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Pasture Calendars for the North Central United States
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Pasture Calendars for the North Central United States

Though there is renewed interest in the north central United States in grazing for-

ages, current research information for making estimates of pasture production is lacking. For this bulletin, historical publications were reviewed along with the experiences of some of the researchers to project carrying capacities for various pastures. A great deal is known about how various pasture crops grow under northern conditions and how some very productive pasture grasses and legumes can be grown.

Many methods can be used to calculate pasture needs for planning purposes. Some use grazing days per acre; others use animal unit months (AUM) per acre. The goal of this bulletin is to formulate a grazing calendar that utilizes the forage resources of the farm. The result is a checklist that a farmer can use quickly to plan and to check the feasibility of a pasture plan.

Carrying capacity for various types of pastures historically has been determined from clipping trials. The calculations estimate forage needed for one AUM, generally using half and leaving half of the stand-

ing herbage for regrowth. In controlled grazing, the objective is to graze pastures down to about

1 to 3 inches before moving on to new pasture, leaving enough leaf area for the plant to continue performing photosynthesis for rapid regrowth.

Consider the calendar and allow for a month of rest in the fall for an alfalfa or alfalfa/grass pasture. The alfalfa needs the rest period to build carbohydrate root reserves to increase winter hardiness and help the stand to persist.

Example

Question: how do you begin to plan pasture for 50 head of dairy cows? As a general rule, it takes about 1 acre each day for 50 dairy cows. But the hazards of using this general rule are underutilization of pasture in the early season and gross overuse during midsummer.

The following example calculates carrying capacity to plot the demands for pasture to feed 50 cows. The schedule is for an alfalfa/brome-grass pasture. Follow the calcu-

lations through and then work with your own resources to complete the picture. Note the need to use several mixtures of

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pasture resources for a long and productive grazing season. (For an explanation of the terms used in the calculations, see Table 1.)

1. 50 cows x 6 months = 300 AUM grazing each season (May through October).
2. 50/1.1 (carrying capacity of the pasture - see Table 2) = about 45 acres are needed each month for May, June and July.
3. Few changes occur other than the number of days per month until mid-July and August when the rate of production drops to .7 AUM/acre so that 72 acres of alfalfa-bromegrass are required to feed 50 head. Some second- or third-cutting alfalfa-bromegrass from hay lands could be used as pasture during late July and August when the AUM for the main pasture drops.

| | May | Jun | Jul | Aug | Sept | Oct |
|----------|-----|-----|-----|-----|------|-----|
| Acres... | 50 | 38 | 42 | 72 | [50] | 50 |

There is a gap in September because of the needed rest period for the alfalfa. The demand appears in brackets []. To meet it you have several options. Temporary summer annuals such as sudangrass or sorghum/sudangrass hybrids could be used. Grass pastures using improved varieties of orchardgrass, perennial ryegrass or timothy can all create opportunities for early season grazing and fill the gap when alfalfa pastures are being rested. Brassicas — turnips, kale or rape — can also be used for fall and early winter grazing. Brassica plantings need to be made 60 to 90 days before grazing. Brassicas have relatively high protein and energy levels, so they can be used for animals with high dietary requirements or used in combination with stockpiled forages.

These calculations compute the grazing acreages needed per month and the carrying capacity of the pasture throughout the season. They also illustrate how

many acres of annuals or hay land might be needed to fill in the gaps. You might think of it this way: you need midsummer pasture of 72 acres, 50 acres from the main pasture, with the balance from hay fields. Some suggest that an efficient pasture plan would be to plant 12 acres of sudangrass for a dependable summer pasture that supplements the 50 acres of alfalfa-bromegrass.

You can do your calculations based on grazing days, but it's our experience that the figures can become confusing as you try to keep track of all of the numbers.

Pasture Management Schemes

■ **Continuous grazing.** This is a simple program that allows the animals access to one pasture for the whole season. Fence costs are minimal because only perimeter fencing is needed. Utilization of the forage is spotty. Alfalfa, birdsfoot trefoil and other legumes last one or two years. Efficiency is about 50 percent at best. Weeds are difficult to control, even with spray programs.

■ **Rotational grazing.** Several systems can be modified to accommodate rotational grazing. Usually weekly changes in pastures of equal size are combined with hay harvest to accommodate the extra herbage that is produced in early summer. Some managers use strict schedules, while others try to manage for full pasture use. If you look at fixed fencing plus the demand for managing the legume-grass mixture, you can begin to appreciate how complex some systems become.

■ **Controlled grazing.** As the term implies, access to a defined strip of forage is changed on a regulated basis. In this scheme, the herd manager is in charge of the time and the amount of pasture used. Electric fence is often needed because the

pasture area will be adjusted as the rate of pasture production changes over the season. The New Zealand-type fencer units can accommodate long fences without losing voltage. This system holds a great deal of promise for use in dairy, beef, sheep or horse farms. Efficiency is reported to be significantly higher than that of continuous grazing.

■ Intensive or mob stocking. This is modified strip grazing with control over the return grazing to promote a long life for the legumes. Often access is given to a few feet of new pasture each day in a long strip across the field. In effect, a wave of grazing moves through the field.

■ Leader grazing or early and late grazers. The leader grazing system often uses mature sheep or beef animals to follow dairy cows or young feeders in the pasture scheme. Extra fences are often needed, as well as attention to the needs of

the animals. Daily flexibility must be assured.

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Table 1.
The animal unit (AU).

| | |
|-----------------------------|--------|
| 1 - 1,200-lb. lactating cow | = 1 AU |
| 2 - dairy heifers < 2 years | = 1 AU |
| 2 - 500- to 700-lb. steers | = 1 AU |
| 1 - horse or mule | = 1 AU |
| 2 - yearling horses | = 1 AU |
| 6 - ewes with lambs | = 1 AU |
| 12 - lambs after weaning | = 1 AU |
| 5 - 300-lb. sows | = 1 AU |
| 50 - 50-lb. pigs | = 1 AU |
| 16 - 150-lb. hogs | = 1 AU |

1 animal unit month (AUM) of feed = 30 days of feed = 750 lb. dry hay or equal needed/month.

1 animal unit day (AUD) of feed = 25 to 27 lb. hay.

Carrying capacity = AUM/acre.

Table 2.
Carrying capacity (animal units/acre).

| | May | Jun | Jul | Aug | Spt | Oct |
|---------------------|-----|-----|-----|-----|-----|-----|
| PASTURE TYPE | | | | | | |
| Alfalfa | .7 | 1.2 | 1.2 | .6 | - | 1.0 |
| Birdsfoot trefoil | .1 | .3 | 1.0 | 1.0 | .5 | .2 |
| Alfalfa-brome grass | 1.0 | 1.3 | 1.2 | .7 | - | 1.0 |
| Alfalfa-timothy | 1.1 | 1.2 | 1.1 | .4 | - | .7 |
| Kentucky bluegrass | .1 | .3 | .3 | .1 | .2 | .3 |
| Ryegrass | 1.0 | - | - | - | .1 | .3 |
| Triticale | - | 1.1 | 1.2 | - | - | - |
| Wheat | .5 | .8 | - | - | - | - |
| Oats | - | .2 | .4 | - | - | - |
| Sudangrass | - | - | 2.0 | 1.0 | .5 | - |



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