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EC72-189 Forage Balance Sheets for Nebraska

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A GUIDE FOR PLANNING AND ANALYZING A YEAR-ROUND FORAGE PROGRAM

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In planning a forage program for farm or ranch, you'll need to know the carrying capacity of available pastures and the productivity of forages.

Carrying capacity is expressed in terms of Animal-Unit-Month (AUM). An AUM is the amount of forage required to feed a mature animal for 30 days. You need to know the numbers of AUMs of forage your livestock need for the full year.

There are about 3 AUM's of feed in one ton of hay. The production levels reported in the tables are average levels. With higher production you may use higher AUM values.

Each forage calendar has been designed for a specific area. These are: The Panhandle and Southwest, Sandhills, South Central and Eastern section of Nebraska (Fig. 1).

To calculate the productivity of your forages:

1. Enter the number of acres for each different type of forage crop in the "Acres" column of your worksheet. Then multiply the number of acres times the total AUM's of production per acre (from forage calendar) and enter in AUM column. This is the carrying capacity.

2. Enter the carrying capacity in the worksheet columns. Do this by multiplying the carrying capacity per month times the AUM. Enter the product in the column for each month. Do this for each type of forage.

3. For hay and silage calculate the total production for the year. You'll feed this as needed.

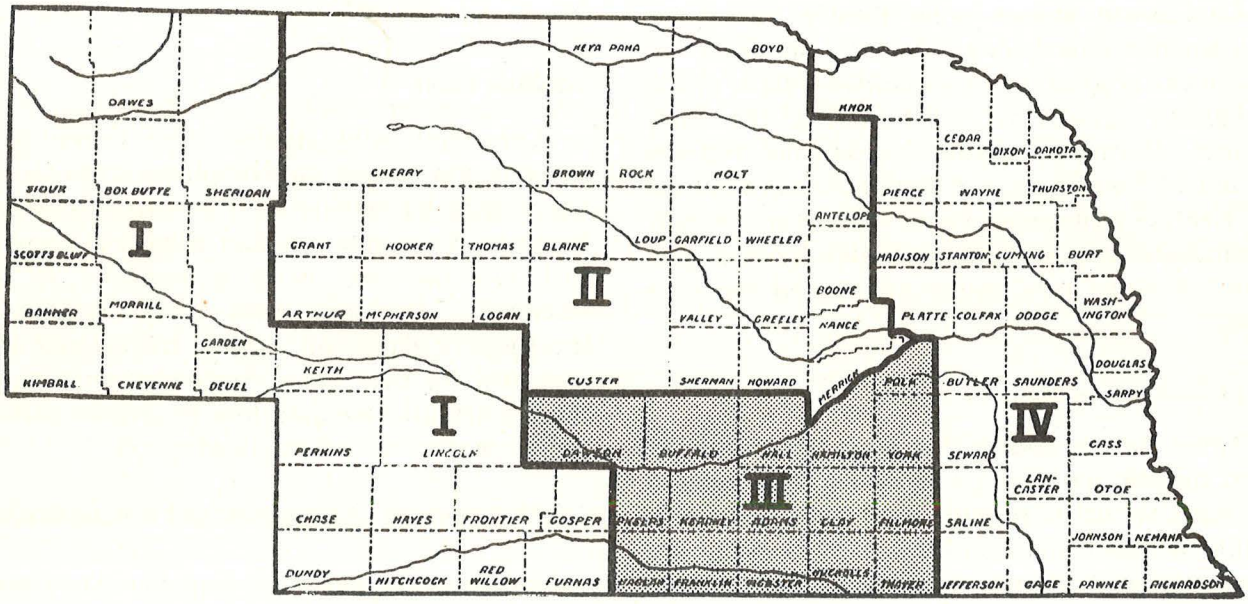

Fig. 1. Areas of Nebraska. I. Panhandle and Southwest, II. North Central. III. South Central. IV. Eastern.

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4. Now add the carrying capacity columns for each month and enter the total in the last line on the worksheet (total AUM's available). This will give you the total AUM of grazing forage available.

To calculate the AUM of forage your livestock need:

1. Enter the number of each kind of livestock that you have under "Number."

2. Multiply the number of livestock by the "Animal Unit Factor" (first column), and then insert the product under "Animal Units" and also for each appropriate month.

3. Total your "Animal Unit" column and you will have the total amount of AUM forage needed.

You may find that surpluses and shortages exist. These problems can be adjusted by changing your livestock numbers or forage acreages. In many cases, using new forage crops will fill in when you're short on feed and will complement your major forage resources.

Choose crops that will supply feed when you need it—then plan to use this in your management program.

Using Grazing Resources

Cool-Season Grasses

Cool-season grasses grow mostly during the early summer (April, May and June). About 80% of the annual production of vegetative growth of the cool-season grasses is made during the early summer. Dormancy during mid-summer restricts the use of these grasses. A look at the bromegrass and Kentucky bluegrass fields in July and August demonstrates this point. Some growth is made again each fall when cool temperatures and moisture return.

Warm-Season Grasses

These are the grasses that grow tall during the warm summer months. To maximize their use you will want to delay turn-on until June and finish grazing by mid-September. Most all of the group are called "natives." If over-grazed and abused, these grasses soon become unproductive.

Each of these grasses has a best time for use. For example: Given a choice among the big bluestems, indiangrass and switchgrass in mid-June, trial steers preferred switchgrass. Given a choice in late July, the steers preferred indiangrass and big bluestem.

If you have switchgrass in your pasture mixtures, your turn-on date should be earlier than on pastures that have only bluestems and indiangrass.

Sorghums

Within this group are the popular sudangrasses, sorghum sudangrass crosses and hybrids and forage sorghums. There are many types, kinds and varieties available.

Some concern must be given to the lag between seeding and use—about six weeks. Also, concern must be given to prussic acid and nitrate contents whenever dry weather or frost restricts plant growth.

Small Grains

Emphasis among the small grains (wheat, oats, rye and barley) has been toward grain production. However, additional pasture can be produced using these small grains. In Nebraska excellent grazing can be produced in wheat, oats, rye and barley.

Examples of innovative use of small grains for pasture by Nebraska farmers and ranchers are numerous. Excellent fall pasture combinations of oats and corn stubble, or acreages of fall and spring rye are used for grazing in October, November, March and April.

Stubble Land

Corn and milo stubble have proven to be valuable grazing and can complement the farm and ranch unit by adding to the feed resources for livestock. Corn and sorghum stubble are resources that can be used more extensively. In some instances, chopping these crop residues for shucklage or silage will increase the amount of low cost feed for beef cows. Remember that many of these types of feeds are low in protein and need supplementation for a balanced ration.

Management of Livestock and Forage Crops

Balanced programs are complex. They involve the major forage crop resources on your farm and ranch. Any changes made should complement what is available and in general use. In many cases small changes in management can increase your carrying capacity and provide a balanced feed program through forage crops. The details of each step should be carefully planned.

Fertilizers can be profitable. Using 100 pounds of nitrogen (plus phosphorus based on soil taken) for cool-season grasses can double carrying capacity. **Fertilize** these cool-season grasses in the fall or spring.

In regions getting 20 inches or more of rainfall, use of **fertilizer** on warm-season prairie grasses is recommended. Timely application during the first week of June with 40-60 lb. of nitrogen (plus phosphorus based on soil test) can double carrying capacity.

Rotational grazing will increase the productivity of grasslands by letting them recover and regrow after they have been used. Rotation and different grazing systems need not be elaborate. The schedule should take advantage of each grazing resource for peak production.

Weed control is also essential for better pastures. Check with your County Agent for current recommendations for chemicals. Weeds usually occur in over-grazed pastures and must be eliminated for maximum production.

Renovation and replanting are frequently necessary in grasslands that have been seriously over-grazed. Of course, in developing new pasture you can select the improved varieties of grasses. Use certified seed. Check with your County Agent or Soil Conservation Service technician for help and latest recommendations. There may be government programs that can be of help in reseeding, restoration or developing new grass seedings.

Your Farm and Ranch Forage Calendar for Eastern Nebraska

KIND OF FORAGE	Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total animal unit months (AUM) available/acre
Pasture													
Bluegrass				.2	.6	.6			.4	.2			2.0
Warm-Season Tall Grass						.2	.6	.6	.4	.2			2.0
Warm-Season Mid Grass						.2	.4	.4	.2	.2			1.4
Bromegrass				.2	.8	.8			.4	.2			2.4
Bromegrass and Alfalfa					1.0	1.0	.6	.4	.6				3.6
Intermediate Wheatgrass				.2	.8	.8			.4	.2			2.4
Inter. Wheatgrass and Alfalfa					1.0	1.0	.6	.4	.6				3.6
Irrig. Pasture (legumes and grass)					3.0	3.0	2.0	2.0	1.0	1.0	1.0		13.0
Winter Wheat[1]				.6	.2					.4	.4		1.6
Spring-Seeded Oats					.8	1.6							2.4
Fall-Seeded Oats										.8	.8		1.6
Sudangrass & sorghum/sudangrass hybrids							2.0	2.0	.4				4.4
Rye				.6	1.0					.4	.4		2.4
Cornstalks[2]	.3	.3									.7	.7	2.0
Sorghum stubble	.2	.2									.5	.5	1.4
Hay and Silage													
Alfalfa Hay													10.0
Grass Hay													6.0
Silage (corn and sorghum)													18.0
Silage (small grains)													4.0
Other													

YOUR WORKSHEET

KIND OF FORAGE	Total need		Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total animal unit months (AUM) available/acre
	Acres	AUM													
Total AUM's Available															

KIND OF LIVESTOCK	Number	AU Factor	Animal Units	Your Livestock Forage Needs											
				Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Mature cattle		1.0													
Yearlings		.7													
Calves (over 3 mos)		.3													
Horses and mules		1.0													
Ewes		.2													
Swine		.1													
Total AUM's of forage needed															

Notes for program change

[1] More production can be obtained from winter wheat although lower grain yields may result.

[2] This value is for 80 bu./A. If 120 bu./A. was produced, use 3.0 AUM.

Your Farm and Ranch Forage Calendar for South-Central Nebraska

KIND OF FORAGE	Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total animal unit months (AUM) available/acre
Pasture													
Warm Season Shortgrass							.1	.1	.1	.1			.4
Warm Season Mid Grass							.2	.2	.2	.1			.7
Warm Season Tall Grass						.2	.3	.3	.2	.2			1.2
Bromegrass[1]					.4	.4			.2	.1			1.1
Intermediate wheatgrass[1]					.4	.4			.2	.1			1.1
Irrigated Pasture					3.0	3.0	2.0	2.0	1.0	1.0	1.0		13.0
Winter Wheat[2]				.4	.2					.2	.2	.2	1.2
Sudangrass							.8	1.2	.4				2.4
Cornstalks[3]	.3	.3									.7	.7	2.0
Sorghum stubble	.2	.2									.5	.5	1.4
Hay and Silage													
Alfalfa Hay													9.0
Grass Hay													4.5
Silage (irrigated corn and sorghum)													12.0
Other													

YOUR WORKSHEET

KIND OF FORAGE	Total need		Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total animal unit months (AUM) available/acre
	Acres	AUM													
Total AUM's Available															

KIND OF LIVESTOCK	Number	AU Factor	Animal Units	Your Livestock Forage Needs											
				Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Mature Cattle		1.0													
Yearlings		.7													
Calves (over 3 mos)		.3													
Horses and Mules		1.0													
Ewes		.2													
Swine		.1													
Total AUM's of forage needed															

Notes for program change

[1] Nitrogen fertilizer on cool-season grasses will increase production. Using 60-80 lb. N/A will essentially double carrying capacity.

[2] More production can be taken from winter wheat although a reduction in grain yield may follow.

[3] This is approximately 80 bu./A. If 120 bu. of corn was produced the total should be 3.0 AUM.

Your Farm and Ranch Forage Calendar for the Sandhills and North Central Nebraska

KIND OF FORAGE	Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total animal unit months (AUM) available/acre
Pastures													
Bluegrass					.3	.3			.2	.2			1.0
Warm Season Tall Grass							.4	.6	.4	.2			1.6
Warm Season Mid Grass							.2	.2	.2	.2			.8
Warm Season Shortgrass							.1	.1	.1	.1			.4
Bromegrass[1]					.4	.4			.2	.2			1.2
Intermediate Wheatgrass					.4	.4			.2	.2			1.2
Irrigated Pasture					3.0	3.0	2.0	2.0	1.0	1.0	1.0		13.0
Winter Wheat[2]				.4	.2					.2	.2		1.0
Rye				.6	1.0					.2	.4		2.2
Rye and Vetch				.2	1.0	.4				.2	.4		2.2
Sudangrass							1.0	1.4	.2				2.6
Cornstalks[3]	.3	.3									.7	.7	2.0
Sorghum stubble	.2	.2									.5	.5	1.4
Hay and Silage													
Subirrigated Hay													3.0
Subirrigated Alfalfa													10.0
Silage (irrigated corn and sorghum)													18.0
Silage (small grains)													4.0
Other													

YOUR WORKSHEET

KIND OF FORAGE	Total need		Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total animal unit months (AUM) available/acre
	Acres	AUM													
Total AUM's Available															

KIND OF LIVESTOCK	Number	AU Factor	Animal Units	Your Livestock Forage Needs											
				Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Mature cattle		1.0													
Yearlings		.7													
Calves (over 3 mos)		.3													
Horses and mules		1.0													
Ewes		.2													
Swine		.1													
Total AUM's of forage needed															

Notes for program change

[1] Nitrogen fertilizer on cool-season grasses will increase productivity. Using 60-80 lb. N/A will essentially double carrying capacity.

[2] More production can be taken from winter wheat although a reduction in grain yield may follow.

[3] This is for approximately 80 bu./A. If 120 bu. of corn was produced the total should be 3.0 AUM.

Your Farm and Ranch Forage Calendar for the Panhandle and Southwestern Nebraska

KIND OF FORAGE	Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total animal unit months (AUM) available/acre
Pasture													
Warm Season Midgrass							.1	.2	.2	.1			.6
Warm Season Shortgrass						.1	.1	.1	.1				.4
Crested Wheatgrass				.1	.3	.3							.7
Intermediate Wheatgrass					.4	.4							.8
Tall Wheatgrass					.3	.5							.8
Irrigated Pasture					3.0	3.0	2.0	2.0	1.0	1.0	1.0		13.0
Sudangrass							.6	.8	.6				2.0
Winter Wheat[1]				.4	.2						.2	.2	1.0
Rye				.4	.6					.2	.2		1.4
Cornstalks[2]	.3	.3									.7	.7	2.0
Sorghum stubble	.2	.2									.5	.6	1.5
Hay and Silage													
Prairie Hay													2.0
Alfalfa Hay													4.0[3]
Silage (corn and sorghum)													9.0[3]
Silage (small grains)													4.0
Other													

YOUR WORKSHEET

KIND OF FORAGE	Total need		Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total animal unit months (AUM) available/acre
	Acres	AUM													
Total AUM's Available															

KIND OF LIVESTOCK	Number	AU Factor	Animal Units	Your Livestock Forage Needs											
				Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Mature cattle		1.0													
Yearlings		.7													
Calves (over 3 mos)		.3													
Horses and mules		1.0													
Ewes		.2													
Swine		.1													
Total AUM's of forage needed															

Notes for program change_____

[1] More pasture can be taken from wheat although a reduction in grain yield may follow. December production is possible in southwestern Nebr. only.

[2] This is approximately 80 bu. corn per acre. If 120 bushels was produced the total should be 3.0 AUM.

[3] If irrigated this could be 14 AUM for alfalfa and 16-20 AUM for corn silage.