

Transcript

[Native Range Health w Laura Goodman FINAL.mp3](#)

Transcript

00:00:10 Dana Zook

Welcome back to the Extension Experience podcast, I'm Dana Zook. This week I'm joined by Doctor Laura Goodman, associate professor and extension specialist for rangeland ecology at Oklahoma State.

00:00:21 Dana Zook

Welcome back, Laura.

00:00:22 Laura Goodman

Thank you.

00:00:22 Dana Zook

It's been a couple of years.

We talked about goats last time.

Laura Goodman

We did.

00:00:27 Dana Zook

So since it's been a little while since you've been on, give the listeners a little bit of your background and how you came to OSU.

00:00:35 Laura Goodman

Sure, sure. So I'm originally from Minnesota, but I did my bachelors in agronomy in Texas and then went on to work on some ranches and do some other things for a couple years and then went back to school and studied range ecology at New Mexico State and did my Masters and my PhD there and then worked on grazing behavior and controlling toxic plants and some other things in central New Mexico and Northeast New Mexico. Ive been here since 2015 and worked on lots of different projects since I've been here. We are working on our virtual Fence project now, the Prairie Project, and working on controlling woody plants with patch burn grazing, prescribed fire and multi species grazing with goats and just worked on range lands.

00:01:33 Laura Goodman

Usually, we're dealing with grazing management and dealing with invasive species in Oklahoma. Prescribed fires are a big management technique that we use a lot.

00:01:43 Laura Goodman

And so a little bit of all of all of those things.

00:01:45 Dana Zook

Lots and lots of stuff. And you answer calls all day long from the 77 counties of Oklahoma and the extension offices like "What is this plant?" Or "what is the stocking rate?" And all those types of things, so Laura is an excellent resource for all of us. I don't know how she, how you do it all.

00:02:02 Laura Goodman

Well, yeah, I love it.

00:02:04 Dana Zook

That's great. That's really cool.

Remind me, what invasive species did you cover in New Mexico?

00:02:12 Laura Goodman

So I was working on loco weed. It's a native species, but it's toxic, right?

00:02:16 Dana

OK.

00:02:20 Laura

It has an alkaloid in it called swainsonine, and especially when you're grazing stalkers starting early in the spring, they can start to graze on that before many of our warm season grasses really start growing. And so we were comparing sheep grazing to herbicide treatments for controlling it.

00:02:41 Dana

OK.

00:02:41 Laura

And so, you know, using sheep to graze out the local weed prior to putting yearlings out on on range and pasture for the summer. And they worked great.

So, those plants are also toxic to sheep, but they can handle a little bit, a little bit higher level and then we were grazing them on and off areas that had it and that actually helped to keep them below the threshold that would start to cause issues for them. We then were drawing blood on these sheep and keeping track of everything to make sure that.

00:03:15 Dana

Oh cool.

00:03:16 Laura

And anyway, yeah, they did a great job.

They were similarly effective to herbicide in killing the plant which we weren't expecting but they did a good job.

00:03:30 Dana

And you did it, I think around that northern New Mexico area?

00:03:34 Laura

Well, kind of.

00:03:35 Dana

Up by Clayton?

00:03:37 Laura

Yeah, around Des Moines.

00:03:40 Dana

Yeah, I remember driving through there as I go to South Fork, Colorado. That's such a cool area.

00:03:46 Laura

Yeah, one of the ranches is right by the Capulan Volcano there.

00:03:51 Dana

OK.

00:03:52 Laura

Yeah, a couple of the ranches I worked on were there and then we put wildlife cameras on those areas that we had grazed with the sheep to track what other animals came on to those areas after we pulled the sheep off and it was really interesting because those areas that we had grazed with sheep were kind of local grazing spots for pronghorn and elk and mule deer and all sorts of animals afterwards.

So yeah, it was a cool project.

00:04:20 Dana

That is interesting. Like what happens with Patch burning, right?

00:04:26 Laura

Yep, Yep.

And you know that I think the thing that we sometimes don't think about. When we're using herbicide for controlling toxic plants, depending on what toxin the plant has, sometimes they are still toxic even when they are dead. You know, it's less likely that an animal's going to eat it once it's dead, but there's a certain period right after you have sprayed it where the plant is dying, where it actually increases palatability for a short period of time.

00:04:58 Dana

I've heard that before

00:04:59 Laura

Yeah, so you know most of the herbicide labels, it says it on there.

You know, if you are spraying this on a toxic plant, it can increase palatability. Be careful when grazing. So we just have to be thinking about that when we're choosing the control mechanism that we're going to use for controlling toxic plants, in particular because. Especially if it's an area that we're haying or something that is going to be incorporated into that hay. It's not always a guarantee that you have eliminated the problem.

That's interesting! I don't think you ever told me that before, so that's a good little summary of your of your trial.

OK, so let's talk about Western Oklahoma experiencing a severe drought?

00:05:45 Laura

Yeah

00:05:46 Dana

The whole state has been in dry conditions for the last couple of years, but Eastern Oklahoma seems to have gotten a few rains recently. So why don't you give us a synopsis of what you're seeing on range land that has experienced drought and what's going on across the state?

00:06:03 Laura

Yeah. So, you know, last summer most of the pastures that I was looking at had grown, you know, somewhere between 50 and 75% of their normal productivity for native pastures. And you know, the further West you got the lower that number. We got some growth but minimal in the summer.

And So, what we're dealing with in most parts of the state is that a lot of people destocked and bought hay. They have dramatically reduced their numbers, but we are still seeing some pastures that have been grazed pretty hard and now we are trying to think of ways to hold on to those animals because it looks like they are going to be worth quite a bit in the future.

00:06:56 Laura

The long-term projection for drought is looking like Eastern Oklahoma is going to be OK, it's going to be back to normal. But there is a huge swath of Western Oklahoma that they are saying, well, maybe not be back to normal until this winter.

We are supposed to be going to an El Nino year here, but it is going to take a little bit longer for the western side of the state.

And so we are projecting that it's going to again be kind of dry.

So our pastures, our grasses are grazed pretty short at this point.

00:07:35 Dana

Yeah, a lot.

00:07:36 Laura

A lot, yeah.

00:07:37 Dana

Unfortunately.

Our native plant populations are adapted to drier conditions, right? I mean, historically this is a dry area.

00:07:47 Laura

So in in Oklahoma, the three things that have always happened to our native plants is drought, grazing and fire.

Those three things, plants are all well adapted to and were regularly happening all over the state.

00:08:05 Laura

The problem happens when we have, you know, drought for an extended period and we have heavy grazing combined with that, it can make those plants take a little bit longer to come back afterwards.

They they didn't necessarily die, but that doesn't mean that they they always grew back really quickly and grew back to the same productivity that they would have without the drought and without heavy grazing during that drought. So, you know, when we graze sustainably, matching to the productivity of those plants, we can expect that we'll actually get more growth during the drought and we'll have quicker recovery after the drought. When we graze harder during drought or take a little bit longer to adjust those stocking rates, that's when our grasses will grow even less than, say, our neighbors that maybe made those decisions a little bit earlier or those adjustments a little bit earlier will grow less during the drought and will take longer to recover following that drought. And so that's just what happens with these grasses. They just take a little bit to come back. They need those resources to be able to regrow all that leaf material they have got all these carbohydrates in the base of the plant, and we can start to diminish those when they're grazing them hard.

00:09:34 Dana

So from the biology of the plant, you know, say a clump of Indian grass, let's talk about that. OK, so this clump of Indian grass, you graze it normally one year you have normal, normal kind of rainfall and then we go through the next year where we keep our stocking rate the same, but we don't have as much rain.

OK, So what happens when it's drier and we are still clipping that plant at the normal rate?

Like you said, I mean, we are reducing the top part of the plant where it gets it's resources. So tell us a little bit about the biology of what happens?

00:10:19 Laura

Yeah, So, so the leaves are the engine, right?

So they're they're converting some light into carbohydrates for the plant. When a grass is repeatedly grazed hard, especially when this is happening in conjunction with drought, that plant is going to have a certain amount of root die off.

OK, so our grasses are like an iceberg; most of the biomass is below ground versus above ground.

Now these are pretty productive grasses that we luckily grow in this state, but whenever they're grazed hard, they have a certain amount of root die off.

And so they're trying to put resources into those roots, and the roots are helping them to capture moisture and nutrients in the soil and everything, and so they must put resources into growing those roots.

There's only a certain amount of resources available, particularly during the drought. So then it's going to take them a little while to regrow roots.

And then they're going to put resources towards leaves. So they're just strapped for providing resources everywhere they need them.

And so that's why it can take a that delay in regrowth after drought. If we've grazed them hard going into drought, they have a smaller root system than if they haven't been grazed hard, so they aren't even able to capture as much moisture as a plant that hasn't been grazed hard.

And so when I'm talking about being grazed hard, you know, we we try to leave half of the plant weight attached to that plant every year. So we just try to leave 50% of the weight of that plant alone and that's over the course of the year.

So we might go in there and graze it, and we're grazing a portion of the plant early. Then we've moved animals out but when we come back in, we're going to graze it again.

But the amount taken over that entire year, we try to leave half of it there.

A lot of times our eye gets trained to how we could graze a wheat field or Bermuda grass pasture and the reality of it is our native grasses cannot handle that type of grazing.

Bermuda grass can be grazed to three or four inch height. Our native grasses can't handle that unless it's like Buffalo grass that's not very tall.

00:12:50 Dana

Right, right, it's not very tall anyway.

00:12:56 Laura

And so when we do that, it's really difficult for them to grow back

00:12:59 Dana

Let me take a step back.

We talk about this normal stocking rate and we have questions in our extension offices. For example, what's the normal stocking rate of Garfield County or what's the normal stocking rate? Well to me,

there's not really a normal stocking rate because every year it's going to change. We will go into our conversation here in a minute on how we can evaluate kind of our forage production for the year, but I would like to know what are some things that producers might see this year after they've grazed their native grass look like a golf course? OK. Because that, that's the reality in some areas. What are some of the things you'll visually see? Will it be weeds?

00:13:36 Laura

Oh, yeah, yeah. We're going to have a lot of plants that people are going to be emailing pictures of. Or, you know, are going in or bringing into extension offices.

Or I've got this plant I've not seen before, and that happens especially so we when especially once we come out of the drought and we start to getting normal rainfall, there's all this open space that's now been provided in these pastures for, you know, kind of weedier type plant. Plants that grow easily from seed, lots of annual plants that just grow for one year, established quickly from seed, and they'll fill in those spaces.

And so we'll get a lot of plants that, you know, maybe people haven't noticed before or, and they'll, fill in in those gaps and lots, lots of grasses and broadleaf plants that maybe wouldn't have been able to grow there as easily if the grasses you know were not grazed quite as hard or had not had the drought.

00:14:44 Dana

So some producers think, oh my gosh, I've got to spray this. We've got to use a herbicide to get rid of this when in fact, if we adjust stocking rate, give those pastures a rest, I mean, will those pastures kind of recover and come out of that weed type of situation or are the weeds there to stay?

00:15:02 Laura

So many times, if we if we back off on our stocking rate and allow those grasses to recover those the grasses will take care of the issue, right, when they grow back and they're able to fill back in. Almost all of our grasses are rhizomatous, which they have below ground runners that help them to spread. It's when we've suppressed them, there is all of this open space. And in areas that have sandy or soils, we just have a little bit more space between plants in general.

But yeah, typically you know it's not really worth the money to spray every broad leaf plant you have in your pasture. And those plants are providing cover for that soil as we start to get that rain back out there. If you were going to pick the plant group that you kind of get the best bang for your buck using a herbicide on that would be the woody plants that we have that grow in our pastures that many of them are resprout or so if we like went in there and cut them, if we, you know, just cut them at the ground level, we're not going to control those plants, they'll grow back. Those would be the ones that you would get more out of controlling versus the broad leaf plants. The broad leaf plants are just a Band-Aid to cover that soil. Eventually the grass will fill back in. I'm not saying that that is never the option. There are some cases where you want to control plants, especially ones that are toxic but usually it's not going to grow you any more grass.

The reality of that is here in Oklahoma, where we're on the drier side of things, you don't get a huge bump in productivity in a native pasture system from spraying broadleaf plants.

00:16:59 Dana

Right.

And some of the broadleaves are not necessarily bad.

In our native pastures, we have a lot of like, yeah, legumes.

And so maybe broad leaf isn't a correct term, Laura, for some of those good plants that we have out there.

00:17:11 Laura

The thing about our native pastures is they are innately diverse, they always have a lot of different species growing in them. But that's actually gives them value because there's a lot of those plants that are actually really good forage plants and our animals do eat them. We just don't always notice it. And those broad leaf plants are typically higher quality than most of our grasses are.

So we've got to be thinking that they're eating those at different times of the year and and they're providing good forage. So we don't want to kill all those and they're providing other things too for us.

So other than cattle, they're also, you know, important for our quail population. Everybody's always asking about why don't we have any quail? Well, well, we have to provide the habitat that they need and they need some shrubs to be able to hide in. They need broad leaf plants that are growing seeds and attracting bugs like their chicks eat and all those things and and our pollinators are using those plants, all all sorts of things are relying on those.

00:18:04 Dana

Right. So, so many interesting things.

We have a cool tool that you discussed in a variety of our meetings across Northwest Oklahoma this spring. It's called the Rangeland analysis platform.

We're going to refer to it as RAP because that's easier, right? Listeners, it's the RAP we are going to talk about. And it's really cool, just as the name sounds. So tell us a little bit about this tool. It's new, right?

00:18:38 Laura

So it's been around just a couple of years now and the initially it was developed just for land cover.

It's based off the Google Earth engine and they developed it just to be able to look at the different cover types that we have in a pasture. So the plant groups that grow and so you could look and see, well what's happening with tree cover, what's happening with shrub cover, how much bare ground is there in my pasture, and then the other it has perennial grasses and broadleaf plants are lumped together.

00:19:13 Laura

So those would be many of our forage species - plants that live for more than one year. And then we have the annual grasses and and broad leaf cover forb cover. Initially it was developed to be able to say what is happening in my pasture. Is my pasture changing through time?

00:19:29 Laura

It are shrubs increasing our trees increasing?

Am I getting more bare ground?

What's happening in response to the management that I'm doing in my pasture?

And then just recently they added a tool with a production estimator, so it gives an estimate of productivity for those perennial and annual plants.

So it'll give us an estimate basically of forage production for our pastures and that's a really, really excellent tool because you know in the past really all we've had is estimates from the Web soil survey.

If we didn't have the the the time or the labor to go out and actually clip our pastures.

00:20:12 Laura

And so this is giving us an estimate of production over like what's the annual production and then also it updates every 16 days. So we can get an idea of what we're how we're tracking with normal productivity. So you know earlier in the year, we can see if we're fitting to the productivity that's at 50% or 75% or normal production or maybe we're above, maybe we're getting good rain that year and we're at 125 or 150% of production.

That information can help us to figure out how to match our stocking rate to the productivity within this year, and not have to guess at what we should be stocking our pastures, how we should be stocking our pastures, how many animals to add or take away.

That's better than anything we've really had in the past.

00:21:10 Dana

It's such a valuable tool.

And from my standpoint, I've used it quite often.

I used to use the Web soil survey more, but it just takes alot of time, but now this seems to be a little easier.

00:21:20 Laura

And then you know, the web soil is a great tool though. The problem that web soil survey has is it's not giving you anything for the current year.

00:21:27 Dana

Right.

00:21:27 Laura

And and the difference is that the RAP is using satellite imagery and that is why it gives an estimate every 16 days.

00:21:34 Speaker 2

So it's using information that it's collecting from those satellite passing over. From the imagery that it captures, it's giving an estimate of OK, well, we know when we're getting these signals from the imagery, this is about how much productivity that we typically get. And so that's something that we just didn't have with Web soil survey

Because it was just kind of, this is what the long term 30 year average for productivity is on this soil.

00:22:05 Dana

Right, soil type and and to be honest, when someone would come in and ask me about the piece of property, it could have seven different soil types on it.

So then you have to divide those out. It was probably pretty accurate, like once we got it divided out.

00:22:19 Dana

It was just a little clunkier. there are other entities that are helping with theRAP, right?

What did we say? The BLM; Bureau of Land Management, National Parks Service, which I don't know what they're providing, but it's probably pretty cool. The Natural Resources Conference service NRCS so it's not just the satellites in our sky. They are taking a lot of moisture data and Lots of things, right?

00:22:46 Dana

So the so Bureau Land Management and the NRCS Natural Resource Conservation Service have been collecting productivity data for a long, long time,. So there's the so they have information for how much was produced in these different areas and we know what the precipitation numbers were for those time periods in those specific areas so they can make these models so they can say when we get this Kind of information out of the on the imagery, we have a model that says these are the kind of things that we're picking up when we're producing this much. So it's validated with field data and so that gives you some estimates to be going off of. So that's how they're giving these estimates and actually now in the production estimator it also show the number that is from the Web soil survey for the area, so you can actually even look and see how is how different is are is this estimate from the Web soil survey estimate for production and stuff and so if that's something that you're more comfortable with or more familiar with, you can always look at that number in.

00:23:49 Dana

Right.

That's cool.

So I had it pulled an example. An example out of northern Dewey County. This is in Northwest Oklahoma. 148 acres of native grass. I think it's native, I mean it looks most of our grasslands out there are that.

But I'm able to go on and just like disseminate this, which is cool. You can go and do your own or you know whatever, but I use this as an example. I don't know what producers place this is so.

I was able to look last year and see the forage production estimation, and it was just over 2000 pounds of forage per acre. OK. And then of course, this year, I can't see really much this year because we are

very early. So that, that is one thing, but it it this is a value cause you can look historically and then so it has a long term production since 2001 and it that long term production was just under 2500 pounds per acre.

And so that was kind of cool to see, well, yes, we did have less rain and and it was impacted - almost 500 pounds per acre So I just thought that was quite interesting that you can look at long term.

And look at last year if you know kind of what last year was and its just such a valuable tool to use. So you know listeners, I'll have the link to that in the in the show notes so that people can use that.

It's really... it's cool and it's it's, it's a different kind of website thing. Rangelands dot app, right?

00:25:32 Laura

Yeah, so it's. So it's a, you know, it's called an app, but it's a it's a web-based app, so you son't have to download it.

00:25:38 Dana

Not on your phone or anything like that.

00:25:38 Laura

No, no, there's no download.

You can just go to the web page and then start clicking through things.

So I'm assuming so you outlined a pasture.

00:25:48 Dana

Yeah, that's what I did, yeah. I just just outlined it.

00:25:51 Laura

And then it gives you an estimate and so it's so useful. So you could you could outline outline your whole property or you could outline specific pastures. You can save those shapes and so then you don't have to reoutline them.

00:26:04 Dana

You know how many acres it is then you can see maybe well, this is supposed to be 152 acres. Or something. Well, my square wasn't exactly, you know, right.

I just thought that was kind of cool. In extension, we do help people look at stocking rates and stuff and so this helps.

You can also go in there and say well, my cows are I have small cows, they have, you know, Corrientes or something like that.

You can say that they're 900 pound cows versus 1300 pound cows, which honestly most of our cows are 1300 pounds, people. But you can say that, you can say what stage of production and it all give you a stocking rate and it's really, really handy.

And it'll show you how that starting rate would be adjusted historically.

00:26:45 Laura

And if you if you decided I'm going to graze them in there for six months, right?

You can put the time, you can put the how length, and how long you want to graze them.

If you were gonna say, oh, I changed my mind. I'm going to graze them for four months, then it'll give you a different number of cows.

Or if you decided, actually I'm going to yeah, I'm. I'm keeping weaned calves or I've got these heifers developing or whatever, you can change the size, change the amount of time and it will just give you the number of animals.

00:27:15 Dana

Right.

00:27:18 Laura

It's super useful and the other thing you know, if you can look back, it'll give you what the number of animals it would have carried in different years.

So like if you wanted to look back at 2011 and see, OK, how many cows would have carried, you know, if you're if you're kind of feeling like this is this reminds me of this year or something, you can kind of look back and see well how many cows would have said I could have carried in in whatever year, you know, and then it gives you that idea, and then the the other thing I was mentioning earlier is it gives you, there's a curve on there that shows like what the cumulative forage production is, and it'll fit it to these lines that are 50, 75, and 100% of normal. And so you can kind of figure out where you're at going forward. I'm hoping that our numbers will be 75 or you know closer to 100% of normal. Yeah, but it'll give you that idea.

00:28:09 Dana

Yeah, fingers crossed.

00:28:15 Laura

And so you can make those stocking rate decisions earlier in the year and maybe you can sell animals when they're worth a little more rather than waiting and holding on to them and selling them later.

00:28:25 Dana

Yeah, absolutely.

Well, this has been an excellent conversation.

I think that we'll have to talk about it again.

I know our extension educators are just learning about this tool. We're trying to get everybody on the ball with it. But people can reach out to your extension office, your area livestock specialists, your.

Agronomists and most of us know what it is and and so we can help you maybe do some evaluation on stocking rate because I think that's going to be so important this summer.

Yeah, and it will probably always give you a number lower than you think.

Yeah, listeners, I mean it's going to, it's going to you're going to be surprised, but that is what it takes to maintain the health of our range lands, right?

00:29:03 Laura

And I think there's a lot of things that have happened that you know, the numbers that we maybe thought were right in the past, we've got larger animals, larger cows.

00:29:09 Dana

Right, we do.

00:29:11 Laura

We have a lot more trees growing in our pastures that are decreasing our production and so there's a lot of things that may be contributing to that. And so just keep that in mind that we, we've got to keep that all in perspective and know you can just look at the at the cover of of different, you know, look at and see if your shrub cover your tree cover has increased as well in the tool that the regular rangeland analysis platform because that could be what's decreasing because it is taking that into account those areas that are are covered up in cedar trees or whatever, whatever the trees that are growing, you know there's a lot of different ones that we have that are trying to take over our pastures is taking that into account. And when we say that our production is 2500 pounds per acre and that's what web soil survey told me, well, the Web soil survey is assuming that you have no no tree cover, so just something to think about if that number is surprising to you.

There might be other things going on that and you have total control over the tree cover like you can.

00:30:11 Dana

Right.

00:30:14 Laura

You can take care of that issue.

00:30:15 Dana

Hold. Hold that thought, OK?

00:30:17 Laura

I'll leave it.

00:30:18 Dana

Hold that thought, because we're gonna talk about that in the next segment, OK.

We're going to talk about this cedar tree issue coming up, but I hope you've enjoyed this segment.

All of the links, including the links to the rangeland analysis platform, for the RAP will be in the show notes and I hope you enjoyed this segment.

Thank you, Laura, for joining us.

We will be back soon with Laura to talk about cedar trees, but thank you for joining us and have.

A wonderful week.