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BIOLOGICAL AND MEDICAL SCIENCES

AN ANALYSIS OF THE VEGETATION AND FLORA OF FIELD-EDGES AND ROADSIDES OF AGRICULTURAL LAND IN EASTERN NEBRASKA

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Five hundred sixty-seven hectares of agricultural cropland in east-central Nebraska were sampled during a vegetative analysis and botanical survey in the summer of 1979. One hundred eighteen species of plants in 39 families were recorded. The number of species recorded in the various edge-areas sampled ranged from six to 34. The differences noted were that species composition varied and some plants were present in small numbers in some areas and absent or undetected in others. Differences could be attributed to variations in slope, soil characteristics, and management of the areas sampled.

† † †

Although cropland agriculture comprises the predominant land use in many areas of eastern Nebraska, there has been little analysis of the plants that are found on farmland. Farms have roadside and irrigation ditches, grass waterways, and fence lines as well as pastures that are areas of permanent vegetative cover.

To evaluate some of the characteristics of the flora of agricultural land, a vegetative analysis and botanical survey was conducted on three east-central Nebraska farms. Plants were examined as a part of the habitat analysis for a comparison of the biological communities of an organic and a conventional farm.

The area studied is agricultural land on the Platte River flood plain 6.4 km north and 3.2 km west of Valley, Douglas County. Soils there are of the Gibbon-Eudora-Wabash asso-

ciation made up primarily of silt and clay with a wide range of moisture drainage. Differences in land topography are slight as the area is nearly flat. Two sections of land were north of Nebraska Highway 36 (Sec. 3 and 4, T. 16 N., R. 9 E.) and a small part (N½ Sec. 10) south of the highway. Three farms comprising 567 ha were systematically surveyed. The greatest number of hectares was devoted to corn production while alfalfa, oats, rye, soybeans, and wheat were other crops produced (Fig. 1). In addition to cropland there was a cool-season grass pasture on the organic farm. The pasture was grazed by 80 cattle during the study period. It was also burned during the spring of 1979.

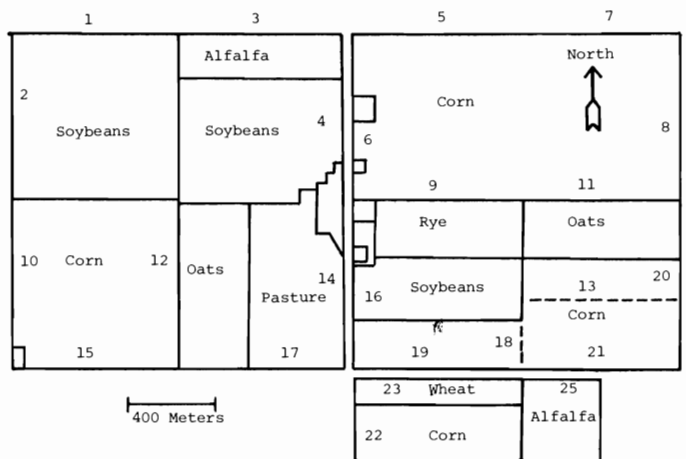


FIGURE 1. Crop type and edge sample area identification numbers of agricultural land studied in east-central Nebraska.

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There were several differences in management noted on the farms. One farmer mowed frequently during the growing season while another mowed only some areas and with less frequency. The use of herbicide was another difference. Drift from field applications was noted to have an effect on plants growing adjacent to the area of application. Also, one ditch showed signs of having been burned in 1978.

METHODS

Field work took place from May through August of 1979, with efforts limited to edge-areas that comprised only 16 ha of the total farm area. A map of the study site was prepared and each edge-area was assigned a number. Those ditches and edge-areas oriented north and south were assigned even numbers, while those going east and west were given odd numbers (Fig. 1).

A modified ten-point sampling frame was used to determine percentage of bare ground, litter, and basal cover of vegetation. The sampling device consisted of a metal frame mounted on legs. Ten holes were drilled in the horizontal members to allow steel pins to be inserted and moved vertically. When the frame was set on the ground, each of the ten pins was pushed towards the ground until contact was made with a plant, vegetative litter, or bare ground. This feature was then recorded. In order to have an even sampling intensity the length and width of each area were considered. Longer and wider areas were subject to greater sampling effort. Percent composition was then calculated from the values derived from basal cover. Frequency of occurrence, expressed as a percentage of the area sample quadrats which contained the species, was calculated by use of a 0.1 m² quadrat placed on the ground once per 200 m² and recording the presence of each species. The number of species recorded in an area served as a measure of species richness.

RESULTS AND DISCUSSION

List of Species

In addition to four crop species, *Glycine max* L. (soybean), *Secale cereale* L. (rye), *Triticum aestivum* L. (wheat), and *Zea mays* L. (corn), 114 species of 39 families were recorded as follow:

Aizoaceae

Mollugo verticillata L. Carpetweed

Amaranthaceae

Amaranthus retroflexus L. Rough pigweed

Anacardiaceae

Toxicodendron radicans (L.)

O. Ktze. Poison ivy

Apiaceae

Cicuta maculata L. Waterhemlock

Asclepiadaceae

Asclepias incarnata L. Swamp milkweed

A. syriaca L. Common milkweed

A. verticillata L. Whorled milkweed

Asteraceae

Ambrosia artemisiifolia L. Common ragweed

A. psilostachya DC. Western ragweed

A. trifida L. Giant ragweed

Artemisia ludoviciana Nutt. White sage

Aster praealtus Poir. Willowleaf aster

A. sp. Aster

Carduus nutans L. Musk thistle

Conyza canadensis (L.) Cronq. Horseweed

Erigeron strigosus Muhl. Daisy fleabane

Helianthus annuus L. Common sunflower

Lactuca canadensis L. Wild lettuce

L. oblongifolia Nutt. Blue lettuce

Ratibida columnifera (Nutt.)

Woot and Standl.

Taraxacum officinale Weber Prairie coneflower

Tragopogon dubius Scop. Dandelion

Goatsbeard

Bignoniaceae

Catalpa speciosa Warder Catalpa

Brassicaceae

Capsella bursa-pastoris (L.) Medic. Shepherd's purse

Descurainia pinnata (Walt.) Britt. Tansy mustard

Lepidium virginicum L. Virginia peppergrass

Rorippa sinuata (Nutt.) Hitchc. Spreading yellow cre

Thlapsi arvense L. Penny cress

Cannabaceae

Cannabis sativa L. Hemp

Caryophyllaceae

Stellaria sp. Chickweed

Celastraceae

Euonymus atropurpureus Jacq. Wahoo

Chenopodiaceae

Chenopodium album L. Lamb's quarters

Kochia scoparia (L.) Schrad. Kochia

Commelinaceae

Commelina communis L. Dayflower

Tradescantia bracteata Small Spiderwort

Convolvulaceae

Convolvulus arvensis L. Field bindweed

| | | | | |
|---|---------------------|--|--|---------------------|
| Cornaceae | | | <i>A. repens</i> (L.) Beauv. | Quackgrass |
| <i>Cornus</i> sp. | Dogwood | | <i>A. smithii</i> Rydb. | Western wheatgrass |
| Cupressaceae | | | <i>Agrostis stolonifera</i> L. | Redtop |
| <i>Juniperus virginiana</i> L. | Red cedar | | <i>Andropogon gerardii</i> Vitman | Big bluestem |
| Equisetaceae | | | <i>Avena sativa</i> L. | Oats |
| <i>Equisetum arvense</i> L. | Field horsetail | | <i>Bromus inermis</i> Leyss. | Smooth brome |
| <i>E. laevigatum</i> A. Br. | Smooth horsetail | | <i>B. japonicus</i> Thunb. | Japanese brome |
| Euphorbiaceae | | | <i>B. tectorum</i> L. | Downy brome |
| <i>Euphorbia maculata</i> L. | Spotted euphorbia | | <i>Carex</i> sp. | Sedge |
| <i>E.</i> sp. | Euphorbia | | <i>Cenchrus longispinus</i> (Hack.) Fern | Field sandbur |
| Fabaceae | | | <i>Dicanthelium oligosanthes</i> (Shult.) Gould | Small panicgrass |
| <i>Amorpha fruticosa</i> L. | False indigo | | <i>D. wilcoxianum</i> (Vasey) Gould and Clark | Wilcox panicum |
| <i>Desmanthus illinoensis</i> (Michx.) MacM. | Bundleflower | | <i>Digitaria sanguinalis</i> (L.) Scop. | Crabgrass |
| <i>Medicago lupulina</i> L. | Black medic | | <i>Echinochloa crusgalli</i> (L.) Beauv. | Barnyard grass |
| <i>M. sativa</i> L. | Alfalfa | | <i>Elymus canadensis</i> L. | Canada wild rye |
| <i>Melilotus alba</i> Desr. | White sweet clover | | <i>Eragrostis cilianensis</i> (All.) E. Mosher | Stink grass |
| <i>M. officinalis</i> (L.) Lam. | Yellow sweet clover | | <i>Hordeum jubatum</i> L. | Foxtail barley |
| <i>Strophostyles helveola</i> (L.) Ell. | Wild bean | | <i>H. pusillum</i> Nutt. | Little barley |
| <i>Trifolium pratense</i> L. | Red clover | | <i>Leersia oryzoides</i> (L.) Sw. | Rice cutgrass |
| <i>T. repens</i> L. | White cover | | <i>Panicum virgatum</i> L. | Switchgrass |
| <i>Vicia americana</i> Muhl. | American vetch | | <i>Phalaris arundinaceae</i> L. | Reed canarygrass |
| <i>V. villosa</i> Roth | Hairy vetch | | <i>Poa pratensis</i> L. | Kentucky bluegrass |
| Hydrophyllaceae | | | <i>Setaria faberi</i> Herrm. | Chinese foxtail |
| <i>Ellisia nyctelea</i> L. | Waterpod | | <i>S. glauca</i> (L.) Beauv. | Yellow foxtail |
| Lamiaceae | | | <i>S. verticillata</i> (L.) Beauv. | Bristly foxtail |
| <i>Nepeta cataria</i> L. | Catnip | | <i>S. viridus</i> (L.) Beauv. | Green foxtail |
| Liliaceae | | | <i>Spartina pectinata</i> Link. | Prairie cordgrass |
| <i>Allium canadense</i> L. | Wild onion | | <i>Sphenopholis obtusata</i> (Michx.) Scribn. | Prairie wedgrass |
| <i>Polygonatum biflorum</i> (Walt.) Ell. | Solomon's seal | | <i>Sporobolus cryptandrus</i> (Torr.) Gray | Sand dropseed |
| <i>Smilacina racemosa</i> (L.) Desf. | False spikenard | | <i>S. heterolepis</i> (Gray) Gray | Prairie dropseed |
| Moraceae | | | Polygonaceae | |
| <i>Morus alba</i> L. | White mulberry | | <i>Polygonum arenastrum</i> Jord. ex Bor. | Common knotweed |
| <i>M. rubra</i> L. | Red mulberry | | <i>P. ramosissimum</i> Michx. | Bushy knotweed |
| Oleaceae | | | <i>P.</i> sp. | Knotweed |
| <i>Fraxinus pennsylvanica</i> Marsh. | Green ash | | <i>Rumex</i> sp. | Dock |
| Oxalidaceae | | | Primulaceae | |
| <i>Oxalis stricta</i> L. | Yellow wood sorrel | | <i>Lysimachia ciliata</i> L. | Fringed loosestrife |
| Plantaginaceae | | | Ranunculaceae | |
| <i>Plantago rugelii</i> Dcne. | Rugel's plantain | | <i>Anemone canadensis</i> L. | Meadow anemone |
| Poaceae | | | Rosaceae | |
| <i>Agropyron caninum</i> (L.) Beauv. | Slender wheatgrass | | <i>Potentilla recta</i> L. | Sulphur cinquefoil |
| | | | <i>Rosa</i> sp. | Rose |

| | | |
|---|--|------------------------|
| Rubiaceae | | |
| <i>Galium aparine</i> L. | | Catchweed bedstraw |
| Salicaceae | | |
| <i>Salix interior</i> (Rowlee) Cronq. | | Long-leaf willow |
| Solanaceae | | |
| <i>Solanum carolinense</i> L. | | Horse nettle |
| Typhaceae | | |
| <i>Typha latifolia</i> L. | | Common cattail |
| Ulmaceae | | |
| <i>Ulmus americana</i> L. | | American elm |
| Urticaceae | | |
| <i>Parietaria pensylvanica</i> Muhl. ex Willd. | | Pennsylvania pellitory |
| <i>Urtica dioica</i> L. | | Stinging nettle |
| Verbenaceae | | |
| <i>Phyla lanceolata</i> (Michx.) Greene | | Fog fruit |
| <i>Verbena bipinnatifida</i> Nutt. | | Vervain |
| <i>V. bracteata</i> Lag. and Rodr. | | Bracted vervain |
| <i>V. stricta</i> Vent. | | Hoary vervain |
| Violaceae | | |
| <i>Viola</i> sp. | | Wild violet |

Vegetative Analysis

The most common species were three grasses, smooth brome, Kentucky bluegrass, and big bluestem (Tables I and II). Smooth brome was the only species recorded in every area. It was also the most frequent species in the pasture (Table III). Analysis of the pasture showed it had 7.2% vegetative cover, litter was 92.4% of the cover, and bare ground was 0.4%.

Differences were noted between the species composition within the edge-areas with some plants present in small numbers in some locations and absent or undetected in others. These differences could be attributed to slope, soil type and texture, water holding capacity, available moisture, etc., and management that could influence plant distribution and occurrence. Physical barriers such as a ditch with steep side slopes or standing water all or part of the year also would influence the presence of a species. These barriers meant an area was inaccessible to farm machinery and could not be mowed. Also, fence lines would prevent an area directly under the fence strands from being mowed. The tall forbs, shrubs, and tree saplings in such areas provided habitat suitable for wildlife and many birds had nest sites in this upright vegetation (Ducey and Miller, 1980).

Although sampling intensity differed with the size of an area, several ditches were of similar size and thus equally sampled. Comparisons were made between three groups of

TABLE I. Number of species and frequency of occurrence (in percentage) in area sample quadrats which contained the species. Species are listed in order from most to least abundant.

| Species | Area | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|------|----|----|----|-----|----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|--|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 25 | |
| Total Present | 12 | 17 | 17 | 28 | 15 | 20 | 10 | 21 | 15 | 19 | 19 | 6 | 14 | 21 | 29 | 22 | 30 | 11 | 22 | 34 | 30 | 11 | 25 | 23 | |
| Frequency | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Bromus inermis</i> | 20 | 50 | 25 | 50 | 100 | 60 | 100 | 55 | 65 | 45 | 30 | 95 | 10 | 85 | 96 | 85 | 78 | 20 | 68 | 20 | 75 | 90 | 95 | 100 | |
| <i>Poa pratensis</i> | —* | 40 | 65 | 35 | 35 | 35 | 35 | 35 | 50 | 5 | — | 5 | 80 | 5 | 63 | 65 | 44 | 50 | 29 | 13 | 27 | 15 | 55 | 57 | |
| <i>Carex</i> sp. | — | 15 | 40 | 38 | 10 | 35 | 10 | 30 | 3 | 55 | 15 | — | 20 | 20 | 23 | 35 | 40 | — | 28 | 58 | 37 | 25 | 23 | 10 | |
| <i>Viola</i> sp. | — | 15 | — | 8 | 10 | 10 | — | 5 | — | 5 | 30 | — | 10 | 5 | 10 | 15 | 10 | — | 3 | 18 | 10 | 5 | 2 | 10 | |
| <i>Polygonum</i> sp. | — | — | 5 | 33 | — | 3 | 3 | 25 | 3 | 20 | 30 | 25 | 15 | 35 | 4 | 5 | — | 30 | 12 | 23 | 15 | 15 | — | 10 | |
| <i>Oxalis stricta</i> | 8 | 50 | 20 | 15 | 10 | 15 | — | — | — | 65 | — | 15 | — | 15 | 10 | 25 | 3 | — | 2 | 20 | — | — | 2 | 3 | |
| <i>Spartina pectinata</i> | 15 | 10 | 5 | 3 | — | — | — | 10 | — | — | 20 | 10 | — | 5 | 4 | 5 | 5 | — | 3 | 23 | 2 | — | 2 | — | |
| <i>Rumex</i> sp. | — | — | — | 18 | — | 5 | — | 30 | 3 | 5 | 40 | 5 | 15 | — | — | 10 | 1 | 40 | — | 58 | 7 | 15 | — | — | |
| <i>Ambrosia artemisiifolia</i> | — | — | — | — | 30 | 5 | 40 | 3 | 28 | — | 25 | — | — | 5 | 1 | — | — | — | 8 | 18 | 10 | 5 | 10 | 20 | |
| <i>Amaranthus retroflexus</i> | 5 | — | — | — | — | 5 | — | 20 | — | — | 25 | — | 15 | 10 | 4 | 5 | — | 20 | 7 | — | 7 | — | 8 | 7 | |
| <i>Hordeum jubatum</i> | — | — | — | 5 | — | — | — | — | 15 | 15 | — | — | 60 | — | 3 | 5 | 8 | 60 | 3 | — | 3 | — | 2 | — | |
| <i>Cenchrus longispinus</i> | — | 30 | — | 5 | 15 | 30 | 5 | — | — | 30 | — | — | — | 5 | — | 10 | — | 30 | — | 3 | 5 | — | — | — | |
| <i>Taraxacum longispinus</i> | — | — | — | 8 | 5 | 15 | — | 3 | 30 | 5 | — | — | 20 | — | — | 30 | 1 | 30 | — | 3 | — | — | — | — | |
| <i>Kochia scoparia</i> | 3 | 5 | 15 | — | — | — | — | 15 | 3 | — | 3 | — | — | — | — | 10 | 5 | 10 | — | 5 | — | — | 2 | — | |
| <i>Trifolium pratense</i> | — | — | — | 5 | — | — | — | — | — | — | 5 | — | — | — | 15 | 35 | 4 | — | 3 | 5 | 3 | — | 2 | 7 | |

TABLE I. Continued.

| Species | Area | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 25 | |
| <i>Echinochloa crusgalli</i> | — | 5 | — | — | 10 | 5 | 15 | 23 | — | 20 | — | — | 10 | — | — | 6 | — | — | — | 13 | — | — | — | — | |
| <i>Anemone canadensis</i> | — | 5 | 15 | 10 | 5 | — | — | 3 | — | — | — | — | — | — | 1 | 5 | — | — | — | 18 | — | — | — | 13 | |
| <i>Medicago lupulina</i> | — | — | — | — | 5 | — | — | — | — | — | — | — | — | — | 20 | 30 | 14 | — | 18 | — | 3 | — | 22 | 43 | |
| <i>Elymus canadensis</i> | 30 | — | 25 | — | — | — | — | 3 | — | 10 | 20 | — | 10 | — | — | — | — | — | — | 8 | 2 | — | — | — | |
| <i>Equisetum laevigatum</i> | — | — | — | 8 | — | 20 | — | 3 | — | — | — | — | — | — | 1 | 15 | 19 | — | — | — | 25 | — | 5 | — | |
| <i>Chenopodium album</i> | — | 5 | — | — | — | — | — | 3 | — | 10 | — | — | — | 5 | 1 | 15 | — | — | — | 13 | — | — | — | 3 | |
| <i>Andropogon gerardii</i> | 35 | — | 5 | — | 20 | — | — | 5 | — | — | — | — | — | 5 | 3 | — | 6 | — | — | — | — | — | — | — | |
| <i>Melilotus officinalis</i> | — | — | — | — | — | — | — | — | — | — | — | — | 35 | 5 | 1 | 10 | — | — | — | 3 | — | — | 7 | 3 | |
| <i>Trifolium pratense</i> | — | — | — | — | 5 | — | 5 | — | — | — | — | — | — | — | 28 | 10 | 1 | — | 2 | — | 2 | — | — | — | |
| <i>Convolvulus arvensis</i> | — | — | — | — | 5 | 5 | 5 | — | — | — | — | — | — | — | 1 | — | 3 | — | 8 | 18 | — | — | — | — | |
| <i>Ambrosia psilostachya</i> | — | — | — | — | — | 5 | — | — | — | — | — | — | — | 5 | 4 | — | 16 | — | 3 | — | 2 | — | — | 7 | |
| <i>Lactuca canadensis</i> | — | — | — | 3 | — | — | — | 3 | — | — | — | — | — | 5 | — | — | 4 | — | — | 3 | 2 | — | — | 7 | |
| <i>Lepidium virginicum</i> | — | — | — | 3 | — | — | 5 | — | — | 5 | 15 | — | — | — | — | — | — | — | — | 10 | — | — | 2 | — | |
| <i>Conyza canadensis</i> | — | — | 10 | 3 | — | — | — | — | — | 5 | — | — | — | 5 | — | — | 5 | — | — | 10 | — | — | — | — | |
| <i>Verbena bracteata</i> | — | — | — | 10 | 5 | — | 5 | — | — | — | 5 | — | — | 5 | — | — | — | — | — | — | — | — | — | 7 | |
| <i>Asclepias syriaca</i> | 3 | — | — | — | — | 5 | — | 8 | — | — | — | — | — | — | — | — | 14 | — | 2 | — | — | — | — | — | |
| <i>Bromus tectorum</i> | — | 5 | — | 10 | — | — | — | — | — | — | — | — | — | — | 3 | — | 1 | — | — | — | 7 | — | — | 7 | |
| <i>Setaria verticillata</i> | 35 | 5 | — | — | — | — | — | 13 | — | 35 | — | — | — | — | — | — | — | — | — | 3 | — | — | — | — | |
| <i>Hordeum pusillum</i> | — | 5 | — | — | — | 5 | — | — | — | 3 | 35 | 20 | — | — | — | — | — | — | — | — | — | — | — | — | |
| <i>Phyla lanceolata</i> | — | — | — | — | — | — | — | — | — | — | — | — | 5 | — | — | — | 9 | 10 | 5 | — | 2 | — | — | — | |
| <i>Lactuca oblongifolia</i> | — | — | — | — | — | — | — | — | — | — | — | — | 5 | — | 1 | — | — | — | 2 | 3 | — | 5 | — | — | |
| <i>Plantago rugellii</i> | — | — | — | 20 | — | 5 | — | — | 5 | — | — | — | — | — | — | — | — | — | — | — | 2 | — | — | — | |
| <i>Setaria viridis</i> | — | 5 | — | 3 | — | — | — | 20 | — | — | — | — | — | — | — | — | — | — | — | 3 | 2 | — | — | — | |
| <i>Aster sp.</i> | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 19 | — | — | — | 2 | — | 3 | 3 | |
| <i>Erigeron strigosus</i> | — | — | — | 5 | — | — | — | — | — | — | — | — | — | — | 1 | — | 1 | — | — | — | — | 10 | — | — | |
| <i>Rosa sp.</i> | 3 | — | 5 | 3 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 5 | — | — | — | |
| <i>Cannabis sativa</i> | — | — | 45 | — | — | — | — | — | — | — | 45 | — | — | — | — | — | — | — | — | 3 | — | — | — | — | |
| <i>Digitaria sanguinalis</i> | — | 10 | — | 5 | — | — | — | — | — | 25 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| <i>Ambrosia trifida</i> | — | — | 15 | — | — | — | — | — | — | 5 | — | — | — | 5 | — | — | — | — | — | — | — | — | — | — | |
| <i>Panicum virgatum</i> | 20 | — | — | — | — | — | — | — | 3 | — | — | — | — | — | — | — | — | — | — | — | 2 | — | — | — | |
| <i>Leersia oryzoides</i> | — | — | — | — | — | — | — | — | — | — | 5 | — | — | — | — | — | — | — | 8 | — | — | — | 2 | — | |
| <i>Potentilla recta</i> | — | — | — | — | — | 5 | — | — | — | — | — | — | — | 5 | — | — | — | — | — | — | — | 5 | — | — | |
| <i>Agrostis stolonifera</i> | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 2 | — | 2 | 10 | — | — | |
| <i>Thlapsi arvense</i> | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 | — | 1 | — | — | 10 | — | — | — | — | |
| <i>Sphenopholis obtusata</i> | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1 | — | 9 | — | — | — | 2 | — | — | — | |
| <i>Desmanthus illinoensis</i> | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 20 | — | — | — | — | — | 12 | — | |
| <i>Setaria glauca</i> | — | — | — | — | — | — | — | — | — | 5 | 20 | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| <i>Equisetum arvense</i> | — | — | 15 | 8 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| <i>Verbena bipinnatifida</i> | — | 5 | — | — | — | — | — | — | 18 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| <i>Eragrostis cilianensis</i> | — | — | — | — | — | — | — | — | — | — | — | — | — | 5 | — | 15 | — | — | — | — | — | — | — | — | |
| <i>Parietaria pennsylvanica</i> | — | — | — | — | — | — | — | — | — | — | 5 | — | — | — | — | — | — | — | — | — | 10 | — | — | — | |
| <i>Nepeta cataria</i> | — | — | — | — | — | 5 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 8 | — | — | — | |
| <i>Helianthus annuus</i> | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 2 | 10 | |
| <i>Descurainia pinnata</i> | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 8 | — | — | — | 3 | |
| <i>Polygonum ramosissimum</i> | — | — | — | — | — | — | — | — | 55 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| <i>Strophostyles helvela</i> | — | — | 35 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| <i>Secale cereale</i> | — | — | — | — | — | — | — | — | 23 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |
| <i>Agropyron caninum</i> | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 20 | — | — | — | — | — | |
| <i>Vicia villosa</i> | — | — | — | 10 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |

*Indicates no value.

TABLE II. Percent basal vegetative cover for species with a cumulative value greater than 10%. Species are listed in order from most to least abundant.

| Species | Area | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 25 | |
| <i>Bromus inermis</i> | 21 | 20 | 26 | 17 | 72 | 41 | 93 | 46 | 30 | 44 | 12 | 75 | 3 | 59 | 29 | 44 | 30 | 19 | 44 | 12 | 46 | 79 | 50 | 51 | |
| <i>Carex</i> sp. | 9 | 8 | 7 | 7 | * | 12 | - | 4 | - | 6 | 25 | 2 | 4 | 6 | 3 | 12 | 26 | 2 | 23 | 26 | 36 | 17 | 3 | 4 | |
| <i>Poa pratensis</i> | - | 30 | 62 | 20 | - | 20 | 4 | 2 | 46 | 4 | - | - | 50 | T | 26 | 16 | 16 | 39 | 16 | 11 | 6 | - | 25 | 26 | |
| <i>Andropogon gerardii</i> | 44 | 10 | T | 1 | 9 | - | 3 | 4 | - | - | - | - | - | 6 | T | - | 2 | - | - | 11 | - | 4 | - | - | |
| <i>Polygonum</i> sp. | - | - | 2 | 3 | - | - | - | 19 | - | - | 13 | 2 | 3 | 19 | - | - | - | 2 | T | - | - | - | - | - | |
| <i>Cenchrus longispinus</i> | - | 2 | - | 5 | - | - | - | 5 | - | 2 | 11 | - | - | - | 1 | T | - | 3 | - | 1 | - | - | - | - | |
| <i>Rumex</i> sp. | - | - | - | 1 | - | 3 | - | - | - | 4 | 6 | - | 6 | - | - | T | - | 2 | 1 | 3 | - | - | - | - | |
| <i>Viola</i> sp. | T | - | - | T | - | - | - | - | - | 2 | - | - | - | T | - | - | - | - | 1 | 1 | T | - | 1 | - | |
| <i>Hordeum jubatum</i> | T | - | - | 1 | - | - | - | - | 2 | 4 | - | - | 8 | - | - | - | T | 5 | - | - | - | - | - | - | |
| <i>Taraxacum officinale</i> | - | - | - | 2 | - | 2 | - | 8 | - | - | - | - | 13 | - | - | 4 | - | 21 | - | - | - | - | - | - | |
| <i>Kochia scoparia</i> | - | - | T | - | - | - | - | 5 | - | - | 11 | - | - | - | - | T | 1 | - | - | 11 | - | - | - | - | |
| <i>Oxalis stricta</i> | - | 6 | T | - | - | - | - | - | - | 4 | - | - | - | 2 | T | T | - | - | - | - | - | - | - | - | |
| <i>Agropyron smithii</i> | - | - | - | - | - | - | - | 1 | - | - | - | 2 | - | - | - | - | 2 | - | 1 | 1 | - | - | 3 | - | |
| <i>Bromus tectorum</i> | - | - | T | 30 | - | - | - | - | - | - | - | 15 | - | - | T | 4 | - | - | - | - | - | - | - | - | |
| <i>Medicago lupulina</i> | - | - | - | - | - | - | - | - | - | - | - | - | - | - | T | T | 5 | - | 6 | - | - | - | - | 15 | |
| <i>Echinochloa crusgalli</i> | - | - | - | - | - | - | - | - | - | 2 | - | 5 | 1 | 3 | 1 | - | - | - | - | - | - | - | - | - | |
| <i>Hordeum pusillum</i> | - | 22 | - | - | - | - | - | - | 2 | 13 | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | |
| <i>Trifolium repens</i> | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | 13 | 7 | - | - | - | - | 4 | - | - | - | |
| <i>Equisetum arvense</i> | - | - | T | - | - | 8 | - | - | - | - | - | - | - | - | - | - | 3 | - | 1 | - | - | - | - | - | |
| <i>Anemone canadensis</i> | - | - | - | 3 | - | - | - | - | - | - | - | - | - | - | - | T | - | - | 6 | - | - | - | 1 | - | |
| <i>Setaria verticillata</i> | 7 | - | - | - | - | - | - | 3 | - | - | - | - | - | - | - | - | - | - | - | 9 | - | - | - | - | |
| <i>Chenopodium album</i> | 11 | - | - | T | - | - | - | - | - | - | - | - | - | - | T | - | - | - | - | - | - | - | - | - | |
| <i>Polygonum ramosissimum</i> | - | - | - | - | 15 | - | - | - | - | - | - | - | - | - | - | 4 | - | - | - | - | - | - | - | - | |
| <i>Spartina pectinata</i> | - | - | - | 3 | - | - | - | - | - | - | - | 14 | - | - | - | - | - | - | - | - | - | - | - | - | |
| <i>Trifolium pratense</i> | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 19 | - | - | - | - | - | - | - | - | |

*Indicates no value.

T=Trace value of less than 1%.

edge-areas: (1) 1, 3, 19, and 21; (2) 15, 17, and 23; (3) 4, 5, 6, 7, 8, 9, 11, 14, 16, 20, and 22. The number of species present ranged from 6 to 34 (Table I). Area 6 was a roadside ditch with the low value; area 20, a roadside irrigation ditch, had the most species recorded. A comparison of the three groups showed that site 21 of group 1 had the high value of 31 species. This was a wide roadside ditch adjacent to Nebraska Highway 36. It was subject to only a single pass with a mower next to the shoulder of the road.

Species richness values for group 2 ranged from 27 to 32.

Site 17 had the highest number of species and was a wide roadside ditch. Area 20 of the group had 34 species and was a ditch with very steep sides and standing water in the bottom. Mowing was limited to a portion of the ditch that a sickle-bar mower operating from the road could reach. It was interesting that area 8, north of and continuous with area 20, was similar in size and configuration, but only 21 species were recorded. The only apparent difference between the two was that area 20 was adjacent to the organic farm while area 8 was adjacent to conventionally farmed fields. Herbicide drift from the adjacent corn field could have influenced plant species occurrence.

TABLE III. Basal species cover and frequency of plants in a pasture of eastern Nebraska agricultural land. Values given as percentage.

| Species | Basal Cover | Frequency |
|--------------------------------|-------------|-----------|
| <i>Ambrosia artemisiifolia</i> | — | 4 |
| <i>A. psilostachya</i> | — | 3 |
| <i>Bromus inermis</i> | 71 | 99 |
| <i>B. tectorum</i> | 1 | — |
| <i>Carex</i> sp. | — | 2 |
| <i>Chenopodium album</i> | 1 | 1 |
| <i>Euphorbia maculata</i> | — | 11 |
| <i>Hordeum jubatum</i> | 1 | 1 |
| <i>Kochia scoparia</i> | 1 | 3 |
| <i>Lepidium virginicum</i> | — | 1 |
| <i>Medicago lupulina</i> | 1 | 7 |
| <i>M. sativa</i> | — | 5 |
| <i>Melilotus officinalis</i> | — | 3 |
| <i>Oxalis stricta</i> | 10 | — |
| <i>Poa pratensis</i> | 8 | 9 |
| <i>Taraxacum officinale</i> | 6 | 14 |

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