

Transcripts for: Scouting and Sampling for Little Cherry Disease - Part 2

WSU-OSU Webinar Session 3

208

00:38:09.180 --> 00:38:17.400

Ashley Thompson: It. Thank you so much. I'm going to turn it over, over to Tobin Northfield to talk about some of the exciting work he's been doing with identifying we've hoppers

209

00:38:23.310 --> 00:38:23.880

Tobin Northfield: All right.

210

00:38:25.770 --> 00:38:26.310

Tobin Northfield: So,

211

00:38:29.460 --> 00:38:37.980

Tobin Northfield: Alright, so I'll talk about X disease in sampling for the LEAP opposite that affected them a little bit about introducing some of these factors.

212

00:38:38.520 --> 00:38:47.490

Tobin Northfield: So the vector population and Amex. In other words, when you can expect to find these we poppers, so the sampling methods, what's the best way of collecting them or

213

00:38:48.270 --> 00:38:55.590

Tobin Northfield: observing them where to put those traps because it turns out trapping is the best and most effective, efficient method.

214

00:38:56.280 --> 00:39:02.370

Tobin Northfield: For monitoring them some factor identification, because it doesn't help you to trap them. If you don't know what you're looking for.

215

00:39:02.850 --> 00:39:10.020

Tobin Northfield: And I'll spend a little bit extra time on that section because that can be tricky in a lot of insects and I want to talk really briefly about

216

00:39:10.560 --> 00:39:20.790

Tobin Northfield: The importance of suckers that we have realized the last week or two, so stay tuned for that. And thank you all for hanging out and I appreciate you listening.

217

00:39:22.230 --> 00:39:28.290

Tobin Northfield: Okay. So one of the key questions that I get often is, what makes a leaf hopper factor.

218

00:39:28.920 --> 00:39:35.040

Tobin Northfield: Why aren't all leave office vectors and what has to happen as a Phytoplasma has to get into the guts of the leaf hopper.

219

00:39:35.400 --> 00:39:41.220

Tobin Northfield: Pass through the quote unquote blood or the human lymph the lymph offer that make it all the way to the salivary glands.

220

00:39:41.580 --> 00:39:48.000

Tobin Northfield: And I can take a federal takes a few weeks ago from the point where it requires it in the gut to all because all the way to celebrate my

221

00:39:48.420 --> 00:40:02.040

Tobin Northfield: Plans and there are several leaf opposite can transmit and often they're fairly closely related, but I Key Stage is getting from the chemo AMP from the gut into the human length and surviving in a salary.

222

00:40:04.140 --> 00:40:14.580

Tobin Northfield: So in California. And when they had an outbreak in the 80s. They had these two main options for real floria on the left and call it on this Montana's on the right.

223

00:40:15.240 --> 00:40:20.250

Tobin Northfield: The one on the left. A common name is Flory ice sleepover. And the one on the right is a mountain we conquer.

224

00:40:20.970 --> 00:40:28.230

Tobin Northfield: And the Pacific Northwest, we have those, but they're not that abundant and what I should also say in California. What they found was the Flory I

225

00:40:28.980 --> 00:40:38.790

Tobin Northfield: Was often in prefers to feed on the trees. Most cherry trees and they really only found that when you had kind of add a control populations that we've

226

00:40:39.570 --> 00:40:47.310

Tobin Northfield: Abandoned orchards and the orchards. We're not being maintained and more commonly, they found that Montana. So, what they found was that more of

227

00:40:48.990 --> 00:40:53.880

Tobin Northfield: An earth special specialists that would feed on the ground cover and then hop up in the trees from time to time.

228

00:40:54.720 --> 00:41:05.010

Tobin Northfield: The Pacific Northwest. We have to, well, most common species are colored and productive on the left and German artists on the right. And then we have a range of four species that are less common.

229

00:41:07.770 --> 00:41:16.530

Tobin Northfield: So this is these are some patterns of abundance that were cooked data collected by Holly Ferguson and then this particular graph was sent to me by Carol Bishop

230

00:41:17.220 --> 00:41:28.650

Tobin Northfield: You can find and this is so I should say that these are pretty similar to buy now, they found in California. And then also relatively similar to the dolls in the 1950s.

231

00:41:29.010 --> 00:41:35.760

Tobin Northfield: You have an outbreak first population peak in May. And so right now we're starting to collect them we

232

00:41:36.690 --> 00:41:53.370

Tobin Northfield: Have just started finding them and traps and in our students last week. And so they're starting to build up and populations right now then often you'll find a peak in August, and then you'll find a another peak in October. And so this

233

00:41:54.750 --> 00:42:01.110

Tobin Northfield: Increase in abundance that all post harvest is where we think is really important for leasing a lot of orchards as post harvest

234

00:42:03.090 --> 00:42:14.250

Tobin Northfield: So the other thing to keep in mind is that leaf operators are really only important infecting the ex Phytoplasma and they have to pick up that next final Plaza, and because they don't pass it on from mother to offspring.

235

00:42:14.700 --> 00:42:23.790

Tobin Northfield: So every year they overwinter is eggs. I'm still in the emerging things those eggs are all disease free so they have to pick it up somewhere transmitted

236

00:42:24.330 --> 00:42:36.030

Tobin Northfield: And so in California in the 1970s here in 1978 what they did was took for trees and belief operas on them and then softly popper could pick up the cytoplasm and pass it on to another planet.

237

00:42:36.600 --> 00:42:41.010

Tobin Northfield: And in April, they found it on those four trees. They try it on. They weren't able to pick it up.

238

00:42:41.460 --> 00:42:49.350

Tobin Northfield: And may they were starting to be able to end really in August and sep tember was when they were really likely to be picking on that final file.

239

00:42:50.070 --> 00:43:00.660

Tobin Northfield: So now we can cut two decades later, and Scott harpist group and and Prosser and they found that they did a totally different study where now they're looking at the

240

00:43:01.110 --> 00:43:07.110

Tobin Northfield: The ecstasy is fighting plasma titers in the plan over time. And you can see again it's increasing over time.

241

00:43:07.440 --> 00:43:22.200

Tobin Northfield: And so, this corresponds to later on in the season. The Fighter plan and start building up and those plan tissues. And that's when they leave hops are most likely to pick it up. So this is really why we think the biggest and most concerning time on point is post harvest

242

00:43:24.330 --> 00:43:36.060

Tobin Northfield: So there are a few ways of collecting them. And the main thing about collecting them is, if you want to keep them alive or if you don't care of most of you will not care to keep them alive. In fact, probably prefer that the not alive.

243

00:43:36.480 --> 00:43:47.370

Tobin Northfield: On which is fine. It's great. And if you want to keep them alive and then you can use sweet betting. This is Adrian Marshall postdoc in my lap. Just finished his PhD with Betsy appears

244

00:43:47.880 --> 00:43:56.160

Tobin Northfield: He's sweeping up some sage brush, a couple weeks ago. He didn't find any of the important factors and that they'll say brush sweeps.

245

00:43:56.910 --> 00:44:08.940

Tobin Northfield: And then the sticky cards are really the most effective and in the 80s, they tried all different types of approaches and really ended up with just your run of the mill yellow sticky card, all it has to be the yellow sticky.

246

00:44:09.270 --> 00:44:17.880

Tobin Northfield: There's a lot of action from a lot of different companies. Some that fold it on themselves. Somebody one side is on the double sided as long as the yellow and sticky. We shouldn't work.

247

00:44:19.320 --> 00:44:28.920

Tobin Northfield: And and and have the I should also say the word trialing so we're going to be trying some traps that preserve our DNA. But that would really be more for research purposes of this point.

248

00:44:30.720 --> 00:44:38.760

Tobin Northfield: So then the question is, where do you put these traps. So, generally you can keep them about a little five feet high. As a general rule,

249

00:44:39.210 --> 00:44:47.370

Tobin Northfield: And this depends on where they're feeding. Of course, there was a study in California in the 1990s 80s late 80s, early 90s.

250

00:44:47.730 --> 00:44:54.030

Tobin Northfield: And there they found that when it an Orisha was completely unmanaged and out of control. Then, and only then that they find

251

00:44:54.480 --> 00:45:02.670

Tobin Northfield: LEON WAS high up in the canopy. And that was because they're feeding on those trees high up in the canopy and then there's an early in the season, out of season that we

252

00:45:03.330 --> 00:45:13.980

Tobin Northfield: Choose the majority of the time, and I'll show some data here in a second. It's lower in the canopy because they're probably using these ground cover as avenues into into the future.

253

00:45:14.730 --> 00:45:26.010

Tobin Northfield: And so just this is just give you an idea of a size. This is a five by seven inch card. And this is one of the leaf offers here. I'll go over the identification here soon.

254

00:45:26.340 --> 00:45:40.680

Tobin Northfield: But this yellow band. You can see on this leaf hopper is characteristic of both coldness reductive and call it on us Montana's doesn't matter which one of those for all intents and purposes, it's not good. And you don't want to nurture.

255

00:45:41.790 --> 00:45:43.560

Tobin Northfield: Because those both of those are factors.

256

00:45:44.880 --> 00:45:57.120

Tobin Northfield: So this is the stage of the 1950s, is just to show a day to give you an idea of what I'm talking about the 1950s and adults they put up these big posts and yellow sticky cards, all the way up the post from five to 15 feet.

257

00:45:57.600 --> 00:46:07.350

Tobin Northfield: And dropped off dramatically from five to 15 feet. This is on a log scale. And so you can think of this as a really downward grabbing up really rapidly.

258

00:46:07.980 --> 00:46:15.750

Tobin Northfield: The other thing that they showed that I won't show here is that catch was much lower when it was windy. So they plotted and daily catch but they had

259

00:46:16.080 --> 00:46:21.420

Tobin Northfield: Against the wind speed and on days when it was really windy they catch this drop down if it was

260

00:46:22.050 --> 00:46:28.710

Tobin Northfield: Not Wendy then leave it similar to fly. And so if you all of a sudden have this surge and leave hoppers and you're watching it closely.

261

00:46:29.430 --> 00:46:37.710

Tobin Northfield: Keep in mind that if it's particularly windy that day, you won't see as many live offers move. And then once the wind picks dies down and last week.

262

00:46:38.310 --> 00:46:46.080

Tobin Northfield: So it's worth keeping that in mind. And this is all done in Culloden us Gemma notice, which is one of the two more abundant vectors, we've got here.

263

00:46:47.820 --> 00:46:54.390

Tobin Northfield: So that in California in the 1970s, there was a guy named sandy Priscilla did a lot of really great research.

264

00:46:55.380 --> 00:47:03.720

Tobin Northfield: He looked at below 50 below five feet high. So this is the feed and height and inches. These are some other different leaf offers that

265

00:47:04.110 --> 00:47:25.890

Tobin Northfield: aren't a problem here in and access these files plasma, but this polka dotted one is the coldness Montana's that's pictured here on the left. And he found that he had a highest capture in 20 inches. And then because someone 10 inches and then up to 60 inches.

266

00:47:27.150 --> 00:47:33.360

Tobin Northfield: One thing to keep in mind is in California and they didn't have they had there was often more bare ground.

267

00:47:34.500 --> 00:47:38.850

Tobin Northfield: orchards and so I'm not entirely sure what how how high the that

268

00:47:40.050 --> 00:47:49.140

Tobin Northfield: That ground cover is. But if you have the ground cover is above the traps and then leave assignments, be able to see that. So you want to get those traps, a little bit above that at least a little bit above the ground cover.

269

00:47:51.630 --> 00:47:59.040

Tobin Northfield: These are to the pictures of the prime suspects of FX disease by a plasma in on Washington and Oregon.

270

00:48:00.030 --> 00:48:11.550

Tobin Northfield: Called German artist was studying quite a bit by someone in Mervyn Nielsen and the 19 1950s, as well as Homer wolf who worked on it at w in Wenatchee

271

00:48:12.120 --> 00:48:21.240

Tobin Northfield: And then this is called on us. We're ductus you're on the right. And this is a penny, just for scale about roughly about two and a half millimeters long

272

00:48:22.350 --> 00:48:27.150

Tobin Northfield: So then the question is, given that these aren't relatively large insects. How do we identify them.

273

00:48:28.350 --> 00:48:40.800

Tobin Northfield: So with regardless and and Montana's it's relatively straightforward because they have this big yellow banner on the growth or x, we can think about is sort of behind on the neck.

274

00:48:41.730 --> 00:48:54.570

Tobin Northfield: Call it rejects us does not have a common name called Ennis Montana says the mountain, the Father, and it's not as common in Pacific Northwest. This was the big problem in California. One thing I do want to point out this leaf hopper here.

275

00:48:56.100 --> 00:49:08.580

Tobin Northfield: As a if this leaf awkward is about 104 and the popper years it was collected in October, and then we just kept that alive for quite a while. And so what happens

276

00:49:08.970 --> 00:49:18.330

Tobin Northfield: Is over time is that the coloration starts deteriorating. So I'm showing this partly to show that there is variation between this leaf opera, which is caught

277

00:49:18.690 --> 00:49:30.510

Tobin Northfield: Probably the first week of its existence and stuck on a yellow sticky card to this leaf offer, which is a bit older and you can see the colors start to pale, but you can still see the yellow band behind that.

278

00:49:31.110 --> 00:49:45.030

Tobin Northfield: So that yellow band is indicative of reluctance or Montana's if you're interested as the extra yellow pretty good size patch Montana's reductive has a smaller patch, if any, but Main thing is big yellow stripe, you know,

279

00:49:46.380 --> 00:49:49.290

Tobin Northfield: So Gemma notice is harder to identify

280

00:49:49.950 --> 00:49:57.840

Tobin Northfield: Initially, and that's because it's sort of this green color. There's no yellow stripe and so it might be viewed as a little bit harder. It also varies

281

00:49:58.080 --> 00:50:14.670

Tobin Northfield: In color. So this is a kind of a greener color. This is more of a yellowish black ish color. This was kind of couple of weeks ago here on the right. And so when insects, try to develop keys for identifying these insects. In general, the

282

00:50:17.100 --> 00:50:20.340

Tobin Northfield: Methods of identifying it can be sort of

283

00:50:21.420 --> 00:50:28.170

Tobin Northfield: Well, it can be something like the post ocular CD is longer than the rest of the hairs on the inside. And that can be kind of a tricky thing to do.

284

00:50:28.590 --> 00:50:34.530

Tobin Northfield: And so we've tried to come up with a creative solution, which I think is effective and this is all motivated by

285

00:50:35.370 --> 00:50:42.510

Tobin Northfield: I grew up a living outside of Mount Rainier. And you see the deer head on the on the mountain. This is actually identified by

286

00:50:43.020 --> 00:50:50.820

Tobin Northfield: Adrian on Marshall, who grew up here, when he and one of the things you'll see here is that there's a face on the back of this this leaf offered

287

00:50:51.270 --> 00:50:56.940

Tobin Northfield: You may not see it at first, but once you see it, it's on all these gentlemen honest and I think that it's a key to identifying

288

00:50:57.300 --> 00:51:05.370

Tobin Northfield: So show a few of these pictures, just to give you an idea and get it ingrained in your mind. So these are the two eyes and then we've got a mustache right here.

289

00:51:05.910 --> 00:51:14.130

Tobin Northfield: There's the mustache. There's the eyes on the right on the back of the insect. And so if you see that you can start looking at it, you can start to see some we

290

00:51:15.390 --> 00:51:20.880

Tobin Northfield: Look at some other pictures of some other mustaches. And I feel free to take any of these

291

00:51:21.900 --> 00:51:22.680

Tobin Northfield: Entertainment.

292

00:51:24.570 --> 00:51:36.300

Tobin Northfield: Personas as motivation to identify that here again is the face. You can see it again here on Dennis Hopper from free rider sunglasses. In this scenario, big mustache.

293

00:51:36.810 --> 00:51:44.100

Tobin Northfield: Big mustache to eyes all senior from American chopper and Danny Trejo, of course you some reason.

294

00:51:44.850 --> 00:51:58.710

Tobin Northfield: The other thing that we've noticed is that there's this pirate hat here that occurs might be different colors, but it's always there. So you can also do it if you have kids, I'm sure you're familiar with the LEGO Movie and mental beard. That's another

295

00:52:00.270 --> 00:52:12.990

Tobin Northfield: So obviously, these are entirely scientific but this this faces. This pattern is on every one of these leaf hoppers that we've seen. And we've seen pictures of them we've collected and so it seems to be as good a diagnostic tools.

296

00:52:14.880 --> 00:52:17.790

Tobin Northfield: Alright, so one of the things I also want to mention is

297

00:52:18.570 --> 00:52:29.850

Tobin Northfield: It LAST WEEK WHEN ADRIAN my post I was collecting because he was collecting a lot of the popper is sleeping on the ground cover alone weeds in the ground cover as well as the soccer treat

298

00:52:30.600 --> 00:52:39.120

Tobin Northfield: These suckers might be incredibly important for disease transmission for a lot of reasons. One is there faster on Nintendo, which makes them really good sources.

299

00:52:39.510 --> 00:52:44.370

Tobin Northfield: Of nutrition for leaf obviously farmers like to grow fast growing tender parts of trees.

300

00:52:44.790 --> 00:52:51.000

Tobin Northfield: The other thing is that as you're moving along the ground cover those are right there near the ground cover. And so the height of those might be really

301

00:52:51.480 --> 00:53:00.150

Tobin Northfield: Accessible will be poppers and the other thing is they're connected to the roots and it's not a long distance of the roots. So just last week, Adrian made this observation.

302

00:53:00.960 --> 00:53:07.470

Tobin Northfield: And let's go for. Now who's here also. And then he immediately went out and collected some suckers.

303

00:53:07.860 --> 00:53:12.600

Tobin Northfield: In ran diagnostics on it and this week we found it. They are actually if you found that they are actually

304

00:53:12.930 --> 00:53:25.680

Tobin Northfield: Listens are infected with cytoplasm. So this is another thing that we've just found out. We haven't obviously done the research to identify how common this is, but I want to read mention this as soon as we can.

305

00:53:26.790 --> 00:53:33.780

Tobin Northfield: That this could be an issue of these three subjects. And so, removing those three separate could be really important for disease transmission

306

00:53:34.800 --> 00:53:44.100

Tobin Northfield: Or reducing disease transmission. So just to summarize some of the take home messages for sampling. You can use your sticky cards, the periods that we really want to focus on

307

00:53:44.400 --> 00:53:50.790

Tobin Northfield: They will come starting to come out now. They're going to be especially common and August and then through October.

308

00:53:51.540 --> 00:53:55.440

Tobin Northfield: You can just keep probably keep them generally less than five feet high, you want to make them.

309

00:53:56.130 --> 00:54:10.560

Tobin Northfield: Available so that the leaf offers can see them obviously it's a yellow stimulus. If you're wondering why yellow. A lot of insects are traveling yellow, yellow can be viewed as a super green that that's just how they see a decision is very, very green and fast growing

310

00:54:11.610 --> 00:54:14.580

Tobin Northfield: And then you can. The other thing to keep in mind is

311

00:54:15.330 --> 00:54:26.640

Tobin Northfield: You can use these if you think that belief opposite in a certain part of your origin, you can put those in put delete these sticky cards in that part of the origin compared to somewhere else. New Order and so you can use this as a to develop

312

00:54:27.270 --> 00:54:35.340

Tobin Northfield: Test some of your intuitions about what you have going on in your own orchard. So don't just view this as an idea of track them over time, but you can also use

313

00:54:36.540 --> 00:54:48.720

Tobin Northfield: And so the other thing I talked about was identification for this color damage for doctors for you really looking for this yellow stripe behind the head and then for Gemma Nautilus is this

314

00:54:50.340 --> 00:54:52.920

Tobin Northfield: Says face right here on the back.

315

00:54:55.740 --> 00:55:09.840

Tobin Northfield: All right. Alright, so, and then the other thing I want to mention is these tree. Soccer is we just made these observations within the last couple weeks, but we think that these free suckers might be important. And so it's something to watch out for. As we progress. And so with that,

316

00:55:11.250 --> 00:55:11.700

Tobin Northfield: Some

317

00:55:14.730 --> 00:55:15.240

Tobin Northfield: So,

318

00:55:19.320 --> 00:55:20.700

Any questions. Thanks a lot.

319

00:55:25.890 --> 00:55:28.560

Ashley Thompson: Hey, we've got two questions for you.

320

00:55:29.910 --> 00:55:38.400

Ashley Thompson: The first one is be lot leaf hoppers are early and abundant in the basement or should I be concerned about adjoining potato fields.

321

00:55:39.900 --> 00:55:40.770

Tobin Northfield: You say between

322

00:55:41.550 --> 00:55:42.900

Ashley Thompson: Between poppers, yeah.

323

00:55:43.140 --> 00:55:46.740

Tobin Northfield: Yeah, that's a good question. So one thing that is

324

00:55:48.090 --> 00:55:52.350

Tobin Northfield: Being the default barriers we can be pretty confident BB poppers and not vectors of

325

00:55:54.030 --> 00:56:02.400

Tobin Northfield: Of ecstasy spider plasma and they do transmit purple talk, which is the beauty of hopper transmitted agent.

326

00:56:04.140 --> 00:56:21.060

Tobin Northfield: There was a when when these there was two prominent labs and UC Berkeley Jensen, and later Purcell they work right next to the group that we're working on BB poppers and so they were working back and forth and they never found any interaction between people offering

327

00:56:22.350 --> 00:56:29.880

Tobin Northfield: That does is probably incredibly rare and says, not at this point in constant communication. People are working in potatoes, but

328

00:56:31.050 --> 00:56:33.690

Tobin Northfield: At this point we don't have any reason to believe that they're important.

329

00:56:37.380 --> 00:56:38.970

Ashley Thompson: So Toby, please.

330

00:56:39.060 --> 00:56:44.880

Ashley Thompson: This Dickie cards on the border of the orchard and how many sticky card should you use per acre.

331

00:56:46.170 --> 00:56:47.730

Tobin Northfield: So the question about

332

00:56:48.810 --> 00:57:05.220

Tobin Northfield: Can you can put yellow sticky cards on the border. The issue with that is if you catch high abundances in though in the border. It's, um, it doesn't necessarily mean that that they're coming from outside the orchard. So if you have, if you imagine that

333

00:57:06.450 --> 00:57:15.150

Tobin Northfield: That you have an orchard with a whole bunch of beautiful trees in the forest moving along through that origin and guess the agent gets into a

334

00:57:16.890 --> 00:57:26.100

Tobin Northfield: Parking lot is right next to it. You've got this massive yellow trap and that there's nothing else around it. That's the only thing that that we've always going to be attracted to. And so it might hit that

335

00:57:26.610 --> 00:57:44.190

Tobin Northfield: That trap and so you can still get really high abundances on a track at the edge of the orchard, just because there's nothing else around it. There's no, there's no competing trees are not competing plants. And so you can get us an edge effect like that simply because there's no

336

00:57:45.240 --> 00:57:51.240

Tobin Northfield: That because because it doesn't want anything else around that trial. And this is an edge effects for for a lot of reasons.

337

00:57:51.510 --> 00:57:59.280

Tobin Northfield: A lot of people are familiar with edge effects with calling mas. It doesn't mean a condom monster coming from outside the order to just means that they start to accumulate on the edges.

338

00:57:59.670 --> 00:58:04.830

Tobin Northfield: And so you can absolutely put jealousy cards of the edge of orchards.

339

00:58:05.670 --> 00:58:15.660

Tobin Northfield: But if you really think that the coming from someone you would really have to put yourselves to cards. Where do you think they're coming from, and not just on the edge of the orchard. So that was the first person was the second question.

340

00:58:18.480 --> 00:58:21.270

Ashley Thompson: Here these yellow sticky card should you place per acre.

341

00:58:21.750 --> 00:58:26.010

Tobin Northfield: That's a good question. So yeah, how many should you put up per acre.

342

00:58:27.660 --> 00:58:35.340

Tobin Northfield: At this point, we don't really know how the big question there is, how tightly aggregated are these leaf offers

343

00:58:35.910 --> 00:58:43.110

Tobin Northfield: And we don't know how tightly area, they are what I would focus on instead is trying to

344

00:58:43.770 --> 00:58:52.230

Tobin Northfield: Most of you know the origin of your origin better than anyone and use that intuition and understanding about the origin to guide your track placement. So if you have

345

00:58:52.770 --> 00:59:03.180

Tobin Northfield: Some areas that have been hit really hard in the past by X disease, then you might want to put some traps in that area and then put it in a reference spot somewhere else.

346

00:59:03.660 --> 00:59:10.350

Tobin Northfield: And so you can, you can, what I would encourage people to do is let their intuition guide them in putting out the

347

00:59:10.920 --> 00:59:16.740

Tobin Northfield: Number traps. If I tell you a number, it's gonna be more than you're going to want to put out but the underlying

348

00:59:17.340 --> 00:59:27.210

Tobin Northfield: reasoning is that you want to try to figure out, get an idea for where they are and and and try to sample as much of the variability. As you can

349

00:59:27.660 --> 00:59:36.570

Tobin Northfield: The other thing to keep in mind is, I'm pretty sure that these leaf offers are moving down the rows, rather than between the rows. And so you may want to

350

00:59:37.740 --> 00:59:52.980

Tobin Northfield: It if you have a couple of traps that are relatively close to each other within the row that will probably give you different information that you have different roads because you'll get sort of two avenues of you have come across the two words. So realize that that's

351

00:59:54.390 --> 01:00:01.620

Tobin Northfield: Not as as helpful as a as an answer. It's just giving you a number, but I would rely on your intuition guide you and

352

01:00:04.800 --> 01:00:10.620

Ashley Thompson: So Tobin. Are there any plans to include these two leaf hoppers in the decision to aid system.

353

01:00:12.090 --> 01:00:14.580

Tobin Northfield: So that ultimately

354

01:00:15.840 --> 01:00:24.570

Tobin Northfield: That would be that would be a great thing to do right now where we're focused on is developing a better understanding the phonology. These we Fockers

355

01:00:26.370 --> 01:00:34.170

Tobin Northfield: It wouldn't make sense. We don't want to put them in addition, a decision aid system without enough data and takes a lot of data to get those phonology models.

356

01:00:34.620 --> 01:00:45.060

Tobin Northfield: And so right now what we're focused on is building up as much phonology data as we can so that when the time comes to get enough data we can put them in. But at this point, it would be

357

01:00:46.170 --> 01:00:48.510

Tobin Northfield: If we don't have enough data decision.

358

01:00:52.680 --> 01:01:01.380

Ashley Thompson: Thank you so much, Tobin we have two other questions that may be Scott and Tiana could help answer the first one is our other

368

01:02:44.820 --> 01:02:49.410

Ashley Thompson: All right. And here's one for Tobin. Are there any predators of these two we've hoppers

369

01:02:51.780 --> 01:02:54.210

Tobin Northfield: We don't know what they are for sure yet.

370

01:02:55.590 --> 01:03:01.410

Tobin Northfield: But they're in the 50s, identify the parasitoid believe poppers are there was. It was identified

371

01:03:01.830 --> 01:03:19.230

Tobin Northfield: A couple things where they found it, but we don't know how fun it is my guess is the spiders are really good predators of these and then some of the generalist writers, but probably spiders. The biggest, biggest predators and whether when spinners or non loves bananas feeding in the grasses.

372

01:03:23.850 --> 01:03:27.270

Ashley Thompson: And it looks like we've answered all of the questions that have come in.

400

01:08:14.280 --> 01:08:20.100

Tobin Northfield: And so leave office generally have a really wide host range, though they don't, they're not like

401

01:08:21.270 --> 01:08:25.710

Tobin Northfield: Scrub specialist that we all think about that just makes a beeline for the crop and feeds on it.

402

01:08:26.070 --> 01:08:31.380

Tobin Northfield: My favorite analogy is that they wander around like toddlers at a buffet line just shoving food in their mouth, till they

403

01:08:31.740 --> 01:08:45.720

Tobin Northfield: Find someone they're at right and they just stay that it so you don't see toddlers at the broccoli end of the fail and they're all donuts or whatever. And so, so that's one of the things, it's hard to identify what's the host plant.

404

01:08:47.010 --> 01:08:55.560

Tobin Northfield: leaf hopper because they will walk, they'll go hop around feeding on so many other different plants right now we're collecting where where we can grow them on.

405

01:08:57.270 --> 01:09:02.520

Tobin Northfield: We have in our colonies, things like clover and dandelion. They like

406

01:09:03.510 --> 01:09:14.910

Tobin Northfield: They will feed on one of the main things to think about when you think about these controls is they will feed on grasses, but grasses are not host for fighter plasma. And so if you're not careful, some of these things will actually

407

01:09:15.720 --> 01:09:23.580

Tobin Northfield: You can out you can get the the grass might be out competing the some of these products, the products are more likely to be host for the fighter plasma.

408

01:09:23.850 --> 01:09:38.430

Tobin Northfield: And so if you're not careful you can remove the grass and allow the broadly, if we take over and then you have something that can host bubbly poppers and the Phytoplasma and so grass is really our friend, even though the pop is my feet on it because it's not actually a

409

01:09:39.540 --> 01:09:47.040

Tobin Northfield: Host for the Phytoplasma and so that's remember the leaf office have to repeat these up every single year. And so that's a big factor.

Bernardita Sallato-Carmona: just a final note, a lot of you guys that are joining the meeting. Thank you very much. We know that is a very busy time. Thank you, Tobin Tiana and Scott for

422

01:11:45.930 --> 01:11:55.560

Bernardita Sallato-Carmona: Hosting and being the speakers of this webinar, but we will ask you to share this information and make your neighbors This is a community effort. So if you can share awareness and

424

01:12:15.000 --> 01:12:22.350

Bernardita Sallato-Carmona: Information and lead them to us a it will be better for all of the industry probably

425

01:12:27.750 --> 01:12:30.990

Tobin Northfield: Thank you Bernardita and Ashley for organizing. Thank you all for listening.