Guide for Year-Round Forage Supply

This publication is a planning guide to evaluate your current forage/livestock balance during the grazing season and to explore alternative types of pastures or their management to achieve a better pasture balance and ways to extend the grazing season.

Table 1 and the table 1 worksheet can be used to enter and calculate your existing livestock numbers and their forage needs, in animal unit months (AUMs). Again, the forage needs can be calculated by month for each type of livestock and totaled.

Table 2 is a worksheet that you can use to enter and calculate your existing pasture acres and their seasonal supply in AUMs. It uses your acres and average pasture productivity from Table 3. Table 3 gives both seasonal total production per acre, but more importantly, the relative distribution of that production during the grazing season. For greatest usefulness, calculate the monthly productivity of all your pastures.

By comparing monthly production (from Table 2) and the monthly needs, you can quickly see where your seasonal production deficits occur.

You also can use these tables and worksheets to project the impacts of:

- a minor decrease in animal numbers,
- addition of fertilization, legumes, or a grazing management, or
- extension of the forage grazing season.

The feed value obtained from pasture is often among the least costly inputs when producing livestock. Unfortunately, due to the limited types of pasture that they manage, many livestock producers can only take advantage of low cost pasture for six to seven months of the year.

Table 1. Livestock Needs Animal Unit Factors

LIVESTOCK DESCRIPTION	Animal Unit Factor
Yearling Steers/Hefs-Med Frame	0.7
Yearling Steer/Hefs-Large Frame	0.9
2 Yr Hfrs-M Milk-8-1000 pounds	1.0
2 Yr Hfrs-M Milk-10-1000 pounds	1.1
2 Yr Hfrs-Hi Milk-8-1000 pounds	1.1
2 Yr Hfrs-Hi Milk-10-1000 pounds	1.2
Cows-Mod Milk-9-1100 pounds	1.0
Cows-Mod Milk-11-1300 pounds	1.1
Cows-Mod Milk-13-1500 pounds	1.2
Cows-Hi Milk-9-1100 pounds	1.2
Cows-Hi Milk-11-1300 pounds	1.3
Cows-Hi Milk-13-1500 pounds	1.4
Bulls	1.5
Ewes-Winter Lamb-175 pounds	0.2
Ewes-May Mod Lamb-175 pounds	0.24
Ewes-May Hi Lamb-175 pounds	0.28
Replacement Ewe Lambs-80 pounds	0.13
Replacement Ewe Lambs-100 pounds	0.17
Replacement Ewe Lambs-120 pounds	0.17
Horses-mature maintenance	0.9
Horses-mares mid-Gestation	0.9
Horses-mares late-Gestation	1.0
Horses-mares 1st 3 Month Lactation*	1.2
Horses-mares late-Lactation*	1.1
Horses-weanlings 4-6 Months*	0.5
Horses-weanlings 6-12 Months*	0.7
Horses-Yearlings 12-18 Months*	0.8
Horses-18-24 Months	0.9
Horses-Light work	1.0
Horses-Moderate work*	1.1
Horses-Heavy work*	1.2
Horses-Stallions	1.0

*Due to the horse's unique feature of maximum intake being limited to 3% of body weght, a more complete ration using concentrate would be needed for lactating mares, weanlings, yearlings, and horses performing moderate and intense work.

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Extension and Outreach

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Table 1. WORKSHEET - YOUR LIVESTOCK NEEDS — example

Example Kind of Livestock	Number1	AU Factor	Animal Units2	Animal Units to Be Carried Each Month3											
				Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Mature Cattle	30	1.0	30	30	30	30	30	30	30	30	30	30	30	30	30
Calves (over 3 mos.)	29	0.3	9						9	9	9	9	9		
Total AUMs of Forage Needed				30	30	30	30	30	39	39	39	39	39	30	30

1 Enter number of each kind of livestock in column 2 and AU factor (from table 1) in column 3.
2 Animal units = Number in column 2 x AU factor in column 3.
3 Enter the total animal units as shown in column 4 that will be on hand each month.

Table 1. WORKSHEET - YOUR LIVESTOCK NEEDS

Your Worksheet Kind of Livestock	Number1	AU Factor	Animal Units2	Animal Units to Be Carried Each Month3											
				Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Total AUMs of Forage Needed															

1 Enter number of each kind of livestock.
2 Animal units = Number in column 2 x AU factor in column 3.
3 Enter the total animal units as shown in column 4 that will be on hand each month.

Table 2. WORKSHEET - YOUR FORAGE SUPPLY — example

Example	Total Available		Animal Unit Months per Acre2												
Kind of Forage	Acres	AUM1	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Unimproved Bluegrass	50	100					30	30	15	10	10	5			100
Trefoil Grass	20	94					10	10	24	30	8	12			94
Total AUMs Available			0	0	0	0	40	40	39	40	18	17	0	0	

1 AUM = Acres in column 2 x total AUMs for each kind of pasture as shown in last column in Table 3.
2 AUM per acre = Acres in column 2 x AUM per acre for each month given in Table 3.

Table 2. WORKSHEET - YOUR FORAGE SUPPLY

Your Worksheet	Total Available		Animal Unit Months per Acre2												
Kind of Forage	Acres	AUM1	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Total AUMs Available															

1 AUM = Acres in column 2 x total AUMs for each kind of pasture as shown in last column in Table 3.
2 AUM per acre = Acres in column 2 x AUM per acre for each month given in Table 3.

Table 3. Total Animal Unit Months of forage for selected Pasture Type and its Availability by Month During the Grazing Season

Pastured/For Age Type	SEASONAL JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
	(Animal Unit Months for Each Forage Type)												
Continuous Grazing													
Unimproved Bluegrass					0.6	0.6	0.3	0.2	0.2	0.1			2.0
Improved Bluegrass + Orchardgrass				0.1	0.85	0.85	0.45	0.25	0.3	0.2			3.0
Improved Bluegrass + Nor Legumes				0.2	1.1	1.1	0.6	0.3	0.4	0.3			4.0
Trefoil Grass					0.8	1.1	1.1	1.1	0.5	0.4			5.0
Unimproved Orchard/Bromegrass				0.2	1.1	1.1	0.6	0.3	0.4	0.3			4.0
Trefoil-Grass					0.5	0.5	1.2	1.5	0.4	0.6			4.7
Orchard or Brome + N or Legumes				0.5	1.5	1.5	0.8		1.2	1.0			6.5
Tall Fescue + N or Legumes				0.5	1.5	1.4	0.6		1.2	1.6			6.8
Warm Season Grass					0.2	1.0	1.3	1.0	0.5				4.0
Sudan or Sudan-Sorghum					1.5	2.5	1.0	0.3					5.3
Alfalfa Grass					1.4	1.4	1.0	1.0	0.6	0.5	0.1		6.0
Alfalfa/Gr 1 Cut then graze					1.2	1.2	0.5	0.5	0.1				3.5
Alfalfa/Gr 2 Cut then graze								1.0	0.4	0.4			1.8
Cornstalks	*	*								*	*	*	1.4*
Stockpiled T Fescue	*	*									*	*	1.5*
Rotation Grazing													
Improved Bluegrass 4 Paddocks				0.3	1.4	1.3	0.8	0.4	0.5	0.3			5.0
Improved Orch/Brm 4 Paddocks				0.5	1.7	1.7	0.9	0.5	0.5	1.0	0.8		7.6
Improved Orch/Brm 8 Paddocks				0.5	1.8	1.8	1.0	0.6	0.5	1.1	0.9		8.2
Trefoil-Gr 4 Paddocks				0.2	1.1	1.2	1.2	1.2	0.6	0.5			6.0
Trefoil-Gr 8 Paddocks				0.2	1.2	1.3	1.3	1.3	0.6	0.6			6.5
Alfalfa-Gr 8 Paddocks				0.5	1.7	1.6	1.1	1.0	0.6	0.6	0.4		7.5

* Stockpiled forage or crop residues produced during the growing season can be grazed during the late autumn or winter months. Do not exceed the AUM total when allocating acres of these winter grazed forages. These forages become increasingly more weathered and less efficiently used in later winter months.
Production for these forages assumes nitrogen fertilizer per acre at rates of 60 lbs. for bluegrass and warm season grasses; 80-100 lbs. for tall grasses. Phosphorus and potassium would be supplied for all forages as needed. Alfalfa should be rested from Sept. 15 to Oct. 20.

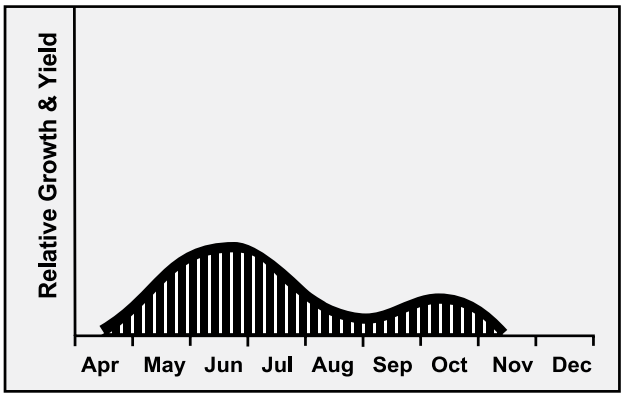
A common situation is the single Kentucky bluegrass-based permanent pasture. While bluegrass is a very desirable grass and can be very productive, it also has traits that make it strongly summer dormant. This limits its productive usefulness primarily to spring and autumn in climates such as ours where midsummer heat and rainfall patterns are erratic. A pasture composed only of one of these grasses would be very limiting for use in season-long grazing and would allow little management flexibility to the grazing manager.

Managing several pastures with different forage species often provides a more flexible forage supply, generally with less risk to livestock enterprises. Where a forage legume such as a clover, alfalfa, or birdsfoot trefoil is included in the pasture with grasses, the overall production and nutritive quality of the pasture forage also often are improved, particularly when nitrogen fertilization is not being used regularly. Legumes in the pastures grow better through the summer months, thus also improving the seasonal distribution of pasture growth. Some producers plant warm-season pasture grasses such as big bluestem and switchgrass for summer pasture as a way to bridge the summer slump of cool-season grass pastures. It is not recommended to try to manage mixtures of cool and warm-season grasses in the same pasture, but they can be effectively managed in separate pastures. Corn crop residues and grass that has been "stockpiled" through the autumn months have been used very effectively in the late autumn and winter months to stretch the grazing season to nearly a year-round grazed forage supply. This means good cost savings to livestock production enterprises.

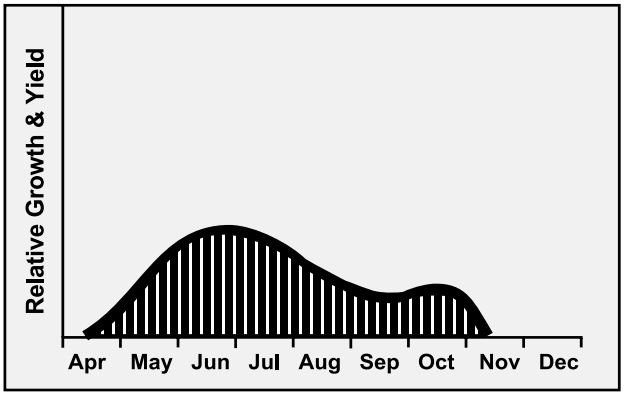
Reviewed and originally prepared by Stephen K. Barnhart, extension agronomist. Adapted from Iowa State University Extension bulletins: Stockpiled Forages (SP-42, 1996) and Corn Crop Residues (SP-44, 1996) written by J.R. Russell, animal science professor, Iowa State University. This fact sheet originally was funded, in part, by the USDA Natural Resources Conservation Service through cooperative agreement no. 74-6114-7-3.

File: Agronomy 3

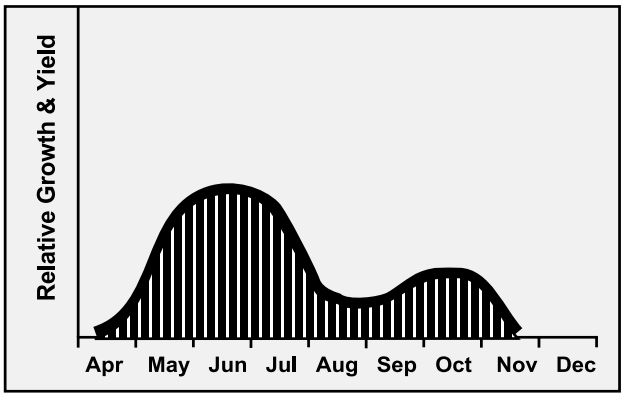
Pasture availability patterns for several common types of pasture



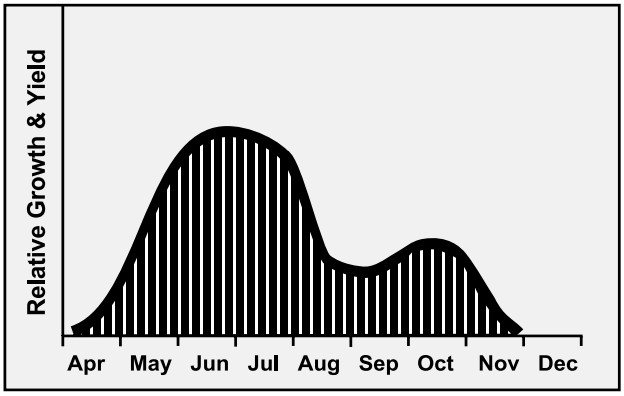
Unimproved Kentucky Bluegrass



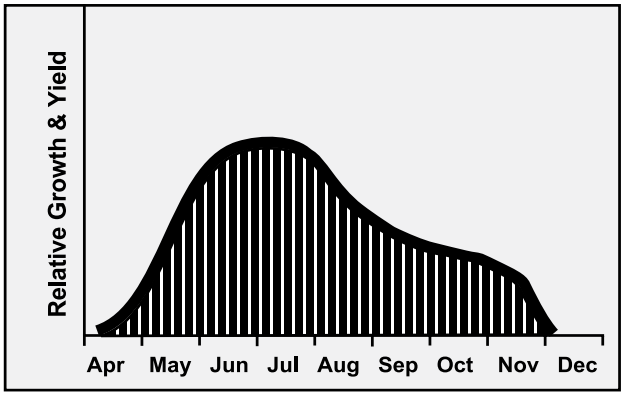
Kentucky Bluegrass and Legumes



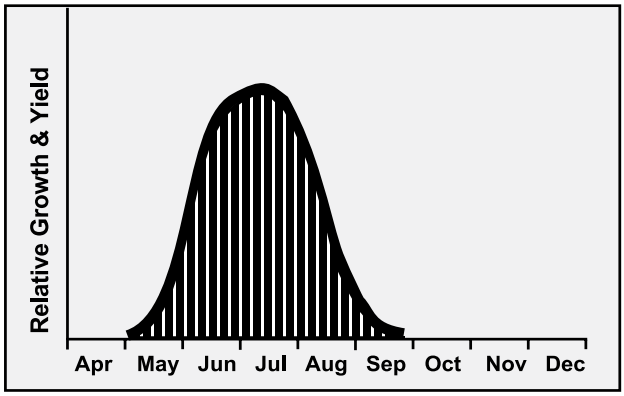
Unimproved Bromegrass or Orchardgrass



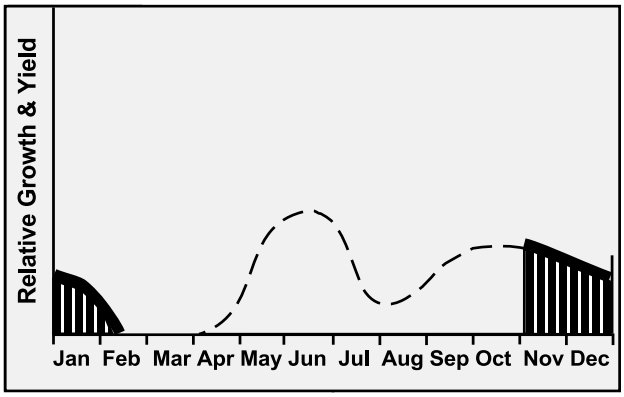
Bromegrass or Orchardgrass + Nitrogen



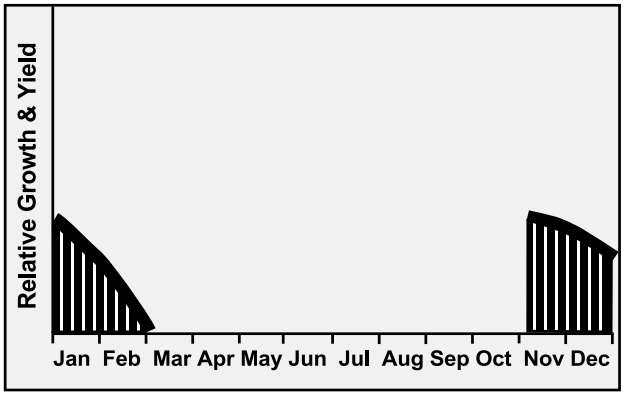
Bromegrass or Orchardgrass + Legumes



Warm-Season Grasses and Sudangrass



Stockpiled Grasses



Corn Crop Residues