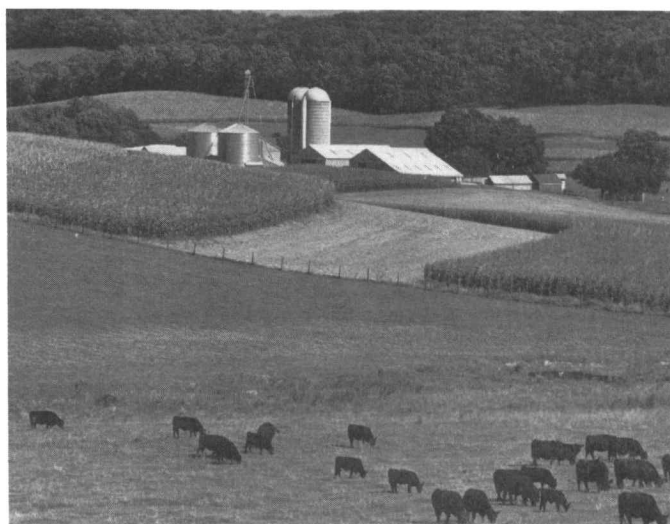


Grazing Lands in the East

Lester R. Vough

Grazing lands in the eastern portions of the United States are highly diverse as a result of the climate, soils and the management practices. In the northern regions, very winter-hardy cultivars must be used. In some of the southeastern coastal areas, tropical grasses are grown. In general, the East produces an abundance of forage. Thus not every acre of pasture on every farm needs to be managed for maximum production. Grazing lands typically are a greatly underutilized resource. As dairy and beef cow numbers have decreased in recent years and dairy farmers have shifted away from pasture to more stored forage, acreage of pastureland has been decreasing since the 60's.

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The Census of Agriculture breaks grazing lands into three categories: cropland used only for pasture or grazing, pastureland and rangeland other than cropland and woodland pastured, and woodland pastured. Cropland pastures generally produce the most forage because they are on the most fertile, well-drained soils and are farmed in crop rotations. The pastureland/rangeland category includes both improved and unimproved pastures. Woodland pasture includes cutover woodland or pastures where brush and woody species have taken over. Woodland pastures generally furnish meager amounts of edible forage.

The eastern U.S. is commonly divided into three geographic regions: northeastern, north central, and humid southern (Fig. 1). The humid South is often further subdivided into the upper South and lower South. These will be



Forage production is the best agricultural use of much of the land in the Northeast. Properly managed pastures aid in improving water quality, as illustrated here in the Lime Lake area of southwestern New York.

All photos with this article are courtesy of USDA Soil Conservation Service.



Fig. 1. Northeastern, northcentral, and humid southern regions.

the divisions used in this paper. Trends in grazing land acreage for the eastern U.S. for the period 1978 to 1987 are shown in Table 1.

Northeast Region. The northeastern region extends from West Virginia and Maryland to Maine. The twelve states of this region occupy about 7 percent of the land area of the 48 contiguous states. Forest and woodland vegetation predominates in this region. Approximately half of the land area is classes VI through VIII. Most intensive reasonable use of such land is for limited to moderate grazing.

Soil drainage is a major limiting factor for forage and crop production in many areas of the Northeast. Soil drainage characteristics can be quite variable, ranging from gravelly soils that seriously limit forage production of drought-sensitive species such as timothy and white clover to impervious subsoil layers common in glaciated soils of the northern and central parts of the region that limit alfalfa production.

Table 1. Trends in grazing land acreage, 1978-87.

State	Cropland*			Pastureland/Rangeland**			Woodland pastured***		
	1987	1982	1978	1987	1982	1978	1987	1982	1978
thousand acres									
Northeast									
ME	87	87	91	36	47	36	60	77	78
NH	31	31	39	17	21	17	31	32	37
VT	188	205	228	103	115	112	124	136	162
MA	53	52	62	45	32	29	36	35	36
RI	5	5	6	3	3	3	4	4	3
CT	40	43	47	24	27	27	23	25	32
NY	822	891	1,126	666	773	791	374	424	478
NJ	73	64	76	35	33	39	20	20	24
PA	803	862	1,004	482	509	539	285	323	374
DE	10	12	17	5	12	9	4	7	8
MD	189	197	224	104	112	120	71	69	94
WV	642	676	715	576	597	600	509	528	534
Total	2,943	3,125	3,634	2,096	2,281	2,322	1,540	1,680	1,858
North Central									
MN	1,122	1,206	1,623	1,038	1,127	1,206	948	1,117	1,272
WI	1,162	1,229	1,453	822	865	961	1,079	1,275	1,442
IA	2,284	2,500	3,155	1,452	1,591	1,695	775	894	945
MO	5,396	5,587	6,780	3,736	3,515	3,480	2,687	2,792	2,914
IL	1,021	1,070	1,487	719	829	954	619	734	850
IN	747	798	1,075	439	470	534	395	492	591
MI	519	566	698	230	253	320	229	269	332
OH	942	982	1,219	726	799	860	447	541	585
Total	13,192	13,938	17,489	9,163	9,451	10,011	7,179	8,114	8,931
South									
VA	1,449	1,523	1,585	1,180	1,243	1,213	721	822	915
KY	3,402	3,453	3,993	1,232	1,063	1,071	1,053	1,055	1,166
TN	2,472	2,608	2,886	1,014	958	894	1,155	1,229	1,304
NC	783	806	926	474	449	444	562	606	765
SC	464	484	587	325	267	258	364	391	524
GA	1,145	1,290	1,481	885	904	867	885	1,037	1,345
AL	1,456	1,474	1,705	1,234	1,173	1,314	1,029	1,220	1,440
FL	1,004	1,072	1,188	4,496	5,108	5,012	1,363	1,966	2,047
MS	1,244	1,441	1,798	1,136	1,125	1,112	943	1,259	1,540
AR	1,938	2,055	2,308	1,483	1,505	1,428	1,133	1,242	1,416
LA	829	916	1,088	1,011	1,021	1,037	439	501	618
Total	16,186	17,122	19,545	14,472	14,816	14,650	9,647	11,327	13,080
Grand Total	32,322	34,186	40,668	25,730	26,547	26,983	18,365	21,121	23,869

*Cropland used only for pasture or grazing includes land used only for pasture grazing that could have been used for crops without additional improvement. Also included is all cropland used for rotation pasture and land in government diversion programs that were pastured. However, cropland that was pastured before or after crops were harvested was to be reported as harvested cropland rather than cropland for pasture or grazing.

**Pastureland and rangeland other than cropland and woodland pastured.

***Woodland pastured includes all woodland used for pasture or grazing during the census year. Woodland or forest land pastured under a per-head grazing permit was not counted as land in farms and therefore, was not included in woodland pastured.

Source: USDC, 1989.

Most unlimed soils of the region are strongly acid, typically pH 5 to 5.5 in the surface horizon. Soil acidity is a critical factor in legume species selection. Northeastern soils are relatively infertile in their native state. In most situations high rates of phosphorus are recommended for legume establishment. Legume persistence and productivity are dependent upon annual potassium and boron applications.

The freeze-free period ranges from less than 115 days in the northern and western uplands to over 200 days in the southern coastal areas. Winter temperatures greatly affect the choice of perennial forage species. Only the most winter-hardy cultivars may be safely grown in the extreme north. In contrast bermudagrass can be maintained in the milder winter climate of the southern areas.

The climate of the Northeast is generally humid. Total annual precipitation ranges from about 30 inches in northwestern New York to as much as 50 inches at some of the higher elevations in the region. Moisture generally is favorable for forage production.

Cropland pasture acreage in the northeastern region totalled over 2.9 million acres in 1987 (USDC, 1989). Orchardgrass, smooth brome grass and timothy are seeded with red clover, birdsfoot, trefoil and sometimes alfalfa in these pastures. Sudangrass and sorghum-sudangrass hybrids are also seeded on cropland pastures for summer grazing.

The 1987 acreage of pastureland reported was about 2 million acres (USDC, 1989). The Census of Agriculture does not provide acreage data for improved vs. unimproved pasture but according to Washko (1974), only about 15% of the permanent pasture acreage fell in the category improved pasture in 1964. The percentage is probably very similar today. Improved (permanent) pastures have been improved by liming and fertilization, reseeding renovation, or both. Basically these pastures are predominately Kentucky bluegrass swards with common white clover and varying amounts of orchardgrass, timothy and quackgrass. Kentucky bluegrass is a volunteer species in pastures and is seldom seeded for pasture purposes. If these pastures have been renovated, red clover or birdsfoot trefoil and one or more of the tall growing grasses have generally been introduced.

For the most part unimproved pastures consist of varying proportions of one or more of the following species: Kentucky bluegrass, Canada bluegrass, redtop, bentgrass, common white clover and unpalatable weeds. Many of these pastures do not lend themselves to improvement because of shallowness of soil, poor internal drainage, rocks and rock outcrops and steepness of slope that prevents use of farm machinery.

North Central Region. The north central region (Minnesota, Wisconsin, Iowa, Missouri, Illinois, Indiana, Michigan and Ohio) represents about 15% of the land area of the 48 contiguous states. About 58% of the land within Minnesota, Wisconsin and Michigan and 76% of the land in the other five states is classified as class I, II or III (Van Keuren and George, 1985). Annual rainfall ranges from about 20 inches in northwestern Minnesota to 50 inches

in southeastern Missouri. Although total rainfall is greater in the southern part of the region, Van Kuren and George point out that drought periods are more of a hazard to forage crops than elsewhere in the region because of greater evaporation. The average freeze-free season is about 100–120 days in the north to 190–200 days in the south.

About 13.2 million acres of cropland pasture and 9.2 million acres of pastureland/rangeland are reported for the region. The predominant pasture grass species throughout much of the region is Kentucky bluegrass. However, Heath (1974) reported that tall fescue has become a major grass over much of the southern area since 1945. As with the northeast region, white clover volunteers in permanent pastures throughout the region. Korean lespedeza and common lespedeza fill an important midsummer pasture need in the southern part of the region.

Red clover is used in pasture renovation because of its ease of establishment, but reseeding is necessary every two to three years because it is relatively short-lived. Birdsfoot trefoil is also being used in pasture renovation, particularly in the northern areas in combination with Kentucky bluegrass.

Smooth brome grass is the most widely seeded grass for pasture, hay, silage, and soil conservation in the central and northern parts of the region. It is not well adapted to climatic conditions in the extreme southern part of the region. Orchardgrass is much more popular in the central and southern locations, although it is grown throughout the region.

Cornstalks and small grain straw are sources of low-cost feed in the fall and winter for beef cows in the region. Following grain harvest the cattle are allowed to glean the fields. Such management practices are complementary and provide a more intensive use of total resources (Heath, 1974).

The Humid South. The humid South extends from the Atlantic Seaboard westward into eastern Oklahoma and Texas and from Kentucky and Virginia to the Gulf Coast. Excluding the portions of Oklahoma and Texas, this region represents about 17% of the land area of the 48 contiguous states. This is an area of relatively high rainfall, 40 to 50 inches or more, with a fairly uniform annual distribution. The growing season in Kentucky ranges from 175 to 200 days and in Mississippi from 210 to 260 days (Chamblee and Spooner, 1985). Year-round grazing is possible throughout much of this region, utilizing annual grasses and legumes in the southern part of the region and stockpiled fescue in the northern part.

The upper South (Kentucky, Virginia, North Carolina, Tennessee, the northwestern quarter of South Carolina, the northern fourth of Georgia, Alabama and Mississippi, and the northern third of Arkansas) has been classed as the ladino clover belt, with tall fescue and orchardgrass the primary companion grasses (Dobson, 1974). Kentucky bluegrass volunteers freely in this area and in some locations is still the most desirable species. Red clover is quite popular and alfalfa acreage has increased rather rapidly in the last 10 years or so. Lespedezas are still quite



This farm in South Carolina has been converted from row crops to permanent Coastal bermudagrass pasture. Previously, a rather undesirable farm because of low land value due to sandy, low fertility soil, it is now a highly productive, very desirable livestock farm.

common but decreasing in usage because of low yielding capacity.

Tall fescue is useful for fall and early spring growth in the lower South, but summer production is minimal. Adapted warm-season grasses provide most of the forage for the cattle industry in the lower South. Bermudagrass is the most widely grown grass. The hybrid bermudagrasses such as 'Coastal', 'Midland', 'Coastcross-1' and 'Tifton 44' are excellent for hay and make good early summer grazing, but from June onward animal gains on pasture are generally low. The acreage of common bermudagrass, which is less productive and lower quality than the hybrids, probably exceeds that of the hybrids, but much of it receives little or no fertilizer or management and its potential contribution is not fully realized (Mays, 1974).

According to Mays, bahiagrass is the most important grass species in the southern half of the Gulf Coast states and much of Florida. And, although johnsongrass is considered a weed in much of the region, Mays points out that it is widely used for grazing and particularly hay in the Black Belt of Alabama and Mississippi. Dallisgrass is also important for grazing in much of the area and in some states occupies more acreage than Coastal bermudagrass.

Several tropical grasses not usually seen elsewhere in

the region are important in Florida. Pangola digitgrass is used for grazing, hay and silage in central and southern Florida. Low yielding carpetgrass and centipedegrass occur to some extent in many native pastures but probably make a minimum contribution to the economy (Mays, 1974).

Mays states that perennial legumes are of less importance in the South than elsewhere in the United States. Several varieties of white and ladino clover are widely grown on heavier soils or bottomlands, usually in mixtures with tall fescue or dallisgrass, but many farmers do not exercise the management necessary to maintain adequate clover populations. When warm-season perennials such as bermudagrass and bahiagrass are fertilized for maximum production, they are too competitive for clovers to be retained in the stand.

Winter annual forages are an important part of the forage program in the humid South. Winter small grains, annual ryegrass and crimson, subterranean and arrowleaf clovers, alone or in mixtures, are widely used for late fall, winter, and spring grazing in the lower South. Small grains in combination with annual clover and ryegrass produce the most rapid steer gains of any pastures grown in the South, average daily gains often being 2.2 to 2.5 pounds (May, 1974).

These winter annual forages are either planted on prepared seedbeds in late summer or early fall or may be overseeded or sod-seeded on bermudagrass or bahiagrass sods to extend the grazing season. With proper management to insure a seed crop, crimson, arrowleaf and subterranean clovers and annual ryegrass will produce volunteer stands under favorable environmental conditions.

Summer annuals are also commonly used, especially in the lower South. Sorghum-sudangrass hybrids and newer pearl millet cultivars, alone and in mixture with soybeans, are widely used for grazing, green chop and silage. They are frequently grown on the same ground following winter annuals.

Potential for Increased Livestock Production from Eastern Grazing Lands. Undoubtedly the grazing lands of the East have the capability to support substantially increased numbers of livestock if farmers would apply new technology and improved management practices. Technological inputs into the production of forage crops, and especially pasture, have been and continue to be very low, in spite of ample research results to demonstrate that application of new technological developments is economically profitable. We now have vastly improved varieties and have research data showing substantial increases in yield with proper fertilization and management. Yet much of the grazing land in the East grows unimproved varieties, receives little if any lime and fertilizer, and no grazing management.

However, we are now beginning to see new interest in pastures and pasture management. Farmers are beginning to pick up intensive grazing management technol-

ogy. A few are even converting row crop land into pasture. The advent of no-till drills makes possible the renovation of hill land pastures that were not feasible to renovate previously. The long grazing seasons in the humid South and the southern portions of the northeastern and north central regions, the availability of large quantities of roughages and by-product feeds from the grain production in the northcentral region and forage production being the best agricultural use of much of the land in the Northeast provide a basis to support substantially increased livestock numbers if that need should exist in the future.

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