

Lovin' Your Ranchette



NEW MEXICO

SMALL ACREAGE GRAZING

Some areas of New Mexico are growing rapidly, with more and more people seeking a rural lifestyle. Buyers are purchasing and building homes on land parcel sizes averaging from one to ten acres, and ranging up to forty acres. Many of these buyers are families who desire to own large animals for hobby, pleasure, or 4-H projects.

Animals grazing on small acreages can create a number of serious resource problems that people may not be aware of. These problems are becoming evident as a result of overgrazing permitted by owners who allow their animals to graze every bit of edible forage and leave the ground denuded of cover. Land with a shortage of grass cover becomes subject to soil erosion by wind and water, a reduction of soil fertility, and an increase in weed species. The economic value of the land and surrounding areas are also adversely impacted.

By reviewing this brochure on a small acreage grazing, the owner can properly care for his or her animal(s) by understanding feed requirements, conserving soil, protecting plant condition and ecological diversity, maintaining or improving wildlife habitat, and increasing property values.

WHAT IS SMALL ACREAGE GRAZING?

Small acreage grazing means raising livestock on pastures usually less than forty acres in size. A perception existing among many landowners is that small parcels of land can be grazed continuously. Understanding range similarity index, carrying capacity, and feed requirements are critical to successful pasture use.

WHY IS PROPER GRAZING SO IMPORTANT?

Proper grazing is vital to the overall ecological health of a piece of land by ensuring that soil quality and vegetative cover are maintained and enhanced. In the absence of adequate ground cover, soil is subject to wind and water erosion, and increased compaction. In the absence of good soil quality, the land remains in poor ecological condition unless costly reclamation efforts are made.

WHAT IS OVER-GRAZING?

Overgrazing is the term used to indicate excessive grazing by domestic livestock or wildlife and results in a poor or unsatisfactory ecological site condition. It often indicates or leads to a lack of vegetation or a shift in plant species, stunted plants, reduced plant vigor and palatability, compacted and barren soil with a lack of organic matter, and excessive runoff and erosion.

RESOURCES IMPORTANT IN SMALL ACREAGE GRAZING:

1. Natural Resources – soil, water, air, plants, and animals.
2. Human Resources - development criteria, (i.e. sizes of individual lots, restrictive covenants, or zoning ordinances), aesthetic values such as open space and attractive landscape, and individual needs, custom, and culture of the people which includes the perception of “quality of life” and “being a good neighbor”.

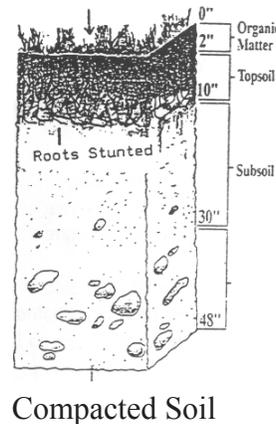
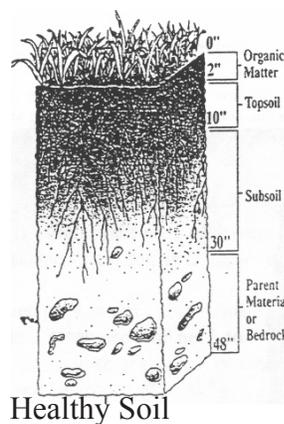
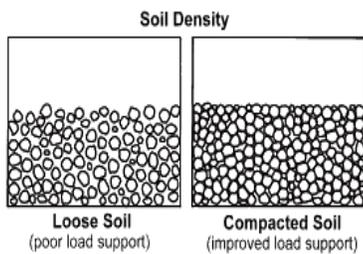
NATURAL RESOURCE PROBLEMS ASSOCIATED WITH OVERGRAZING

SOIL:

Overgrazing causes soil compaction, especially in wet areas. It also reduces soil fertility and soil infiltration rates. Indicators include excess runoff, erosion, soil is hard when dry, standing water after rainstorm for an extended time, and soil surface crusting. As you can see below, compaction reduces pore space and will stunt roots. Imagine grass trying to grow in a dirt driveway compacted by vehicle traffic.

- e.g. Horses exert 23.0 psi/hoof
 Vehicles at 3600 lbs. exert 18.0 psi/tire
 Humans flat on both feet exert 2 – 6 psi
 Balanced on ball of one foot 50 – 75 psi

(psi = pounds per square inch)



HEALTHY SOIL

- A. Organic matter 1 – 5%
- B. Water infiltration good
- C. Water holding capacity good
- D. Fertility good
- E. Pore space adequate for air/water/nutrients
- F. Erosion – slight to none

UNHEALTHY SOIL/ COMPACTED SOIL

- A. Organic matter reduced to less than 1%
- B. Water infiltration reduced
- C. Water holding capacity reduced
- D. Fertility reduced
- E. Pore space greatly reduced

WATER:

Excessive grazing can contribute to water pollution. It is best to locate corrals downslope from culinary drinking water wells so sediment and manure runoff from corrals will not contaminate ditches, streams and wells. If a stream flows through the pasture, it is recommended to fence a water gap to reduce the animals' access to the stream and minimize impacts of activities such as wading, trampling, and browsing. Overgrazing increases runoff, which reduces infiltration into the soil profile. It is much more desirable to have precipitation slowly infiltrate into a vegetated soil surface as opposed to running off a barren piece of ground. The positive action benefits the site by growing more grass and improving soil quality, and off-site benefits include aquifer recharge and cleaner streams.

AIR:

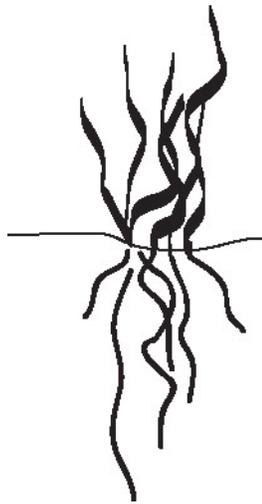
Overgrazing reduces adequate plant cover which can lead to air pollution (dust storms), a result of severe winds eroding bare soil. Overgrazed pastures typically have an abundance of weeds and few native grasses. The root systems of annual weeds have a single taproot and do not anchor the soil as well as grass plants, which have a fibrous root system. Weed infestations are also a weed seed source for your neighbors downwind.

Wind erosion Rio Arriba County - Spring 2002

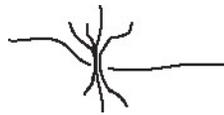


PLANTS:

Overgrazing reduces plant composition, vigor and palatability. For example, weeds or annual species with little or no value for livestock or wildlife will invade a pasture that has been excessively grazed. When determining how much to graze, it is best to identify the grass the animal(s) most likely graze or favor and use that grass as your grazing indicator. A good rule of thumb for proper grazing of range grasses is to take 50% of the current years' growth. Basically, this means to graze half and leave half of the key indicator species.



Excellent Grass Stand



Poor Grass Stand

Keep in mind that if the grass on the right was not continuously grazed, the root structure would be like the grass on the left. And if the grass on the left was properly grazed to the height of the grass, the roots would still be the same. The poorly rooted grass has very little root reserve for the next year's growth. In overgrazed situations, poor grass stands prevail.

As grasses become less healthy, weeds tend to take over a site, causing a decrease in ecological condition. A typical native range site in excellent condition has a high percentage of diverse grass species, and a low percentage of annual forbs and woody species. Available animal forage is improved with improved grazing.

ANIMALS:

Overgrazing and the decline of desired grasses can cause animal health problems. Therefore it then becomes costlier to maintain a healthy animal because of the need to use supplemental feed year around. Also, the desired wildlife will avoid the area because of the lack of feed and cover. Undesirable wildlife, such as pocket gophers, may invade a barren pasture.



HUMAN RESOURCE PROBLEMS ASSOCIATED WITH OVERGRAZED SMALL ACREAGES

Overgrazed pastures are unsightly or unattractive. Overgrazing reduces the grazing value and sale ability of the property by as much as 50% for a native pasture. The future natural resource conservation trend will emphasize the importance of avoiding overgrazing and its detriments to the natural resources. In the arid Southwest, climate conditions can hamper an area from “bouncing back” after extended overgrazing. Abused land heals slowly in New Mexico.

HOW MUCH DOES A HORSE OR COW EAT?

- A mature pleasure horse will require approximately 30 pounds of grass or hay per day. A one-thousand-pound cow will require approximately 25 pounds of grass or hay per day. In the winter, this feed requirement increases with a decrease in temperature.
- A horse/cow may need supplemental feeding to correct deficiencies in protein or other essential nutrients in the forage.
- Grain is needed in a horse or cow’s diet when the animal is being worked or in the winter for body maintenance.
- The higher the stocking rate the more rapid the destruction of vegetation if animals are allowed to graze continually, even if ample hay is supplied.
- During the winter in the Estancia Valley area, for example, 4 – 6 months may require supplemental feed due to the snow cover, short growing season, and lack of cool season species. In other areas of New Mexico, and on larger ranches, grazing could occur year around, but supplemental feed is still necessary on small acreages.

WHAT IS AN AUM AND HOW DO I DETERMINE AVAILABLE FORAGE?

An AUM stands for animal unit month. An animal unit month is the forage required for 1 animal weighing 1000 pounds (such as a cow) for 1 month.

Therefore:

1 cow at 1000 lbs.	=	1.0 animal unit (AU)
1 horse at 1250 lbs.	=	1.25 AU
1 sheep at 200 lbs.	=	0.20 AU
1 goat at 150 lbs.	=	0.15 AU

Calculate yearly forage:

1 cow	x 1.0 AU	x 12 months	=	12.0 AUM/year or 6.0 AUM/6 months
1 horse	x 1.25 AU	x 12 months	=	15.0 AUM/year or 7.5 AUM/6 months
1 sheep	x 0.20 AU	x 12 months	=	2.4 AUM/year or 1.2 AUM/6 months
1 goat	x 0.15 AU	x 12 months	=	1.8 AUM/year or 0.9 AUM/6 months

HOW DO I DETERMINE FORAGE CONDITION ON MY PASTURE?

- Be able to identify key grasses and plants found in your area and understand carrying capacity associated with a given site condition. (See Guide on next page.)
- Use the “average” carrying capacity for this area, as defined on the next page and in the examples. Irrigated conditions will produce more forage, yielding as much as ten times the carrying capacity. Since there are very few irrigated pastures of small acreages in this area, these guidelines are to be used for non-irrigated, native pasture.

DETERMINING RANGE CONDITION - SIMILARITY INDEX CLASS

Range Condition Class	Percentage of Present Plant Community as Compared to Native Ecological Potential (Similarity Index)
Excellent	76 - 100%
Good	51-75%
Fair	26-50%
Poor	0-25%

SIMILARITY INDEX CLASS

An example of how to understand this concept comes from the Estancia Valley. The predominant range site in the Estancia Valley is called a loamy site and is directly related to a loamy soil surface texture. Loamy range sites in excellent similarity index condition will have approximately 20% western wheatgrass, 20% blue grama grass, 15% galleta, 10 – 15% sideoats grama, with the balance of the composition as dropseed, threeawn, and alkali sacaton grass species and approximately 10% annual forbs and woody species. The carrying capacity for this “excellent” site is 2 – 3 acres per animal unit month (AUM) or 12 – 18 acres for one animal unit for 6 months (AUM/6mos). The annual production on this site will range from 500 – 1500 lbs., depending on climatic conditions (mostly rainfall).

Unfortunately, most of the loamy range sites in this area are not in excellent similarity index, for a number of reasons that typically result from historical use. The majority of the range sites in this area are in fair similarity index, meaning less plant diversity and an increase in less desirable plants. A typical loamy site in fair similarity index will have a composition of blue grama grass, alkali sacaton, dropseed, and more than 25% of annual forbs and/or woody species. The carrying capacity is, therefore, less than that of an excellent site, with 3.5-6 acres required for an AUM, or 21-36 acres for an AUM/6 mo.

Guide to Average Stocking Rates for Loamy Range Site

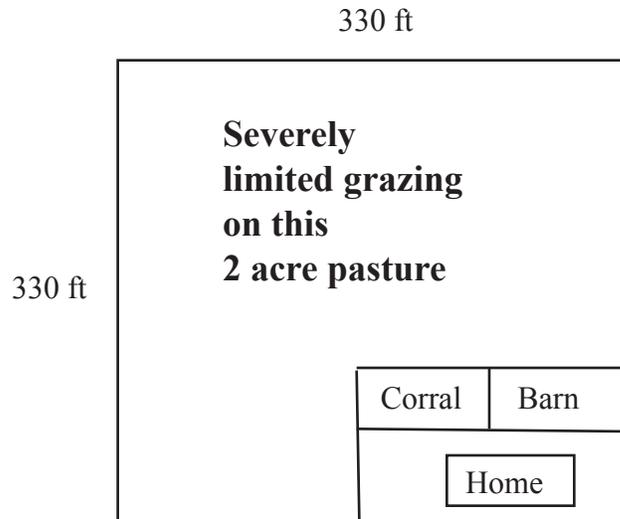
Excellent Similarity Index	2.5 Ac./AUM or 15 Ac.AUM/6 mos
Good Similarity Index	3.3 Ac./AUM or 19.8 Ac.AUM/6 mos
Fair Similarity Index	4.7 Ac./AUM or 28.2 Ac.AUM/6 mos
Poor Similarity Index	6.0 Ac./AUM or 36 Ac.AUM/6 mos

This guide illustrates a very important fact for rangeland in this area: Small acreages cannot be used as a primary food source for grazing animals. The carrying capacity of typical range sites in this area is very low, compared to other areas of the United States, and small acreages should be viewed more for recreational value rather than grazing value.

Two examples follow.

EXAMPLE #1: 2.5 ACRE Lot with Home, Barn, & Pasture

Assume: On this 2.5 acre lot, only 2.0 acres will be used as pasture in fair similarity index. Home, barn, corrals, and yard take up the balance of the property.



To determine carrying capacity:

2 Ac. Divided by 4.7 Ac/AUM (Average rate for fair condition) = .43 AUM
 Notice that .43 AUM is considerably less than the 1.25 AUM required for a horse!
 .43 of one month is approximately 12 days. This does not mean 12 days of every month, but the carrying capacity of this site is only 12 days per year !

To determine feed requirements:

1 horse needs 15.0 AUM/year.

Pasture available is .43 AUM.

Difference = 14.57 AU < feed.

1.0 AUM = 750 lbs of hay or .037 ton bunk fed

14.57 AUM = 10,928 lbs of hay or 5.5 tons bunk fed, approximately 183 bales of hay.

NOTE: This 2-ac. Pasture provides less than 3% of a horse's annual feed requirements.

A practical approach to such small acreage management is to allow the animal(s) on the pasture for either one day per week, or 2 or 3 afternoons per week, but be sure to provide supplemental feed on those days, just as you normally would if they were penned up. This allows them exercise and a variety in their diet, and the owner can ride or take pleasure in watching them in the pasture. The little bit of forage utilization, hoof action, and manure spreading will benefit the overall condition of the soil and plants. Be sure and follow proper grazing principles to ensure that plants remain healthy and soil quality is maintained.

EXAMPLE #2: Rotational Grazing on 40 Acres

By properly managing your pasture and allowing for periodic rest, the carrying capacity increases. A good rule of thumb is that an increase of 25-30% can be achieved with rotational grazing, basically moving up one similarity index class. For this example, a 40 acre block will be considered in similarity index condition and compared to four, 10 acre paddocks, with a similarity index class rating of good, due to the rotational management. The landowner would like to graze 3 cows, which equates to 3.0 Animal Units (AU).

1320'	1320'
1320'	1320'

40 Acre Pasture

Carrying capacity:
40 divided by 4.7 ac/AUM=8.5 AUM

% grazing time:
AUM available (8.5) divided by
AUM needed (3.0) (12 mos)=24

This means that the pasture can be grazed 24% of the time, or 88 days per year.

Total AUMs in this 40 ac. Pasture is 8.5, with grazing at 24 % of time, or 88 days per year.

Supplemental feed needed: 10.3 tons hay

1320'	1320'
1320'	1320'

<p><u>10 AC Pasture</u> 10ac divided by 3.3ac/AUM=3.03 Divided by 36 AUM needed= 8.4% of time</p>	<p><u>10 AC Pasture</u> Same calculations for 8.4% of time</p>
<p><u>10 AC Pasture</u> Same calculations for 8.4% of time</p>	<p><u>10 AC Pasture</u> Same calculations for 8.4% of time</p>

Total AUMs in this divided field is 12.1, with grazing allowed 33.6 % of time, or 122 days, at 30 days per paddock. This allows ample rest to maintain vegetative condition.

Supplemental feed needed: 8.9 tons hay

The main reason for rotational grazing is that grasses require a rest between grazing, especially in heavily grazed situations. This rest stimulates root growth, which provides rapid re-growth of above ground forage. Obviously, if a landowner only has one two-acre pasture in fair condition, a rotation could only consist of grazing for a few days, then penning the animal(s) to allow the pasture to rest and grow. Depending on time of year and growing condition, it may be a few months before the pasture can be grazed again for a few days, especially if livestock feed is the primary goal. This type of management works to an even greater benefit with larger pastures, as seen in example #2. Ranchers with large acreages and numerous pastures practice rotational grazing that offer both economic and environmental benefits.

It is important to stress that small acreages should not be considered as a feed source for grazing animals due to such low carrying capacities. The fragile nature of the vegetation and soils in this area do not easily recover from abuse. Since many developers of subdivisions have allowed large animals on one to 10 ac. Lots, this brochure is intended to provide information to landowners so that they can better manage their livestock while protecting natural resources.

WHAT DO I DO WITH MY HORSE WHEN IT IS NOT IN THE PASTURE?

Keep the horse in the sacrifice area/corral/barn or lease extra pasture. Horses in confinement sometimes need to relieve boredom. This can be accomplished by regular exercise, pets in the area, feeding a little throughout the day, and by placing rocks in the feed bunks to slow the eating. Keep in mind that horses will eat more than they need. Feeding long-stem forage reduces the incidence of behavioral abnormality such as wood chewing and mane/tail chewing. To reduce trampling on pasture it is also best to keep the animal penned at night since horses don't eat much during the nighttime.

WHAT CAN I DO TO CORRECT AN OVERGRAZED PASTURE?

- First, recognize whether or not your pasture is overgrazed and decide if the pasture needs to be reseeded. Your Natural Resources Conservation Service office or local Soil & Water Conservation District can assist you in your specific case. If soil compaction problems are identified, it is recommended that deep ripping or chiseling be done. This will bring back the soil pore space desperately needed for air/water/nutrient interactions. Then re-seed pasture if necessary.
- Set up a rotational grazing system whenever possible. One way this can be accomplished is by cross fencing the existing pasture with electric fences to create little paddocks.
- If one-pasture system is used, use sacrifice areas, such as corrals to contain the animals when the pasture is in a rest rotation. A "mini" rotation can be achieved by staking the horse and moving the horse throughout the pasture.
- Reduce number of animals or acquire more land if possible.
- Mow the tall grass clumps to stimulate new growth for better utilization.
- Manure should be spread in the pasture or composted in a bin. If spreading is done, drag or rake manure to increase rate of decomposition and reduce clumping, which can kill vegetation. The manure will add nutrients necessary for new growth. Fertilize the pasture based on soil testing for nitrogen, phosphorus and potassium. New Mexico State University offers soil analysis at a low cost.
- Identify an indicator grass that animals will graze. Graze only half of the weight of production forage that is present. For example, graze 8" tall plant to 4" only. In well managed rotational grazing, animals may utilize 65% of the growth. Therefore, an 8" plant could be grazed to less than 3" since a recovery period is allowed. For estimating weights of grass plants, clip the plant near the base and balance the plant on your finger. This will provide an idea of how much to graze.
- Remove animals from the pasture after heavy rain to avoid soil compaction from their hooves.
- Identify and control weeds. If herbicides are used, read and follow label directions.



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