The objective of proper grazing management is to match forage nutritive value and availability with the nutrient requirements of grazing livestock for the optimum production of red meat, milk, and fiber. Many times the only management change required is to develop a controlled breeding season that matches seasonal forage availability with the nutrient requirements of gestating or lactating females or that of growing animals. If producers are not currently utilizing a controlled breeding season, this may be a logical place to initiate an improved grazing management strategy.

No single grazing system will meet the requirements of all producers; that is, there is no “one size fits all program” that will work for everyone. Certain tracts of land lend themselves to one type of grazing system better than others, and management philosophies and experience levels of producers will likewise dictate how livestock will be manipulated.

Generalized grazing systems that facilitate livestock movement, however, have been developed that enable producers to have improved control over the forage budgeting process. An important point to remember is that grazing systems generally have less impact on animal performance than do soil fertility or stocking rate. There has not been a grazing system devised that will lessen the negative impacts of a poor soil fertility program or an overstocked pasture.

Grazing systems that may have a practical application for the Oklahoma livestock producer are discussed below. The systems discussed in this fact sheet relate to the producer who pastures livestock on introduced forages such as bermudagrass, Old World bluestem, weeping lovegrass, tall fescue, and annual forages such as the cereal grains.

**Continuous Grazing**

Since by definition a grazing system involves movement of grazing livestock, continuous grazing is not actually a grazing system. Continuous grazing, however, is the type of system utilized by most producers because it requires the least level of managerial input from the livestock producer and is generally the least expensive to implement. Although criticized by some as an ineffective system, continuous grazing has several real advantages relative to other grazing systems, the least of which is enhanced animal performance.

Individual animal performance, whether quantified as live-weight gain, calving percentage, or milk production is typically higher for livestock in continuous grazing systems under moderately stocked conditions (Table 1). The improved performance is due to a higher degree of diet selectivity by the animal. Grazing livestock, if allowed the opportunity, will typically select a diet of higher nutritive value than would be indicated by a typical forage sample.

Other grazing systems that involve cattle movement between pastures do not allow the animal as much freedom in diet selection. This aspect generally results in reduced animal performance because the animal is forced to consume forage that it might not otherwise select.

The major disadvantage of continuous grazing relates to the variable growth rate of forage crops. For example, during early spring, bermudagrass experiences a rapid growth rate that requires a relatively heavy stocking rate to achieve the desired harvest efficiency. Later, during periods of reduced precipitation levels associated with summer, forage growth rate declines and requires that there be a reduction in animal numbers. To optimize forage utilization under continuous grazing, a variable stocking rate should be used and may be accomplished by adjusting either livestock numbers or pasture size. The use of inexpensive electric fencing offers producers the opportunity to rapidly adjust pasture size and maintain a proper stocking rate relative to forage production rate. By simply opening or closing gates of a multi-paddock operation, producers may accomplish the same result.

Excess forage from that part of the pasture not being grazed during the rapid growth phase should be cut as high-quality hay. In fact, the opportunity to cut excess forage for hay or silage is one of the best methods for incorporating the “variable stocking rate” pasture management scenario.

If a variable stocking rate that matches varying forage levels is not utilized, pastures will be overstocked at some times and understocked at other times. Overstocking coupled with a poor fertility program typically leads to an invasion of weeds and undesirable grasses such as broomsedge and threawn. Under these circumstances, animal performance begins to decline and the carrying capacity of the pastures is also reduced.

Conversely, understocking results in “patch” or spot grazing. Patch grazing is where animals repeatedly graze the
Table 1. Beef steer performance under continuous and rotational grazing systems (taken from Ball et al. 1991).

<table>
<thead>
<tr>
<th>Pasture species</th>
<th>Grazing Method</th>
<th>ADG (lbs.)</th>
<th>Change from continuous stocking (%)</th>
<th>Gain/acre (lbs.)</th>
<th>Change from continuous stocking (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Warm-season</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bermudagrass + N</td>
<td>Continuous</td>
<td>1.37</td>
<td></td>
<td>738</td>
<td>+1</td>
</tr>
<tr>
<td></td>
<td>Rotational-4(^1)</td>
<td>1.27</td>
<td>-7</td>
<td>749</td>
<td>+1</td>
</tr>
<tr>
<td>Bermudagrass + N</td>
<td>Continuous</td>
<td>1.31</td>
<td></td>
<td>820</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rotational-4</td>
<td>0.99</td>
<td>-24</td>
<td>418</td>
<td>-22</td>
</tr>
<tr>
<td></td>
<td>Strip</td>
<td>0.86</td>
<td>-19</td>
<td>434</td>
<td>-19</td>
</tr>
<tr>
<td></td>
<td>Green chop</td>
<td>0.81</td>
<td>-38</td>
<td>577</td>
<td>+8</td>
</tr>
<tr>
<td>Sericea lespedeza(^2)</td>
<td>Continuous</td>
<td>1.87</td>
<td></td>
<td>306</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rotational-3</td>
<td>1.65</td>
<td>-12</td>
<td>276</td>
<td>-10</td>
</tr>
<tr>
<td><strong>Cool-season</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orchardgrass + N</td>
<td>Continuous</td>
<td>1.30</td>
<td></td>
<td>364</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rotational-4</td>
<td>1.23</td>
<td>-5</td>
<td>388</td>
<td>+8</td>
</tr>
<tr>
<td>Tall fescue(^3) + alfalfa</td>
<td>Continuous</td>
<td>1.70</td>
<td></td>
<td>313</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rotational-4</td>
<td>1.77</td>
<td>+4</td>
<td>308</td>
<td>-2</td>
</tr>
<tr>
<td>Tall fescue(^3) + N</td>
<td>Continuous</td>
<td>1.62</td>
<td></td>
<td>290</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rotational-10</td>
<td>1.39</td>
<td>-14</td>
<td>354</td>
<td>+22</td>
</tr>
<tr>
<td>Tall fescue(^4) + N</td>
<td>Continuous</td>
<td>1.28</td>
<td></td>
<td>243</td>
<td></td>
</tr>
<tr>
<td>Wheat/ryegrass + N</td>
<td>Continuous</td>
<td>2.15</td>
<td></td>
<td>746</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rotational-6</td>
<td>1.72</td>
<td>-20</td>
<td>733</td>
<td>-2</td>
</tr>
</tbody>
</table>

\(^1\) Number following rotational is the number of paddocks used in the system.
\(^2\) Sericea lespedeza was a low-tannin type.
\(^3\) Tall fescue was endophyte-free.
\(^4\) Tall fescue was endophyte-infected.

same area as soon as regrowth is available. Animals continue to utilize previously grazed areas because the immature regrowth is more palatable and of higher nutritive value. Ungrazed areas in the pasture continue to increase in maturity, decline in nutritive value, and become increasingly less palatable. The decline in harvest efficiency results in wasted forage and decreases profit potential from the livestock operation.

The bottom line regarding continuous grazing is that it can be a profitable system if a variable stocking rate is utilized to match the variable growth rate of the pasture. If livestock demand is matched to forage production utilizing the “variable stocking rate” management option, more efficient use of the forage will be realized.

**Rotational Grazing**

Rotational grazing requires that a single pasture be subdivided into two or more smaller units, though not necessarily equal in size. In a rotational grazing system, livestock are moved from one pasture to another for short periods of time. The concentration of livestock results in a temporarily overstocked condition that allows for a high forage harvest efficiency. A high harvest efficiency means that more of the available forage produced in the grazing unit is consumed by the animals and little forage is wasted.

Close attention must be paid when rotationally grazing in order to determine the optimum time to move livestock to another paddock. This is the critical element in rotational grazing and requires considerable management expertise. Because of the variable production rate of forage species, grazing time may vary from as few as 1-2 days up to 7-10 days per paddock depending on climatic conditions and the growth rate of the forage. Rotational grazing systems in which producers move livestock on a calendar basis may not achieve optimum results relative to animal performance or forage utilization.

Varying forage levels may require producers to skip one or more paddocks in the grazing rotation and cut the skipped units for hay during periods of excess production. Forage removal as a hay crop will help control weed species and prevent mowed areas from becoming excessively mature with a resultant decline in forage nutritive value.

Some advantages of rotational grazing include the previously mentioned improved harvest efficiency. The improved harvest efficiency associated with rotational grazing may allow for a slight increase (10 to 15%) in livestock numbers compared with a poorly managed continuous grazing system. Other advantages of rotational grazing include better control of livestock and early observation of potential health problems since, by default, the producer spends more time with the livestock. Rotational grazing early in the spring may also provide a means to control early weed species.

The primary disadvantage of rotational grazing relates to reduced individual animal performance. Livestock in a rotational grazing system do not have the diet selectivity that animals in a continuous grazing system have. This lack of diet selectivity typically results in reduced animal performance,
especially when animals are grazing warm-season forages. Another disadvantage of rotational grazing involves the added expense of additional fence construction, although this may be somewhat ameliorated by the use of low-cost electric fencing. Additional water development may be necessary, and the added cost of labor involved in moving livestock routinely are additional considerations.

Some forage species may perform best under rotational grazing. Livestock may benefit from rotationally grazing warm-season perennial grasses due to increased harvest efficiency and nutritive value of the forage. For example, weeping lovegrass, if not rotationally grazed, is patch grazed by livestock and quickly becomes excessively mature and unpalatable. This results in livestock avoidance of the plants, and thus, much forage is wasted. Rotationally grazing cool-season forage crops may not be as important to the grazing animal, but rest between grazing events may be beneficial to the plant in dry matter production. Reseeding annual clover species should also be rotationally grazed to promote seed production, and thus, stand persistence.

**Grazing Systems for Growing Animals**

Growing animals have a higher nutritive requirement than dry, pregnant females or mature males. Several grazing systems have been designed that attempt to provide a higher nutritional plane for growing animals.

A slight modification of rotational grazing known as first-last grazing may be a valuable system for enhancing growing animal performance. With this approach, the livestock herd is typically split into two groups; “first and last” or “leader and follower” grazers. The first grazers (leaders) are typically younger animals that have a higher nutritive requirement when compared to mature animals. The leaders are allowed to graze a paddock first and obtain forage of the highest nutritive value. When approximately one-third of the forage has been consumed, these first grazers are rotated to a new paddock. The last grazers (followers) are typically mature animals with lower nutritive requirements. This twist on rotational grazing results in improved growing animal performance when compared with simple rotational grazing.

One variation of continuous grazing involves the installation of a creep gate to allow younger animals access to forage of higher value. With a creep-grazing system, younger animals have free access to other pastures generally planted to high-quality annual forages, but the size of the creep gate opening prevents entry into the pasture by mature animals. Allowing creep access will work with either warm- or cool-season forages. Those forage species typically utilized in creep-grazing systems include the small grains, ryegrass, and/or clovers for fall and winter grazing while sudangrass, sorgho-sudan hybrids, pearl millet, annual lespedezas, and cowpeas make excellent choices for summer forage programs.

Construction and installation of a pasture creep gate is simple. The pasture creep gate can be constructed of wood or metal and installed as a panel in the fence line or as a gate. The gate may also be placed in electric fences. The opening in a creep gate used for calves is generally 18 inches wide. This will accommodate calves that weigh up to 600 lbs.; however, width of the creep gate can be varied to meet the specific requirements of a producer and his livestock. A simple horizontal bar that is adjustable for height can also be used to limit calves of different sizes from entering the creep pasture. The typical adjustment range for the horizontal bar will vary from 24 to 48 inches measured from ground level. Since pasture creep gates are often permanently installed in a fence, a second horizontal bar can be used to completely close the gate. Help in the construction and installation of a pasture creep gate may be obtained from your local county Extension office.

Research has demonstrated that growing cattle with creep access to forages of higher nutritive value can result in calves that weigh an additional 50 pounds or more at weaning. Creep gates can provide an excellent return for their nominal investment.

**Strip Grazing**

Strip grazing is a grazing technique used primarily with dairy herds but can be adapted to other types of livestock operations. Strip grazing uses two portable fences (typically electric) to allot a small area of the pasture for grazing. This is actually an intensive form of rotational grazing with a somewhat higher labor requirement. Livestock are confined to an area smaller than that required for the entire herd. As with other rotational grazing systems, the temporarily over-stocked condition associated with strip grazing results in a high harvest efficiency, although animal performance is typically reduced.

Sudangrass and sudangrass hybrids may be best suited for this type of grazing system although any forage may be strip grazed. Strip grazing allows the forage to be consumed with a minimum amount of trampling of good forage.

Beef cattle often graze one of the field-cured forage sorghums during fall and winter using a slight modification of strip grazing. The use of one portable fence ahead of the animals serves as a valuable management tool to prevent livestock from trampling, and thus, wasting the field-cured forage. See OSU Extension Facts No. 2561 for details on using field-cured forage sorghums for fall and winter grazing.

**Limit Grazing**

Rather than purchase relatively expensive protein supplements during the fall and winter, many producers utilize a grazing system known as limit grazing. With limit grazing, livestock spend most of the time on dormant pasture/native range and receive an adequate quantity of good-quality hay. In addition, the livestock are allowed access to cool-season pastures for a limited time rather than on a continual basis. Properly fertilized cool-season forages generally provide nutrients in excess of that required by dry pregnant females, thus the requirements are met with less grazing time. Although most limit-grazing systems involve the use of cool-season forages, there is no reason why a producer could not utilize the same management strategy using warm-season forages.

The utilization of high-quality forages can be managed to serve as supplemental protein for mature livestock and help enhance growing animal performance. Dry pregnant females can be limit-grazed one or two hours on alternate days or every third day to conserve forage and still meet the animal’s protein requirements. Lactating cows and growing animals require more nutrients compared with dry cows and should be
allowed to graze approximately two hours each day on the high quality forage.

A less efficient limit-graze schedule, but more practical for some people, is to allow one full day of grazing on forage of high nutritive value followed by two to four days of grazing on dormant grass depending on the crude protein requirements of the animal. More forage is lost, however, because of increased trampling, the presence of bedding areas, and dung and urine spots within the pasture.

This system depends upon an adequate supply of dry grass and/or good quality hay to serve as a source of energy during periods the animals do not have access to the higher quality forage. Animal performance is improved using limit grazing when compared with other fall-winter grazing systems utilizing only dormant grass pastures or hay.

Final Thoughts on Grazing Systems

The key to proper grazing management is to obtain a balance between animal diet selectivity and harvest efficiency; the "right" system will vary between locations and producers. Close attention should also be paid to matching livestock nutrient requirements with forage availability. Using either a continuous or rotational grazing system can result in the optimum use of available forage, acceptable animal performance, and thus, a profitable livestock operation depending on the producer's managerial expertise.

Producers considering changing the type of grazing system of their operation, or producers who may just be getting into livestock production should:

1) Think through the process with respect to their expectations and inputs required for each system and,

2) Seek an optimum balance among harvest efficiency, resource conservation, individual animal performance, and, most importantly, the economic returns from the total enterprise.

The most significant aspect of a grazing system, however, is to provide grazing livestock with an adequate amount of forage of high nutritive value. This requires choosing the proper forage species for grazing, a sound soil fertility program, and the proper stocking rate.

If you require further information about which of the grazing systems offers the most potential for your livestock production operation, contact your local county agricultural agent.