Why Proper Grazing Use?
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Highlight
Proper grazing use is paramount in attaining efficiency of rangeland produc-
tion. Numerous scientific studies provide the basic reasons for practicing proper use. Results of grazing intensi-
ty studies are being reported from the West. The reasons for proper grazing use are emphasized. The bene-
fits are enumerated.

From a range management standpoint, the problems involved in im-
proving range productivity center around two points: (1) Produc-
ing more good quality forage per acre, and (2) doing a better job of properly harvesting the forage crop. Solutions to these two points certainly are not always simple. They can be complex, difficult, time-consuming and costly. But this can be said about almost any effort to increase efficiency.

Proper grazing use is the most im-
portant and usually the least expen-
sive way to achieve more forage pro-
duction on rangeland. Proper grazing use by itself will improve and maintain forage production on ranges now producing below optimum. Without proper grazing use, the beneficial ef-
fects from almost any other measure can be nullified or reduced in effect-
iveness.

Proper grazing use is defined by the American Society of Range Manage-
ment in its Glossary of Terms Used in Range Management as “The degree and time of use of current year’s growth which, if continued, will either maintain or improve the range condi-
tion consistent with conservation of other natural resources.” It can also be defined as “grazing at an intensity which will maintain adequate cover for soil protection and conservation of other resources and maintain or im-
prove the quantity and quality of de-
sirable vegetation.”

Plants, as well as animals, have cer-
tain requirements for their health and growth which must be taken into ac-
count. These requirements need to be known for key forage species which may be grasses, forbs, and or shrubs depending upon class of grazing ani-
mal, season of use, composition of the vegetation, and other factors. The safe degree of use that can be made of key species usually varies according to whether grazing occurs during the growing season, after maturity, during dormancy, or combinations of seasons. Safe degree of use usually varies for different key forage species. It is gen-
erally thought that a greater degree of use can be made after maturity than during the growing season of key spe-
cies without harming the vegetation. Other resource factors, such as a soil that is unsuitable when dry, need to be given careful consideration, however. Safe degree of use for key forage spe-
cies according to range site, class of
grazing animal, and season of use need to be worked out.

Some of the more important facts about grasses which are supported by scientific studies are reviewed briefly because grasses are key forage species on most ranges.

Plant Food
Plant food is manufactured in the leaves. When the leaves of a grass are grazed off during the growing season, the food manufacturing process is re-
duced. Excessive grazing during the growing season can almost eliminate the manufacturing of plant food which, in turn, seriously restricts growth. Leave-
ing a stubble of green leaves to func-
tion during the growing season helps promote production of foliage.

Food Storage
1. Grasses store food over their dor-
mant season (McConkie, 1942). The process of storage takes place during the last few weeks of the growing sea-
son. Stored food is used by the grain when it starts to grow after a period of dormancy. If grass is continually grazed too closely during the growing season, this food storage process does not take place. Consequently, the grass plant is weakened and gets a late start in the next growing season. When this happens year after year, desirable grasses which are preferred by grazing animals are eventually replaced by un-
palatable weeds and brush which are relatively more vigorous because they are not grazed very much, if at all.

2. About half of the food stored by a grass is stored in its root system. The other half is stored in the crown or lower parts of stems. Excessive graz-
ing, therefore, physically removes a part of the grass’ food reserve which it needs to begin its new growth.

3. Part of the stored plant food is used by a grass to grow new roots. This is necessary because a part of the root system dies each year. If the grass is not allowed to store food, new roots are not produced. The result is a weak root system which cannot take full advantage of available moisture and nutrients. Forage production is thus reduced.

Growth Buds
The growth buds of some grasses occur deep in the crown and even underground (Hyder and Swen, 1963). These grasses withstand close grazing better than grasses having growth buds
above the crown where they can be re-

Root Stoppage

When green leaves are clipped from a
grass, the roots stop growing (Crider,
1955). The first time the grass is
clipped during the growing season, the
roots stop growing for a short time (12
to 18 days). If the plant is clipped
again in a few days, the duration of
root stoppage increases. Every addi-
tional clipping stops root growth for a
longer period of time, and the per-
centage of roots that stop growing varies according to the proportion of the
foliage removed. It is easy to un-
derstand how repeated close grazing,
which is typical under heavy stocking
and season-long grazing, restricts de-
velopment of the root system which, in
turn, lowers forage production.

Freezing

The growing tissue of a grass exists
primarily in the crown. This growing
tissue can be killed by freezing when
it is exposed. Leaving a stubble on
the grass over winter helps mulch the
crown and protects it against severe
winter-kill. Closely grazed palatable
bunchgrasses with their centers frozen
at the periphery of the bunch and
results in more even distribution of
forage. Proper degree of use and mulch contribute in
several ways to increasing the effec-
tiveness of precipitation.

a. Evaporation is caused by wind
and sun. A good stubble on the grass
and some mulch left on the ground
reduces this loss of valuable moisture.

b. Much of the precipitation in range
areas comes in the form of snow. A
standing stubble has proven to be ef-
fecive in keeping much of the snow
moisture where it falls.

c. Bare soils in range areas com-
monly form a surface crust and vesic-
ular structure when exposed to the im-
pact of rain drops. (Hugie and Passey,
1964). Such structure greatly reduces
the ability of the precipitation to enter
the soil. Valuable water is lost by run-
off which carries fertile topsoil with it.
This reduces the productivity of the
resource, silts streams and reservoirs,
and causes water pollution.

d. Grass seedlings seldom survive in
bare areas because of excessive surface
temperatures. Grass seedlings become
firmly established primarily where
mulch and plants partially shade the
soil. Mulch is very important for nat-
ural revegetation to thicken the stand
of desirable grasses on rangelands.

Residue

The accumulation of plant residues
around grasses has a number of ben-
eficial effects which influence range
production and health.

1. Range soils that are denuded of
vegetation and without mulch are sub-
ject to frost heaving. Valuable forage
plants are heaved up bodily and left
sitting on pedestals of soil where their
roots dry out readily and their crowns
growing tissue) are exposed to killing
frosts. Not all pedestalled plants de-
note excessive grazing, however, be-
cause pedicelled plants commonly oc-
cur on some soils where the ungrazed
plant community is in near-climax con-
dition. Furthermore, stones in bare
soils may be heaved up to the surface
due to freezing and thawing. This
contributes to the formation of a stone
pavement which seriously restricts the
establishment of forage plants. It takes
very little mulch on the surface of the
ground to reduce frost heaving to a
minimum. The amount of mulch that
can be accumulated in arid areas is
limited because such organic material
disappears, probably through oxidati-
on.

2. Most rangelands are in areas of
relatively low precipitation. Thus, it
is all the more important to do every-
thing possible to allow this moisture
to enter the soil so it will be avail-
able for forage production. Proper de-
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Effects on Vegetation

Proper grazing use has the following
main beneficial effects on key forage
species:

1. Increased or maintained vigor of
both shoots and roots.

2. Increased infiltration of water for
plant growth.

3. Seedling establishment and even-
tual thickening of the stand.

As a result of building up the health,
vigor, and stand of important forage
species, the following is accomplished:

1. Increased forage production.

2. Earlier spring growth and, there-
fore, earlier turn out date.

3. Prolonged green feed season.

4. Improved reliability of produc-
tion from year to year.

5. Stabilized basic soil resource.

Research

Research stations over the West are
reporting the effects of different in-
tensities of grazing on rangelands. One
of the latest reports is from Miles City,
Montana (Houston 1966). The Miles
City station has prairie vegetation and
summer precipitation; however, the
principles reported there apply to other
range areas.

At the Miles City station, a 10-year
study showed that heavy grazing:

1. Reduced basal cover of vegeta-
tion on summer range.

2. Reduced average height and rate
of growth on two key species.

3. Reduced range condition rating
or did not allow improvement.

4. Accelerated runoff and caused
severe gully erosion.

5. Reduced calf crop at weaning
time.

6. Reduced birth weight of calves.

7. Reduced rate of gain of calves.

8. Reduced weaning weight of
calves.

9. Reduced weaning grade of
calves.

10. Reduced value of calves pro-
duced per breeding cow.

11. Reduced spring and fall weights
of wet and dry cows.

12. Reduced fertility of cows.

Comparable results recently were
reported by Frischnecht and Harris
(1968) in their excellent study of graz-
ing systems and intensities on crested
wheatgrass in Utah.

Efficiency of Rangelands

Efficiency is a prime concern in to-
day’s range livestock industry. Gener-
ally speaking, much has been done
in various components of live-
stock ranching such as marketing,
transportation, machinery, and farm
crops also has been improved signifi-
cantly. Many companies and people
work hard helping the livestock indus-
try develop and perfect these effi-
ciencies because their livelihoods de-
pend on selling products and services
to ranchers.

The story of grazing efficiency on
rangeland is entirely different. Almost
no one except a few public employees and a few private consultants have sincerely pushed scientifically sound range management to achieve efficiency on the range. There are almost no special products to be bought by the rancher in order to achieve range efficiency. There are no industries which go all out to support the theme of efficient range management. There is no strong advertising program for good range management such as there is for animal-health products or machinery, for example. Yet, ranchers are faced with a serious situation of rising costs, low prices, and low returns on capital investment. They need increased efficiency in order to stay in the business.

Ranchers should look critically at their one remaining big opportunity for increased efficiency—their range-lands. Proper grazing is a paramount factor in achieving this efficiency.

Selected Bibliography


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