sounds good.

0:28:12.770 --> 0:28:21.490

Andrew Munkres VBA

Right. OK. So I'll introduce myself. I'm Andrew munkres. I am currently the President of the Vermont Beekeepers Association.

0:28:22.160 --> 0:28:25.410

Andrew Munkres VBA

I've been on the Board of Directors there for six years.

0:28:26.140 --> 0:28:29.430

Andrew Munkres VBA

And I'm a commercial beekeeper from Cornwall, Vt.

0:28:30.260 --> 0:28:31.90

Andrew Munkres VBA

And.

0:28:32.60 --> 0:28:38.900

Andrew Munkres VBA

I spoke with you folks last in July, so for those of you that were on AIB at that point.

0:28:39.750 --> 0:28:44.920

Andrew Munkres VBA

Uh, we talked generally about the effects of neonics on bees and.

0:28:46.180 --> 0:28:54.550

Andrew Munkres VBA

Generalized exposure and that was very short notice and I was out of state so I didn't have any time to prepare anything other than.

0:28:55.260 --> 0:29:4.410

Andrew Munkres VBA

You know a verbal talk this time I've put together a slideshow for you. And Morgan asked me to specifically address.

0:29:5.140 --> 0:29:6.830

Andrew Munkres VBA

The effects.

0:29:7.830 --> 0:29:9.540

Andrew Munkres VBA

On honey bee colonies.

0:29:10.380 --> 0:29:12.390

Andrew Munkres VBA

Of Neuronic treated seed.

0:29:13.510 --> 0:29:31.590

Andrew Munkres VBA

And so that's what this is limited to. However, we are gonna talk a little bit about exposure because that's it's pretty important to explore exposure routes and levels so that we know.

0:29:32.830 --> 0:29:43.770

Andrew Munkres VBA

What? Uh likelihood the studies have of of being real world situations. So we're gonna start out by talking about that.

0:29:45.140 --> 0:29:47.430

Andrew Munkres VBA

So a little bit of background.

0:29:48.380 --> 0:29:50.110

Andrew Munkres VBA

Uh, for those of you.

0:29:50.920 --> 0:29:52.900

Andrew Munkres VBA

Who don't keep honey bees.

0:29:54.250 --> 0:30:5.740

Andrew Munkres VBA

Ohh honey bees. What you see here is a honey bee whose foraging for pollen honey bees eat nectar and pollen, and they store it within the hive.

0:30:6.560 --> 0:30:21.600

Andrew Munkres VBA

To feed themselves, and as beekeepers were lucky that they're not so good at math, and they actually usually store more nectar than they need to make it through a whole season, which provides the surplus that we can harvest for a commercial crop.

0:30:22.440 --> 0:30:31.650

Andrew Munkres VBA

The pollen is collected on a more day-to-day basis. They don't stockpile that cause they don't need it over the winter, so that's much more an immediate thing.

0:30:32.470 --> 0:30:34.270

Andrew Munkres VBA

And within a hive.

0:30:36.30 --> 0:30:44.720

Andrew Munkres VBA

The pollen is used to feed the brood. Adult bees can survive just fine on carbohydrates, which would be the sugar and the nectar.

0:30:45.550 --> 0:30:59.690

Andrew Munkres VBA

But the developing larva need to be fed pollen in. In this picture, the Brown capped honeycomb cells at the bottom of the picture are what we call brewed it's pupating larva.

0:31:0.450 --> 0:31:15.340

Andrew Munkres VBA

The white grub looking things that are in the cells kind of across the middle of the picture are larva, which are developing honey bees and then up towards the top of the picture you'll see some different colored cells.

0:31:16.290 --> 0:31:20.670

Andrew Munkres VBA

With some kind of pasty substance in it, and that is pollen.

0:31:21.400 --> 0:31:31.350

Andrew Munkres VBA

And the bees stored adjacent to the brood, and it is fed to the brood mixed with nectar after being processed in the mandibular glands of the worker bees.

0:31:33.370 --> 0:31:51.420

Andrew Munkres VBA

Here's another example. You'll see the capped brood. You can see the the uncapped larva. You can see the band of pollen surrounding the larva. You can see nectar which is glistening, and then once it's been dried to 18% moisture and capped. We refer to it as honey.



0:31:52.970 --> 0:32:2.720

Andrew Munkres VBA

So that's all relevant because these are all potential exposure routes to NEO necks. For the honey bees.

0:32:3.600 --> 0:32:5.390

Andrew Munkres VBA

Any questions about any of that?

0:32:8.450 --> 0:32:19.310

Andrew Munkres VBA

Very good. That is a serious readers digest version of a honeybee Physiology and nutrition. But it should be enough to to make it through the rest of this.

0:32:20.710 --> 0:32:33.690

Andrew Munkres VBA

So obviously today we're talking about uh neonics seed treatments, we're not addressing fungicidal seed treatments or other insecticide classes beyond the Nitroguanidine NEO next.

0:32:34.700 --> 0:32:35.550

Andrew Munkres VBA

And.

0:32:38.370 --> 0:32:54.330

Andrew Munkres VBA

You guys were talking about the actual cropland acres. I've got some old data. I'm sure you have much more up to date, but we're talking about somewhere north of 86,000 acres of corn. And, you know, considerably less than that of soybeans.

0:32:54.980 --> 0:33:3.770

Andrew Munkres VBA

And so pretty significant acreage of corn in recent years. Anecdotally, we've seen a lot more soybeans being grown.

0:33:4.540 --> 0:33:7.10

Andrew Munkres VBA

They're both extremely commonly treated.

0:33:7.680 --> 0:33:23.150

Andrew Munkres VBA

With the NEO necks, uh, the three nitroguanidine that we're mostly interested in in our clothianidin, imidacloprid and thiamethoxam. And they're all highly toxic to pollinators.

0:33:26.350 --> 0:33:34.880

Andrew Munkres VBA

So what we've got here? Uh, this was developed for me by a UVM student who works at the UV MB lab.

0:33:36.80 --> 0:33:56.650

Andrew Munkres VBA

And I know there's been some discussions in the past after presenting to the AIB about why can't we

just move the bees away from the cornfields or why can't we have sanctuary areas that are planted with pollinator friendly plants that will help protect the honey bees from the crop fields?

0:33:57.620 --> 0:33:58.160

Andrew Munkres VBA

I.

0:33:59.80 --> 0:34:1.940

Andrew Munkres VBA

Is we already have areas that are not.

0:34:3.220 --> 0:34:11.240

Andrew Munkres VBA

Where neonics are not used and the bees are still getting exposed and part of that is because of the flight range of the honey bee.

0:34:11.880 --> 0:34:22.850

Andrew Munkres VBA

They can fly up to five miles from the high of looking for food. That's pretty unusual, so we included circles of three mile radius here.

0:34:24.400 --> 0:34:36.100

Andrew Munkres VBA

And these are registered locations. Honey bee apiaries have to be registered with the Department of Agriculture, so there's a database of where they are located.

0:34:37.100 --> 0:34:43.770

Andrew Munkres VBA

Uh. The forested areas of Vermont are not conducive to raising honey bees.

0:34:44.740 --> 0:35:3.770

Andrew Munkres VBA

Because they starve to death, there needs to be roughly an acre in bloom continuously through the course of the growing season. Within flight range of a honeybee colony. In order for it to survive and produce enough money to make it through the winter and in the forested areas.

0:35:6.210 --> 0:35:15.320

Andrew Munkres VBA

You'll get plenty of bloom in the spring when the trees are blooming and many of the trees actually produce nectar. But then after that?

0:35:16.230 --> 0:35:29.440

Andrew Munkres VBA

There's basically nothing uh, in the forested areas. So when you look at a map of the state, all the honey bee yards will be concentrated in the agricultural valleys. So.

0:35:30.210 --> 0:35:38.50

Andrew Munkres VBA

Honey bee raising and honey production overlaps with the rest of Vermont agriculture.

0:35:39.10 --> 0:35:41.960

Andrew Munkres VBA

So what we've done here is taken the agricultural land.

0:35:42.770 --> 0:35:48.440

Andrew Munkres VBA

And using uh GIS imagery, we figured out which fields.

0:35:49.140 --> 0:35:51.30

Andrew Munkres VBA

Are in row crops.

0:35:52.290 --> 0:36:10.880

Andrew Munkres VBA

Uh. And it's, uh, you can see by the key that it's marked whether it's corn or whether it's soybeans. And then the circles that are overlayed are the flight ranges of the apiaries that are located in these particular areas. So this one is Addison County.

0:36:11.680 --> 0:36:13.430

Andrew Munkres VBA

Here we've got Franklin County.

0:36:15.900 --> 0:36:19.570

Andrew Munkres VBA

Here's some close-ups. Just to give you a sense of how.

0:36:21.910 --> 0:36:53.320

Andrew Munkres VBA

How dense the the crop land is, and there's really 2 problems with cropland. One which is surmountable and the other one, which isn't. The surmountable problem is that the the crop fields are extremely clean of weeds, and what a farmer would call a weed a beekeeper would call a wildflower. And the honey bees can forage on it. So the areas that are in crops are not particularly useful. Forage for honey bees.

0:36:54.110 --> 0:37:4.110

Andrew Munkres VBA

Except in the case of soybeans, which does produce nectar and pollen, corn does produce pollen for a period in the late summer.

0:37:5.50 --> 0:37:20.460

Andrew Munkres VBA

Uh, it's not very high quality, but honey bees are unable to determine the quality of pollen, unlike they are able to determine the quality of nectar, so they'll often gather corn pollen. But through the rest of the year that cropland.

0:37:21.130 --> 0:37:35.580

Andrew Munkres VBA

Is not useful as a food source. The bigger problem is that those areas are largely toxic to honey bees due to the neonicotinoid seed treatments that are used. So what you're looking at when we look at this map.

0:37:36.360 --> 0:37:54.840

Andrew Munkres VBA

Is the acreage which is potentially uh toxic to honey bees, where they're likely to have some kind of an exposure if they're flying there during planting, if they're collecting pollen or nectar from field to Jason crops, or if they're collecting pollen from the crop itself?

0:37:59.330 --> 0:38:29.140

Andrew Munkres VBA

Ah, this is a chart showing the increase in acute insecticide toxic loading for crop land. This is especially interesting because one of the reasons that neonics have become so popular is because you don't get the catastrophic B kills that you used to get with the organophosphates and some of the other classes of pesticides. But in reality, in reality.

0:38:29.240 --> 0:38:59.650

Andrew Munkres VBA

The overall toxic loading of the crop land has been increasing since, well for a couple decades now, so if we look at it by chemical class, you can see that most of that increase in toxic loading on cropland is due to the neonicotinoids. And when they're looking at the overall toxic loading of crop land, you're looking at a combination of the toxicity.

0:39:0.150 --> 0:39:28.810

Andrew Munkres VBA

The likelihood of exposure, the persistence of the chemicals that are being used and the modes of dissipation of the chemicals that are being used. So that's all taken into consideration. So personally I when I look at this graph, I think it's hardly surprising that we've been seeing increased honey bee losses since roughly 2008 since the toxic loading of cropland increases quite sharply at that same time.

0:39:30.310 --> 0:39:39.780

Andrew Munkres VBA

So as we look at the crop land that's been treated with neonics, which as we know are systemic pesticides, there's several routes of application.

0:39:40.670 --> 0:39:51.360

Andrew Munkres VBA

And there's a couple here that we're gonna ignore, cause it's beyond the scope of this presentation, but we're specifically interested in the seed treatments, so we've got dust from planting.

0:39:52.10 --> 0:39:54.80

Andrew Munkres VBA

Uh, we've got.

0:39:56.910 --> 0:40:15.640

Andrew Munkres VBA

Pesticides that have been taken up by the plants and are present in the pollen and the nectar we've got soil borne levels of pesticides which are expressed in the guttation water, which is fluid from inside the plant, which is expressed out through the pores of the plant.

0:40:16.230 --> 0:40:40.980

Andrew Munkres VBA

And then we actually have, uh, pesticides in the surface water. In the case of native pollinators, the soil levels of neonics are an issue because there are ground nesting native pollinators. But honey bees don't nest in the ground, so we won't talk about that today. But we will talk about the other four. So starting out with dust.

0:40:43.70 --> 0:41:1.790

Andrew Munkres VBA

Regardless of what type of plant or you have, whether it's mechanical plate planter or an air planter, there is a certain amount of dust which is released. This is an image here from Purdue University and that dust can be both acutely toxic and.

0:41:2.570 --> 0:41:7.100

Andrew Munkres VBA

Uh, toxic and a chronic manner. Depending on how the bees encounter it.

0:41:7.960 --> 0:41:15.630

Andrew Munkres VBA

Uh, it's well known that if honey bees happen to be flying across a crop field while it's being planted.

0:41:16.370 --> 0:41:30.260

Andrew Munkres VBA

Even though we may not see a cloud of dust behind the planter, there is enough uh particulate of the neonicotinoids in the air to kill the honey bees as their flying.

0:41:31.970 --> 0:41:38.940

Andrew Munkres VBA

And uh, often they won't make it back to the hive. Uh, they'll die extremely quickly.

0:41:41.840 --> 0:41:53.670

Andrew Munkres VBA

There's also, uh, a risk of that dust landing on non crop plants, and studies show that.

0:41:55.230 --> 0:41:59.80

Andrew Munkres VBA

The levels of dust can be up to 9 parts per billion.

0:41:59.940 --> 0:42:18.270

Andrew Munkres VBA

I there have been some studies that show them being even higher than that, but nine parts per billion on field adjacent crops is pretty typical, and that level, if a honey bee is foraging, say on these dandelions, well, this field is being no till planted with Neo, Nick treated corn.

0:42:18.940 --> 0:42:25.30

Andrew Munkres VBA

Uh, those honey bees would also likely uh receive an acutely lethal dose.

0:42:26.90 --> 0:42:31.990

Andrew Munkres VBA

And if the dandelions or say a little bit outside of the crop field.

0:42:32.930 --> 0:42:38.490

Andrew Munkres VBA

Those bees might pick up enough neonics that it would become a a lower level.

0:42:39.890 --> 0:42:42.640

Andrew Munkres VBA

Exposure and a chronic type exposure.

0:42:48.180 --> 0:42:53.950

Andrew Munkres VBA

We did. I'll show you some testing that we did last summer later and we did find.

0:42:55.150 --> 0:43:4.570

Andrew Munkres VBA

Levels of new necks in field adjacent crops, so this is a real thing that's happening, whether it's by transference of planting dust.

0:43:5.230 --> 0:43:12.480

Andrew Munkres VBA

Or whether it's movement through the soil, uh with runoff water and then being uptake by uh adjacent plants.

0:43:15.300 --> 0:43:29.730

Andrew Munkres VBA

So let's talk a little bit about guttation fluid. Uh, some people are familiar with this and some people, this is new information. So I'll take just a couple of slides to talk about this. You can think of it sort of like the SAP of the plant.

0:43:31.220 --> 0:43:32.530

Andrew Munkres VBA

But it's often.

0:43:33.570 --> 0:43:40.950

Andrew Munkres VBA

Simply water that the plant has pulled up and then is expressed out through the pores of the plant. Uh.

0:43:41.700 --> 0:43:50.550

Andrew Munkres VBA

Usually happens when the plant is fairly young. With corn it typically happens until it's somewhere between two and three feet tall.

0:43:51.380 --> 0:43:55.70

Andrew Munkres VBA

And the concern here.

0:43:56.20 --> 0:43:56.900

Andrew Munkres VBA

Is that?

0:43:57.380 --> 0:44:7.270

Andrew Munkres VBA

Uh barons in 2021 showed that the levels of neonics in guttation fluid are just outrageous.

0:44:8.200 --> 0:44:16.780

Andrew Munkres VBA

So in middle corporate, they came up with 47,000 parts per billion. Clothianidin came up with 23,000 parts per billion.

0:44:17.730 --> 0:44:26.100

Andrew Munkres VBA

And so I am mix off them came up with almost 12,000 parts per billion. So these levels are way beyond.

0:44:27.100 --> 0:44:31.220

Andrew Munkres VBA

Acutely toxic, and they also found.

0:44:32.340 --> 0:44:40.240

Andrew Munkres VBA

No levels below 10,000 parts per billion and the highest levels were up to around 200,000 parts per billion.

0:44:41.30 --> 0:44:45.500

Andrew Munkres VBA

So these levels are way beyond acute toxicity to bees.

0:44:46.550 --> 0:45:15.420

Andrew Munkres VBA

And this graph right here will show you how quickly the bees dying after drinking the guttation fluid from crop plants that are treated with either of these three major Neo next. So the the mean is between 3 1/2 and you know 5 four and three quarter 5 1/2 minutes. So these bees might make it back to the hive depending on how far away the corn field is.

0:45:16.500 --> 0:45:46.20

Andrew Munkres VBA

A lot of them aren't going to, and so this is not necessarily gonna show up as a pesticide kill where you have big piles of dead bees in front of the hive. The this is just gonna be foragers that never return. They they die in the field, they die on the way back. If you have a crop which has slightly lower levels and the bees don't die immediately, then they'll bring the contaminated fluid back to the hive to feed to the brewed and cause all kinds of other problems.

0:45:46.790 --> 0:45:56.960

Andrew Munkres VBA

So the the reason guttation fluid is an issue is because it is forged on. As you can see in this picture, it is forged on by bees.

0:45:57.740 --> 0:46:3.150

Andrew Munkres VBA

Uh, for the purpose of water, which is used to dilute.

0:46:4.130 --> 0:46:19.550

Andrew Munkres VBA

Nectar, honey and pollen and turn it into brood food, and they'll collect from people swimming pools. They'll collect from mud puddles. They'll collect from streams and rivers, and we'll talk about the surface water contamination in a little bit.

0:46:20.260 --> 0:46:25.500

Andrew Munkres VBA

But by far the highest levels are found in the quotation fluid.

0:46:26.210 --> 0:46:26.960

Andrew Munkres VBA

And.

0:46:29.40 --> 0:46:32.430

Andrew Munkres VBA

He has pretty serious consequences to the to the colonies.

0:46:33.960 --> 0:46:48.160

Andrew Munkres VBA

Now there's several routes, so we talked about acute exposure and as I said, some of those methods of acute exposure can also turn into chronic exposure. But there are some mechanisms of chronic exposure which are specific.

0:46:48.700 --> 0:47:5.110

Andrew Munkres VBA

Uh, surface water. We mentioned when they say plant exudates, they're talking about guttation fluid occasionally. If a crop is infested with aphids, the aphids will actually produce a sweet substance called honeydew.

0:47:5.780 --> 0:47:8.590

Andrew Munkres VBA

But if the crop has been treated with neonics.

0:47:9.760 --> 0:47:15.550

Andrew Munkres VBA

They're going to be any foods feeding on it because the aphids are all going to be dead, so that's not a big concern, I.

0:47:16.790 --> 0:47:32.80

Andrew Munkres VBA



Here anyway, the nectar could be a potential exposure and pollen could be potential exposure. In general, the nectar seems to contain less lower levels of NEO necks than the pollen does.

0:47:33.180 --> 0:47:52.230

Andrew Munkres VBA

And it's very difficult to measure the abraded dust, but you can measure it on field adjacent crops by taking plant tissue samples once it's been absorbed by the plant. So all of those chronic exposure methods affect the the foraging worker bees.

0:47:53.250 --> 0:47:55.750

Andrew Munkres VBA

And they can get stored in the hive.

0:47:56.820 --> 0:48:23.10

Andrew Munkres VBA

They can get mixed with the brood food, which affects the young bees in the hive. It affects the larva, the brood, and it can also potentially affect the queen. So if you guys are willing, we're gonna go off into the weeds here and look at some of the research that specifies some of the effects on the colony and on the developing larvae and on the Queens, you guys good with that.

0:48:25.260 --> 0:48:25.810

cc198c43-b550-4aed-b186-e126b5902cea

Yep.

0:48:29.440 --> 0:48:39.570

Andrew Munkres VBA

All right. Looking at water, we already talked about how water is collected to mix with the larval food as the bees are raising.

0:48:40.630 --> 0:48:46.990

Andrew Munkres VBA

Replacement bees. It's also used to cool the hive so you can have, uh.

0:48:47.670 --> 0:48:48.880

Andrew Munkres VBA

Exposures.

0:48:51.210 --> 0:49:8.560

Andrew Munkres VBA

From oral ingestion, which would be when the water gets mixed with the brute food, or you can have contact exposures because the bees are spreading the water around the hive and it's getting on other worker bees and it's getting on the larvae as they're using evaporative cooling to cool the hive in the summer.

0:49:9.290 --> 0:49:12.570

Andrew Munkres VBA

And let's see.

0:49:14.260 --> 0:49:16.240

Andrew Munkres VBA  
Who did this study?

0:49:17.760 --> 0:49:30.520

Andrew Munkres VBA  
That was barons in 2021. They found that the average level of neonics in surface water in agricultural watersheds, and we're not talking about puddles, actually in.

0:49:31.350 --> 0:49:44.960

Andrew Munkres VBA  
The fields were talking about streams in agricultural watersheds. The level is about .012 parts per billion, and as we'll see later, that level is actually well above the.

0:49:45.40 --> 0:49:52.390

Andrew Munkres VBA  
No LOEC or lowest observable effect concentration for the three Nomex.

0:49:53.240 --> 0:49:54.710

Andrew Munkres VBA  
Were discussing.

0:49:56.390 --> 0:49:59.570

Andrew Munkres VBA  
The other exposure uh is through the pollen.

0:50:1.460 --> 0:50:15.560

Andrew Munkres VBA  
And this one is is fairly easy to sample for. So in 2021 we partnered with UVM. They had a graduate student who was looking to do a.

0:50:16.310 --> 0:50:30.310

Andrew Munkres VBA  
Uh thesis project on Paul and collection and species identification to see which species were being foraged on by honey bees throughout the state. So there were four locations that were sampled.

0:50:31.90 --> 0:50:51.990

Andrew Munkres VBA  
And the VPA partially funded uh gave a grant to the student to perform this work because this was something we wanted to add to our database and share with the public. And in addition, we provided extra funding to get any sample that was big enough tested for pesticide residue.

0:50:52.630 --> 0:51:22.170

Andrew Munkres VBA  
Uh, as long as the samples were being collected, we figured we'd get them tested for pesticides. So at the lower right, what you see is a pollen trap, which knocks the pollen from the baskets on the bees hind legs. And you can't do this for any length of time, or the colony will become pollen starved. So you

typically do it for 24 to 48 hours with a specific colony. Give them a break so that they can have food to feed the larvae again.

0:51:23.280 --> 0:51:50.950

Andrew Munkres VBA

And these samples. There were sixteen samples that were big enough to be sent in to the lab. We used the the DICE lab at Cornell. They sample for 93 different pesticides, and they have a very low level of detection. So it's advantageous for that. And you can see by the pie graph which ones, which types of pesticides we found with the yellow.

0:51:51.450 --> 0:51:56.660

Andrew Munkres VBA

Uh pie, slice on the left, just under 8% being the NEO necks.

0:51:57.680 --> 0:51:58.400

Andrew Munkres VBA

And.

0:51:59.130 --> 0:52:14.800

Andrew Munkres VBA

What I'd like to point out here with this pie graph. This shows the sampling. It was conducted each month through the growing season. So May, June, July, August and September and again in this in this bar graph, the neonics are represented by the yellow.

0:52:15.610 --> 0:52:20.430

Andrew Munkres VBA

And you'll see that we got some pretty significant neonic hits in May.

0:52:21.210 --> 0:52:46.300

Andrew Munkres VBA

We got just a little bit in June, then nothing in July and then again in August in this correlates with exposure in May due to planting and possibly exposure of field adjacent crops. And then by July everything's kind of settled down a little bit and then in August typically the corn tassels. And so that's when you see.

0:52:48.220 --> 0:52:53.40

Andrew Munkres VBA

Levels of exposure beginning to rise again, and if you look down on the lower graph.

0:52:53.880 --> 0:52:56.690

Andrew Munkres VBA

Uh on the left hand side, kind of in the middle.

0:52:57.440 --> 0:53:4.760

Andrew Munkres VBA

You'll see the three big hitters, along with Thiacloprid uh, which was detected.

0:53:5.690 --> 0:53:10.220

Andrew Munkres VBA

But is not typically used as a seed treatment.

0:53:11.150 --> 0:53:17.70

Andrew Munkres VBA

So here's a little graph of the pesticide detections through time and I just wanna compare that.

0:53:17.790 --> 0:53:23.380

Andrew Munkres VBA

With the University of Guelph uh chart of the.

0:53:24.200 --> 0:53:55.650

Andrew Munkres VBA

Population cycle of a well managed colony of honey bees. So what you've got in the middle is the middle of the winter when they are at their smallest population and in May and June they are building up to their largest population, which is in July. So what you have is colonies that are attempting to replace their winter bees and build up to a size where they'll produce enough bees and store enough money to survive the winter.

0:53:56.70 --> 0:54:22.260

Andrew Munkres VBA

And during that build up period, which is critical to their survival, that's when they are being exposed to the first round of neonics. The second exposure happens on the far side of the curve when the population is declining, as they're shrinking back down to their winter population. And at that point, the bees are raising what we call the winter bees and the winter bees are morphologically different. They live longer.

0:54:23.40 --> 0:54:31.150

Andrew Munkres VBA

And they have different proteins in their fat bodies and they are raised at a very critical time of year.

0:54:32.300 --> 0:54:39.420

Andrew Munkres VBA

And if those bees are not healthy, the colony will not survive the winter. Unfortunately, they're being raised in August.

0:54:40.720 --> 0:54:44.360

Andrew Munkres VBA

Which is when they get the second exposure to neonicotinoids.

0:54:47.220 --> 0:54:56.390

Andrew Munkres VBA

And here's just a mention. You may see this piperonyl butoxide, which is, you know, technically labeled as an inert ingredient.

0:54:57.230 --> 0:55:15.980

Andrew Munkres VBA

But it actually increases the level of the the toxicity of of various new next by many many fold. So some of these quote inert ingredients actually make every uh make the the pesticides much much more toxic.

0:55:16.760 --> 0:55:17.790

Andrew Munkres VBA

For the honey bees.

0:55:21.350 --> 0:55:31.320

Andrew Munkres VBA

Based on the interesting results from 2021, in 2022 we set out more pollen traps.

0:55:32.220 --> 0:55:40.380

Andrew Munkres VBA

And once again collected samples and sent them to Cornell for analysis. They are.

0:55:41.570 --> 0:55:45.260

Andrew Munkres VBA

Kind of a preeminent lab for testing.

0:55:46.250 --> 0:56:1.380

Andrew Munkres VBA

For pesticide residues and as a result, they're very backed up. So we turned these in last fall and we got these results on Friday. So I'd like to give a huge thank you to Samantha Ellger at the UV MB lab. Who?

0:56:2.110 --> 0:56:8.480

Andrew Munkres VBA

Didn't have time to make a bunch of nifty bar graphs like she did for the 2021 data, but she did create this nice chart.

0:56:9.310 --> 0:56:14.540

Andrew Munkres VBA

Which shows us the levels that were found in 2022.

0:56:15.270 --> 0:56:44.780

Andrew Munkres VBA

And they're color-coded. The yellow are comparatively low levels that are still well above the lowest observable effect concentration, and those are likely to cause behavioral changes in the bees, the ones that are coded in orange are high enough to cause physiological changes in the bees and the sample that is coded in red.

0:56:45.210 --> 0:57:4.330

Andrew Munkres VBA

Is enough to cause all of the previous problems as well as reproductive problems in the colonies, so this is not insignificant at all. 24% of the pollen samples contained levels of neonics that were above.

0:57:5.80 --> 0:57:15.80

Andrew Munkres VBA

The LOEC and 14% of the plant tissue samples contained levels of neonics that were above the LOEC.

0:57:16.60 --> 0:57:17.350

Andrew Munkres VBA

So uh.

0:57:18.390 --> 0:57:33.680

Andrew Munkres VBA

When I testified last time to the AIB, there was some question about whether these studies done in the US at large were really relevant to Vermont. There was some question.

0:57:34.360 --> 0:57:45.190

Andrew Munkres VBA

As to whether somehow Vermont was special and we weren't exposing the honey bees to the neonics here, obviously we are they this is.

0:57:46.640 --> 0:57:54.50

Andrew Munkres VBA

This uh, this is parallel to what's being found in other parts of the country. Uh, so we are not surprised.

0:57:55.520 --> 0:58:4.710

Andrew Munkres VBA

There are, there may be some questions the agency of age also did some testing with a smaller number of samples in summer of 2022.

0:58:5.410 --> 0:58:6.540

Andrew Munkres VBA

And those.

0:58:7.320 --> 0:58:37.890

Andrew Munkres VBA

We're sent out to the lab and those came back with no detections for neonics, and at this point, I've chatted with Brooke Decker, who's the Pollinator health specialist, and we're not sure if that's a result of the timing of the sampling or the sensitivity of the equipment at the lab where it was sent at. The state uses the lab in California and the B lab uses the lab at Cornell. So both the B lab and the agency of age will be doing additional testing.

0:58:38.30 --> 0:58:49.860

Andrew Munkres VBA

This coming summer, but uh, I think it's pretty clear what we found. Any additional testing will simply be to corroborate what we've already found. This chart shows you.

0:58:50.850 --> 0:58:56.480

Andrew Munkres VBA

The LOEC's for uh several different.

0:58:57.210 --> 0:59:10.820

Andrew Munkres VBA

Neonet pesticides. The big three that we're interested in are clothianidin, imidacloprid, and thiamethoxam. And as you can see, with those three the LD 50.

0:59:11.560 --> 0:59:42.590

Andrew Munkres VBA

Is let's look at clothianidin. The LD 50 is .04 micrograms per B&B weighs a gram, so that is comparable to .04 parts per billion. And if you look at the low, lowest observable effect concentration through oral ingestion, we're talking point O OO5 micrograms per B, which again is comparable to point.

0:59:42.680 --> 0:59:44.440

Andrew Munkres VBA

Oh oh 5.

0:59:45.180 --> 0:59:46.340

Andrew Munkres VBA

Parts per billion.

0:59:48.100 --> 0:59:49.320

Andrew Munkres VBA

So uh.

0:59:52.120 --> 1:0:5.170

Andrew Munkres VBA

One thing I really want to stress here is just how incredibly sensitive the pollinators and the honey bees specifically are, and how toxic the neonics are.

1:0:5.930 --> 1:0:19.80

Andrew Munkres VBA

Uh, you guys were talking about how many tons of seed were planted each year in Vermont, all of it treated by with neonics, or 99% of it treated with neonics.

1:0:20.360 --> 1:0:38.750

Andrew Munkres VBA

Or something, or 16%, I guess treated with something we don't know what it is. Regardless, vast amount of it treated with neonics. I've heard a figure of somewhere around 12 tons of actual neuronal coding being used, whereas it would take only one teaspoon.

1:0:39.910 --> 1:0:49.210

Andrew Munkres VBA

Of Neo necks to kill every single bee in the entire state of Vermont. So that's the level of toxicity that we're talking about.

1:0:50.240 --> 1:1:9.470

Andrew Munkres VBA

So understanding that and the lowest observable effect concentration and when we're talking about lowest observable effect, let's be clear. These are lowest observable adverse effect concentrations. So these are effects that scientists have noticed that have a strongly adverse effect on the colony.

1:1:11.750 --> 1:1:23.770

Andrew Munkres VBA

So sorry, I'm going to have to line my notes up. I don't have the slide numbers on this screen, so my notes are based on the.

1:1:25.230 --> 1:1:34.220

Andrew Munkres VBA

Slide number. So I'll just try and get synchronized again, OK, this ones from Tosi 2017 and they.

1:1:36.390 --> 1:1:47.400

Andrew Munkres VBA

Exposed worker bees to 1.3 billionths of a gram, so that's 1.3 nanograms per B.

1:1:48.100 --> 1:2:13.780

Andrew Munkres VBA

I, in a single exposure and so that's roughly equivalent to 1.3 parts per billion. Although you can't, you know, a bee isn't a solution, so it's not a direct correlation. But I did try to convert everything into the same units. All of these studies are done with different units and it can get super confusing, but we're basically talking about extremely low levels of exposure.

1:2:14.490 --> 1:2:26.80

Andrew Munkres VBA

And the light colored bars are untreated and the darker colored bars are bees that have been dosed.

1:2:27.480 --> 1:2:32.730

Andrew Munkres VBA

With thiamethoxam and at very low concentrations.

1:2:33.510 --> 1:2:38.60

Andrew Munkres VBA

And what happens is the bees are.

1:2:39.320 --> 1:2:41.650

Andrew Munkres VBA

Much more likely to fall down.

1:2:44.430 --> 1:2:49.600

Andrew Munkres VBA

They're much more likely to spend time at the bottom of the hive, which is where the bees hang out.

1:2:50.260 --> 1:2:53.820

Andrew Munkres VBA

Were they don't when they're not doing any work.

1:2:54.980 --> 1:3:0.310

Andrew Munkres VBA

They're much more likely to exhibit bizarre, abnormal behaviors their.

1:3:1.760 --> 1:3:5.370

Andrew Munkres VBA

Much more likely to be unable to climb.



1:3:6.950 --> 1:3:16.950

Andrew Munkres VBA

And they are, uh, likely to have difficulty following the light, which is critical to honeybee navigation. So.

1:3:18.550 --> 1:3:31.340

Andrew Munkres VBA

For comparison, picture of field of sheep which has been exposed to a neurotoxin which causes them to wander around aimlessly, fall down, bash into things, and be unable to walk up a hill.

1:3:32.70 --> 1:3:52.520

Andrew Munkres VBA

And this is the comparison with the hive of worker bees that have been exposed and are behaving like what we've seen in this study and obviously with insects, nobody's gonna be that concerned unless you're beekeeper. But if it were happening to somebody's farm animals and they were behaving like that, it would be horrifying.

1:3:54.640 --> 1:3:55.310

Andrew Munkres VBA

Uh.

1:3:56.340 --> 1:4:7.140

Andrew Munkres VBA

This ones from Sheraton 2015 and they used a dose of about 3.8 parts per billion of I MD.

1:4:7.850 --> 1:4:8.580

Andrew Munkres VBA

And.

1:4:9.420 --> 1:4:12.580

Andrew Munkres VBA

What you can see basically is over a period of time.

1:4:13.300 --> 1:4:13.920

Andrew Munkres VBA

Ah.

1:4:15.870 --> 1:4:26.540

Andrew Munkres VBA

Honey bees generally live five to six weeks in the summer, and what we're seeing is instead of living for the full 60 days, bees that have been dosed.

1:4:28.90 --> 1:4:38.400

Andrew Munkres VBA

With imidacloprid are much more likely to start dying off around the 30 day mark, so there life expectancy is about half.

1:4:39.290 --> 1:4:40.420

Andrew Munkres VBA

Of.

1:4:41.460 --> 1:4:57.780

Andrew Munkres VBA

What you would normally expect. Interestingly, the difference between four and eight micrograms per liter or four and eight parts per billion is pretty minimal. So the, the, the, the worst case scenario is already happening.

1:4:58.520 --> 1:4:59.910

Andrew Munkres VBA

At the lower level.

1:5:3.530 --> 1:5:35.340

Andrew Munkres VBA

Uh, this is a study that was done by Tyson in 2020 on foraging, and this graph is a little bit harder to understand, but they they're low dose was 4 1/2 parts per billion. They're high dose was nine parts per billion which we didn't find in pollen, but which would be a very low dose of exposure to guttation fluid or something like that or potentially you'd get A9 parts per billion exposure from planting dust on field adjacent crops in the springtime. So these are.

1:5:35.440 --> 1:5:43.650

Andrew Munkres VBA

Again, a field realistic exposures and basically what it shows is greatly reduced foraging.

1:5:44.690 --> 1:6:3.920

Andrew Munkres VBA

And fewer recruitment dances. So when the bees come back from foraging, they dance to recruit other foragers to their crop. And if they've been exposed to neonics, they're less likely to dance, and they're less likely to successfully recruit other foragers when they do dance.

1:6:4.910 --> 1:6:14.40

Andrew Munkres VBA

And interestingly, the lower section of the graph shows that it takes a higher sugar concentration in the nectar of the plant.

1:6:14.810 --> 1:6:22.110

Andrew Munkres VBA

To keep the foragers going back so the bees are basically losing their motivation to forage.

1:6:22.930 --> 1:6:29.40

Andrew Munkres VBA

And it takes a much, much sweeter solution to keep them returning to the food source.

1:6:29.850 --> 1:6:43.280

Andrew Munkres VBA

So, uh, significant impacts within the hive on foraging and obviously foraging is key to the honey based survival and the colonies survival as a whole through the winter and through any dearth that you might have.

1:6:45.240 --> 1:6:51.330

Andrew Munkres VBA

Uh, this one the the only graph we want to look at here is in the lower left corner, which is thiamethoxam.

1:6:52.40 --> 1:6:52.790

Andrew Munkres VBA

And.

1:6:54.320 --> 1:6:57.680

Andrew Munkres VBA

This is from Yang 2012.

1:6:58.700 --> 1:7:2.950

Andrew Munkres VBA

And uh, Nope, sorry. This one is also Sheraton.

1:7:3.940 --> 1:7:10.350

Andrew Munkres VBA

And what this is is a graph of bees that have been exposed.

1:7:11.60 --> 1:7:14.410

Andrew Munkres VBA

To famous Oxnam and.

1:7:16.190 --> 1:7:27.660

Andrew Munkres VBA

They the the the worker bees within the hive, we call them house bees, travel all around and do necessary jobs, cleaning cells, feeding larva.

1:7:29.0 --> 1:7:50.570

Andrew Munkres VBA

Removing mites from larva. If they're parasitized, you know, all kinds of jobs, packing pollen, collecting nectar from Field's, and what they found they set up a video camera and watched marked bees throughout the day, and they found that bees that had been exposed to neonics.

1:7:52.30 --> 1:8:3.550

Andrew Munkres VBA

Moved less than half as far through the course of a day, then ones that had not, and so basically any worker that's exposed to thiamethoxam.

1:8:4.320 --> 1:8:12.930

Andrew Munkres VBA

Is gonna be doing less than half the work of the control worker bees that have not been exposed. So again these are.

1:8:14.30 --> 1:8:34.140

Andrew Munkres VBA

Symptoms that you wouldn't see, even a beekeeper wouldn't see this if they were just looking at a

colony and they would write off the colonies. Failure to thrive on something else. It's very difficult to see these things unless you do have a video camera set up and you're watching specific bees throughout the course of a day.

1:8:35.550 --> 1:8:39.40

Andrew Munkres VBA

I here's another graph on I MD.

1:8:39.890 --> 1:8:47.340

Andrew Munkres VBA

Uh, this ones Yang 2012 and what they did is they exposed bees to .4 or .04.

1:8:48.70 --> 1:8:54.950

Andrew Munkres VBA

Uh, for a couple of even lower levels. Uh, of IMD and.

1:8:55.30 --> 1:9:2.220

Andrew Munkres VBA

ANG we're talking nanograms, so these are incredibly low doses here.

1:9:2.880 --> 1:9:4.660

Andrew Munkres VBA

And in the lower graph.

1:9:5.760 --> 1:9:8.280

Andrew Munkres VBA

What you see is that.

1:9:10.330 --> 1:9:22.530

Andrew Munkres VBA

The two higher levels, which are still incredibly low, .4 and .04 those bees had an extremely impaired full factory associative memory.

1:9:23.220 --> 1:9:53.130

Andrew Munkres VBA

And that was what that means is they don't remember smells. And the reason that's relevant is that when honey bees are foraging, they bring back samples of the nectar that they're foraging on. And they share the smell of that nectar with all the other workers in the hive to help them locate the crop that they're foraging on when they get recruited and go out and look for it. And what's happening is because neonics are a neurotoxin, the bees.

1:9:53.590 --> 1:10:4.100

Andrew Munkres VBA

Memory is getting messed up and they're losing the ability to remember smells as part of the process of forgery, recruitment and.

1:10:5.760 --> 1:10:9.690

Andrew Munkres VBA

And nectar location, when they're actually flying out into the field.

1:10:11.560 --> 1:10:29.380

Andrew Munkres VBA

So, uh, I could obviously go on all afternoon with more and more studies, but I'll. I think you get the sense it's it's pretty significant. The doses are fairly low. The second thing I wanna hit on is the fact that.

1:10:30.660 --> 1:10:52.770

Andrew Munkres VBA

Uh, these insecticides aren't just working on their own. Uh, obviously, they're also interacting with the fungicides and with the inert ingredients and the tank mixes and all that. But that is beyond the scope of this talk. And I was asked to stick directly to the NEO next, but just know that the overall toxicity of the NEO next can be greatly increased depending on what has been mixed.

1:10:54.40 --> 1:10:58.470

Andrew Munkres VBA

With it either on a seed coating or in a tank mix. If you're talking an orchard spray.

1:10:59.100 --> 1:11:22.730

Andrew Munkres VBA

Uh, with seed coatings, we're mostly talking fungicides and there are some fungicides that will greatly increase the toxicity of the neonics. What we're looking at here in this section, however, is the increase in toxicity when you combine an innate pathogen of the honeybee with a pesticide exposure and this is.

1:11:25.260 --> 1:11:49.500

Andrew Munkres VBA

A report from APHIS, which is the animal and plant health inspection service of the USDA, and we participate in the National honeybee survey every year, and we get our colonies sampled and you, they report back on many things. One is the total number of Varroa mites that were in the sample of bees that they had.

1:11:50.400 --> 1:11:55.430

Andrew Munkres VBA

And the Nosema load and these are probably the two most.

1:11:56.70 --> 1:11:57.310

Andrew Munkres VBA

Uh, important?

1:11:58.830 --> 1:12:3.40

Andrew Munkres VBA

Pathogen and pest of honey bees at the current time.

1:12:3.970 --> 1:12:15.780

Andrew Munkres VBA

The Nosema is a fungal pathogen that lives in the gut. It's sporeforming and it can sicken the bees.

1:12:16.470 --> 1:12:30.480

Andrew Munkres VBA

The verosa mites are an external parasite which feed on the fat bodies of the honey bees and the big problem with them, aside from weakening the bees somewhat by sucking their fat bodies.

1:12:31.170 --> 1:12:38.100

Andrew Munkres VBA

Is they are of a vector of viruses, so managing viral mites.

1:12:39.400 --> 1:12:51.410

Andrew Munkres VBA

Is important for control. However, we're seeing honey bee losses even in colonies that have been properly managed for Vera, and that's where the synergies come into play.

1:12:52.130 --> 1:13:2.300

Andrew Munkres VBA

So in this picture you can see a mite, uh on the thorax of a honey bee, and this honeybee has been afflicted with deformed wing virus.

1:13:3.50 --> 1:13:4.10

Andrew Munkres VBA

And.

1:13:5.490 --> 1:13:19.720

Andrew Munkres VBA

It obviously exposure during the larval stage causes a malformation of the wings, and this worker bee will be unable to fly. Now what's extremely interesting here is.

1:13:21.730 --> 1:13:25.220

Andrew Munkres VBA

The the mites can spread these viruses on their own.

1:13:26.60 --> 1:13:36.410

Andrew Munkres VBA

But when you combine a exposure to virus mediated by the mites with an exposure to neonic pesticides.

1:13:37.290 --> 1:13:54.550

Andrew Munkres VBA

Which is that far right hand graph. You can see that the clinical incidence of deformed wing virus increases from about 10% to probably 17% during the summer when the bees are.

1:13:55.230 --> 1:14:4.110

Andrew Munkres VBA

A little more able to fight things off and increases from about 6% to 18%.

1:14:4.910 --> 1:14:6.20

Andrew Munkres VBA

Uh as a mean?

1:14:7.240 --> 1:14:19.430

Andrew Munkres VBA

During the fall, which is when it's critical to be, as I talked about before, it's critical to have healthy colonies there. So a neonet exposure and these this exposure was.

1:14:20.950 --> 1:14:24.280

Andrew Munkres VBA

A .3 parts per billion exposure to clothianidin.

1:14:25.370 --> 1:14:33.220

Andrew Munkres VBA

For a .6 part per billion exposure to thiamethoxam, and that's from Coulon in 2017.

1:14:33.960 --> 1:14:43.50

Andrew Munkres VBA

Uh, so you can see how again, this would not appear to the beekeeper as being anything other than a bad case of virus.

1:14:43.930 --> 1:15:0.700

Andrew Munkres VBA

But you could have controlled your mites and have a very low level of deformed wing virus until you have a pesticide exposure during corn tacking time, which can then cause an increase in your virus loading.

1:15:1.920 --> 1:15:3.300

Andrew Munkres VBA

Uh, here, we've got.

1:15:5.170 --> 1:15:26.740

Andrew Munkres VBA

This is an exposure of about .7 parts per billion. That's the left hand graph. Then they did some higher exposures, but the the trends remain the same and this is a synergy between a neurotic exposure and a Nosema load. And what you can see is that.

1:15:27.540 --> 1:15:34.810

Andrew Munkres VBA

The neo Nick by itself does not cause a tremendous amount of mortality at that level.

1:15:35.860 --> 1:15:46.610

Andrew Munkres VBA

Uh. And within the time frame, but once you combine it with a Nosema infection, it increases by roughly 30%.

1:15:47.550 --> 1:16:5.580

Andrew Munkres VBA

So again, 30% might not sound like much, but the margins of error for getting your colonies through the winter are much closer than 30%. So an increase of 30% in your Nosema loads is pretty significant.

1:16:7.710 --> 1:16:36.620

Andrew Munkres VBA

Uh, this is another indicator of things. Same study. This is another indicator of what's happening with the bees. The left hand chart is glucose oxidase activity and glucose oxidase is an antibiotic that is added by the worker bees from their hypopharyngeal glands into the brood food. So they're basically sterilizing the food as they're feeding it to the larva. And what you can see here, if you look at.

1:16:38.760 --> 1:16:47.690

Andrew Munkres VBA

The control or a simple neonic exposure or a simple nosema exposure compared with the combination of Nosema and the NEO neck?

1:16:48.510 --> 1:16:56.880

Andrew Munkres VBA

Uh, everything's pretty stable until you combine the Nosema and the neonet and then you see a drop off.

1:16:57.590 --> 1:17:14.170

Andrew Munkres VBA

In glucose oxidase activity, which then results potentially in contaminated brood food, which would then allow pathogens to spread within the larval population of the hive.

1:17:15.160 --> 1:17:17.380

Andrew Munkres VBA

The second chart shows you.

1:17:18.240 --> 1:17:37.20

Andrew Munkres VBA

That accommodation of Nosema and anionic exposure actively reduces the size of those hypopharyngeal glands that the worker bees possess. That again are used to produce the brood food, so it's limiting the bees ability to feed their sisters.

1:17:41.130 --> 1:17:45.190

Andrew Munkres VBA

This this one is the cyclopoid which uh.

1:17:46.30 --> 1:17:52.700

Andrew Munkres VBA

I only included because it's a significant finding and we did get a hit in the pollen collection for cyclopoid.

1:17:53.450 --> 1:18:8.440

Andrew Munkres VBA

And this again is a synergy between Nosema and insecticides and what you're basically looking at the green line there shows about a 40% mortality at 20 days.

1:18:9.100 --> 1:18:26.550

Andrew Munkres VBA



And with the combination of the Nosema and the Thiacloprid, it's up to about 70%. So it's an increase again in about 30% immortality at day 20 when these bees should normally be living until day 60.

1:18:31.120 --> 1:18:33.710

Andrew Munkres VBA

I hear some more mortality studies.

1:18:35.80 --> 1:19:2.690

Andrew Munkres VBA

On the left hand side, you've got bees that are uninfected by Nosema and bees that are infected by Nosema, and then on the right hand side you've got B's that have been exposed to about five parts per billion of thiamethoxam, and the uninfected bees are down around 50%. But the infected bees are up around 77%.

1:19:6.760 --> 1:19:7.930

Andrew Munkres VBA

Interestingly.

1:19:8.740 --> 1:19:22.870

Andrew Munkres VBA

That was worker bees. The folks that did this study, this is Vidal from 2011 and these folks thought to test drones, which are the males and the males for whatever reason.

1:19:23.770 --> 1:19:26.20

Andrew Munkres VBA

Are basically completely wiped out.

1:19:26.770 --> 1:19:30.910

Andrew Munkres VBA

By the combination of Nosema and thiamethoxam.

1:19:32.0 --> 1:19:50.790

Andrew Munkres VBA

So obviously you have to have drones in order to make your Queens, and that's pretty good. Segue into the next section. I'll take a brief pause. I've been kind of cruising right along trying to get through this in the hour allotted, but I'm happy to take a brief pause and answer any questions. If anyone has anything.

1:19:55.950 --> 1:19:57.400

Andrew Munkres VBA

Is everybody still awake?

1:20:0.150 --> 1:20:1.0

Andrew Munkres VBA

I have a question.

1:19:59.390 --> 1:20:10.430

Griffith, Morgan

Andrew, I have a question more of a request is when you provide this presentation, would you be able to provide the citations of the studies that you are?

1:20:12.70 --> 1:20:13.300

Andrew Munkres VBA

The citations.

1:20:12.420 --> 1:20:24.670

Griffith, Morgan

Including the some of them are in the slides, but I know some of them. I'm just trying to phonetically spell a name that you're saying, so if you're able to in the future, just when we have this to provide the the citations.

1:20:25.180 --> 1:20:28.230

Andrew Munkres VBA

The citations are all on the last slide of the presentation.

1:20:27.950 --> 1:20:29.160

Griffith, Morgan

Awesome. Thank you.

1:20:29.600 --> 1:20:34.110

Andrew Munkres VBA

So I did include them, but I didn't try and add them into the individual flights.

1:20:32.890 --> 1:20:35.910

Griffith, Morgan

That's OK that's fine, as long as they're there. Thank you.

1:20:35.640 --> 1:20:52.990

Andrew Munkres VBA

Yeah, they're they're all there. And if you're trying to track down a particular slide, you can just shoot me an e-mail and I can help you out. I'm not so much of a computer genius and so editing images on PowerPoint is not something I was going to try and figure out how to do.

1:20:53.710 --> 1:20:53.990

Andrew Munkres VBA

It's.

1:20:55.940 --> 1:20:57.120

Andrew Munkres VBA

Yep. No there, there.

1:20:57.180 --> 1:20:58.240

Griffith, Morgan

Justice, thank you.

1:20:58.620 --> 1:21:1.30

Andrew Munkres VBA

Yep, they're all there on the last slide.

1:21:2.950 --> 1:21:13.350

Andrew Munkres VBA

OK, so Queens and colony strength. So we talked about synergism. There's also a number of studies that have dealt with effects on Queens and.

1:21:14.320 --> 1:21:45.390

Andrew Munkres VBA

Uh, just so you understand, again this is common knowledge, but among beekeepers. But just to get us all up to the same level, the queen is the mother of every bee within an individual colony, and what we call a colony a layperson might call a hive to us, the hive is actually the box that the bees are in and the family of bees that's living within the boxes or within the hollow tree is a colony, and they're all related. And the queen is the mother of all of them. So there is only one.

1:21:45.480 --> 1:21:57.390

Andrew Munkres VBA

Fertile female in the entire colony and the success of the queen. The health of the Queen determines the health and success of the colony, so effects on.

1:21:59.550 --> 1:22:21.800

Andrew Munkres VBA

Effects on the Queen's are drastically amplified in the in the success of the colony or effects on the colony. So this study is Sandrock 2014 and what we're looking at here is the actual overall colony performance and this is pretty telling.

1:22:22.530 --> 1:22:35.50

Andrew Munkres VBA

What she used was A5 parts per billion exposure to thiamethoxam and A2 parts per billion exposure to clothianidin. And what you're looking at the black.

1:22:35.680 --> 1:22:43.550

Andrew Munkres VBA

Data points are control and the red data points are exposed.

1:22:44.230 --> 1:22:50.810

Andrew Munkres VBA

And So what you see, uh, with overall colony population in the spring of 2011?

1:22:51.530 --> 1:23:15.480

Andrew Munkres VBA

Control and treat it a roughly the same, but by the summer you're seeing that well, the control colony has grown to over 30,000 bees. And I say colony, but there's multiple colonies because obviously there's a significant spread within each group, but the the control colonies are over 30,000 for a mean and the exposed colonies.

1:23:16.200 --> 1:23:25.220

Andrew Munkres VBA

Are much lower down around maybe 22,000 and then again they even out in fall of 2011.

1:23:25.840 --> 1:23:28.80

Andrew Munkres VBA

And then the following spring.

1:23:29.200 --> 1:23:31.900

Andrew Munkres VBA

With no exposure since the previous year.

1:23:33.0 --> 1:23:33.850

Andrew Munkres VBA

The.

1:23:34.780 --> 1:23:42.120

Andrew Munkres VBA

Colony that was exposed uh is significantly weaker than the control colony.

1:23:42.720 --> 1:23:55.830

Andrew Munkres VBA

And again, this is not something that a beekeeper is necessarily gonna be able to figure out why they're colony is so weak. But we've all been seeing weak colonies with no explanation.

1:23:56.620 --> 1:23:59.570

Andrew Munkres VBA

And this is certainly.

1:24:0.880 --> 1:24:13.400

Andrew Munkres VBA

A fairly obvious uh cause. The other two graphs are merely correlating what you see at the top, which is number of eggs and larvae and number of viable pupa.

1:24:15.730 --> 1:24:23.560

Andrew Munkres VBA

Those, obviously, are simply precursors to overall colony strength, so we won't deal with them separately.

1:24:24.430 --> 1:24:25.410

Andrew Munkres VBA

Ohm.

1:24:31.550 --> 1:24:57.580

Andrew Munkres VBA

This one is from Williams 2015 and what we're looking at here is actually figure one is whether the Queen survived and they came to the conclusion that no significant difference was observed between the neuronal exposed bees and the control bees. However, in I'm I'm a queen breeder and we raise and sell over 1000 Queens every year.

1:24:58.90 --> 1:25:20.320

Andrew Munkres VBA

And a difference between 20% dead Queens and 40% dead Queens. I would consider statistically

significant. Certainly in my operation, if I went to 40% of my Queens being dead, I would be pretty upset. So the exposure they used here was four parts per billion thiamethoxam and one part per billion clothianidin.

1:25:20.990 --> 1:25:23.330

Andrew Munkres VBA

And again, both, uh. Realistic.

1:25:24.190 --> 1:25:26.990

Andrew Munkres VBA

Levels of exposure in the field.

1:25:27.820 --> 1:25:32.750

Andrew Munkres VBA

Uh, the second figure? Same exposures. Uh, shows the.

1:25:33.630 --> 1:25:40.930

Andrew Munkres VBA

Likelihood of a young queen uh producing eggs and again much more.

1:25:42.170 --> 1:25:44.30

Andrew Munkres VBA

Likely to have no eggs.

1:25:45.170 --> 1:26:15.660

Andrew Munkres VBA

If they've been exposed to neonics over 40%, that's awful. We usually expect, you know, maybe 5 to 10% of the Queens to not produce eggs from after mating and in the lower, they are producing eggs, but they are not successfully producing fertilized worker eggs. Deployed offspring become workers, haploid offspring become.

1:26:15.760 --> 1:26:23.940

Andrew Munkres VBA

Drones. And so again we're seeing a difference between about 20 and 45%. Forty 8%.

1:26:24.610 --> 1:26:30.100

Andrew Munkres VBA

Uh. In successful Queens being successful at raising uh worker bees.

1:26:34.660 --> 1:26:51.230

Andrew Munkres VBA

This ones from Spivak in 2016 and the dosages are right there on the screen. The orange is the control. These are some higher dosages, but it's worthwhile including this because.

1:26:51.950 --> 1:26:53.890

Andrew Munkres VBA

Uh, that the scale?

1:26:54.760 --> 1:26:59.670

Andrew Munkres VBA

Is the number of eggs that were laid within a 15 minute window.

1:27:0.350 --> 1:27:9.280

Andrew Munkres VBA

And you notice that even at the 10 parts per billion level, you're seeing a significant drop off in.

1:27:9.990 --> 1:27:11.530

Andrew Munkres VBA

Eggs being laid by a queen.

1:27:12.670 --> 1:27:41.970

Andrew Munkres VBA

And this can dramatically affect your colony population rate. You have all those bees dying at 60 days old, and they need to be replaced by a queen that's capable of laying 1500 to 2000 eggs a day. And if their egg laying rate has been cut in half, you will not have a colony that can propagate enough worker bees to replace the bees that are dying through natural attrition. And this is what these brood patterns look like.

1:27:42.620 --> 1:28:4.450

Andrew Munkres VBA

From these Queens that have had exposure, I think the 10 parts per billion and the 20 parts per billion pattern or maybe what might be realistic, the higher levels of exposure that they tested would happen in the springtime when they're being exposed to planting dust or to guttation fluids. So they aren't to be ignored.

1:28:6.300 --> 1:28:10.430

Andrew Munkres VBA

But certainly a queen that's exposed at that time.

1:28:12.640 --> 1:28:18.150

Andrew Munkres VBA

Might not recover and would need to be replaced or they would be laying very slowly for the rest of the season.

1:28:19.60 --> 1:28:25.630

Andrew Munkres VBA

This is from one David Tarpy's grad students, uh Joe Malone, and this is 2022.

1:28:26.490 --> 1:28:51.770

Andrew Munkres VBA

And what they did is they looked at the composition of the food that is fed to the queen to try and determine why we're seeing such significant effects in queen productivity. And they used very low levels, so .6 parts per billion of imidacloprid and .3 parts per billion of thiamethoxam.

1:28:52.470 --> 1:28:53.260

Andrew Munkres VBA  
And.

1:28:54.0 --> 1:28:58.640

Andrew Munkres VBA  
What you're seeing from the left hand side, which was exposed.

1:28:59.340 --> 1:29:8.430

Andrew Munkres VBA  
To Neo next versus the right hand side is concentrations above or below the baseline.

1:29:9.240 --> 1:29:39.430

Andrew Munkres VBA  
Of phytosterols, which are indicative of the quality of the royal Jelly, which is fed to the queen. And so basically what's happening is there's hardly any nutritional content to the royal Jelly that's being fed to the queen. When the nurse bees are exposed to very low levels of neonicotinoids. And once this queen has been raised, there's no going back. They've had this poor nutrition, they end up being.

1:29:39.520 --> 1:29:47.800

Andrew Munkres VBA  
Less productive and shorter lived. And I'll just add here that if you go to the be informed partnership.

1:29:49.430 --> 1:30:7.740

Andrew Munkres VBA  
They will have information. They're explaining how loss of queen productivity increase in Queen replacement and Supersedure has become one of the major concerns of commercial beekeepers all over the country. So this is this is some explanation.

1:30:8.410 --> 1:30:23.730

Andrew Munkres VBA  
Of of why that is happening in the the the root causes now this chart here was put together by VBA board member Fred Putnam this year, and this is a kind of a good example.

1:30:25.130 --> 1:30:54.600

Andrew Munkres VBA  
Of how the Queen's productivity can drastically affect the overwintering success of a colony of bees. So if you recall, we were seeing differences in productivity that were 50%, you know, Queens that were only 50% as productive as their untreated counterparts. And other queen measures that were varying by 30% or more.

1:30:55.100 --> 1:30:58.950

Andrew Munkres VBA  
What Fred's done here is he's calculated out.

1:31:1.40 --> 1:31:6.150

Andrew Munkres VBA  
The colony population, with a dwindling rate.

1:31:8.130 --> 1:31:40.180

Andrew Munkres VBA

Increased by 3% due to a reduction in queen productivity of only three percent, 2% and 1%. So these are much, much lower than the levels of difference in queen productivity that we were seeing in these studies where the Queens were exposed to to field reasonable levels of neonics and what's happening is by March in an unexposed colony, you might have 7500 bees remaining.

1:31:40.460 --> 1:31:48.260

Andrew Munkres VBA

Which is getting pretty close to the minimum viable population to maintain colony warmth through the winter.

1:31:49.530 --> 1:32:3.730

Andrew Munkres VBA

And what happens if you have a 3% drop in queen productivity? Is that minimum population drops to just over 2000 bees and that is not a viable unit to get through.

1:32:4.420 --> 1:32:15.440

Andrew Munkres VBA

Uh, any cold weather? The honey bees survived the winter by generating their own heat, by consuming honey, and there's a minimum cluster size which is needed to.

1:32:16.440 --> 1:32:27.900

Andrew Munkres VBA

Survive just just to keep their sisters warm and make it through the winter and all of us. Uh beekeepers have seen these tiny clusters that had been.

1:32:29.140 --> 1:32:42.100

Andrew Munkres VBA

Uh colonies the previous year, and that dwindled down to these tiny colonies and then died over the winter. And this is a graphic example of how that can happen.

1:32:43.490 --> 1:32:45.410

Andrew Munkres VBA

So moving on to.

1:32:46.580 --> 1:32:52.400

Andrew Munkres VBA

What the VBA recommends, obviously you guys know all about IPM, so I won't harp on it.

1:32:53.90 --> 1:33:1.460

Andrew Munkres VBA

Uh and uh. Important component of IPM is to choose the least toxic pesticide option and that you'll notice.

1:33:2.660 --> 1:33:8.320

Andrew Munkres VBA

Here in the bumblebee toxicity section, they're talking about the toxicity of dynamites.



1:33:9.60 --> 1:33:18.920

Andrew Munkres VBA

Way less toxic than neonics. So if you look at the dynamites, uh, say, Antonella, April is a diamide. It's available as a seed treatment.

1:33:19.950 --> 1:33:39.900

Andrew Munkres VBA

It's persistence in the soil is about 90 days as a compared to 3.8 years for the three neonics that we're talking about and they could not create a solution with cyan tranel approval that was concentrated enough to kill 50% of the bumblebees that they tested against.

1:33:40.910 --> 1:33:47.780

Andrew Munkres VBA

Uh. And the LD50 for honey bees was .1 micrograms per beat.

1:33:48.710 --> 1:33:49.290

Andrew Munkres VBA

Uh.

1:33:50.240 --> 1:33:59.710

Andrew Munkres VBA

And if you look at thiamethoxam as a comparison, the LD 50 for honey bees is .005 micrograms per B.

1:34:0.350 --> 1:34:6.30

Andrew Munkres VBA

And the LD50 for bumblebees is .0015.

1:34:6.660 --> 1:34:23.600

Andrew Munkres VBA

So again, LD 50 is not particularly useful for measuring effects at the colony scale, but it is useful for toxicity comparison. And so if you're looking at seed treatments that should be used instead of new mix, there are obviously some options that are much better.

1:34:24.120 --> 1:34:42.490

Andrew Munkres VBA

Uh, in terms of protecting pollinators than the neonics, so the Vermont Beekeepers Association recommends to eliminate the prophylactic use of systemic pesticide treated seed. Last time I spoke with you, I spent a lot of time on the Quebec study that showed basically no economic difference for farmers.

1:34:43.270 --> 1:35:12.780

Andrew Munkres VBA

Using treated seed versus untreated seed, we're talking leonick treated seed, not fungicide treated seed and Quebec has very similar soil and climate conditions compared with us, so it's actually an apples to apples comparison, so very little economic benefit, if any at all, so should not be used prophylactically. We're dumping tons and tons of this stuff in places where it pest pollinators can be exposed and we don't need to be doing that.

1:35:13.740 --> 1:35:17.50

Andrew Munkres VBA

If I PM testing reveals a pest problem.

1:35:17.780 --> 1:35:38.190

Andrew Munkres VBA

Then you should use a coded seed and you should choose the least toxic pesticide for the application. Potentially the dynamites or potentially something else, and the VBA recommends due to their extreme pollinator toxicity that the nitroguanidine class of neonics should be phased out completely within two to three years.

1:35:39.510 --> 1:35:44.220

Andrew Munkres VBA

And once again, I'm going to leave you with this chart, which is the actual.

1:35:45.810 --> 1:36:2.240

Andrew Munkres VBA

Pesticide level data from 2022 and I'll point out that 5.3 parts per billion that we saw in clothianidin, that was from up north.

1:36:2.880 --> 1:36:3.710

Andrew Munkres VBA

And.

1:36:4.690 --> 1:36:33.40

Andrew Munkres VBA

After uh, Doctor Alger from the Bee Lab, saw that she said OK, we need to call that beekeeper. So her assistant called that beekeeper and said, you know, we, we test that yard every year for the national honeybee survey. And we'd really like to make sure we keep testing that yard because we're seeing some pretty high pesticide levels. So we'd like to to continue the both the pesticide sampling and the national Honey Bee survey health monitoring there because it would be relevant.

1:36:33.660 --> 1:36:35.470

Andrew Munkres VBA

And he said, well, you'd be welcome to.

1:36:36.500 --> 1:36:37.910

Andrew Munkres VBA

Except all the bees are dead.

1:36:39.800 --> 1:36:49.830

Andrew Munkres VBA

So that's what we're dealing with is beekeepers, is going out and in the case of this particular yard, finding out that the entire yard has been wiped out.

1:36:50.580 --> 1:36:51.240

Andrew Munkres VBA

So.

1:36:52.920 --> 1:37:0.160

Andrew Munkres VBA

That's what I want to leave you with. If it were dairy cows that were dying at these rates, something already would have happened.

1:37:2.280 --> 1:37:11.820

Andrew Munkres VBA

And I strongly encourage you all to make recommendations to the Department of AG that follow the NBA's recommendations. Thanks for your time.

1:37:14.260 --> 1:37:15.960

cc198c43-b550-4aed-b186-e126b5902cea

Thank you. Thank you, Andrew.

1:37:17.900 --> 1:37:19.690

cc198c43-b550-4aed-b186-e126b5902cea

We'll see if they have any questions.

1:37:19.860 --> 1:37:25.470

cc198c43-b550-4aed-b186-e126b5902cea

Ohh I'd you're very long, detailed presentation. Appreciate you putting all that time into it.

1:37:27.860 --> 1:37:40.540

cc198c43-b550-4aed-b186-e126b5902cea

I do have one, just one minor point I wanna make. And you had mentioned that piperonal butoxide. Excuse me. Piperonal Butoxide was an inert agreement. Is not an inert ingredient. It is a. It's listed as an active.

1:37:41.280 --> 1:37:48.970

cc198c43-b550-4aed-b186-e126b5902cea

In the center, just it's listed as an active on it on Petside labels, not as an inner ingredient. So that's just a minor point there.

1:37:55.820 --> 1:37:56.910

cc198c43-b550-4aed-b186-e126b5902cea

Yeah, yeah.

1:37:48.530 --> 1:37:57.340

Andrew Munkres VBA

Yeah, Samantha had that correct. On the slide, I, I, I saw it was listed as a synergist. And I just said the wrong word. So sorry about that. And thanks for correcting me, see.

1:37:57.720 --> 1:37:58.430

cc198c43-b550-4aed-b186-e126b5902cea

Yeah, no worries.

1:37:59.600 --> 1:38:8.330

cc198c43-b550-4aed-b186-e126b5902cea

Any other comments or questions? I have a question you Stephanie sent to the Agency of Agriculture of the You had taken the samples. This is.

1:38:15.530 --> 1:38:15.960

Andrew Munkres VBA

Yes.

1:38:9.630 --> 1:38:22.600

cc198c43-b550-4aed-b186-e126b5902cea

In the middle of your presentation, but you included plant tissue samples as one of the items that you tested. What what? What plants with the actual crop plants or adjacent plants or what plants?

1:38:22.200 --> 1:38:47.570

Andrew Munkres VBA

So those those were all field adjacent we tested from you know about 3 or 4 feet field adjacent to about 50 feet field adjacent the plants that we sampled were all plants that were actively blooming and known to be foraged on by honey bees. So we selected dandelions, alfalfa and goldenrod.

1:38:48.900 --> 1:38:53.770

Andrew Munkres VBA

And we got the hits in the goldenrod that was field adjacent.

1:38:54.580 --> 1:38:55.890

Andrew Munkres VBA

And.

1:38:56.910 --> 1:39:1.810

Andrew Munkres VBA

We plan to do more plant tissue sampling uh, especially in the spring.

1:39:2.550 --> 1:39:12.480

Andrew Munkres VBA

But there are numerous other studies that show levels. Uh in plant tissue, including at UVM. There was a grad student that was looking at.

1:39:13.200 --> 1:39:28.780

Andrew Munkres VBA

Ohh buffer zones around crop fields for pollinator habitat and discovered. Actually there were, uh, significant levels of neonics in the quote buffer zone, so she thought maybe it wasn't such a good idea to be planting wildflowers there.

1:39:29.480 --> 1:39:42.510

Andrew Munkres VBA

I and the B labs come up with uh samples in some wild beast surveys that they've done. They've come up with significant levels of neonics in milkweed that was fielded field adjacent.

1:39:44.390 --> 1:39:44.960

cc198c43-b550-4aed-b186-e126b5902cea

Thanks.

1:39:45.330 --> 1:39:45.840

Andrew Munkres VBA

Yeah.

1:39:49.610 --> 1:39:52.480

cc198c43-b550-4aed-b186-e126b5902cea

OK. Well, great. Thank you, everybody else have any questions.

1:39:53.950 --> 1:39:57.780

cc198c43-b550-4aed-b186-e126b5902cea

And we're gonna get a copy of that presentation for the record.

1:39:58.780 --> 1:39:59.470

cc198c43-b550-4aed-b186-e126b5902cea

Uh.

1:39:58.840 --> 1:40:3.90

Andrew Munkres VBA

Absolutely I will. Uh, I can send it to you or I can send it today, if you like.

1:40:3.840 --> 1:40:6.50

cc198c43-b550-4aed-b186-e126b5902cea

Morgan is the contact.

1:40:6.840 --> 1:40:7.200

cc198c43-b550-4aed-b186-e126b5902cea

Yeah.

1:40:6.980 --> 1:40:7.390

Andrew Munkres VBA

OK.

1:40:5.100 --> 1:40:8.500

Griffith, Morgan

You can send it to me. Andrew to Morgan. Thanks.

1:40:9.290 --> 1:40:9.910

Andrew Munkres VBA

Perfect.

1:40:9.570 --> 1:40:13.130

cc198c43-b550-4aed-b186-e126b5902cea

Alright. And I will be back in touch with as questions arise, I'm sure.

1:40:14.160 --> 1:40:20.70

Andrew Munkres VBA

Sounds good. I'm always available and obviously, uh, feel strongly about this, so I'm happy to help in any way I can.

1:40:20.660 --> 1:40:22.280  
cc198c43-b550-4aed-b186-e126b5902cea  
Yeah, I appreciate you appreciate it.

1:40:24.600 --> 1:40:27.550  
cc198c43-b550-4aed-b186-e126b5902cea  
OK, then we need to take a break or keep rolling.

1:40:31.160 --> 1:40:32.690  
cc198c43-b550-4aed-b186-e126b5902cea  
We're OK, OK.

1:40:34.450 --> 1:40:35.760  
cc198c43-b550-4aed-b186-e126b5902cea  
Right, Morgan, you're up.

1:40:36.130 --> 1:40:39.480  
Griffith, Morgan  
Yep, I'm going to.

1:40:42.920 --> 1:40:43.820  
Griffith, Morgan  
Share.

1:40:46.870 --> 1:40:51.110  
Griffith, Morgan  
So similarly, I might not see you, UM.

1:40:52.420 --> 1:40:57.720  
Griffith, Morgan  
So just shout to stop me. UM, if you have questions but.

1:40:58.590 --> 1:41:29.100  
Griffith, Morgan  
So basically this is one thing that came up last meeting uh, so was to look at the ecological risk assessment of the neonicotinoids at the EPA has conducted pretty recently. So I sent out kind of like a narrative summary of those risk assessments and then this is just trying to pick and choose a little bit. So it's a little bit less detailed than that summary, but both of those will be available.

1:41:29.160 --> 1:41:31.280  
Griffith, Morgan  
On the website for this meeting, but also on teams.

1:41:34.330 --> 1:41:35.100  
Griffith, Morgan  
So.

1:41:37.280 --> 1:41:41.420

Griffith, Morgan

Basically, the UM, the neonics are going through the.

1:41:41.500 --> 1:41:47.730

Griffith, Morgan

3 registration review process right now with EPA, so in 2020.

1:41:48.620 --> 1:41:49.740

Griffith, Morgan

The EPA.

1:41:50.470 --> 1:41:55.980

Griffith, Morgan

Published a proposed interim decisions, which are part of that registration review process.

1:41:56.970 --> 1:42:27.480

Griffith, Morgan

Those are called kids for short PID uh, so those pids identify the exposures risks and then in the actions that are required to mitigate any of the risks that they find to be of concern. So this is kind of a timeline of things that are going to be coming out of EPA soon. I did hear in a meeting with EPA last week, so this 4th bullet here about an amended.

1:42:27.760 --> 1:42:30.860

Griffith, Morgan

Proposed interim decision anticipated in early 2023.

1:42:31.750 --> 1:42:35.900

Griffith, Morgan

That will be the anticipated in the next month or so.

1:42:42.370 --> 1:43:2.260

Griffith, Morgan

So this is just for us to go back to these if we need them. So this summary is from those two interim decisions. So they did imidacloprid by itself and then they did clothianidin and thiamethoxam together because they are such similar.

1:43:3.20 --> 1:43:3.830

Griffith, Morgan

Chemicals.

1:43:5.280 --> 1:43:13.460

Griffith, Morgan

And then I also looked at, Umm, also published in 2020 by the EPA. Is this final B risk assessment?

1:43:14.220 --> 1:43:37.590

Griffith, Morgan

That were used as to support that registration review, so again clothianidin and thiamethoxam were grouped together in a medical bridge, was on its own. So there are pids for two other neonics, but I'm

not going to talk about them today because they weren't listed as seed treatments in Vermont from our seed report. It's.

1:43:40.360 --> 1:43:41.880

Griffith, Morgan

So the EPA.

1:43:43.210 --> 1:43:59.570

Griffith, Morgan

Reviews kind of the national usage data of these chemicals when they're looking at these pids. And so the the largest agricultural use of these three neonics in terms of pounds of active ingredient that.

1:44:0.230 --> 1:44:3.480

Griffith, Morgan

Applied on is in the form of sea treatments.

1:44:5.440 --> 1:44:9.200

Griffith, Morgan

So this is dimethoxy him. So it just to kind of give you an idea so.

1:44:10.720 --> 1:44:16.970

Griffith, Morgan

Of all the average acres treated with any form of five methoxy ham.

1:44:17.860 --> 1:44:29.470

Griffith, Morgan

3% of those acres are treated by a soil or foliar application and then 97% of the acres that have received thiamethoxam do so through seed treatments.

1:44:33.230 --> 1:44:35.290

Griffith, Morgan

And it's similar for clothianidin.

1:44:37.880 --> 1:44:46.670

Griffith, Morgan

Where it's even less so, 1% of those average acres receive a soil or foliar application, and then 99% of those acres.

1:44:47.380 --> 1:44:54.960

Griffith, Morgan

Are with coffee anadin seed treatments. They didn't have this type of usage data for a medical period.

1:44:58.870 --> 1:45:1.630

Griffith, Morgan

Are you seeing a black box on the screen? Are you?

1:45:2.560 --> 1:45:4.610

cc198c43-b550-4aed-b186-e126b5902cea

So see, see yours your slides.



1:45:4.360 --> 1:45:5.640

Griffith, Morgan

OK. OK, great.

1:45:7.900 --> 1:45:8.670

Griffith, Morgan

So.

1:45:9.920 --> 1:45:24.730

Griffith, Morgan

When the EPA is kind of going through this ecological risk summary, they look at just as what Andrew was saying like, well, how, what potential exposures are there. So these are the terrestrial exposures.

1:45:25.940 --> 1:45:56.830

Griffith, Morgan

That the risk assessment associated with neonics, so for birds and mammals, it's mainly the ingestion of the residues that are on the treated seed for terrestrial invertebrates. So that's where our pollinators fall into. So it's either contact with the spray ingestion via the pollen or the nectar or exposure to the seed dust. They're are exposures to surface water and guttation fluid like Andrew was saying.

1:45:57.650 --> 1:46:8.890

Griffith, Morgan

But with EPA, they kind of prioritize the exposure so they do look at those things, but it looks like that these were the main routes of exposure.

1:46:10.60 --> 1:46:12.970

Griffith, Morgan

So these are the ones that they called out as being.

1:46:15.550 --> 1:46:17.230

Griffith, Morgan

The main parts of their models.

1:46:18.90 --> 1:46:23.20

Griffith, Morgan

Uh, so for plants, it's mainly just the exposure is just from ground and foliar applications.

1:46:25.680 --> 1:46:26.430

Griffith, Morgan

So.

1:46:28.200 --> 1:46:43.920

Griffith, Morgan

I'm gonna focus today, just like Andrew did, relevant to treated seeds. So we're not gonna talk about the foliar or soil applications of Neo next that the EPA assessed.

1:46:45.200 --> 1:46:45.720

Griffith, Morgan

So.

1:46:46.410 --> 1:46:49.640

Griffith, Morgan

There are exposures are.

1:46:51.680 --> 1:46:57.510

Griffith, Morgan

Basically the highest acute and chronic risks identified for this is just for terrestrial again right now.

1:46:58.880 --> 1:46:59.330

Griffith, Morgan

But.

1:47:0.270 --> 1:47:7.470

Griffith, Morgan

Those risks really vary depending on seed size and also size of.

1:47:9.550 --> 1:47:31.760

Griffith, Morgan

This is for ingestion, right? So the size of the bird or the mammal. So for example larger seeds like corn and soybean are considered lower risk because they have a lower concentration of active ingredient on them and they're also too big for the smaller birds or mammals to eat. So all of that exposure is taken into account when they're.

1:47:32.690 --> 1:47:38.580

Griffith, Morgan

Doing the assessment of whether this risk is something that needs to be mitigated.

1:47:40.310 --> 1:47:43.740

Griffith, Morgan

So this is their mammalian risk assessment.

1:47:44.650 --> 1:47:55.350

Griffith, Morgan

So there are potential for acute risks of concern, but the most likely risk of concern in their analysis is from the chronic consumption of treated seeds.

1:47:56.150 --> 1:47:56.870

Griffith, Morgan

So.

1:47:58.220 --> 1:48:7.260

Griffith, Morgan

There is some variables that kind of impact how mammals are exposed to the treated seeds, so some of those are how far apart?

1:48:7.980 --> 1:48:19.880

Griffith, Morgan

The seeds are in the field and the number of seeds available. Also the amount of cover the field has, so I guess a a newly planted field has less coverage.

1:48:20.680 --> 1:48:28.400

Griffith, Morgan

So it's less attractive for smaller mammals, right? So it's kind of less. They're more exposed out in that field, whereas a no till field.

1:48:29.850 --> 1:48:30.970

Griffith, Morgan

Is more attractive.

1:48:32.150 --> 1:48:34.810

Griffith, Morgan

To the smaller mammals also.

1:48:35.570 --> 1:48:43.60

Griffith, Morgan

A variable is whether or not the seed is incorporated into the soil and at what depth, or whether it's on the soil surface.

1:48:43.660 --> 1:48:47.490

Griffith, Morgan

And then the life stage and the size of the mammal was also taken.

1:48:48.360 --> 1:48:51.480

Griffith, Morgan

Into account for how that exposure.

1:48:52.170 --> 1:48:53.890

Griffith, Morgan

Led to a risk or not?

1:48:56.290 --> 1:49:9.460

Griffith, Morgan

So for our big three neonics, there's slight differences in the mammalian risk assessment, but overall, the chronic levels of concerns or LLC.

1:49:10.280 --> 1:49:21.20

Griffith, Morgan

Were exceeded for all size classes of mammals consuming select treated seeds with the exception that for thiamethoxam treated soybeans.

1:49:22.40 --> 1:49:26.770

Griffith, Morgan

They had no chronic level of concern exceedances for mammals, so.

1:49:28.430 --> 1:49:31.400

Griffith, Morgan

That means, like with their modeling of the risks.

1:49:32.680 --> 1:49:43.400

Griffith, Morgan

Based on exposure and size and amount of seeds and all those variables that we just talked about, that level of concern wasn't.

1:49:44.80 --> 1:49:49.950

Griffith, Morgan

Exceeded for five doxim treated so it means, but in the other.

1:49:50.900 --> 1:50:1.520

Griffith, Morgan

Neonics umm, no matter. So some of the other seeds that they assessed our corn, soybean, cotton, wheat, sorghum, sugar, beet, lettuce.

1:50:3.310 --> 1:50:5.500

Griffith, Morgan

And so those ones all showed.

1:50:6.360 --> 1:50:12.410

Griffith, Morgan

Basically a risk for all sizes of mammals consuming those St. treated seeds.

1:50:16.760 --> 1:50:38.710

Griffith, Morgan

So beyond the the million risk assessment, they do a bird risk assessment. They caught the the risk exception for birds, reptiles and terrestrial phase and phibians. However, birds are used as surrogates for the potential risks for the reptiles and the terrestrial phase amphibians.

1:50:39.400 --> 1:50:44.690

Griffith, Morgan

So middle clopin microprint is classified as highly toxic to birds.

1:50:45.550 --> 1:50:51.690

Griffith, Morgan

Well, the Indian is kind of going down the scale moderately toxic dimethoxy umm is slightly toxic.

1:50:55.630 --> 1:50:58.840

Griffith, Morgan

So looking at the three NEO necks.

1:51:0.40 --> 1:51:0.650

Griffith, Morgan

Umm.

1:51:1.440 --> 1:51:2.430

Griffith, Morgan

How they?

1:51:4.40 --> 1:51:12.540

Griffith, Morgan

A way that they kind of quantified that the risk is by showing the percent of a bird's diet.

1:51:13.260 --> 1:51:15.270

Griffith, Morgan

Depending on the bird's eyes that.

1:51:16.120 --> 1:51:25.840

Griffith, Morgan

Uh needed to be the treated seed in order to exceed the acute level of concern. So for a medical afraid, you can see that 3%.

1:51:27.400 --> 1:51:36.660

Griffith, Morgan

The birds diet of field corn and that's for a large birds only. The birds that are able to eat that size of a seed.

1:51:37.340 --> 1:51:50.640

Griffith, Morgan

And 12% of the diet for soybean and less percent of the diet for it to be an acute level of concern for the smaller seeds. So for the cotton seed and the sorghum and the wheat seed.

1:51:52.660 --> 1:51:55.760

Griffith, Morgan

However, the EPA.

1:51:56.440 --> 1:52:0.810

Griffith, Morgan

Does mention that given the availability of other seed sources, so.

1:52:1.550 --> 1:52:2.510

Griffith, Morgan

Basically.

1:52:3.190 --> 1:52:19.680

Griffith, Morgan

The grain of the crop, or seeds from nearby weed species that eating diets made-up entirely of a specific seed type, is unlikely for birds, but it is much more likely an incidence of a treated seed spillage event.

1:52:21.790 --> 1:52:25.380

Griffith, Morgan

So for umm clothianidin.

1:52:26.690 --> 1:52:32.770

Griffith, Morgan

Sea treatment exposures. The expected risks are highest for the small birds.

1:52:32.850 --> 1:52:35.730

Griffith, Morgan

Umm. And then that risk.

1:52:38.320 --> 1:52:41.500

Griffith, Morgan

Decreases as you get bigger birds.

1:52:44.0 --> 1:52:56.830

Griffith, Morgan

The large birds there are some acute dose based species level of concern exceedences when they're feeding on corn, sugar beets and lettuce.

1:52:58.410 --> 1:53:0.270

Griffith, Morgan

So basically.

1:53:1.490 --> 1:53:10.850

Griffith, Morgan

The acute depends on how much they're eating, but a chronic level of concern is across the board for all three NEO necks.

1:53:18.480 --> 1:53:19.950

Griffith, Morgan

Uh, so the same?

1:53:20.770 --> 1:53:27.200

Griffith, Morgan

Uncertainties and variabilities that we that I went over for the million risk assessment, so about.

1:53:28.480 --> 1:53:36.750

Griffith, Morgan

How much cover is provided in the field whether the seeds are incorporated in the soil or not? So all of that is the same for the bird risk assessment.

1:53:37.880 --> 1:53:39.750

Griffith, Morgan

But basically the overall.

1:53:42.240 --> 1:53:49.600

Griffith, Morgan

Kind of definition of that risk can be thought of as the size of the seed and the size of the bird dictates the size of the wrist.

1:53:50.280 --> 1:53:51.70

Griffith, Morgan

So.

1:53:51.840 --> 1:53:54.380

Griffith, Morgan

For example, so the EPA calls out to a large bird.

1:53:55.350 --> 1:54:3.130

Griffith, Morgan

Forging in cornfields would have to have approximately 99% of the diet be treated seed in order to reach the acute.

1:54:3.990 --> 1:54:5.100

Griffith, Morgan

Level of concern.

1:54:5.820 --> 1:54:6.480

Griffith, Morgan

Umm.

1:54:8.150 --> 1:54:10.50

Griffith, Morgan

But that chronic.

1:54:11.20 --> 1:54:12.580

Griffith, Morgan

Level of risk is still there.

1:54:13.430 --> 1:54:15.260

Griffith, Morgan

Umm. And then.

1:54:16.770 --> 1:54:21.950

Griffith, Morgan

EPA does call out that basically because of the such a high percentage needs to be.

1:54:22.660 --> 1:54:32.360

Griffith, Morgan

Eaten by a bird in in kind of like one sitting or in like in a day that instances just highly.

1:54:34.130 --> 1:54:36.540

Griffith, Morgan

Is more likely if the seed is spilled.

1:54:41.240 --> 1:54:47.230

Griffith, Morgan

So for terrestrial invertebrates, so this is our our pollinators.

1:54:48.970 --> 1:54:53.950

Griffith, Morgan

The we just heard from Andrew, they're classified as highly toxic to honey bees.

1:54:55.530 --> 1:55:1.840

Griffith, Morgan

The primary routes of exposures honey bees we heard from Andrew, so it's.

1:55:3.60 --> 1:55:14.520

Griffith, Morgan

Oral ingestion from pollen or nectar. It can also be from surface water, plant mutation fluids, honeydew soil for any ground nesting bees and leaves.

1:55:17.10 --> 1:55:31.80

Griffith, Morgan

That is, the EPA says that there is a high uncertainty regarding the importance of these other routes of exposure, and the EPA lacks information to quantify risks from these other routes. So.

1:55:33.370 --> 1:55:35.880

Griffith, Morgan

Basically they only.

1:55:37.400 --> 1:55:38.660

Griffith, Morgan

Assess the risk.

1:55:39.410 --> 1:55:45.140

Griffith, Morgan

With contact with foliar spray or oral ingestion through contaminated nectar or pollen.

1:55:47.670 --> 1:55:54.640

Griffith, Morgan

EPA also uh does not have a method to reliably quantify exposure of bees via the dust from the treated seeds.

1:55:55.970 --> 1:56:11.40

Griffith, Morgan

But EPA calls out that they're working with different stakeholders to identify best management practices so, and they actually reference a lot of the best management practices that we have saved on our team site.

1:56:13.80 --> 1:56:16.190

Griffith, Morgan

Available. So those are the stakeholders that they're working with.

1:56:17.500 --> 1:56:23.740

Griffith, Morgan

And to promote technology based solution to reduce that potential exposure via dust from the treated seeds O.

1:56:24.390 --> 1:56:31.580

Griffith, Morgan



They recognize that it to root of exposure, but they don't have a a method to really quantify that exposure right now.

1:56:41.40 --> 1:56:41.580

Griffith, Morgan

So.

1:56:41.650 --> 1:56:43.470

Griffith, Morgan

So are some model results.

1:56:44.240 --> 1:56:48.190

Griffith, Morgan

And and data from multi year applications.

1:56:48.870 --> 1:56:52.840

Griffith, Morgan

In the soil, do suggest a year to year accumulation.

1:56:54.910 --> 1:56:58.20

Griffith, Morgan

Of the neonics in the soils and.

1:57:2.150 --> 1:57:16.760

Griffith, Morgan

But some of the residue data in pollen and nectar don't show that carryover in the treated treated crops. So this is all these are all quotes from the EPA proposed interim decision, so.

1:57:17.540 --> 1:57:23.270

Griffith, Morgan

Their data is showing that yes, it's in the soils, but it's not showing that it's taken up by the next year's crop.

1:57:24.310 --> 1:57:25.600

Griffith, Morgan

Umm. And so.

1:57:27.770 --> 1:57:36.310

Griffith, Morgan

So this is an example in the middle of croquet PID. The residues in succeeding crops, so the white Clover was planted. After I treated seed.

1:57:37.250 --> 1:57:48.150

Griffith, Morgan

Treated corn seed was planted so they were low and so that the rest of honey bees not expected from white Clover crop that was planted in succession after Unicorn.

1:57:52.820 --> 1:57:55.170

Griffith, Morgan

So there is a lot of data.

1:57:56.50 --> 1:57:59.520

Griffith, Morgan

Thankfully for traditional vertebrate risk assessment.

1:58:0.110 --> 1:58:2.120

Griffith, Morgan

For pollen and nectar residue.

1:58:2.830 --> 1:58:5.640

Griffith, Morgan

For foliar and soil applications.

1:58:6.470 --> 1:58:9.920

Griffith, Morgan

For be attractive crops so.

1:58:11.460 --> 1:58:13.320

Griffith, Morgan

However, the data.

1:58:14.880 --> 1:58:22.250

Griffith, Morgan

I didn't want to go into all of that because I really wanted to focus on just this treated seed exposures so.

1:58:22.890 --> 1:58:24.390

Griffith, Morgan

Data from exposure.

1:58:27.270 --> 1:58:38.980

Griffith, Morgan

From the middle corporate sea treatments is not mentioned in the risk to terrestrial invertebrates.

There is a little bit mentioned. You can see here for a middle close period.

1:58:40.70 --> 1:58:41.690

Griffith, Morgan

Of having some.

1:58:42.540 --> 1:58:57.870

Griffith, Morgan

Uh week. The strength of evidence is considered weakest in indicating a colony level risk to honey bees for the registered use of sea treatments on beans. However, that was not for.

1:58:58.790 --> 1:59:3.660

Griffith, Morgan

Swabians it was for other beans, so specifically wasn't soybeans, so.

1:59:7.130 --> 1:59:8.30

Griffith, Morgan

Basically.

1:59:11.160 --> 1:59:21.150

Griffith, Morgan

I don't. I can go through these bullet points if you want me to. But so for each of our neonics, there were studies and a lot of these are from that final B risk assessment.

1:59:23.580 --> 1:59:28.810

Griffith, Morgan

That the link is in the few slides earlier. So they found both.

1:59:31.0 --> 1:59:41.680

Griffith, Morgan

Evidence for an Andrew did a really good job of showing evidence of toxicity to honey bees and also EPA also called out some.

1:59:43.50 --> 1:59:48.330

Griffith, Morgan

Full field colony levels studies that didn't find.

1:59:49.190 --> 1:59:54.720

Griffith, Morgan

Effects for hives that were adjacent to treated seed fields versus a control.

1:59:57.960 --> 2:0:1.30

Griffith, Morgan

Untreated, basically agricultural field.

2:0:1.820 --> 2:0:2.500

Griffith, Morgan

So.

2:0:6.100 --> 2:0:17.280

Griffith, Morgan

The risk is there is, in the evidence, UM you can see in the clothianidin and the thiamethoxam that beat kill multiple bee kill incidents were associated with the planting of.

2:0:18.140 --> 2:0:26.90

Griffith, Morgan

Treated corn seed. It was as a possible exposure from dust drift.

2:0:27.270 --> 2:0:28.510

Griffith, Morgan

Umm. And then.

2:0:30.980 --> 2:0:32.40

Griffith, Morgan

There were some.

2:0:33.200 --> 2:0:37.30

Griffith, Morgan

Risks at a colony level, but.

2:0:38.370 --> 2:0:40.190

Griffith, Morgan

For full year in soil applications.

2:0:45.530 --> 2:0:51.810

Griffith, Morgan

So I wanted to look a little bit more into the data for each of the neonics. And so this is for the clothianidin.

2:0:52.410 --> 2:0:53.190

Griffith, Morgan

So.

2:0:54.80 --> 2:0:55.460

Griffith, Morgan

The majority of the.

2:0:56.370 --> 2:1:0.70

Griffith, Morgan

Uh. Available full field studies.

2:1:0.760 --> 2:1:11.200

Griffith, Morgan

Evaluated the effects to honey bees from seed treatments of the various crops. So again, these are calling out specific studies that EPA.

2:1:12.610 --> 2:1:14.480

Griffith, Morgan

Analyzed in order to.

2:1:15.780 --> 2:1:24.570

Griffith, Morgan

Assess the risk of this chemical. So these are some of the specifics. So honey bee colonies placed in or adjacent to fields.

2:1:25.430 --> 2:1:35.10

Griffith, Morgan

Planted with either treated corn or treated canola, there was no significant differences between the treated and the canola control sites for the colony development.

2:1:36.280 --> 2:1:38.490

Griffith, Morgan  
But they also found.

2:1:39.130 --> 2:1:40.330

Griffith, Morgan  
Umm.

2:1:42.590 --> 2:1:59.540

Griffith, Morgan  
That colonies located and treated seals heads a transient increase in amount of rude compared to the control bumblebee, so they also looked at in addition to honeybee, some studies that looked at bumblebees and wild bees. So that's the last two bullets on this slide.

2:2:0.150 --> 2:2:2.460

Griffith, Morgan  
So bumblebee colonies placed.

2:2:3.550 --> 2:2:21.70

Griffith, Morgan  
Adjacent to oilseed rape seeds that were treated with clothianidin had a significant decrease in the mean number of queen and worker bee cocoons per colony, and then for Mason bees that were adjacent to clothing and entreated seed fields.

2:2:22.740 --> 2:2:23.250

Griffith, Morgan  
Uh.

2:2:24.410 --> 2:2:25.520

Griffith, Morgan  
The number.

2:2:30.490 --> 2:2:39.220

Griffith, Morgan  
Was reduced. UM, what am I reading? Oh, see. Found wild, solitary bees per flower was reduced. And then Mason bees.

2:2:40.230 --> 2:2:45.940

Griffith, Morgan  
Had a reduced number of brewed tubes that were adjacent to treated seeds.

2:2:51.940 --> 2:3:0.850

Griffith, Morgan  
So for a thiamethoxam, again there's a multitude of data that EPA looked into for terrestrial invertebrate risk assessment.

2:3:3.580 --> 2:3:10.580

Griffith, Morgan  
They uh for thiamethoxam treated oilseed rape seeds. They observed increased honeybee mortality.

2:3:16.410 --> 2:3:28.140

Griffith, Morgan

The they tried to look at for this, the 4th bullet down. So the study examining the planting operation of thiamethoxam treated corn seeds.

2:3:30.340 --> 2:3:33.320

Griffith, Morgan

Is that a little bit kind of is just a?

2:3:33.990 --> 2:3:38.130

Griffith, Morgan

Wasn't a clear conclusion that could be made, so they observed.

2:3:38.860 --> 2:3:51.780

Griffith, Morgan

Similar mortality in the control, hives and the treatment hives the day of planting, but the transient increases in honey view mortality immediately after sewing in the treatment group.

2:3:52.930 --> 2:4:7.480

Griffith, Morgan

But except for the day of sodding the control hives had higher mortality and all the other days compared to treatment hives. So I think I I put that bullet in there mainly just to show reading these risk assessments. It's obviously.

2:4:9.720 --> 2:4:16.330

Griffith, Morgan

My personal opinion is it's it's really hard, hard to interpret and to study.

2:4:17.290 --> 2:4:19.770

Griffith, Morgan

And find a clear.

2:4:21.390 --> 2:4:35.840

Griffith, Morgan

Link uh clear cause and effect. Just because it's so. So many variables at play here and I think Andrew touched upon that as well as there's there's so many things happening that it's really hard to nail down a is causing B.

2:4:37.280 --> 2:4:42.780

Griffith, Morgan

But EPA is is looking at all of these studies and and trying to.

2:4:44.190 --> 2:4:48.800

Griffith, Morgan

Put that all into their assessment of of the risk of these chemicals.

2:4:50.180 --> 2:4:53.70

Griffith, Morgan

So for thiamethoxam they also looked at bumblebees.

2:4:54.540 --> 2:4:57.750

Griffith, Morgan

In addition to these honeybee studies and.

2:4:58.880 --> 2:4:59.820

Griffith, Morgan

On the bees.

2:5:2.850 --> 2:5:9.580

Griffith, Morgan

Had significant number of workers was reduced for hives, for colonies that were.

2:5:10.990 --> 2:5:16.330

Griffith, Morgan

Placed adjacent to biomethane or clothianidin treated corn seeds.

2:5:17.30 --> 2:5:21.310

Griffith, Morgan

And they also had worker and drone weights where?

2:5:22.700 --> 2:5:42.560

Griffith, Morgan

Over 25% reduced for those calling bumblebee colonies that were adjacent to the treated fields, but then they cite another study for bumblebees exposed to flowering rape grown from thiamethoxam treated seed, and they saw no significant effects in the treatment group compared to the control.

2:5:43.890 --> 2:5:49.0

Griffith, Morgan

So I think EPA just trying to throw out all all the available data that was there.

2:5:57.180 --> 2:6:0.670

Griffith, Morgan

Uh, so beyond terrestrial invertebrates?

2:6:1.310 --> 2:6:6.50

Griffith, Morgan

They do also look at aquatic, so this is saltwater invertebrates risk assessment.

2:6:7.300 --> 2:6:15.360

Griffith, Morgan

There aren't many uh risks of concern here for any of the three neonics that we looked at.

2:6:17.170 --> 2:6:26.80

Griffith, Morgan

But the Unix are readily soluble in water, so this was a model of potential exposure that EPA looked at.

2:6:31.620 --> 2:6:39.560

Griffith, Morgan

So again, looking further into aquatic risks. So this is for fish and aquatic phase in phibians risk assessment.

2:6:40.870 --> 2:6:45.870

Griffith, Morgan

So the middle flood risk assessment noted that there is no direct risks of not surge for fish.

2:6:47.490 --> 2:6:51.460

Griffith, Morgan

There were limited number of aquatic incidents reported for a medical opioid.

2:6:54.700 --> 2:6:58.560

Griffith, Morgan

However, they indicate a lack of direct adverse impacts on fish.

2:7:1.690 --> 2:7:3.500

Griffith, Morgan

There are some.

2:7:4.280 --> 2:7:14.370

Griffith, Morgan

Their classifieds with clothianidin and thiamethoxam, or classified as practically non-toxic to fish on an acute basis. But both chemicals did show minor effects on fish.

2:7:14.970 --> 2:7:20.200

Griffith, Morgan

Umm, when they were chronically exposed. But EPA?

2:7:21.290 --> 2:7:23.60

Griffith, Morgan

Did not overall.

2:7:24.730 --> 2:7:30.190

Griffith, Morgan

Identify a risk of concern for fish or aquatic phase and phibians.

2:7:31.730 --> 2:7:37.530

Griffith, Morgan

So this is for plants. So this is terrestrial and aquatic plant risk assessment that EPA went through.

2:7:38.800 --> 2:7:44.120

Griffith, Morgan

Basically, no toxicity or risk could concern were identified for terrestrial or aquatic plants.

2:7:45.220 --> 2:7:46.630

Griffith, Morgan

For any of the three neonics.



2:7:51.210 --> 2:7:55.460

Griffith, Morgan

So these are the the final B assessments.

2:7:55.560 --> 2:8:2.410

Griffith, Morgan

Umm, look at in the pits and the pros interim decisions they look at reported incidents.

2:8:3.410 --> 2:8:10.930

Griffith, Morgan

For the three chemicals. And so I just tried to summarize, pick out the incidents that were mentioned that.

2:8:12.200 --> 2:8:14.190

Griffith, Morgan

Were relevant for seed treatment.

2:8:16.660 --> 2:8:20.500

Griffith, Morgan

So for medical period, there were sixteen incidents reported.

2:8:21.150 --> 2:8:26.910

Griffith, Morgan

To the environmental information Incident System database from 1995 to 2017.

2:8:27.950 --> 2:8:33.470

Griffith, Morgan

For terrestrial organisms, and there was one incident associated with seed treatment.

2:8:35.30 --> 2:8:44.540

Griffith, Morgan

And that incident was a large number of birds dying allegedly due to ingested ingestion of the metoclopramide wheat seeds.

2:8:45.120 --> 2:8:45.740

Griffith, Morgan

Umm.

2:8:46.570 --> 2:8:51.340

Griffith, Morgan

But they did residue analysis. So on those birds, and it did not detect a medical period.

2:8:55.560 --> 2:8:56.340

Griffith, Morgan

So there.

2:8:58.570 --> 2:9:5.80

Griffith, Morgan

We're limited to no incident reports received by the EPA for clothing and arthia methoxy ham.

2:9:6.980 --> 2:9:13.450

Griffith, Morgan

Umm, but that doesn't necessarily mean that it didn't happen, it just that they.

2:9:14.740 --> 2:9:16.840

Griffith, Morgan

Weren't reported to them.

2:9:17.670 --> 2:9:19.350

Griffith, Morgan

Obviously so.

2:9:21.130 --> 2:9:35.650

Griffith, Morgan

They did have one incident involving birds, but they couldn't. Other chemicals. In addition to neonics, were involved, so again, they couldn't narrow it down specifically to either clothianidin or thiamethoxam.

2:9:40.350 --> 2:9:46.350

Griffith, Morgan

So these are kind of more of these, UM, just a summary from each of the.

2:9:47.270 --> 2:9:50.660

Griffith, Morgan

Neonics about those incidents that are reported.

2:9:53.960 --> 2:9:57.630

Griffith, Morgan

These are for specifically for pollinator incidents.

2:9:58.600 --> 2:9:59.390

Griffith, Morgan

And.

2:10:1.200 --> 2:10:3.660

Griffith, Morgan

You can see the numbers here that UM.

2:10:5.230 --> 2:10:18.940

Griffith, Morgan

They classify the incidents as either highly probable or possible, depending on how the data can tie it back to the actual cause of the incidents.

2:10:19.560 --> 2:10:20.210

Griffith, Morgan

So.

2:10:21.730 --> 2:10:41.300

Griffith, Morgan

There were some for five methoxy am, so there were 22 incidents reported in the US for honey bees in associated with agricultural use of thiamethoxam, and seven of those, 22 had that highly probable or possible to have been associated with corn planting in Indiana and Minnesota and Illinois.

2:10:43.400 --> 2:10:50.770

Griffith, Morgan

Those incidents included the observations of hundreds of thousands of dead bees and also bees with behavioral impacts.

2:11:1.900 --> 2:11:3.620

Griffith, Morgan

So as part of the.

2:11:4.510 --> 2:11:22.50

Griffith, Morgan

Proposed interim decisions so they after they've gone through the available data and identify risks of concern, EPA then proposes mitigation measures to address those identified risks. Right. So.

2:11:23.190 --> 2:11:23.950

Griffith, Morgan

UM.

2:11:25.550 --> 2:11:32.790

Griffith, Morgan

If you couldn't tell, they've identified the risk to birds and small mammals of eating treated seed.

2:11:33.410 --> 2:11:45.500

Griffith, Morgan

So one of the proposed mitigation measures right now in the PID is to have additional seed bag language. So these kind of three sayings.

2:11:46.800 --> 2:11:56.340

Griffith, Morgan

Are the EPS proposing to add to the seed bag language so cover or collect treated seeds spilled during loading and planting in areas?

2:11:57.250 --> 2:11:59.200

Griffith, Morgan

Umm, such as row ends?

2:12:0.70 --> 2:12:5.420

Griffith, Morgan

Dispose of all excess treated seed by burying seed away from bodies of water.

2:12:6.60 --> 2:12:11.130

Griffith, Morgan

And also do not contaminate bodies of water when disposing of planting equipment wash water.

2:12:12.480 --> 2:12:12.960

Griffith, Morgan

So.

2:12:13.620 --> 2:12:16.350

Griffith, Morgan

I included this last bullet, EPA.

2:12:17.610 --> 2:12:20.990

Griffith, Morgan

Does say when they're calling out these mitigation measures that.

2:12:22.310 --> 2:12:37.330

Griffith, Morgan

They were considered with the understanding of the high benefits associated with seed treatment uses which through their use have the potential to reduce overall neonicotinoid exposure and offer a lower overall ecological risk compared to foliar uses.

2:12:38.650 --> 2:12:41.910

Griffith, Morgan

Umm, so I think EP is calling out that balance.

2:12:49.750 --> 2:12:51.280

Griffith, Morgan

So that.

2:12:51.420 --> 2:13:7.190

Griffith, Morgan

Umm I can pull anything else up if there are questions, but that's kind of like a quick run through. I encourage you to read the summary or even just look at the through the links of the pids themselves or that final be assessment.

2:13:8.900 --> 2:13:11.140

Griffith, Morgan

But I tried to just kind of get it all in.

2:13:12.490 --> 2:13:14.690

Griffith, Morgan

But if there's any questions I can attempt.

2:13:17.250 --> 2:13:18.60

Griffith, Morgan

To answer them.

2:13:20.550 --> 2:13:21.640

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So we have a hand up.

2:13:21.690 --> 2:13:22.890

Griffith, Morgan

Yeah, go ahead, Clarice.

2:13:25.680 --> 2:13:53.770

Cutler, Clarice

Thanks so much for that, Morgan and for your work on the summary document. I only skimmed that, but obviously a lot of work there. So thanks. I'm trying to remember at the beginning of your presentation, you were saying that this is, this is the pit, the proposed interim decision and I think he said that there was gonna be an update or maybe it was a different document coming out very soon. Is that the?

2:13:54.460 --> 2:13:56.0

Cutler, Clarice

The true decision.

2:13:56.510 --> 2:14:1.740

Griffith, Morgan

It's not the true and Steve, you can correct me if I'm wrong, but so it's the.

2:14:3.60 --> 2:14:6.210

Griffith, Morgan

Basically it's it's an amended PID.

2:14:6.890 --> 2:14:7.240

Cutler, Clarice

OK.

2:14:7.240 --> 2:14:17.970

Griffith, Morgan

That is going to include some amendments to the mitigation measures and it might include some.

2:14:18.740 --> 2:14:24.470

Griffith, Morgan

Measures that are incorporated based on their.

2:14:25.810 --> 2:14:28.980

Griffith, Morgan

Risk assessment specific to endangered species.

2:14:29.290 --> 2:14:29.680

Cutler, Clarice

OK.

2:14:30.70 --> 2:14:34.920

Griffith, Morgan

So I'm gonna let me if you can bear with me. 2 seconds, I'll pull that timeline back up and.

2:14:34.640 --> 2:14:34.980

Cutler, Clarice

Great.

2:14:39.310 --> 2:14:41.920

Griffith, Morgan

And Steve, you can probably talk to this better than I can, but.

2:14:44.130 --> 2:14:51.320

Griffith, Morgan

So the two, the two, the second and third bullet here. So the biological evaluation.

2:14:52.380 --> 2:14:59.210

Griffith, Morgan

Those are specific to the Endangered Species Act, so those are specific to the UM.

2:15:0.510 --> 2:15:6.130

Griffith, Morgan

Risks associated with the neonicotinoids and exposure to listed species.

2:15:6.880 --> 2:15:23.930

Griffith, Morgan

So that's kind of in the middle of this. And so the first. So the first one, so the proposed interim decision was in January 2020. So then that 4th bullet is what you're saying. So that's what I heard last week in a meeting was that.

2:15:25.110 --> 2:15:26.130

Griffith, Morgan

They can.

2:15:26.820 --> 2:15:27.830

Griffith, Morgan

They're going to.

2:15:28.800 --> 2:15:54.40

Griffith, Morgan

Issue an amended proposed interim decision and that's what they anticipated in the next month or two and that will can have kind of any tweaks to those mitigation measures that we just went over, but also include anything from those biological evaluations. So any additional mitigation measures based on those environment, endangered species risk assessments.

2:15:57.380 --> 2:15:57.860

Cutler, Clarice

Great.

2:15:58.850 --> 2:15:59.310

Cutler, Clarice

Thanks.

2:15:59.250 --> 2:16:1.900

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Yeah. And I'll just add on there that.

2:16:4.320 --> 2:16:26.40

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So the interim decisions are issued before they've completed the full registration review or the REREGISTRATION review because a lot of times the REREGISTRATION review is dependent on data call Inns and data generation is being done by the registrants and they may take years to complete. But EPA will issue an interim decision if they've got some.

2:16:28.650 --> 2:16:39.310

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If they can make a change in the use or attic conditions that they feel will clearly reduce the risk, you know while they're waiting for the additional data and that's used what they're doing.

2:16:40.470 --> 2:16:46.140

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In this kind of situation, and I don't know what the timeline is for the reregistration, but reregistration can take.

2:16:46.840 --> 2:16:49.760

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15 years to complete so.

2:16:50.660 --> 2:16:53.550

cc198c43-b550-4aed-b186-e126b5902cea

Such as the issue, these unnerved decisions in the meantime.

2:16:56.570 --> 2:16:57.490

cc198c43-b550-4aed-b186-e126b5902cea

That makes any sense.

2:17:4.110 --> 2:17:4.300

Griffith, Morgan

Yeah.

2:17:2.40 --> 2:17:9.90

cc198c43-b550-4aed-b186-e126b5902cea

Morgan, I have a quite Stephanie at the agency and trying to pause, make sure the board has opportunity to ask questions before I ask one.

2:17:10.650 --> 2:17:39.790

cc198c43-b550-4aed-b186-e126b5902cea

It was mentioned both earlier today and then by you that there is persistence of neonicotinoids found in the soil with the planting of treated seeds and it was meant you mentioned that the subsequent crop Clover I guess is what was planted did not have presence of that pesticide within those. And I might not be saying this accurately, maybe it's I'm couching it wrong but wasn't present in the.

2:17:39.870 --> 2:17:58.510

cc198c43-b550-4aed-b186-e126b5902cea

Clover crop or it was low? Maybe, but I'm wondering is it if it's persistent in the soil, is the persistence? And I don't know, it may not have said this in these reports, is it effective and it and controlling insects when it's persistent in the soil. So while the plant isn't taking it up, is it actually doing anything?

2:17:59.680 --> 2:18:2.680

cc198c43-b550-4aed-b186-e126b5902cea

And its persistence that makes sense.

2:18:2.180 --> 2:18:10.960

Griffith, Morgan

I get your question. I get your question. I will tell you that the EPA proposed in your decision will not answer that question.

2:18:10.800 --> 2:18:12.330

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Question. OK, alright.

2:18:12.920 --> 2:18:15.50

Griffith, Morgan

But I think.

2:18:16.740 --> 2:18:23.610

Griffith, Morgan

And other people can chime in. I was just. I was reminded of Heather Darby's presentation of.

2:18:24.750 --> 2:18:29.180

Griffith, Morgan

Pest pressures were lower in fields that had been.

2:18:31.350 --> 2:18:34.770

Griffith, Morgan

Planted continuously with treated seeds.

2:18:35.950 --> 2:18:36.260

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OK.

2:18:42.730 --> 2:18:43.280

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Yeah, yeah, yeah.

2:18:45.750 --> 2:18:46.150

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Maybe.

2:18:35.800 --> 2:18:49.290

Griffith, Morgan



Right. So like the pest pressure would lower. So it maybe that if I'm I think I'm interpreting your question right, so maybe is right, so it is doing something over time by just being in the soil of having so it.

2:18:50.630 --> 2:18:54.700

Griffith, Morgan

It is controlling those pests by just being in the soil. That's what you're asking, right?

2:18:55.940 --> 2:18:56.460

Griffith, Morgan

Umm.

2:18:55.200 --> 2:19:2.480

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Yeah, alright. Yeah, I don't sure if that was something that was because it's when you mentioned like they maybe put other mitigating.

2:19:2.660 --> 2:19:11.100

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You know, recommendations and I wasn't. And you said that they don't do this in the review, but it sounds like that could be a mitigating.

2:19:11.980 --> 2:19:14.380

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Recommend so that's why I was asking.

2:19:11.770 --> 2:19:16.800

Griffith, Morgan

Right. Yeah, right. To have it be. Yeah, I get your connection now. Yeah.

2:19:18.370 --> 2:19:24.270

Griffith, Morgan

Yeah, I don't. I don't know. They didn't. They basically just called that out as a.

2:19:25.530 --> 2:19:30.820

Griffith, Morgan

My interpretation of why the they were looking at that data was to say, yeah, we.

2:19:31.670 --> 2:19:33.780

Griffith, Morgan

No, it can be there, but then it didn't.

2:19:35.40 --> 2:19:39.370

Griffith, Morgan

Basically, the risk was low for that subsequent crop. So then.

2:19:40.720 --> 2:19:43.820

Griffith, Morgan

We didn't identify that as a risk.

2:19:44.720 --> 2:19:46.210  
cc198c43-b550-4aed-b186-e126b5902cea  
To terrestrial.

2:19:45.70 --> 2:19:47.610  
Griffith, Morgan  
To pollinators or to right?

2:19:47.330 --> 2:19:53.470  
cc198c43-b550-4aed-b186-e126b5902cea  
OK, alright. Thank you. And this is Steve. That's another point is we're gonna be collecting soil data.

2:19:54.30 --> 2:19:54.330  
Griffith, Morgan  
Right.

2:19:54.260 --> 2:19:59.560  
cc198c43-b550-4aed-b186-e126b5902cea  
From Heather Darby study so we can get, we'll get some information from that too.

2:20:2.790 --> 2:20:9.70  
cc198c43-b550-4aed-b186-e126b5902cea  
Any other questions or comments from the board members or other folks on the participating in the call?

2:20:11.300 --> 2:20:13.60  
cc198c43-b550-4aed-b186-e126b5902cea  
Another hand up, nothing.

2:20:12.220 --> 2:20:13.160  
Griffith, Morgan  
Yeah, go ahead, Claire.

2:20:15.300 --> 2:20:15.870  
Cutler, Clarice  
Thanks.

2:20:17.140 --> 2:20:24.510  
Cutler, Clarice  
This might just be a comment or leading to a question, and I'm speaking in rough draft here essentially, but I guess.

2:20:25.970 --> 2:20:30.480  
Cutler, Clarice  
You know, wanted to comment how far apart the mitigation.

2:20:31.370 --> 2:20:34.0  
Cutler, Clarice  
Recommendations were and the PID.

2:20:35.370 --> 2:20:37.320

Cutler, Clarice

Uh from the VBA?

2:20:38.110 --> 2:20:39.740

Cutler, Clarice

Uh requests.

2:20:40.440 --> 2:21:0.120

Cutler, Clarice

And as someone who's you know doesn't work with this data very closely, I guess you know more. Getting you pointed out that sentence in the PID on that is kind of trying to find that balance. And I'm wondering if we're really, you know, if that really is the big difference or if there's like.

2:21:0.830 --> 2:21:3.420

Cutler, Clarice

You know, I think everybody is agreeing that these are toxic too.

2:21:4.310 --> 2:21:10.90

Cutler, Clarice

Pollinators. But maybe there's some uncertainty in the exposure.

2:21:11.340 --> 2:21:12.580

Cutler, Clarice

Or is it really just?

2:21:13.790 --> 2:21:15.510

Cutler, Clarice

Balancing the benefits of.

2:21:16.440 --> 2:21:18.560

Cutler, Clarice

Traded say it's was rambling, but.

2:21:21.670 --> 2:21:24.290

Griffith, Morgan

I think, Clarence, I think yeah, that's.

2:21:24.380 --> 2:21:32.770

Griffith, Morgan

Umm why? I included? I mean that is there like that sentence is there in the EPA risk assessment?

2:21:33.900 --> 2:21:35.610

Griffith, Morgan

As like their.

2:21:39.570 --> 2:21:40.0

Cutler, Clarice

Got it.

2:21:36.330 --> 2:21:44.680

Griffith, Morgan

Culminating sentence like these, these are the mitigation measures for risks that we've identified and then that's that sentence is stated.

2:21:45.230 --> 2:21:46.250

Cutler, Clarice

OK, got it.

2:21:55.410 --> 2:21:55.640

Griffith, Morgan

Yeah.

2:21:56.40 --> 2:21:59.490

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That's the ID. That's the that exact point.

2:22:0.210 --> 2:22:0.910

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And.

2:22:2.310 --> 2:22:3.20

cc198c43-b550-4aed-b186-e126b5902cea

I think.

2:22:4.880 --> 2:22:15.310

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From my perspective, I think we're getting into the meat of the matter right now. You know, we're going to be over the next few meetings. We're really going to be digging into this whole question and.

2:22:16.60 --> 2:22:21.510

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You know, this is what the what the legislature intended when they established this and gave us this.

2:22:22.790 --> 2:22:23.330

cc198c43-b550-4aed-b186-e126b5902cea

Figment.

2:22:24.210 --> 2:22:28.200

cc198c43-b550-4aed-b186-e126b5902cea

Just does wrestle with this question, so that's what we're here for.

2:22:29.160 --> 2:22:31.830

cc198c43-b550-4aed-b186-e126b5902cea

So first you hit it right on the head, I think.

2:22:33.920 --> 2:22:45.430

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So that's what we're going to be dealing with and that sort of Morgan that you've done with that now.  
So that kind of leads us right to the next almost a perfect segue to the work plan.

2:22:46.500 --> 2:22:49.520

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Which is? What are we going to think about next or what?

2:22:50.760 --> 2:22:51.230

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What?

2:22:52.550 --> 2:23:2.130

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You know, information is the board gonna get next to keep wrestling with this question and the big one is the economic impact, you know the economic benefit.

2:23:3.310 --> 2:23:4.430

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So see treatments.

2:23:5.560 --> 2:23:6.130

cc198c43-b550-4aed-b186-e126b5902cea

You know.

2:23:7.800 --> 2:23:11.360

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We're going to get some of that information from Heathers study, but.

2:23:12.490 --> 2:23:20.80

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The information that the board needs is you know that what what other information can we get on that particular question?

2:23:24.580 --> 2:23:26.300

Griffith, Morgan

Yeah. So we had originally.

2:23:26.480 --> 2:23:27.120

Griffith, Morgan

Ah.

2:23:28.650 --> 2:23:36.960

Griffith, Morgan

Tabled kind of talking through that topic, see so determine the economic impact for crop loss as compared to crop yield.

2:23:38.140 --> 2:23:44.160

Griffith, Morgan

When you're activities are used for like planning to talk about it in the May meeting.

2:23:44.960 --> 2:23:45.570

Griffith, Morgan

Umm.

2:23:47.30 --> 2:23:49.0

Griffith, Morgan

We things that we have.

2:23:50.700 --> 2:24:3.340

Griffith, Morgan

Mentioned and so it's kind of wheels are working well. Starting to work in the background of of having so some of the people of the studies that we have so else and Shields are Travis Group.

2:24:4.80 --> 2:24:12.450

Griffith, Morgan

I'm from Cornell. Comment, give us a talk about this studies that they've done for the economic impact, so that's.

2:24:14.440 --> 2:24:18.520

Griffith, Morgan

Kind of in the To Do List for our future meetings here.

2:24:22.120 --> 2:24:26.430

Griffith, Morgan

But if there's other if we know other people, if we have more studies.

2:24:27.560 --> 2:24:38.490

Griffith, Morgan

We would love to hear from you where a, a little light. So the other thing I know actually was called out as an action item.

2:24:40.30 --> 2:24:43.380

Griffith, Morgan

Last meeting was to.

2:24:45.320 --> 2:24:50.90

Griffith, Morgan

Reach out for the entomologists, so we need.

2:24:52.290 --> 2:24:55.150

Griffith, Morgan

To try and have UM.

2:24:55.900 --> 2:25:11.830

Griffith, Morgan

We called out that we wanted to hear more from entomologists, like from Penn State or Cornell for the topics this like the surveillance and monitoring and maybe the.

2:25:12.650 --> 2:25:32.580

Griffith, Morgan

Reduce pest Hart Harbridge from conservation tillage. We had called that out so we don't have anybody scheduled yet. But if we have specific people that you guys know of, please let me know and I can reach out and we can try and coordinate getting somebody in to talk to us.

2:25:34.0 --> 2:25:34.680

Griffith, Morgan

About that.

2:25:36.0 --> 2:25:39.320

Griffith, Morgan

The other thing that we are.

2:25:40.290 --> 2:25:45.50

Griffith, Morgan

Trying to have somebody come in is for.

2:25:46.470 --> 2:25:49.600

Griffith, Morgan

A review of what other states are doing.

2:25:51.280 --> 2:25:54.170

Griffith, Morgan

From a regulatory standpoint or?

2:25:54.970 --> 2:25:59.250

Griffith, Morgan

Just, uh, maybe best management practices standpoint, so we are.

2:26:0.390 --> 2:26:3.240

Griffith, Morgan

Working on that, but we don't have.

2:26:5.550 --> 2:26:8.660

Griffith, Morgan

A firm date for that yet either.

2:26:10.900 --> 2:26:12.590

Griffith, Morgan

What we do have lined up?

2:26:13.590 --> 2:26:17.360

Griffith, Morgan

Is for in our June meeting.

2:26:17.800 --> 2:26:19.560

Griffith, Morgan

Umm we have the.

2:26:19.650 --> 2:26:20.870

Griffith, Morgan

A.

2:26:22.450 --> 2:26:33.620

Griffith, Morgan

Pioneer seed treatments, I think we mentioned so that umm, a group of ancient tag folks went with Jonathan Chamberlain and heard a really enlightening.

2:26:35.320 --> 2:26:36.330

Griffith, Morgan

Presentation.

2:26:37.490 --> 2:26:52.710

Griffith, Morgan

Uh, about basically the logistics of treated seed and demand planning and availability. And so we asked them to give that same type of presentation to the board.

2:26:53.800 --> 2:27:0.880

Griffith, Morgan

So that it can get at that balance exactly what Clarice is just bringing up of, of, we need to hear.

2:27:2.230 --> 2:27:10.560

Griffith, Morgan

All of the risks and the toxicity and then kind of look at where what's available and how what, what are we?

2:27:11.270 --> 2:27:17.310

Griffith, Morgan

What's at stake right for farmers? So the, UM, kind of logistics of that. So they're coming in June?

2:27:18.40 --> 2:27:19.830

Griffith, Morgan

Umm so I guess for.

2:27:23.580 --> 2:27:28.470

Griffith, Morgan

If anybody else, is there anything else you guys want? Uh, yeah. Go. Go ahead, Wendy.

2:27:30.470 --> 2:27:31.290

Wendy Sue Harper (Guest)

Well, thank you.

2:27:32.100 --> 2:27:35.150

Wendy Sue Harper (Guest)

I was wondering if we're gonna have anybody talk about the.



2:27:37.170 --> 2:27:37.420

Griffith, Morgan

Oh.

2:27:38.250 --> 2:27:40.780

Griffith, Morgan

You just muted yourself in the middle of your sentence.

2:27:40.50 --> 2:27:50.500

Wendy Sue Harper (Guest)

Sorry, I was wondering if someone would on economic impact, there'd be somebody who could talk about the economic impact on the loss of pollinators for food crops.

2:27:51.70 --> 2:27:51.710

Griffith, Morgan

Umm.

2:27:52.520 --> 2:28:1.910

Wendy Sue Harper (Guest)

You know, it's like a little bit of a jump ahead. We're still trying to understand toxicity to the pollinators, but if we're losing them, that will impact food that's pollinated.

2:28:3.10 --> 2:28:3.380

Wendy Sue Harper (Guest)

So.

2:28:4.400 --> 2:28:6.210

Wendy Sue Harper (Guest)

Will that be part of the conversation?

2:28:8.90 --> 2:28:9.110

Griffith, Morgan

Do you have?

2:28:9.870 --> 2:28:13.200

Griffith, Morgan

Do you know of it? Do you have someone in mind or you just just know the topic?

2:28:13.630 --> 2:28:14.280

Wendy Sue Harper (Guest)

Umm.

2:28:17.840 --> 2:28:18.50

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It.

2:28:17.300 --> 2:28:21.640

Griffith, Morgan

You don't need to know right now, but if you do, you can share if you later.

2:28:20.680 --> 2:28:34.560

Wendy Sue Harper (Guest)

I have a colleague who has done pollinator studies all over the world and used to work for FAO Barbara Gilhen and I can see if she'd have any interest in doing it. She's got a lot on her plate right now, but I could ask her.

2:28:39.950 --> 2:28:42.590

Griffith, Morgan

I think I mean other board members, it's.

2:28:49.670 --> 2:28:50.20

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Good.

2:28:47.770 --> 2:28:50.280

Griffith, Morgan

I would love to hear your thoughts.

2:28:52.50 --> 2:28:57.300

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Sorry, the doctor Becker had to leave, but it does. UM, have an economist, an agonist.

2:29:0.590 --> 2:29:1.150

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And you know.

2:29:4.10 --> 2:29:4.260

Griffith, Morgan

Hit.

2:29:3.790 --> 2:29:4.670

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I'll I'll reach out.

2:29:6.70 --> 2:29:9.210

Griffith, Morgan

That I know of, one that Terry worked with on is.

2:29:9.780 --> 2:29:14.0

Griffith, Morgan

Umm, but I have a feeling I believe they're not there anymore.

2:29:14.710 --> 2:29:15.130

Griffith, Morgan

Umm.

2:29:14.860 --> 2:29:16.330

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OK, I'll see what I can find out.

2:29:18.990 --> 2:29:26.360

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So in terms of the folks you mentioned, Morgan from Pennsylvania in Cornell, have we reached out to them yet?

2:29:27.570 --> 2:29:29.900

Griffith, Morgan

I have not yet. So yeah, it's on.

2:29:32.100 --> 2:29:33.800

Griffith, Morgan

My list so the entomologists? Yeah.

2:29:34.840 --> 2:29:35.280

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OK.

2:29:37.570 --> 2:29:38.160

cc198c43-b550-4aed-b186-e126b5902cea

Uh.

2:29:39.400 --> 2:29:39.890

cc198c43-b550-4aed-b186-e126b5902cea

OK.

2:29:42.70 --> 2:29:42.880

cc198c43-b550-4aed-b186-e126b5902cea

Well.

2:29:45.390 --> 2:29:50.920

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What are we for the next meeting? Try to arrange that presentations from those folks.

2:29:51.670 --> 2:29:54.80

cc198c43-b550-4aed-b186-e126b5902cea

On the economic on economic impact.

2:29:56.60 --> 2:29:59.560

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Was the board members would like some other topic to be focused on.

2:30:0.260 --> 2:30:0.590

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But.

2:30:1.430 --> 2:30:1.740

cc198c43-b550-4aed-b186-e126b5902cea

So.

2:30:3.340 --> 2:30:4.10

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Do you guys think?

2:30:5.640 --> 2:30:6.580

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That sound reasonable?

2:30:12.310 --> 2:30:14.750

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See Fred Putnam has hand up too.

2:30:16.460 --> 2:30:19.710

Fred Putnam (Guest)

Yeah, just a suggestion, Morgan, at.

2:30:20.370 --> 2:30:32.680

Fred Putnam (Guest)

At Cornell's doctor, Scott Mccart would be the contact person who might have a lead on work that's been done on economic impact from the loss of pollinators on food crops.

2:30:33.850 --> 2:30:35.450

Griffith, Morgan

Can you say that name again? I'm sorry.

2:30:38.500 --> 2:30:38.960

Griffith, Morgan

Like that.

2:30:35.300 --> 2:30:39.730

Fred Putnam (Guest)

Scott Mccart MC Capital ARP. Yep.

2:30:39.810 --> 2:30:40.490

Griffith, Morgan

Yeah. OK.

2:30:42.210 --> 2:30:43.430

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Alright, thank you. Thank you for that.

2:30:45.820 --> 2:30:46.490

cc198c43-b550-4aed-b186-e126b5902cea

Well, let's.

2:30:47.220 --> 2:30:47.870

cc198c43-b550-4aed-b186-e126b5902cea

I.

2:30:48.810 --> 2:30:55.780

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It seems like we're a little fuzzy on the agenda for the next meeting and we'll work on it.

2:30:57.860 --> 2:31:8.850

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And maybe what? Well, we'll just have to get back to you, you know, pretty quick on that one. I mean, there is a possibility that we would not have a meeting on May 22nd if we don't have a good agenda.

2:31:12.230 --> 2:31:18.660

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I mean, I don't know. How's that? I mean, May 20 May is going to be pretty busy personal folks. Imagine if we don't.

2:31:20.930 --> 2:31:24.890

Griffith, Morgan

I think that's a little bit why it ended up, you know, because people were, you know the.

2:31:27.200 --> 2:31:31.240

Griffith, Morgan

Pioneer folks were pushing, you know, they were too busy. They're busy, but.

2:31:32.40 --> 2:31:34.210

cc198c43-b550-4aed-b186-e126b5902cea

Yeah, it's gonna be a busy month. Imagine.

2:31:38.780 --> 2:31:46.400

cc198c43-b550-4aed-b186-e126b5902cea

I love looking further ahead. We're talking about trying to organize a field trip to Heather's research.

2:31:47.410 --> 2:31:48.180

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In June.

2:31:51.490 --> 2:31:52.420

cc198c43-b550-4aed-b186-e126b5902cea

And then.

2:31:53.230 --> 2:31:58.720

cc198c43-b550-4aed-b186-e126b5902cea

You know, hopefully having, I don't know, Sir anymore. You're going to have anymore on.

2:31:59.370 --> 2:32:0.820

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Risk assessments or?

2:32:1.860 --> 2:32:9.140

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My plan is to have the review finished. I think around fall time. I haven't focused on in the past month.

2:32:10.260 --> 2:32:29.270

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So I don't think I'll have. I don't expect to find anything very significant than what I already found. I think it changed to formalize the review and write it up. OK, OK well, so again, looking ahead on the work plan, we're you know, August and September is when we're going to start having to.

2:32:30.20 --> 2:32:31.70

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Put things on paper.

2:32:33.770 --> 2:32:41.120

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So that's just something to be aware of. So if there, if there are things or is there any information or topics?

2:32:41.930 --> 2:32:48.560

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Or presentations that we want to get in the get in before then. Now is the time to think about them and let us know.

2:32:50.660 --> 2:32:51.410

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So we can.

2:32:52.270 --> 2:32:54.660

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You know, get them on the table and getting them into the record.

2:32:55.850 --> 2:32:56.670

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Before we.

2:32:57.360 --> 2:32:57.940

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You know for.

2:32:59.190 --> 2:33:1.160

cc198c43-b550-4aed-b186-e126b5902cea

Coming up with some proposals so.

2:33:4.130 --> 2:33:8.380

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Alright. Any any other board members have any comments on all of those lines?

2:33:9.490 --> 2:33:38.340

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I personally very interested in Ontario, that kind of information we had the gentleman last year about this time Paul talk. And I think when he wasn't necessarily getting into the weeds on some of the science and some of the things they've seen. But you know it, I feel like they've sort of been down this route for

not too many years. You know, they're just ahead of us in this game. And to me, I think there be interesting as to what Ontario has done. Have they found or?

2:33:39.90 --> 2:33:41.780

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So what was the name Paul?

2:33:41.490 --> 2:33:46.870

Griffith, Morgan

It's Paul hoekstra. Yeah, so Paul hoekstra. And he was with the grain farmers of Ontario.

2:33:47.450 --> 2:34:11.810

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But but I would think there'd be somebody. And, you know, I've been trying to find someone in my contacts to see if they could put us with someone from, I don't know what Canadian agency or or something along that line that could provide some some information on what they've done, what they've seen from it, what did work, what didn't work. You know, that kind of information I think is got some value.

2:34:13.110 --> 2:34:13.580

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You know.

2:34:15.100 --> 2:34:21.710

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Yeah. Ohh I'd like I got it more. I don't know if I jumped the gun or not, but we didn't show that video. You wanted to show.

2:34:22.170 --> 2:34:26.720

Griffith, Morgan

Yeah, so so we can, yeah, it's just thinking of that it so.

2:34:27.450 --> 2:34:40.540

Griffith, Morgan

That's on another thing. So it wasn't action item for us to look into a little bit of the art shaft SMA. Jonathan, you had mentioned him as be looking into and doing research on.

2:34:41.260 --> 2:34:47.110

Griffith, Morgan

Uh dust from planters and mitigation of of that dust. So.

2:34:47.560 --> 2:34:51.190

Griffith, Morgan

Umm, we have a video of a.

2:34:52.420 --> 2:35:0.600

Griffith, Morgan

Interview with him as almost like a teaser, and I know that Jill's been working on like a lit reviews, like kind of what we did before.

2:35:1.940 --> 2:35:8.850

Griffith, Morgan

Of a like an annotated bibliography of research that we're finding about.

2:35:10.310 --> 2:35:14.520

Griffith, Morgan

Planter modifications to reduce the most reduced dust.

2:35:14.910 --> 2:35:22.260

Griffith, Morgan

Umm. Of treated seed planting? So we have a kind of a I think it's a 6 minute video of an interview with him.

2:35:23.880 --> 2:35:40.550

Griffith, Morgan

To also I address that topic, so I don't know if we need more but or if you guys wanna see that now where I can just we can post a link and you can watch it on your own time. It's kind of it's up to you guys whatever you want to.

2:35:45.50 --> 2:35:45.300

Griffith, Morgan

Yep.

2:35:41.830 --> 2:35:50.920

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What? What are we? Post it and let people watch it because you know, if they have any technical difficulties, I don't wanna waste a lot of people's time so.

2:35:51.860 --> 2:35:52.150

Griffith, Morgan

Yeah.

2:35:51.990 --> 2:35:54.880

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But yeah, it's an interesting, but that is one thing. So how about this?

2:35:59.70 --> 2:36:0.200

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What are we?

2:36:3.60 --> 2:36:12.810

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We'll work on a on agenda for the May 22nd if we can pull a good one together, we'll let everybody know. If not, we'll we'll. We'll defer to June.

2:36:15.650 --> 2:36:18.220

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But sounds like we have some work to do to get that together.



2:36:20.180 --> 2:36:23.230

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Is there anything else we need to talk about, Morgan before we move on to?

2:36:26.490 --> 2:36:26.980

Griffith, Morgan

Umm.

2:36:27.580 --> 2:36:29.610

Griffith, Morgan

Umm, no.

2:36:30.340 --> 2:36:37.800

Griffith, Morgan

I think we are good. Umm, yeah, we'll just work on getting people in and I'll work with Heather about a field trip.

2:36:38.280 --> 2:36:46.780

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Yeah, and and you know, board members, if you have anything that you feel like the board needs to consider, you know, let Morgan know. So we can line it up.

2:36:47.450 --> 2:36:47.950

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OK.

2:36:49.230 --> 2:36:52.930

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And as always, you know, stay in touch with Morgan on on any questions or anything.

2:36:54.750 --> 2:37:0.50

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So the next item on the agenda would be the review of any relevant 2023 legislative bills.

2:37:0.760 --> 2:37:4.640

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I you know, that's one of the things that the board is tasked with doing.

2:37:5.360 --> 2:37:11.440

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Uh to to cut to make recommendations to the secretary, but I'm not aware of any.

2:37:12.80 --> 2:37:15.440

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That are out there right now and let's somebody else that is.

2:37:16.130 --> 2:37:18.150

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So we can move on to public comments.

2:37:18.330 --> 2:37:22.320

Griffith, Morgan

Can you hold that, Steve? One minute. Wendy. Sue, do you have your hand up to say?

2:37:23.960 --> 2:37:24.600

Griffith, Morgan

Say something.

2:37:25.350 --> 2:37:26.300

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What's that old hand?

2:37:26.850 --> 2:37:28.390

Griffith, Morgan

The original thing I didn't know.

2:37:31.610 --> 2:37:33.200

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OK, alright.

2:37:29.410 --> 2:37:34.980

Griffith, Morgan

I think, she said. It's an old hand. Ah, got it. OK, that's fine. Sorry I didn't interrupt.

2:37:35.470 --> 2:37:41.850

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OK, the public comment, anybody in the public would like to attend, not non board members like to think about?

2:37:47.300 --> 2:37:47.910

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OK.

2:37:49.430 --> 2:37:50.300

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Well, with that.

2:37:53.300 --> 2:37:54.670

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I guess thank you very much.

2:37:55.640 --> 2:37:57.390

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For another productive meeting.

2:37:58.530 --> 2:38:2.440

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And we'll you'll be hearing from us soon about the May 22nd meeting.

2:38:5.750 --> 2:38:6.440

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Alright, thanks.

2:38:6.770 --> 2:38:7.780

Griffith, Morgan

Yep. Thank you.

2:38:8.530 --> 2:38:9.60

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Thanks.

2:38:11.70 --> 2:38:11.590

Amanda St.Pierre

Thank you.

2:38:19.160 --> 2:38:29.230

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It's her first time at this location. Yeah. Where's your office anyway? It's on Cherry Street, like, right across here in the LG.