- ~~Form NRCS-RANGE-414 is useful for recording planned utilization specifications for key species in key grazing areas. Data concerning actual grazing use for future comparisons can also be recorded. See exhibit 4–3 in chapter 4. Methods for determining the degree of utilization of key plants are in Chapter 4, Inventory and Monitoring of Grazing Land Resources.~~

(d) Degree of grazing use as related to stocking rates

Because of fluctuations in forage production or loss of forage other than by grazing use, arbitrarily assigning a stocking rate at the beginning of a grazing period does not ensure attainment of a specific degree of use. If the specified degree of use is to be attained and trend satisfactorily maintained, stocking rates must be adjusted as the amount of available forage fluctuates.

Guides to initial stocking rates in field office technical guides are based on general averages for individual ecological sites. These guides are without specific reference to the grazing distribution characteristics of individual grazing units. For example, a Stony Hills Range Site that has steep areas adjacent to a relatively level Loamy Upland Range Site generally receives less grazing use by cattle than the Loamy Upland Range Site. The Stony Hills Range Site may produce enough forage to permit a stocking rate of 2 acres per animal unit per month when it is the only site in a grazing unit. Its grazing use, however, is generally substantially less, in the example just described, by the time the Loamy Upland Range Site has been properly used. The reverse may be true if the grazing animal is sheep or goats. Therefore, initial stocking rates for a grazing unit should not be based directly on the initial stocking rate guides without a careful onsite evaluation of factors affecting grazing use of the entire grazing unit.

Many methods are used to determine the initial stocking rate within a grazing unit. Often the past stocking history and the trend of the plant community are the best indicators of a proper stocking rate. The Multi Species Stocking Calculator in the Grazing Lands Application (GLA) software is one method for determining stocking rates, especially when the area is grazed or browsed by more than one kind of animal. See also Stocking Rate and Forage Value Rating Worksheet in Chapter 5, Section 3, (exhibit 5–3).

(e) Prescribed grazing schedule

A prescribed grazing schedule is a system in which two or more grazing units are alternately deferred or rested and grazed in a planned sequence over a period of years. The period of nongrazing can be throughout the year or during the growing season of the key plants. Generally, deferment implies a nongrazing period less than a calendar year, while rest implies nongrazing for a full year or longer. The period of deferment is set for a critical period for plant germination, establishment, growth, or other function. Grazing management is a tool to balance the capture of energy by the plants, the harvest of that energy by animals, and the conversion of that energy into a product that is marketable. This is done primarily by balancing the supply of forage with the demand for that forage. Such systems help to:

- Maintain or accelerate improvement in vegetation and facilitate proper use of the forage on all grazing units.
- Improve efficiency of grazing through uniform use of all grazing units.
- Stabilize the supply of forage throughout the grazing season.
- Enhance forage quality to meet livestock and wildlife needs.
- Improve the functioning of the ecological processes.
- Improve watershed protection.
- Enhance wildlife habitat.

Many grazing systems are used in various places. Prescribed grazing is designed to fit the individual operating unit and to meet the operator's objectives and the practice specifications. Exhibit 5–6, Prescribed Grazing Schedule Worksheet (Chapter 5, Section 3) may be used in conservation planning. Other formats that contain the necessary information may also be used. The basic types of grazing management systems follow. Many others can be developed to fit specific objectives on specific lands.

- Deferred rotation
- Rest rotation
- High intensity—Low frequency
- Short duration

(1) Deferred rotation grazing

Deferred rotation grazing generally consists of multipasture, multiherd systems designed to maintain or improve forage productivity. Stock density is moderate, and the length of the grazing period is longer than the deferment period. An example of a deferred grazing system would be the four pasture, three herd Merrill System. This system grazes three herds of livestock in four grazing units with one unit being deferred at all times. The number of livestock is balanced with the available forage in all four grazing units. Each grazing unit is deferred about four months. In this way the same grazing unit is not grazed the same time each year. This type of system will repeat itself every 4 years. Figure 5–2 is a conceptual model of a deferred rotation system.

Figure 5–2 Deferred rotation system model

Year one

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1			graze	graze	graze	graze	graze	graze	graze	graze	graze	graze
2	graze	graze					graze	graze	graze	graze	graze	graze
3	graze	graze	graze	graze	graze	graze					graze	graze
4	graze	graze	graze	graze	graze	graze	graze	graze	graze	graze		

Year two

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1	graze	graze					graze	graze	graze	graze	graze	graze
2	graze	graze	graze	graze	graze	graze					graze	graze
3	graze	graze	graze	graze	graze	graze	graze	graze	graze	graze		
4			graze	graze	graze	graze	graze	graze	graze	graze	graze	graze

Year three

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1	graze	graze	graze	graze	graze	graze					graze	graze
2	graze	graze	graze	graze	graze	graze	graze	graze	graze	graze		
3			graze	graze	graze	graze	graze	graze	graze	graze	graze	graze
4	graze	graze					graze	graze	graze	graze	graze	graze

Year four

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1	graze	graze	graze	graze	graze	graze	graze	graze	graze	graze		
2			graze	graze	graze	graze	graze	graze	graze	graze	graze	graze
3	graze	graze					graze	graze	graze	graze	graze	graze
4	graze	graze	graze	graze	graze	graze					graze	graze

The fifth year of this type of system is the same as the first year. Note that the actual length of time grazed and deferred depends on the size of the grazing units, the size of the herd, and the weather for the year. The model in figure 5–2 assumes equal size (in terms of forage supply) for the four grazing units in the system.

(2) Rest rotation grazing

Rest rotation grazing consists of either multipasture - multiherd or multipasture - single herd. Stock densities are moderate to heavy depending on the number of livestock herds. Rest periods are longer than grazing periods. Grazing periods are set so that no grazing unit is grazed the same time of year during the cycle of the system. An example of the rest rotation grazing system is the three pasture one herd Santa Rita system. Figure 5–3 is a model of a rest rotation system.

In this model the fourth year is a repeat of the first year. Note that the actual length of time grazed and rested depends on the size of the grazing units, the size of the herd, and the weather for the year. The model above assumes equal size (in terms of forage supply) for the three grazing units in the system.

Figure 5–3 Rest rotation system model

Year one

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1			graze	graze	graze	graze	graze	graze	graze	graze	graze	graze
2	graze	graze										
3												

Year two

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1	graze	graze										
2												
3			graze	graze	graze	graze	graze	graze	graze	graze	graze	graze

Year three

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1												
2			graze	graze	graze	graze	graze	graze	graze	graze	graze	graze
3	graze	graze										

(3) High intensity – low frequency grazing

High intensity - low frequency (HILF) systems are multipasture - single herd systems. Stock density is high to extremely high. The length of the grazing period is moderate to short, with a long rest period. Dates for moving livestock are set by the utilization of the forage. Grazing units are not grazed the same time of year each year. Figure 5–4 is a conceptual model of a HILF grazing system.

In HILF the number of grazing units and grazing capacity of each unit determine how often if ever the same grazing unit is grazed during the same period of the year.

Figure 5–4 HILF grazing system model

Year one

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1	graze							graze				
2		graze							graze			
3			graze							graze		
4				graze							graze	
5					graze							graze
6						graze						
7							graze					

Year two

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1			graze							graze		
2				graze							graze	
3					graze							graze
4						graze						
5							graze					
6	graze							graze				
7		graze							graze			

(4) Short duration grazing

Short duration grazing is similar to high intensity - low frequency except that the length of the grazing and rest periods are both shorter for the short duration. Utilization, therefore, is less during any given grazing period. Stock densities are high. Figure 5–5 is a conceptual model of a short duration grazing system.

In the short duration model, the pattern may never repeat itself. The number of grazing units and grazing capacity of each unit determine how often, if ever, the same grazing unit is grazed during the same period of the year.

In many parts of the United States, livestock cannot be grazing on the land the entire year. Where snow or other related conditions prevent yearlong grazing, the concepts of the grazing systems still apply. Figure 5–6 is an example of a deferred rotation grazing scheme where the livestock can only be on the grazing land from April through October.

Figure 5–5 Short duration grazing system model

Year one

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1	g			g				g			g	
2	g				g			g				g
3		g			g				g			g
4		g				g			g			
5			g			g				g		
6			g				g			g		
7				g			g				g	

Year two

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1			g			g				g		
2				g			g			g		
3				g			g				g	
4	g			g				g			g	
5	g				g			g				g
6		g			g				g			g
7		g				g			g			

Conservation planning and application on grazing lands are detailed in chapter 11. How each type of grazing management system works and the advantages and disadvantages of each type must be understood. A landowner rarely adopts any grazing management system exactly as it is conceptualized in a handbook or textbook. The management that gets applied to the land is a combination of things that come closest to achieving the needs of the resources, landowner, and livestock. The NRCS conservationist must understand how livestock graze, the response of plants to grazing, and how rangelands in an area are impacted by different types of grazing management. Generally, the more extensive the grazing management, the slower the response of the forage resource. The more intensive the grazing management, the faster the forage response. However, risk of poor animal performance is increased. All of these factors must be discussed with and understood by the landowner.

Figure 5–6 Deferred rotation grazing scheme (April – October)

Year one

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1				graze	graze	graze	graze	graze	graze	graze		
2							graze	graze	graze	graze		
3				graze	graze	graze						
4				graze	graze	graze	graze	graze	graze	graze		

Year two

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1							graze	graze	graze	graze		
2				graze	graze	graze						
3				graze	graze	graze	graze	graze	graze	graze		
4				graze	graze	graze	graze	graze	graze	graze		

Year three

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1				graze	graze	graze						
2				graze	graze	graze	graze	graze	graze	graze		
3				graze	graze	graze	graze	graze	graze	graze		
4							graze	graze	graze	graze		

Year four

Mgt. unit	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1				graze	graze	graze	graze	graze	graze	graze		
2				graze	graze	graze	graze	graze	graze	graze		
3							graze	graze	graze	graze		
4				graze	graze	graze						