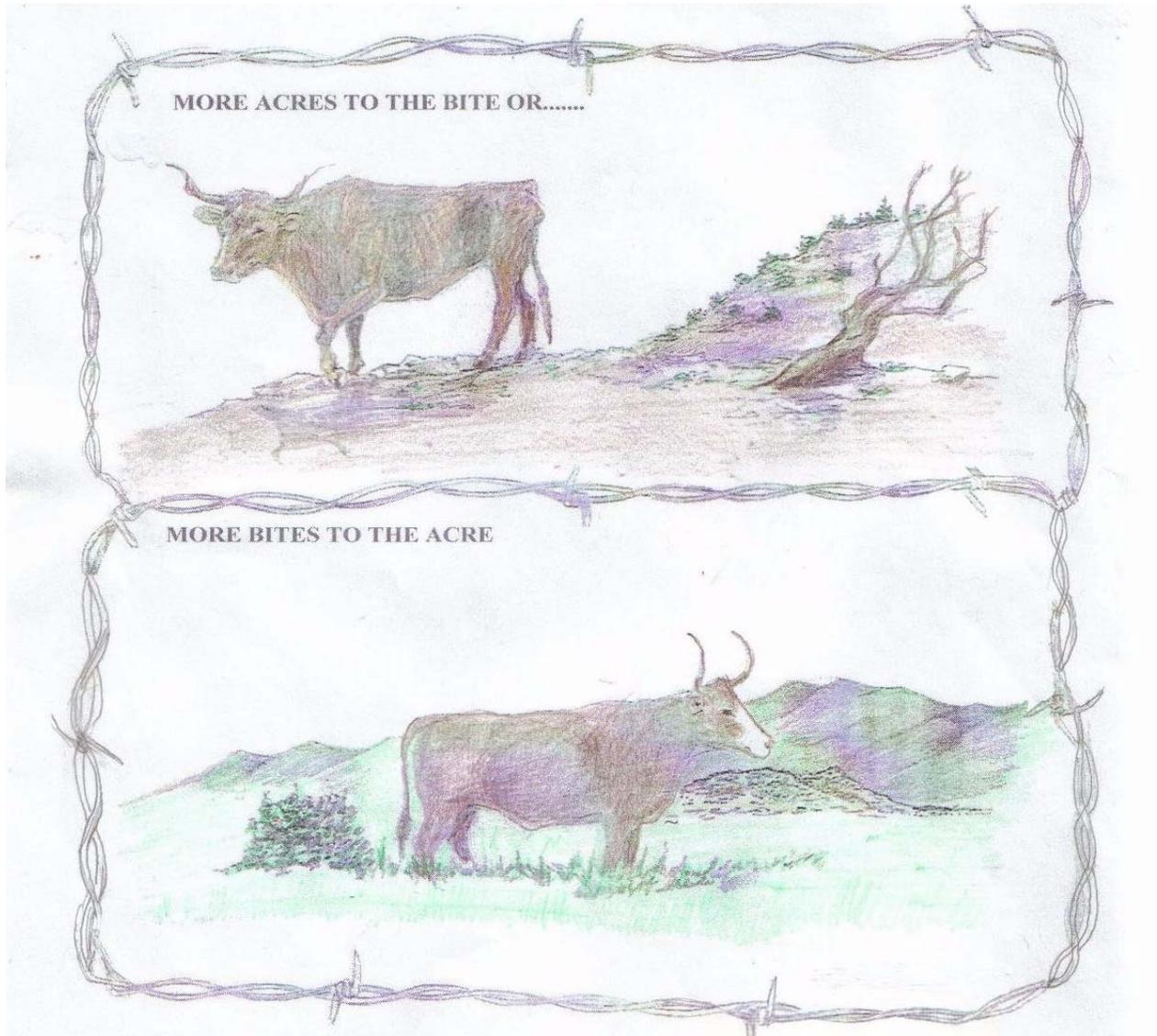


SMALL ACREAGE GRAZING IMPACTS TO OUR NATURAL RESOURCES

WHICH SHALL IT BE?



USDA-NATURAL RESOURCES CONSERVATION SERVICE

SMALL ACREAGE GRAZING

Many counties are growing rapidly, and more and more buyers are purchasing and building homes on land parcel sizes ranging from one to ten acres. Many of these buyers are families who desire to own larger animals for hobby, pleasure or 4-H agricultural projects. Animals grazing on small acreages can create a large 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 grass and leave the ground bare. Land with a shortage of grass cover becomes subject to soil erosion by wind and water, reduced soil fertility, reduced plant palatability and increased weed species.

By reviewing this brochure on small acreage grazing, the owner can properly care for his or her animal(s), conserve the soil, protect the palatability of the forage and preserve water quality.

WHAT IS SMALL ACREAGE GRAZING?

Grazing livestock on pastures usually less than ten acres in size.

WHY IS PROPER GRAZING SO IMPORTANT?

Proper grazing improves/maintains/preserves our natural resources such as water quality, water cycle including ground water recharge, soil compaction, soil erosion, desired plant communities, economics between healthy and unhealthy plant communities, and animal health.

WHAT IS OVERGRAZING?

Overgrazing is the term used to indicate poor/unsatisfactory condition and composition of the available forage. It often indicates or leads to: lack of vegetation, or a shift in types of plants, weed infestations, compacted soil, stunted plants, reduced plant vigor and palatability, excess runoff and erosion, barren soil and lack of organic matter.

RESOURCES IMPORTANT IN SMALL ACREAGE GRAZING:

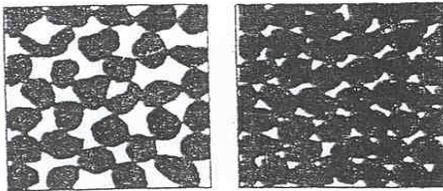
1. Natural Resources - soil, water, air, plants and animals.
2. Human Resources - development criteria, i.e. sizes of individual lots and overall developments, esthetic value, needs and quality of life.

NATURAL RESOURCE PROBLEMS 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 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

Effect of Compaction on Pore Space



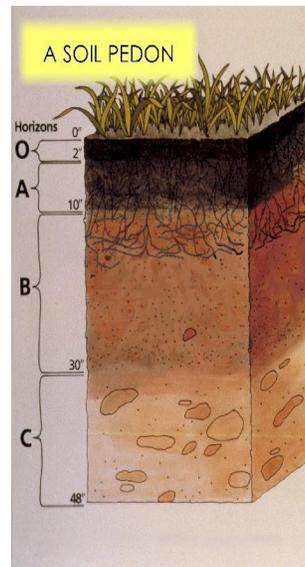
Uncompacted

Compacted

Black- soil granular
White- pore space for air and water

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 less than 1%
- B. Water Infiltration reduced
- C. Water Holding Capacity reduced
- D. Fertility reduced
- E. Pore Space greatly reduced
- F. Erosion - Severe

WATER: Overgrazing can contribute to water pollution. It is best to locate corrals down slope from culinary drinking water wells so sediment and manure runoff from overgrazed pastures won't contaminate ditches, streams and wells. If a stream flows through the pasture, it is best to fence a water gap to reduce the animals' access to the stream and activities such as wading, trampling, and browsing, which can add sediment to the stream.

AIR: Overgrazing reduces plant cover, which can cause air pollution (dust storms) and wind erosion. Overgrazed pastures that have weed infestations will be a good weed seed source and wind will blow weed seeds to your neighbors

PLANTS: Overgrazing reduces vigor and the palatability of plants. For example, weeds or annual species with little or no value for livestock will invade with overgrazing. Identify the grass the animal(s) most likely graze or favor and use that grass as your grazing indicator.

Fenced Out River or Creek

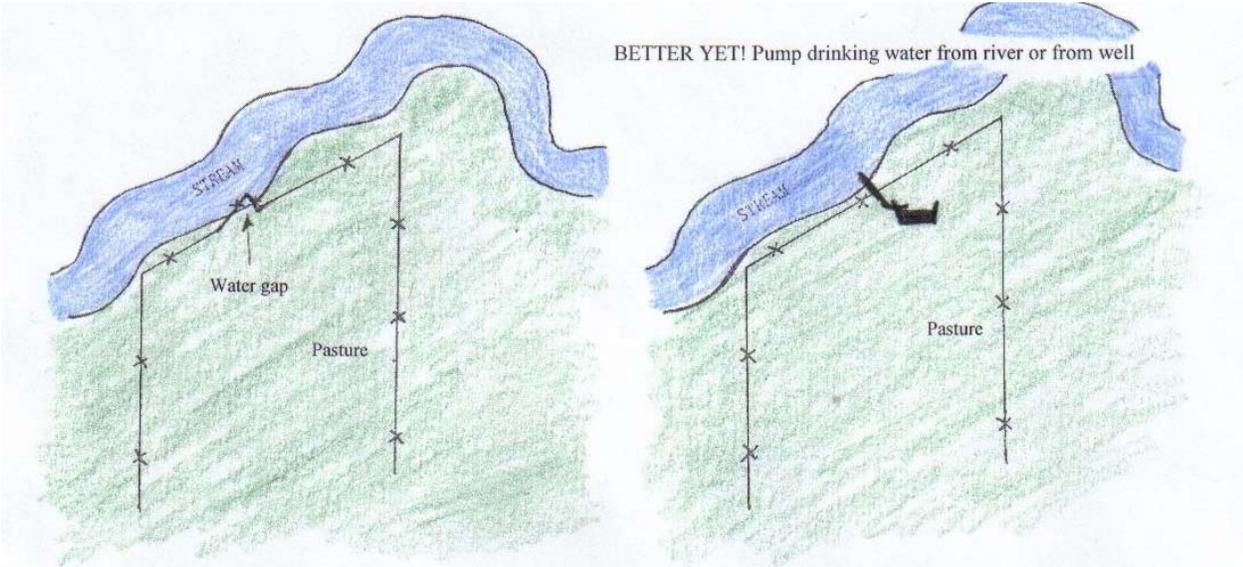
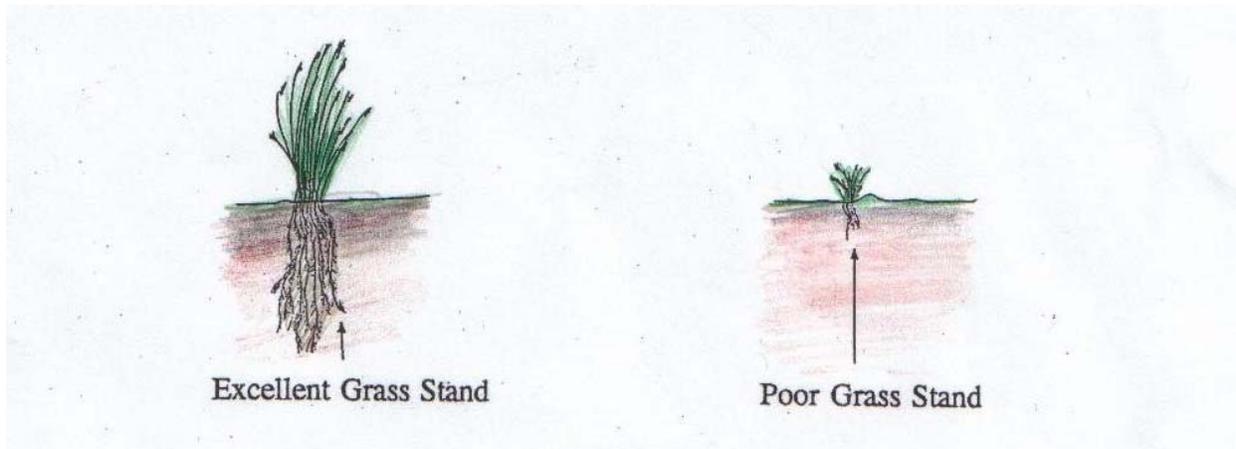


Photo – NRCS



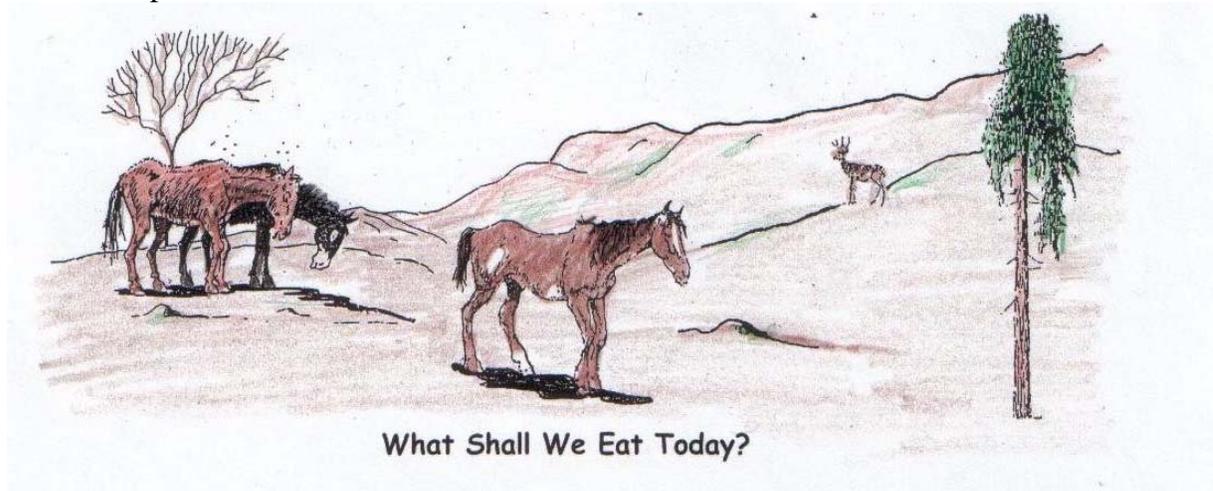
Photo – used with permission, Sandhill Task Force

Riparian Area Photos



Keep in mind that if the grass on the right wasn't 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 on the right, the roots would still be the same as shown on the left. Notice how the root mass of these 2 grasses decrease in size in each height state. The poorly rooted grass has very little root reserve for the next year's growth. In overgrazed situations, poor grass stands prevail.

ANIMALS: Overgrazing and the decline of desired grasses cause animal health problems. Therefore, it then becomes costlier to maintain a healthy animal because of the need to use supplemental feed year around. (See chart page 9) Also, the desired wildlife will avoid the area because of the lack of feed. Undesirable wildlife, such as pocket gophers, may invade a barren pasture.



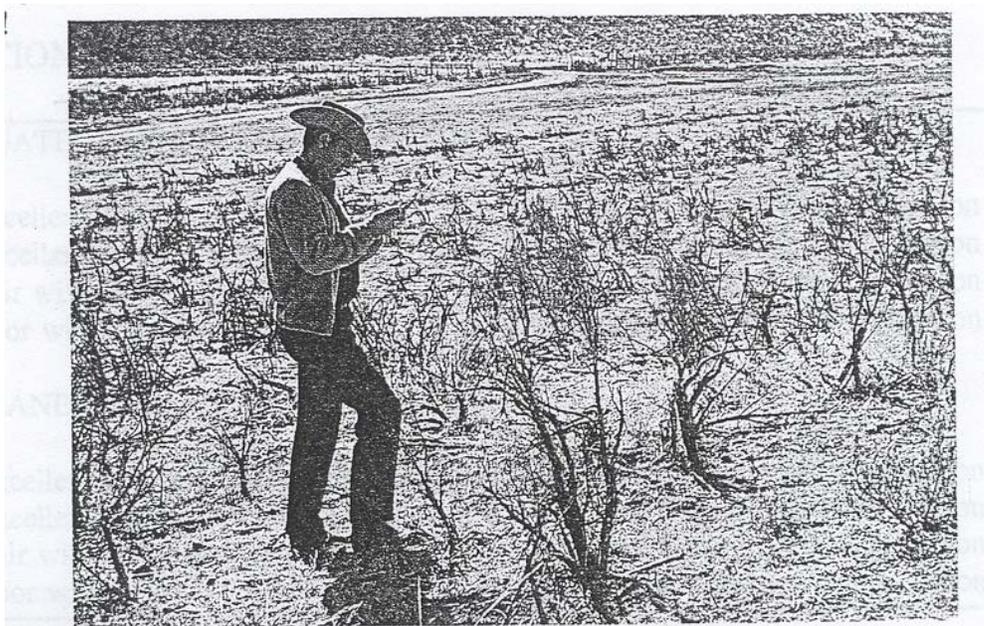
HUMAN RESOURCE PROBLEMS WITH OVERGRAZED SMALL ACREAGE

Overgrazed pastures are unsightly or unattractive. Overgrazing reduces the sale ability of the property and grazing value. The future natural resource conservation trend will emphasize the importance of avoiding overgrazing and its detriments to the natural resources.

The value of overgrazed pasture could be valued at 50% less than a pasture in excellent condition.

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 west, 5 to 6 months of supplemental feed will be required.



The Effect of Overgrazing

Photo Credit: USDA-NRCS



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 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

AUM = forage for 1 month
AUM/yr = forage for 1 year
AUM/6 months = forage for 6 months

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

EXAMPLE: GRAZING OF 2 HORSES/ YEAR AROUND

Therefore, 2 horses x 1.25 AU x 12 months = 30 AUM/year. But, in Wyoming area nutritional grazing doesn't occur year round due to dormancy and periodic snow. Assume for this example that grazing occurs only 6 months/year, if adequate forage is available. Grazing would need to provide 15 AUM/6 months and supplemental feeding would be 15 AUM/6 months. This supplemental feeding would most likely be in the form of hay. Therefore, if the irrigated pasture is in fair condition, without rotational grazing, you would need 7.5 acres for the 2 horses (see charts below).

HOW DO I DETERMINE FORAGE CONDITION ON MY PASTURE?

- Call your local Natural Resources Conservation Service or Conservation District Office for assistance on forage condition.
- Be able to identify grasses/weeds and understand the criteria in this document of this brochure.
- Assign a condition class to your pasture, such as excellent, fair, etc. Then follow the assigned AUM year.

CONDITION CLASS

IRRIGATED/SUBIRRIGATED PASTURE

Excellent with rotation grazing	5.0 AUM/acre/6 to 7 months growing season
Excellent w/out rotation grazing	4.0 AUM acre 6 to 7 months growing season
Fair without rotation grazing	2.0 AUM/acre/6 to 7 months growing season
Poor without rotation grazing	1.0 AUM/acre/6 to 7 months growing season

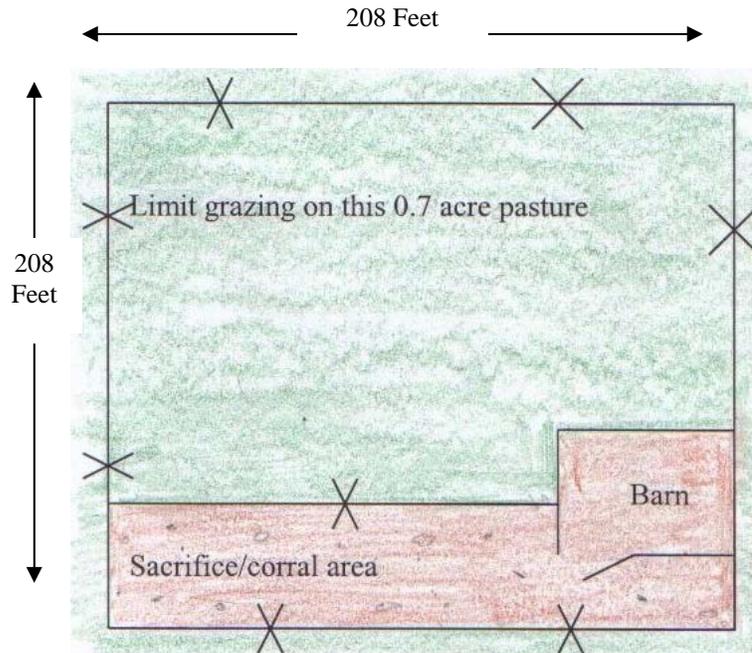
DRYLAND PASTURE

Excellent with rotation grazing	2.0 AUM/acre/6 to 7 months growing season
Excellent w/out rotation grazing	1.0 AUM acre/6 to 7 months growing season
Fair without rotation grazing	0.5 AUM acre/6 to 7 months growing season
Poor without rotation grazing	0.2 AUM/acre/6 to 7 months growing season

EXAMPLE 1.0 ACRE PASTURE WITH BARN

Assume: On this 1.0 acre piece only 0.7 acres is excellent condition pasture, 0.3 acres is the corral and barn.

**KEEP IN MIND THAT
GRAZING OCCURS ONLY
FOR ABOUT 6-7
MONTHS/YEAR IN THE
WEST**



1.0 acre size with 0.7 pasture and 0.3 acre barn/corral

Therefore, at 5.0 AUM/acre/6 months x 0.7 acre = 3.5 AUM/6 months

3.5 / 6 months = 0.6 AUM during the growing season

Notice that 0.6 AUM is less than the 1.25 AUM required for a horse!

1 horse needs 15.0 AUM/year

Pasture available 3.5 AUM/6 months

11.5 AUM/6 months - this is supplemental feed.

1.0 AUM = 750 lbs of hay or 0.37 ton bunk fed

11.5 AUM = 8625 lbs of hay or 4.3 tons bunk fed

TO DETERMINE PERCENT OF GRAZING TIME:

Divide AUM available by AUM required

0.60 AUM available/month

/ 1.25 AUM required/month

= .48 x 30 days/month = 14.4 days of grazing each month maximum available for a 6 month grazing period. So, on a 1 paddock (small pasture) system, graze 14 days/month and rest 16 days/month. (See 1st Calendar)

WE WILL USE 3 DIFFERENT PASTURE AND FENCING EXAMPLES ON THE 0.7 ACRE PASTURE (SEE CALENDARS BELOW)

1 PADDOCK PASTURE WITH CORRAL/ SACRIFICE AREA	2 PADDOCK PASTURES WITH CORRAL/ SACRIFICE AREA	3 PADDOCK PASTURES WITH CORRAL/ SACRIFICE AREA
S M T W T F S	S M T W T F S	S M T W T F S
<u>1 2 3 4 5 6</u>	<u>1 2 3 4 5 6</u>	<u>1 2 3 4 5 6</u>
7 8 9 10 11 12 13	<u>7</u> 8 9 10 11 12 13	7 8 9 10 <u>11 12 13</u>
14 15 16 17 18 19 20	14 <u>15 16 17 18 19 20</u>	<u>14 15</u> 16 17 18 19 20
21 22 <u>23 24 25 26 27</u>	<u>21 22</u> 23 24 25 26 27	<u>21 22 23 24</u> 25 26 27
<u>28 29 30</u>	28 29 30	28 29 30
Purple - Grazing 1 Paddock Black - Rest pasture 16 days	Purple - Grazing 1st Paddock Blue - Grazing 2nd Paddock Black - Rest pasture 23 days	Purple - Grazing 1st Paddock Blue - Grazing 2nd Paddock Green - Grazing 3rd Paddock Black - Rest pasture 25 days

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 regrowth of above ground forage. (See plant response diagram page 4)

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

Keep the horse in the sacrifice area/corral/barn or get extra pasture. Horses in confinement sometimes need to relieve boredom. This can be accomplished by regular exercise, pets in the area, toys in the corrals, such as toy balls, feed 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. When animals are grazing green pasture it is always a good idea to feed a little hay to balance the feed nutrients so going from hay to green pasture is less traumatic. 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.

AN EXAMPLE OF ADEQUATE PASTURE:

For 1 horse or 15 AUM/ year or 1.25 AUM or 2.5 AUM for 2 horses or 30 AUM/year can be used for any size pasture you may have.

for example 3.0 acres of excellent condition pasture with rotational grazing

$$\underline{\times 5.0 \text{ AUM/6 months (from condition class pg 6)}}$$

$$= 15.0 \text{ AUM/6 months}$$

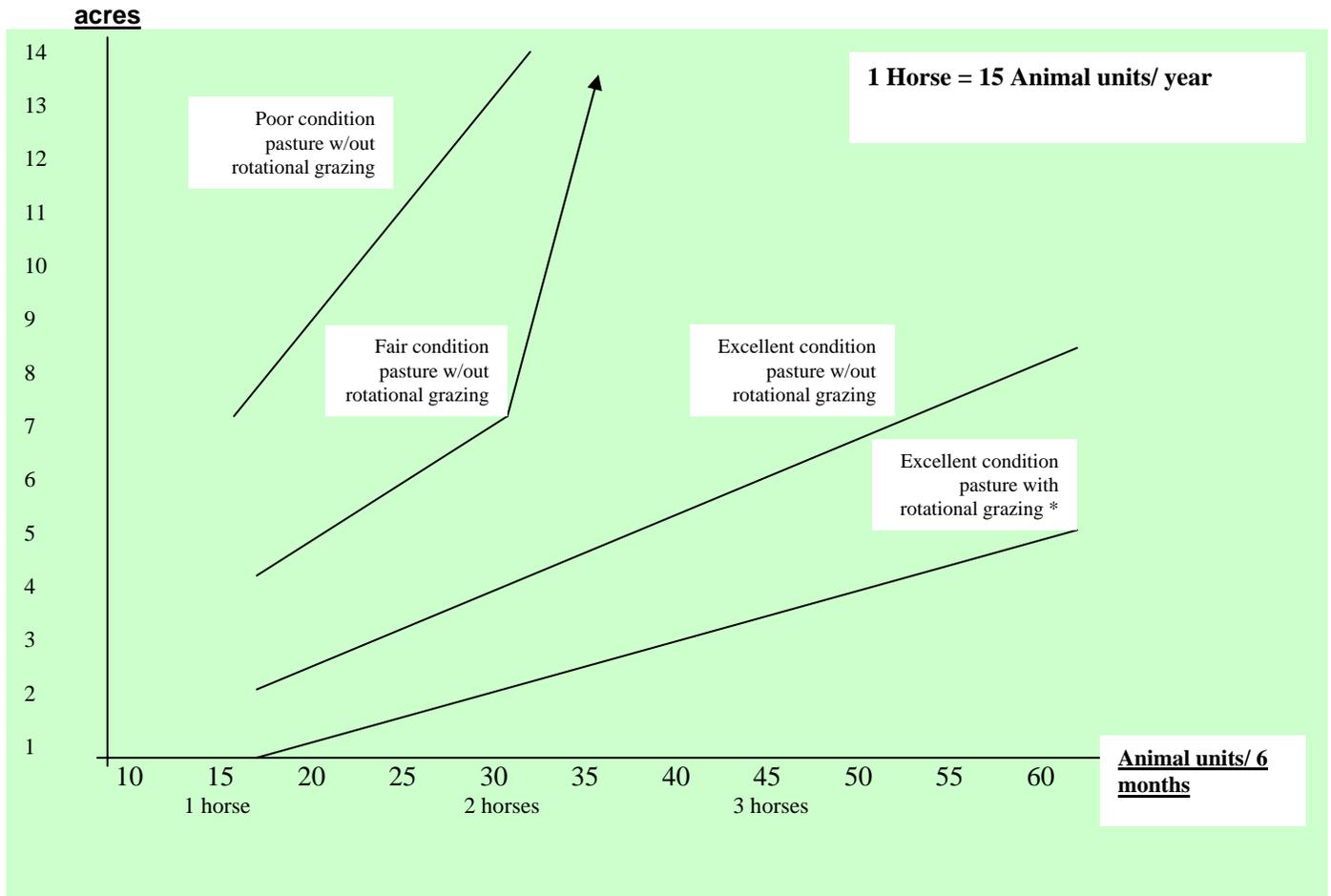
15.0 AUM/6 months - 6 months grazing = 2.5 AUM, this would be enough forage to run 2 horses during the 6 month grazing season.

$$2.5 \text{ AUM available}$$

$$- \underline{2.5 \text{ AUM required}}$$

$$1.0 \times 30 = 30 \text{ day's grazing/month/maximum available over a 6 month grazing period.}$$

ACRES TO ANIMAL UNITS GRAPH



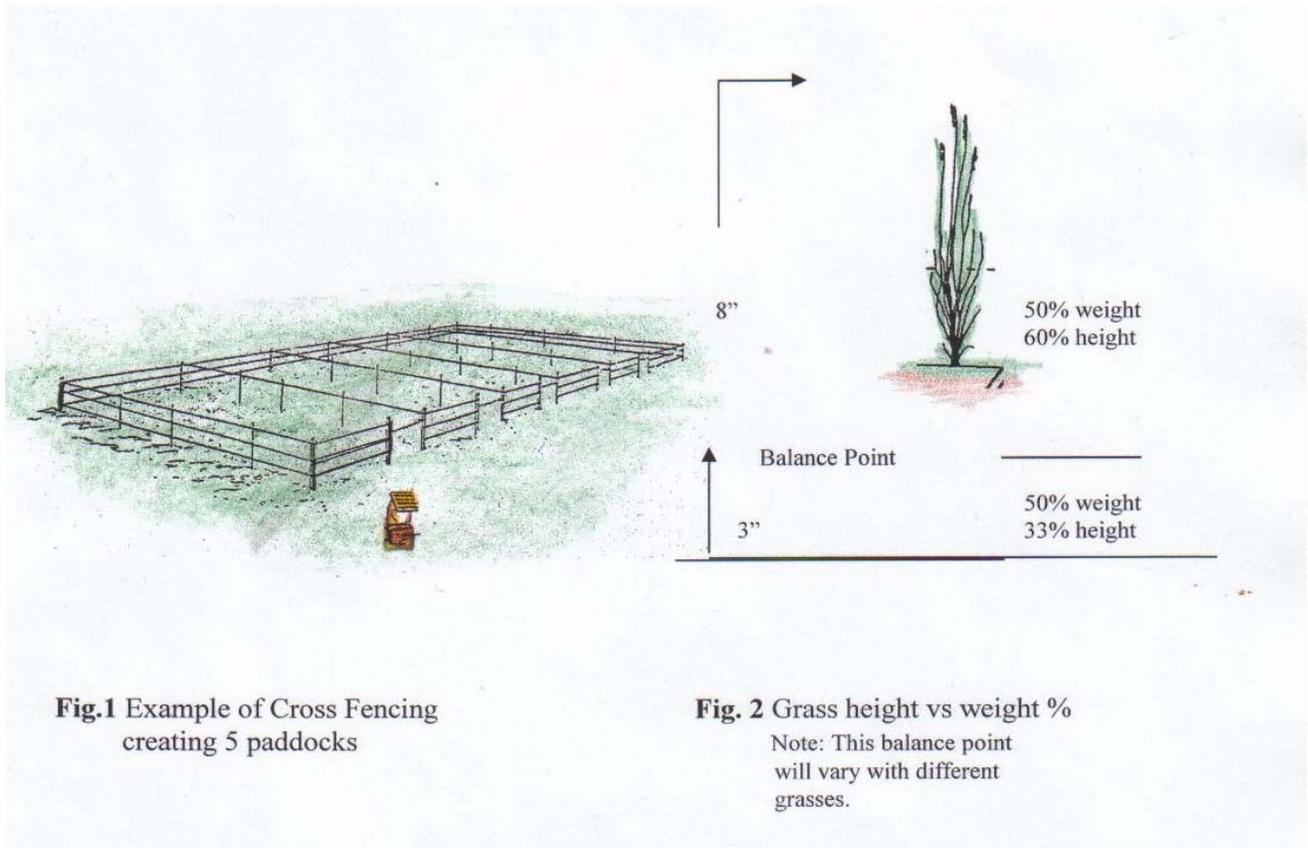
ALL WITH 6 MONTH GRAZING PERIOD 6 month supplemental feeding during the winter

*Additional supplement may be required
During the 6 month grazing season

Condition of Pasture	Pasture AU Available 6 months	Supplemental Feed AUM 6 months	Total AUM/yr (1 horse)
Excellent w/rotational grazing	5.0 AUM/acre/6 months	+ 10	= 15
Excellent w/out rotational grazing	4.0 AUM/acre/6 months	+ 11	= 15
Fair w/out rotational grazing	2.0 AUM/acre/6 months	+ 13	= 15
Poor w/out rotational grazing	1.0 AUM/acre/6 months	+ 14	= 15

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 local **Natural Resources Conservation Service** 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 the air/water/nutrients. Then reseed 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. (see fig. 1)
- If a one pasture system is used, use sacrifice areas, such as corrals to contain the animals when the pasture is in a rest rotation. It is feasible to split or cross fence these pastures with an electric fence to rotate animals, or stake the horse and rotate 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.
- Irrigate after grazing and remove animals from the irrigated/wet areas to avoid soil compaction from their hooves.
- Identify and control weeds. If herbicides are used contact Weed and Pest and **follow label directions.**
- 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 3” 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. Keep in mind for grasses weight of a plant is to clip the plant near the base and balance the plant on your finger. This will give you an idea of how much to graze the plant. (see fig. 2)



This brochure developed in cooperation with:

**USDA-Natural Resources Conservation Service
Conservation Districts**

**For more information and further assistance, contact your local Conservation District or
Natural Resource Conservation Service Office.**

For copies of this brochure contact:

<http://wyswcs.home.bresnan.net/>

or call 307-233-6747

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