

PASTURE PLANT COMMUNITIES IN THE NORTHEAST

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Pastures are important to the economy of the northeastern United States, but we still don't know much about their ecology. One of the areas where we need more information is in understanding how environment affects the success of forage and weedy species in pastures. We surveyed 44 farms from Maryland to Maine. All farms had grazing animals, usually dairy cows. In 2-8 pastures on each farm, we collected information on plant species number and total cover, bare ground, and number and cover of each species present. We had soil test results, slope, elevation and aspect for each pasture, and annual precipitation and temperature for each farm.

These pastures were very diverse. The average number of plant species in a pasture was 32, but we found anywhere from 9 to 73. Nearly half of the species identified were native. Most species were rare, but some were common and abundant. Many of these were forage species, such as orchardgrass, Kentucky bluegrass, tall fescue, timothy and red and white clovers. Other common species included quackgrass, English and common plantains, curly dock and dandelion.

In the pastures we sampled, annual temperature was the most important environmental variable. Over the region we sampled, the number of species and abundances of most forage species increased in the cooler areas. Soil properties weren't as important as climate. Soil organic matter was an exception, since it was positively related to number of species and to a few grasses. Soil phosphorus was positively related to both total species number and total plant cover.

Topography, climate and soils together didn't explain much of the variation in total cover (58%), number of species (24%), cover of forage species (6%), or in the abundance of common species. In northeastern pastures, site characteristics may determine what *can* grow there, but management determines what *does* grow there.

Number of species in the major species groups found in pastures.

	Introduced	Native	TOTAL
Broadleaf plants	95	103	198
Legumes	14	2	16
Grasses	37	21	58
All species	160	150	310

Total cover and cover of major species groups. Cover was estimated for each species separately, so it can be over 100% if species overlapped.

	Min.	Average	Max.
Bare ground	0.0	6.3	78.4
Broadleaf cover	0.1	20.2	65.9
Legume cover	0.0	18.4	69.4
Grass cover	9.0	61.1	99.9
Total cover	16.8	111.2	234.4