

## Unconventional Grazing Systems Webinar Q&A

Answers are sorted by the person who asked.

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1. Any thoughts on managing invasive vegetation in the paddocks?
  1. Answer. I have an opinion on everything and often have research sources and/or experience to back it up. ☺
    - a. I will answer from the perspective of using grazing animals only since there are so many other alternatives that may or may not be an option.
    - b. Understanding that invasive species may or may not be native vs non-native to the area; noxious or poisonous or nutritious or a combination and that specific parts may be one of these; herbaceous or woody; a few or a solid infestation; have physical (thorns, needles prickles), chemical (tannins, alkaloids, terpenes, glucosides and more) or other defense mechanisms; etc. etc.
    - c. Management is the most important thing. Throwing out a few goats and expecting a miracle is a recipe for a bad reputation and lots of problems. Like every livestock species they must, I repeat must, be rotated at an appropriate stock density to get the desired effect on the vegetation.
    - d. Goats are generally my personal favorite to start this conversation. My goats could and would eat plants that other livestock wouldn't touch or would eat sparingly. That doesn't mean that goats can eat everything – for prickly pear cactus I've had the best luck turning in cattle just after a prescribed burn took all the needles off and they ate it like crazy, gained well and reduced the cover by around 90%. Goats have been proven to kill kudzu, poison ivy, multiflora rose, and many other invasives. They can significantly suppress teasel, autumn olive, black locust, honey locust etc. Ask local goat producers or if there aren't any pick a goat that you don't like and see if they will eat the target plant then watch to see effects. Contact me for the Iowa Goat Fact Sheet that I put together with help from Mark Kennedy, retired Missouri state grazing specialist with NRCS.
    - e. I successfully taught at least 3 cattle herds in Iowa to eat Canada thistle. Kathy Voth with *ON PASTURE*® and Dr. Fred Provenza at Utah State pioneered this idea and brought it to the mainstream.
    - f. Understanding the interactions of the plants and animals (Plant-Herbivore Interactions Class) now taught by the Noble Foundation, is a key to dealing with the invasive species. Goats will eat poison ivy but can't take 100% of their diet of almost any single species. Goes back to the management statement. Sometimes ensuring that the goat herd has access to good hay to dilute defense chemicals or other plants that detoxify the defense chemicals see → {Livestock Foraging Behavior In Response To Sequence and Interactions Among Alkaloids, Tannins, and Saponins; Tiffanny L. Jensen; *Utah State University*} is necessary so that they consume as much as you need them too. This is a two week course and worth the time and money.

- g. There are more things to consider than I can share here. If this is an area of interest go visit with the area or state NRCS grazing person, University Agricultural Extension small ruminant specialist, local goat owners that have been in business at least 7 years (there is a reason), to see what works for your area. If necessary e-mail me and I'll see if I can help
2. Regarding goats, there is a program in Maryland called Eco-Goats, where goats are rented to help manage invasives on pastures?
  2. Answer: That is actually a statement.
    - a. Some rental businesses are: Livestock for Landscapes; Rent a Goat™; Rent a Ruminant LLC; Goats on the Go®; Prescriptive Livestock Services and I'm sure many more. Most are goat centric. Check You Tube and do an internet search. This is not an easy business although the business model is growing and you can glean a lot of information that will help if you are considering doing it.
  3. So, all of the practices mentioned here equals sustainability?
  3. Answer: There is no real definition of sustainability in the world that I live in.
    - a. Generally I am having a conversation of what is more sustainable than something else. If I am working with organic, those with lots or very little money, someone next to a vineyard or urban area etc. All of those impact what we should or should not do and may affect what is considered sustainable. Generally grazing livestock for a period of a few weeks or months when they are well managed is arguably more sustainable than repeated herbicides, mechanical (bulldozer) treatments, and maybe prescribed fire. Reality is that all of these are viable tools and work best in combination to manage ecological succession and impact a species or suite of species. Grazing and Fire are the two main ecological tools, the others are more intensive and generally expensive. No treatment lasts forever and there is a response curve where the targeted species begins to regenerate, return or encroach. The goal of NRCS is to help private landowners make the best decision based on their management expertise and goals, the needs of the land to stay productive, the laws, regulations and policies set by congress and our oath to protect and defend the constitution for the taxpayers of the U.S.
  4. Can you talk a little about grazing horses? Do you recommend mowing after horses graze? Also how about running a drag over the pasture?
  4. Answer:
    - a. Horses are the hardest animals on forage that I have ever encountered. Because of their psychology, the lead mare picks a potty spot and then the herd goes to the far end of the paddock and grazes the forage to the soil and begin to work toward the bathroom. That coupled with the need for only 30 minutes of sleep per day and being a caecal digester makes them tough on forage.
    - b. My best luck with horses is to either confine them to a stable most of the time then allow them to graze for some salad and ride them for exercise. Or put them in the minimum paddock size possible with other livestock so we can get a more even stubble height and move them to get enough rest so they do not kill the grass. Remember in Africa that zebra are second into new areas after

elephants because they can graze poor quality forage and be okay. Horses are generally pets and not livestock so economic considerations may not apply as well. Keeping them feed correctly and healthy may outweigh pasture lifespan and plant health concerns.

- c. Philosophically the more work the animals do and the less that I do; the better. I don't believe in welfare for animals. If stock density is correct for most livestock then the manure is scattered around the paddock when they leave. In high density systems I could almost "skate" across. By the time the herd returned the manure was decomposed and didn't affect grazing.
  - d. Because horses deliberately eat their own manure for vitamins, and a nice dose of parasites you've got issues to deal with that way. A good population of dung beetles and earthworms can help decompose and bury manure in place.
  - e. There is nothing wrong with spreading manure with a drag or any other way it needs to be cleaned from the stalls daily and stable at some interval. It is just not my first choice.
  - f. I'm not a fan of mowing pastures because it indicates that we failed to convert plant biomass to animal biomass in pastures. Still need enough leaf left to feed the plant through photosynthesis so keep the mower height at 4 inches or so. There are legitimate reasons to mow other than aesthetics so it depends.
5. Why stagger the temp fence line vs in straight line?
5. Answer:
- a. As I proof read it occurred that I misunderstood your question. So a. & b. are a different take from c. & d. With paddocks where the acreage is set and all fences are permanent: the expectation in pasture is that the herd grazes until the forage reaches a minimum stubble height and then they are rotated to the next pasture. Because forage doesn't grow at the same rate year round that means that producers will rotate in 7 days sometimes, 5 another and 14 in some years on the same paddock due to changes in the rate of forage growth. Most people that I work with won't do that. They want to rotate every XX days.
  - b. Temporary fences allow the producer to change paddock size and keep the amount of time in a paddock constant instead of the other way around!! So when the forage grows fast the acreage is less and when the forage slows down the acreage is more. The trigger for rotation in every grazing system is based upon plants and how much is grazed not, theoretically, on a calendar, chart or anything else. This allows some management certainty for producers who live their lives based upon a calendar. The best part is that if they need to take a vacation and will be gone for two paddock changes then they can just lay out a double sized piece plus a little extra and go on vacation without having to get someone else to move the herd (just check the water)! I love management flexibility.
  - c. I LOVE the fact that electric fences: permanent, semi-permanent and temporary are not that tight 20 (really 20!) -300 psi vs 250-600 psi for barbed. That allows management flexibility to fence "in" or fence "out" sensitive, fragile or other areas. Works great for fencing along streams, riparian areas, gullies

and other features that aren't straight. I love that if the temporary electric interior fence breaks then I just tie a knot in the twine, tape or rope and keep going. Remember electric fence is a psychological barrier and should make the animal think they are hurt. Barbed wire is a physical barrier and will actually hurt the animal if they try to get through. SAFETY NOTE: it is inhumane, dangerous, and inefficient to electrify barbed wire. NRCS will not pay if someone does this using one of our F.A. contracts.

- d. Example: High Density Cattle Herd in central Iowa in an oak/hickory savannah. Oak regeneration is a concern. The cattle pushed acorns into the soil in the fall and we got up to 1000 saplings per acre. When moving the cattle they grazed many of the saplings but survival was high for several years. They just never got above 8 inches or so. The producer then decided which ones to keep along fence boundaries. She curved the fence to exclude the sapling when the herd was on the left side and moved that section of fence again to exclude the sapling when the herd was on the right side. The sapling grew about 2 feet in that year. We lost a few to deer but in 3 years the saplings were generally above cattle and deer grazing reach and were on their way to replace the massive oaks and hickory trees that were the only other age group in that savannah. Our target was maintaining 10 - 25% shade.
6. Please tell me more about the webinar on goats with "Mark". I would like to view it.
6. Answer: I couldn't find it in the webinar portal so I apologize that I was wrong. Good news is that I have it in PowerPoint format and if you want it with a live presenter than perhaps NRCS can get Mark Kennedy or one of our current state or national specialists to do a special presentation.
7. Does the 800' rule for water apply to non-cattle species?
7. Answer:
  - a. The 800' rule is more about body size and a safety zone than anything else. Don't forget that the trough needs to be in sight of the herd also. The idea is that the individual animal can make it back to the safety of the herd before the predator can pull it down and eat it. Doesn't matter if predators still exist there or not the prey animals don't forget. Smaller livestock have a much smaller flight area. I expect that horses and bison are similar to cattle.
  - b. Sheep have to almost be touching and goats aren't much better. I don't know about pigs and poultry (chickens and turkeys fly at least a little). That opens up more questions about water placement, drinking perimeter space (18" for cattle and horses; 10" for sheep and goats), ensuring trough capacity and refill rates etc. This is another webinar opportunity – talk with your grazing specialist and NRCS engineer for planning thoughts.
8. Are there NRCS practices which provide for tree planting in pasture other than silvopasture?
8. Answer:
  - a. I'm a fan of windbreaks although they need to have livestock excluded for a number of years. If you are looking for shade then an enclosure that fences out your "grove" of trees from browsing and rubbing for several years can work. That will allow you to plant circles, patterns or linear tree plantings based on

what you need. Don't plant one or two trees for shade because the soil compaction and sometimes too many nutrients can kill them if the herd loafs there too often and too long.

- b. If you are looking to add trees or shrubs for browse then Conservation Practice 512 or 550 may fit but not well. In deer systems I recommended planting a grazable tree like willow, cottonwood, poplar or even bush honeysuckle along the perimeters and scattered throughout the paddocks if the producer is willing. Pen raised breeder herds are generally on full feed so this is a supplement and not the main course. Place net wire in a square at least 4 feet square with the tree in the middle, sturdy posts and keep trimming the top at 5-6 feet high to make it bush out. Anything sticking through the net wire will be browsed with the intent of leaving enough leaves inside to keep the plant alive. Risk is fawns getting head caught and bucks getting antlers caught or just destroying them to get to the trees. The trees mentioned above regrow quickly, are cheap, and are preferred browse.
9. King Ranch Bluestem Pasture - Blackland prairie - No fertilization or herbicide planned by cooperator. Can we manage as Rangeland?
9. Answer: According to the NRCS Range and Pasture Handbook here are the definitions: Sounds like the producer is already managing it as rangeland.
  - a. **Rangeland** Land on which the historic climax plant community is predominantly grasses, grass like plants, forbs, or shrubs. Includes lands revegetated naturally or artificially when routine management of that vegetation is accomplished mainly through manipulation of grazing. Rangelands include natural grasslands, savannas, shrub lands, most deserts, tundra, alpine communities, coastal marshes, and wet meadows
  - b. **Pasture** (1) Grazing lands comprised of introduced or domesticated native forage species that are used primarily for the production of livestock. They receive periodic renovation and/or cultural treatments such as tillage, fertilization, mowing, weed control, and may be irrigated. They are not in rotation with crops.
  - c. For a high density stocking system you can begin to work with the livestock producer and apply management with what it there. I would hope that over time the higher producing plants such as big bluestem, Indian grass and others would begin to return with proper rest, grazing height, and prescribed fire. K.R. is not a high producer and there are better plants for grazing as succession builds soil health to support them. The producer may need to nudge the system along by re-introducing better plants but without good management K. R. may be the best they can achieve.
10. Any thoughts on the interaction between fencing and irrigation systems, day-to-day?
10. Answer: I am a fan of temporary electric fences where we can install and remove  $\frac{1}{4}$  to  $\frac{1}{2}$  a mile in a few minutes with the right ATV/UTV and a bit of creativity – see You Tube. Things like using a battery powered drill to wind up fence reels and having step in posts on a frame to grab them and stab them into the soil without getting off the vehicle. I've seen some really creative solutions for center pivots to run over fence posts that spring back up. If you will e-mail

with a more specific question then I'll be glad to answer or try to find someone who can.

11. I have successfully grazed horses, Smaller paddocks and rotation makes them do well on pasture

11. Answer: Thank you. My main issue with horses is achieving a grazing height in pasture that meets the NRCS prescribed grazing standard of a minimum stubble height without spot grazing. I haven't dealt with horses on rangelands personally but have heard some horror stories. Send me some pictures.

12. What are the negatives effects of grazing hogs during the winter, if there is one?

12. Answer:

- a. I like grazing almost every class of livestock as close to year round as we can. Every time I feed hay or purchased feed to livestock then I'm pretty sure I'm losing profit potential versus having them do it on their own. There are exceptions though.
  - b. Main criteria for winter grazing for me are these: Can the animal graze through the snow depth that is in their environment. If it isn't heavy wet snow or ice layers then Cattle and horse = 20" or less; Sheep and goats 8" or less, pigs= mostly want to follow other livestock but will go through 12". The forage underneath needs to be high enough quality and quantity to make up for the extra calories burned getting to the forage and staying warm.
  - c. People have been grazing swine for many years. My main criteria is to not have too many so that they don't start to root up the soil. They should primarily graze legumes, eat fruit, nuts and insects and get what they can from the manure of the ruminants in the system. I've been told in Missouri that one pig per 20 cows is about right. In Iowa they worked well but didn't always "play nice" with small ruminants like sheep. Not sure for other parts of the U.S.
13. Have you had experience with grazing for controlling reed canary grass? If so, how effective was it - would cattle or goats graze on reed canary grass and are there certain times in the plant's life cycle that would be ideal for this?

13. Answer:

- a. Most reed canary doesn't begin to generate alkaloids until it is 15" in height. It is very palatable until then and after maturity. To damage most grass species they should be grazed when they are reproductively in the boot stage and plant reserves are lowest. That means make the cow herd eat "broccoli" for a while. Tastes bad but shouldn't be enough to reduce gains that much.
- b. I worked with The Nature Conservancy in Iowa on a riverine floodplain where they had repeatedly sprayed and later repeated burned to control reed canary grass only to have it come right back with the next flood event. We used cattle 100 head/acre/day with a daily move. The cattle incorporated the 2 inches or so of reed canary thatch into the soil so seed could germinate and ate all of the 36 – 40 inches of green vegetation in that one day and that is how we sized the paddocks using temporary fence. When the reed canary got about 15-18 high again it was regrazed. In two growing seasons there was a huge difference in the openness of the stand. Benefits are the wildlife like baby turtles could get through the area and there was a chance for any remaining native sedge species to take advantage of the micro highs and lows created to germinate and

grow. Risk was that we had more open soil than I am usually comfortable with. This area had been so manipulated that we were willing to accept some risk to check for the ability of the cow herd to suppress reed canary. The cattle gained weight and didn't appear to suffer from the alkaloids that can be present in reed canary grass.

14. Is disease an issue with multispecies grazing?

14. Answer:

- a. We have to always be careful of disease and stay on top of animal health. There are some shared diseases among kinds of livestock and in some cases wildlife. This question can be better answered by a veterinarian based on the specific livestock species and geography.
- b. Parasites are a much higher concern for me. Barber pole worm in small ruminants and the normal fly, tick and lice issues can be made worse or sometimes helped by putting everything into one herd and moving them so that there is a significant rest in each paddock that can help break the parasite cycle. Management is the key. Keeping animals close together can mean more opportunities for transmission or sharing of parasites and disease. Again management, geographic location and species matter.

15. Any comments on using shade trees in pasture management systems.

15. Answer: Same answer as for Question #8.

16. What distance do you replace 800" rule with for sheep? Can you email the stuff you referred to on MO EFOTG?

16. Answer: They almost need to be touching. See question #7

17. Goat grazing guidance by Mark Kennedy is available on Missouri's eFOTG with the Prescribed Grazing (528) standard.

17. Thanks!

18. Are the endophyte friendly fescues able to withstand grazing as well as KY31 endophyte infected?

18. Answer: The research that I've listened to and read indicates several things

- a. See {Livestock Foraging Behavior In Response To Sequence and Interactions Among Alkaloids, Tannins, and Saponins; Tiffany L. Jensen; *Utah State University*} it appears that secondary chemicals can cancel each other out and that changes how the endophyte infected fescue is consumed. Endophyte friendly has significantly lower levels of ergovaline (125 ppb) vs 250 for leaves, 600 for stems and 1200 to 2400 for seeds with infected endophyte fescue. The threshold for toxicity is around 200 ppb so if fescue of either sort is only a small percentage of the diet it may not matter. Reality has been that endophyte infected takes over because livestock won't eat it or leave it for last and it becomes 100% of the diet and wreaks havoc.

I was Published in On-Pasture August 2015 and this also may help

***Editor's Note: Jess Jackson says that it seems he's been learning to communicate almost all his life. "Just expressing my thoughts in a way that other people can understand is like pushing marshmallows into a parking meter," he says. But when he paints mental pictures he's found communication becomes easier. He'll be sharing some of the pictures he's painted***

*with On Pasture readers over the next little while to help us all think about things in a new way.*

Although cows and small ruminants can self-medicate, eat weeds and do wonderful things for us, they are self-centered and stubborn and benefit greatly from grazing management. Think of it this way:



I raised four children and if we let them loose on a buffet line without restraint or good parenting, the dessert would be gone first, meat next, then maybe a few vegies or fruit. But most of the salad and vegetables would get moldy before they were eaten. The best thing for kids is to give them a plate of food containing a balanced meal, then let them go back when it is empty.

Livestock are no different than kids. They eat the dessert plants first, then the next best and so on, continually grazing the same plants until those plants die. Scientists call this *pushing back succession*. The best solution is to split grazing lands into the smallest paddocks that the manager can handle which contain generally equal amounts of forage on “the plate”. Then move the livestock so that ALL the plants are eaten. The dessert plants get enough rest to regrow, reproduce and be ready for the next grazing event. The salad plants may not taste as good but many are nutritious. Besides, salad isn’t bad for me, I just like to wipe the taste from my mouth with a ribeye.

A second-order effect is that if forages like fescue are left to be grazed last, then the toxicity is 100% of the diet. If livestock were encouraged to graze every plant, including fescue, in a short time frame, the toxicity would be a smaller percentage of the diet. Even the trampling of stems and other “yucky” things helps build soil health and allow all plants the chance to compete evenly. Your local NRCS Range or Grazing Specialist can help show producers what the plate size should be.

- b. Endophyte friendly, endophyte free and endophyte infected are the three types of fescue that I am aware of. When it is the majority of the diet then livestock stop eating endophyte infected as they get sick instead of full. This is not true for the other two. Endophyte friendly and E- Free can be overgrazed and killed that way but are still very hardy in the upper Midwest and humid east along that latitude.
19. Greg Watkins: What is the best way to manage browse species to maintain them in a grazing system for small ruminants?
- a. Answer: I inserted part of a job sheet that I did for Iowa. It WILL be different for any state that doesn’t touch Iowa. This may be a guide to help start and pay special attention to the criteria for defoliation.

#### Conditions Where Practice Applies

On forests, native and naturalized pastures, wildlife lands, and other lands where trees and shrubs need to be removed to restore or create the natural or desired plant community.

### **Criteria for Brush Management with Goats**

**Beginning threshold:** Canopy of brush species exceeds 25% measured at or below five feet averaged throughout the targeted area to begin.

**Ending threshold:** All brush species have at least 80% leaf removal and some twigs possibly eaten below five feet in height throughout the treatment area at the end of July. Research has shown that defoliation after July has little effect so plan to have initial defoliation complete before August.

### **Method/Implementation**

The total area to be browsed should be fenced into at least 5 paddocks if at all possible. Initiate browsing as soon as the brush is fully leafed and defoliate as described above. Move goats to the next paddock and repeat. When the initial paddock leafs out again regardless of where the goats are in the rotation bring them back to the initial paddock to defoliate the brush again. Continue this method to manage brush until all paddocks have brush suppressed or killed to at least the threshold described above. Killing brush may take 2 to 3 years of repeated browsing.

**Guard Animals or Protection:** Most goat herds need protection from predators and a good fence and guard animal can be a good idea.

### **STOCKING RATES**

The following table should be used as a guide for stocking rates when goats for weed and brush control.

*\*Recommendation is based on how many acres to carry one animal unit per year. In Iowa this is generally 1 cow to 3-5 acres. So where you could put 1 cow then translate the table to derive the number of goats or cow/goat combination. As brush increases the capacity for cattle decreases and capacity for goats increases.*

| <b>Pasture Type</b>           | <b>% Brush Canopy</b>            | <b>Cows</b> | <b>Goats</b>                    | <b>Cows + Goats</b>                        |
|-------------------------------|----------------------------------|-------------|---------------------------------|--|
| Excellent Pasture             | <10%                             |             | Not eligible for NRCS financial | Not eligible for NRCS financial assistance |
| Brushy Pasture                | 25% – 40%                        | 1*          | 9 to 11*                        | 1 +(2 to 4)*                               |
| <b>Brush Eradication</b>      | <b>&gt;40%</b>                   |             | <b>8 to 12</b>                  | <b>.5 +(4 to 6/ac)</b>                     |
| Sustainable Browse Management | Maintain 10 –< 40 % brush canopy |             | 1 to 3/ac                       | .25 + (1 to 2)/acre                        |

**Example:** Total acres of brush multiplied by 8-12 then divided by the number of grazing weeks between green up and August 1<sup>st</sup> equals the initial stocking rate. This is the number of goats needed to defoliate the entire acreage in one grazing season (Generally May 1 – July 31 or about 12 weeks). Research shows that defoliation after August 1<sup>st</sup> has little effect on brush species mortality.

25 acres X 10 goats/ac. ÷ 12 weeks = 21 goats initial stocking rate. All goats are in one herd and rotate within the 5 paddocks.

### **Goat Grazing Preferences**

**Preferred species:** Multiflora rose, blackberry, greenbriar, honeysuckle, locust, sumac, willow, mulberry, wild grape, autumn olive, gooseberry, chicory, red clover, ragweed, lambs quarter, sericea lespedeza, crown vetch, poison ivy/oak, spotted knapweed, pigweed, oak, walnut, agrimony, leafy spurge.

**Intermediate preference:** cedar, buck brush, hickory, ironweed, spiny amaranth, curly dock, pokeweed, buttercup, white clover, thistle, bur dock, ox-eye daisy, queen anne's lace, garlic mustard.

**Not preferred:** most grasses

Undesirable or potentially poisonous: horse nettle (poisonous), perilla mint, wooly croton, buffalo burr, wild cherry (okay if fresh, poisonous if wilted), Switchgrass (may cause photosensitivity), alsike clover (may cause liver damage)

19. I would be interested in the grazing reference from the Missouri (?) eFOTG
20. Answer: <https://efotg.sc.egov.usda.gov/treemenuFS.aspx> Rebecca section four of the electronic field office technical guide for practice 528 Prescribed Grazing. Link should work. For non-NRCS employees e-mail me or Dee Vanderburg at [dee.vanderburg@mo.usda.gov](mailto:dee.vanderburg@mo.usda.gov) and we will send you what you need.