**Olivia Amundson**: Alright, welcome to another episode of Cattle HQ brought to you by South Dakota State University extension, I am Olivia Amundson based out of the Sioux Falls regional office and I have my coworker Kiernan Brandt who's based out of the Watertown regional office with me here today.

On today's episode we're going to be talking about calving distribution and the effects it has on herd health with Dr. Joe Armstrong of the University of Minnesota Joe would you like to give a brief introduction of who you are and what you do.

**Joe Armstrong UMN Extension:** For sure thanks for having me today Olivia I am Dr. Joe Armstrong I grew up in Minnesota, which is very important, much better state and went to vet school at the University of Minnesota, which is much better school. And then I ended up down in southeast Minnesota in private practice working primarily bovine, dairy, beef sale barn work all of that, and now I work at the University of Minnesota as the cattle production systems extension educator.

**Olivia Amundson:** Okay, so we're gonna talk about um, calving distribution and how it really has some effects on herd health as a whole, I think a lot of times when we think about claving distribution we don't necessarily think about what it has or what it can potentially do for the overall health of our herd, and so you know kind of just to give a brief introduction of calving distribution and why it's so important.

You know so having distribution are those it will it's the measure of the number of calves that are going to be born within a 21 day calving period. And why we break it up into 21 days is because, if we think about the length of the estrous cycle of a cow that's 21 days so on average, we want to shoot for around a 60 day having distribution and that really allows for approximately three opportunities for our cows to become pregnant within a 60 day breeding window now if we're incorporating estrous synchronization we get an extra opportunity because we're able to kind of manipulate that cycle early on, and so we kind of allow that female to have an additional opportunity but that's not why we're here today we're not going to talk about estrous synchronization. But just understanding that a 60 day breeding cycle is really based on a number of opportunities that cow has the opportunity to become bred.

Traditionally we want to see the majority of our mature cow herd calve within that first 21 days and so benchmarks indicate about 63% of that herd should calve in the first 21 days, 87% of that heard should be calved by 42 days and then 96% of that herd by 63 days so that's a large majority of the herd having within a 63 day period, and of course there's advantages and disadvantages to that as well. And so, when we think about calving within that kind of time period, especially for you, Joe what kind of benefit do you see when working with producers that have a more consolidated calving season.

**Joe Armstrong UMN Extension:** So the calving window in the cabin distribution when it's really tight, I really go back to this kind of systems approach and what I think about is, it's kind of a chicken or the egg situation. Okay, so we talked about this on the dairy side, all the time there's high for so fertility cycle, where, if you get cows pregnant on time then they're better at getting pregnant, the next time and it's just a cycle that works that way, so the calving distribution to me is basically a chicken or the egg or the same thing. So if you take care of your cows really well you do all these other things right, you can get healthy cows and the correct body condition, all these things, then you're calving distribution tends to work out.You get all of your calves born early in the cabin window because cows are ready to get pregnant and that sets them up for the next time and they get pregnant early again so for me it's kind of a systems approach there's not a real way to separate them the cabin distribution and having that tight window with everything towards the front really sets us up and is a I don't I don't want to call it it's a result of herd health management through the whole year that's what it really is so it's one of the things i've looked at to say, is everything else going well, because of having distribution, you know minus a problem with a bull or something like that it's kind of a fluke or something else is everything else going well, and if it is then you're calving distribution kind of worked itself out.

**Olivia Amundson**: So then, so then if we think about management and management year round, what are some maybe some of those health management strategies that we could start incorporating into our herd, to ensure that we're kind of working our way towards a more defined distribution, which is then going to in turn, take it or have an advantage on overall herd health.

**Joe Armstrong UMN Extension:** Yeah so the big thing is, are we we're talking big concepts here right so it's not it's not a thing just crazy outlandish or any new technology, these are things we've known for a while and that we really need to account for and one of the first steps is separating your cows on age. So if you've got your older mature cows, they need to be separate from there from your heifers, especially if bunk space is limited because I think everyone's seen it if you throw a hay ring out there, and you put a big round bale of hay in there and you're heifers and cows are mixed in those heifers don't get to be around that hay ring very often and they're always separate pushed down the hill wherever they go. But the cows kind of guard that feed source so separating our heifers and our cows is a is a big piece of that to start and then after that bunk space becomes a huge piece, and I like to see two feet per head and that's kind of my bare minimum for bunk space on cows and heifers two feet per head. And then it's a mineral program issue after that you know we struggle, a lot of times to get mineral into these cows free choice mineral it's better than no mineral that's for sure and it's definitely in my opinion, better than licked tubs and better than blocks so free choice loose mineral is probably you know what I see most often what I'd love to see is that mineral force fed in a bank in a ration however you get that down it doesn't matter to me, but that would be the three things that I think about a lot, bunk space mineral and then separating by age.

**Olivia Amundson:** Yeah and I think you made a good point they're separating my age, especially when we think about heifers feeding heifers and getting heifers bred there's some research out there that say three year olds are the only grew up with a majority of their calves born in that second 21 day period and a lot of that is because they're still growing, and if we aren't paying attention to how much bunk space they potentially have or how much space, they have to eat and they're not getting those nutrient requirements that they need we're definitely going to struggle getting those females bred back on that first cycle so that's definitely that's a really important point to make, especially when we're thinking about getting heifers re-bred

**Kiernan Brandt:** Joe I'm just curious to hear your thoughts um I worked with a couple producer groups up here that actually push that even a little bit further, and they take that one calf out. That particular place I'm thinking of what they were having some disease problems with those younger groups of cows, and that was actually one of the ways that they were able to kind of get that resolved in addition that I think that ended up incorporating like some Rumensin and some other things in there, but maybe they had some more bossy cows, but they ended up making that split to where they weren't actually grouping those cows together until those females were pregnant with their third calf.

**Joe Armstrong UMN Extension:** Absolutely, I like that, because yeah if we think about who who's the hardest animal to get pregnant it's definitely not that heifer or you know that heifer is growing, but she doesn't have the stress of also growing a calf or lactation. So really it's that first calf heifer that animal that has one calf on the ground already. That animal is the hardest animal to get pregnant because she's got so much demand on her body, she also needs more targeted nutrition. So, because she's growing she's growing a calf she's lactating as well there's all these things going on, so I agree if you can separate really into three groups would be ideal, but not everyone has that space, but so I'm trying to be a little realistic about it but yeah. If I had if I had it in an ideal world, I absolutely would separate into three group’s mature cows, my second calf heifers and my coming heifers.

**Olivia Amundson:** So, or well actually nutrition is huge obviously nutrition drives reproduction, so if we are you know, obviously, maintaining a body condition score five, five and a half and understanding when that cow calves she's now lactating um and so those nutrient requirements are a lot higher than but we're not going to get her bred back if she's not fed right and still maintaining a good decent body condition score another thing that I know you've mentioned or I've seen and maybe some of your previous presentations is how, If we're defining our accounting distribution, so we really you know we have like a 60 day or 70 day let's say calving window we're really setting ourselves up for healthy calves and that's because we're really able to kind of target that nutrition for our females and that's really going to play down into our calves, can you talk a little bit about that kind of down line effects that it has as well.

**Joe Armstrong UMN Extension:** Absolutely, so when we talk about bunk space and body condition and trying to keep everything stable and uniform the big key piece of that is the uniformity, so when I come into a group, and I say. I can see that everyone in that group is the same body condition or very close to the same body condition, I can make those targeted nutrition decisions to that group and it's going to affect everybody and it's going to be good for everybody. When we struggle and when we get variable results in in some of the downstream effects is when we have really skinny cows really fat cows and everything in between. And when we try to make nutrition decisions our fat cows get fat or skinny cows stay skinny and it doesn't matter what we do. So that's why we're looking for this uniformity this bunk space all of that, and the downstream effect is really what we talked about with colostrum quality and quantity that those are the things that really, really matter so firstly we get better colostrum quality that are colostrum quantity for our calves when or when the dam is healthy and then that affects lactation to that that lactation curve is going to be much better than can be much more milk available much higher quality milk available when that dam is taken care of so you get more growth, out of your calves too. So, again we're seeing this as a systems approach right, so we know that the number one factor for how heavy calves are weaning is their age, so we want everyone as close to the front of that calving window as possible in our cabin distribution. But then, after that it's really about mom what she can she do for that calf. And way down at the bottom of the list in all of this is genetics you got to be able to have the management in place so that your genetics has can the genetics can show their potential because doesn't matter how high quality genetics, they are if our management is broken.

**Olivia Amundson:** You know, talking about herd health, we really haven't even had or made mention of the word, vaccines, I mean does vaccines come into play when we think about maybe the herd health or just having distribution really kind of help, maybe. You know, maybe cut some of those vaccines out for lack of a better way to say that um you know, in terms of keeping our herd, you know healthy.

**Joe Armstrong UMN Extension:** Yeah I mean when we talk about vaccines in, and this is maybe a little different to if there's people listening to this we've talked to the veterinarian before I am looking to cut vaccines out whenever possible there's key vaccines that need to be there absolutely vaccines are super important. But like we've talked about when your cabin distribution is tight your calving window is tight and everything's working well, that way, that means that there's a lot of other things going right in your system you've got a healthy heard that uniform body condition nutrition is on point in our programs on point all that stuff's going really well you're probably got to run in a clean operation, everything else is going so well. So a lot of times yeah when we start to see that we can cut some vaccines and they still play a part, because we need to be protected, and they need to be there for insurance, but we can cut some vaccines out usually because we're taking care of everything else so well and some of the vaccines that are on the market are really just tools to help us to put a bandaid on something until we can fix the management, which is the true root causes some of these diseases.

**Olivia Amundson:** And really if we can avoid maybe some of those diseases or sicknesses in our calves really based off of you know we really set mom up for success. In terms of nutrition she's giving high quality colostrum which, in terms of giving us, you know, a high immunity, you know calf, that is, maybe getting sick less I mean that's going to have effects on overall weaning weights too which is going to have an effect on. The money that we received back when we sell those calves in whichever way we decided to sell them, so it really is a whole system's approach and has a downline effect and it's really something that we can start looking at in terms of just how our cows are calving and when they're calving.

**Kiernan Brandt:** Well, I think beyond even our calf health, which is obviously super important a lot of times with these reproductive diseases that can get into our cow herd if we're scattered out in our calving distribution is not front loaded and has a tendency to drag out towards the end there. If we end up having some kind of an outbreak, a lot of those diseases, Joe correct me if I'm wrong here, but will present them in very similar ways making that even harder to pick up, whereas if we have we have that distribution front loaded we have 60 plus percent calving in that first 21 days and a large portion front loaded then. If something like that were to pop up and we notice a few more cows straggling out towards the end of end of that distribution that might give us an indicator that we might have something going on just one less thing to guess at.

**Joe Armstrong UMN Extension:** Absolutely, there is nothing worse than trying to diagnose an abortion issue in heard with the calving distribution that's super wide or calves year round it's so hard to get a hold on what's going on and to identify what the problem is because a lot of times just, even if I know what the distribution was the year before and we're trying to match that I can see the pattern and that'll tell me what I'm looking at, for the most part, you know, am I dealing with early mid late, am I dealing with a bunch of rebreeds or reheat you know so then. I know what to look for so yeah I think that that's a perfect point when we're talking about that you know, having a tight calving window knowing what to expect. Having that consistent from year to year any deviation from that then gives me something exactly pinpoints what I need to look for and what the problem is and we don't have to be taking our best guess at everything we have a lot more information then.

**Olivia Amundson:** Yeah and I think that sets us up for another really good question that may be some guys don't always take us seriously as they need to but I'm doing a breeding soundness exam on their bulls and how important that really is in terms of getting our cows pregnant and getting them pregnant timely, I mean, is there any advice you can give in terms of when guys get BSE are there, certain things that need to be looking for asking for, to make sure that those bulls are going to do the job that we're asking them to do.

**Joe Armstrong UMN Extension:** Well, the big thing is that that the theriogenology association changed the BSC standards pretty recently and the last couple years, so we have new metrics we have new ways that we're doing things and new things that we're looking at there's been some changes to spur morphology and things that are considered abnormal versus what we consider actually normal now so I think that's the big thing, are we using the updated standards is a huge deal because they really are targeted, they have a lot of data behind them to show us not only is a bull good or bad, but is a bull capable of doing what we want it to do and getting this calving distribution right or is he not so there's a lot of gray area right there's a lot in between this bull getting pregnant or get cows pregnant the bull can't get pregnant this bull can get cows pregnant and this will bull cant get any cows pregnant there's a lot in between that. And so we're really trying to sort out the high end bulls that can really give us this tight calving distribution and that that's what we're looking for with these new standards so that's what we really want to see. Now all of that is a mood point if you don't take care of your balls, on the other side of things right they need eyes, they see heat with their eyes first they gotta be able to go and move, so they got feet and legs there too, and they be fat I don't have a bigger pet peeves and fat bull they can't be fat they gotta be the right body condition they're an athlete, especially if you're asking them to do a bunch of work in a pretty short period of time they got to be ready to go. In terms of timing for that BSE that's always tricky right because you want it fairly close to breeding season. But we also want a chance to retest that bull if something's goofy on the day of, right if it's 100 degrees out in your testing that bull probably shouldn't test them in the first place, you should probably wait till it's a little cooler out, but you want a chance to retest them. And it takes a while for him to make new sperm cells, so if something does happen we're talking about a 60 day period before we're seeing new sperm cells that's a long time, so I like to I like to do it close enough that you have time to get another bull if you need to and that he could get retested and still be good for that season in some way, so I like 30 to 45 days before you turn that bull out that's my recommendation, usually.

**Olivia Amundson:** Even if a bull passes their BSE doesn't mean that they're going to go out and completely do the job that we're asking them, I mean we need to make sure that we're paying attention to those bulls. Because obviously doesn't test libido it doesn't test if a bull is going to be nice to the other bulls out in the pasture I mean I've been parts of train wrecks myself, where you know these bulls have been BSE’d but we still miss two cycles in our cows, so something to definitely always be watching for because that right there will screw up an entire calving distribution. And then, of course, you have the downline effects of that as well.

**Kiernan Brandt:** Yeah and I think before we even jump on the on the libido I mean I always just encourage guys when they're when they have a vet out there, doing BSE’s that I mean to get as much information, one out of the vet, but also to be taken as much information as they can because there's a lot of intricate parts and processes of a BSC and chances are a vet might see them all, but he's not gonna have the opportunity to look at them all the same, so if you can be as a producer they're actively walking around checking eyes checking feet checking for persistent frenulum’s any alarms and some of those other intricacies of the, of the working gear going wrong. Anything that we can get to give us a better idea of how that bull is going to go out and perform beyond just what it says under the microscope.

**Olivia Amundson:** Yeah so really if that bull doesn't perform, and you have a bunch of open cows blame your vet, especially the one from Minnesota that works for the university.

**Joe Armstrong UMN Extension:** I mean we're not perfect and I, and I and it's perfect point that Kiernan made absolutely I'm only as good as what the producers tell me. I can't I can't see everything and I don't know these cattle as well I've never will, as well as the producers do. So I'll take all the help I can get I'll take anybody telling me hey he was lame a week ago I need you to look this left front foot absolutely I can't see everything. A lot of times, you know I'm very guilty of being super busy and trying to get to the next job so absolutely I'll take all the help I can get eyes, feet, body condition anything that a producer sees because they see them way more than I ever will so absolutely I'll take all the help.

**Olivia Amundson:** Okay, so here's another thought that I don't know I kind of found interesting on one of your presentations and I guess it was towards the bottom, but what does calving distribution have to do with potential when we're putting or when we're calving cows and maybe we're calving them out in the pasture setting um do we see a difference in maybe parasite loads of these animals when they are maybe front loaded in the calving season versus those cows are calving later in the calving season.

**Joe Armstrong UMN Extension:** Yeah it depends on what parasite we're talking about. When we're talking about things that we're talking about like calf diseases or things like that, when we're talking about either cryptosporidium or Coxcidiosis, then, absolutely. It makes a big difference when we have a really strong out calving distribution we get a lot of mixing of ages so we've got you know older calves and younger calves, we might have a day old calf in the same area as a six week old calf and everything transfers older to younger everything. It doesn't matter what it is, it goes older to younger so when we see those mixed groups, all the time and calves being the little petri dishes and virus parasite factories that they are we see that what we have is a problem with the later calves in the distribution, they tend to get sick more often and it's because we've built up these pathogens in the environment. And, most notably that that does come down to the big three that cost scours which is coronavirus run of rotavirus and cryptosporidium and then Coxcidiosis later in life after three weeks of age, so those are the things that we worry about a lot when we mix ages, we change who gets sick and how often and how bad. And so, if you are going to string it out, you really should be doing something like a Sand Hills calving method kind of thing where you're moving anybody who hasn't calved to another area so that you split our age groups up like that.

**Olivia Amundson:** I guess what else does the guys see you when you have maybe a spread out calving distribution, other than just parasites and maybe more incidences of scours I mean on a vet standpoint what else do you see maybe as guys are starting wean or precondition their calves, I mean is there, I mean are there other health related issues that you see when these calves are, you know being brought together and maybe weaned.

**Joe Armstrong UMN Extension:** Yeah the big thing that I don't think we talked about it enough. Is that when we get big age ranges we can't develop a vaccine protocol that fits all the calves it just doesn't work. I don't want to give that one month old calf an injectable modified live viral vaccine, I really don't I think it's not effective. Okay, so I should back that up it's protective we know it's protective but it doesn't give us any long lasting immunity. So I mean, I want to be doing my pre weaning shots and I want all the calves to be four to six months of age. And I want that, but if I get sprung out or strung out, then I get six month old calves in there with one month old calves and now my vaccine protocol really doesn't fit the group. And I'm almost making to vaccine protocols if the producers is willing for the younger calves and the older calves, it becomes so much less efficient. So for me that's another thing we don't talk about enough your vaccine protocol becomes less effective when and you get less protection when you get these strung out groups.

**Olivia Amundson:** We didn't like going back to your bunk space, you know calves that are maybe one month old compared to calves that are like four to six months old, you know that one month old, he's going to be overtaken by some of those older calves and really that gain isn't going to be there he's really not even ready to be you know eating that kind of a ration depending on whatever you're feeding those calves so there's a difference in that too.

**Joe Armstrong UMN Extension:** Absolutely, and I bounced back and forth between the dairy in the beef world quite a bit and that's what I didn't practice. And, and I like it, because it gives me a chance to learn things from both sides, and we take things from the beef side and I applied to the dairy and I take things from the dairy and applied to the beef. So this two feet of bunk space for beef cows didn't come from nowhere, I mean it came from somewhere right we didn't just pull that number out of out of nowhere. And that's the bunk space that we need for cows in dairy we need two feet per head in a fresh cow, you know in my ideal world, I would have 30 inches for everybody that's what we want for fresh cows on the dairy that would be excellent for beef cows, because even when you do have two feet of bunk space for everybody it's still tight everybody's got a push and shove, get up there and eat, at the same time and you're right when we have calves that are different sizes, they can't they can't eat. The other thing I'd say from the dairy is those calves, the rumen is not ready it's not ready. Even when we provide grain, which is one of the main things that develops the rumen and we provide grain from day one in a dairy calf that rumen and is not ready, unless they've been eating grain consistently for five to six weeks. So you're trying to wean a one to two month old calf I don't think that room is ready to support it and that's why you see this big negative energy balance post weaning because that rumen can't support that caps function yet so yeah it's a bad deal to have it strung out have weaning these really young calves, but the rumen is not ready to take over yet.

**Olivia Amundson:** So, in general calving distribution has been a huge role on overall herd health and like I said I just don't think we always look at it in a systems approach and kind of think about maybe some of the repercussions that come with you know calving over a you know past the 90 day calving window, and so I think you brought a lot of good information to the table is there anything else we missed in terms of talking about herd health and how you know counting distribution kind of plays a role in all of this.

**Joe Armstrong UMN Extension:** Yeah I mean we could we could talk forever, because it is all connected and it's all it's all a system, and this is one of the things that that is the a good measure of the output of the system right. You get your calving distribution you've got your pounds a calf weaned per cow exposed those are big kind of things that I look at as outputs of how is the whole system working. So we could talk on and on and on, I think one of the only things that we really didn't talk about is just basics of hay and how to store your hay how to make sure you don't have as much spoilage. How you feed your hay to make sure your as efficient as possible, how you store your hay when you cut it is a huge deal, you got to be able to access the hay that you want to feed, and so we get into discussions on a lot, a lot of farms where people are just starting up and they love stack and things front or back to front. Right, you make your first cutting you put it in the back of the shed, then you put second cutting in front of that third cutting in front of that. Well, then you end up feeding it in the wrong order right you feed third cutting first and second, because you can't get the first cutting it's in the back of the shed. So, even just simple things like that play a huge role in all this getting the right feed to the cows at the right point in gestation is as simple as stacking your hay from left to right instead of back to front. So those kind of things are like I said we could talk for days about this and try to incorporate all the different pieces of the system, but. Those are things you need to talk to your veterinarian about and your nutritionist about and your extension educators about, especially the ones in SDSU because all joking aside these guys are guys are pretty good.

**Olivia Amundson:** Yeah, well we enjoy and Joe as well, even though he's really hard on us he really is um you know he pushes us to be better. I don't know, Kiernan you have any last questions or thoughts.

**Kiernan Brandt:** I just I figured we'd close with just kind of highlighting on something that Joe said earlier, I think it's really important. Just to understand the context of what we're talking about, me I love to talk genetics I love to help guys pick bulls, I love the nutrition side of things, but I love to help guys balance rations and figure out how to do it cheap and effective. But to me, those are those are things that I consider relative growth things like calving distribution or foundational growth, and we really can't even begin to tap into things like understanding the genetic potential of our animals and optimizing rations especially, like some of these targeted feeding strategies based on when we're cutting and storing or hay if we're not already doing foundational things like front loading our calving distribution right to understand where we're at we were already doing these basic things correctly.

**Olivia Amundson:** Yeah and honestly, it might be something that we have Joe on again for an additional podcast to kind of continue the conversation on you know the importance of having distribution in some of these different system pieces that all kind of make that that work so. Other than that, Joe, thank you so much for being with us this morning and for all of our listeners, thank you for tuning in, and we will catch you on the next one.