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Ecesis of a Weed Flora

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Ecesis of a Weed Flora[1]

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Abstract. The topsoil from an Iowa State University building site was piled for reuse. The site had been mulched with local oat straw the previous winter, and the pile developed a flora of remarkable diversity and vigor. Plants of 44 species, representing 32 genera of 14 families were identified on the soil pile. Soil from beneath the surface of the pile was collected and placed in greenhouse flats, and the emerging seedlings were counted and identified during a 10 months period. Twelve additional species, representing 11 genera and 8 families, which had not been collected on the soil heap, were found in the greenhouse.

The weed flora shown in figure 1 appeared suddenly on the Iowa State University campus in the spring of 1961. This rank growth of many species developed on a pile of topsoil stripped from the site of the new Instrumentation Laboratory of the College of Veterinary Medicine. The area had been in lawn from the time of building of the Veterinary Quadrangle in 1912 until 1960. At that time the turf was harvested for reuse. In fall the building site was mulched with oat straw from the Ames vicinity until excavation started. Obviously, many of the plants listed are not lawn weeds and may be presumed to have entered with the straw. Other plants may have arisen from seeds buried for long periods of time in the lawn. Although we cannot pinpoint the source of each species, the rapid appearance of such vigorous and varied weed flora provides a good example of the manner of spread and establishment of weed populations.

The soil mound, about six feet high and twenty to thirty feet across, was surveyed carefully in September of 1961, the first year of growth. Forty-four species, representing 32 genera within 14 families, were identified (Table 1). Several areas were then cleared and scraped carefully to eliminate new-crop seed, and four soil samples were taken at a depth of one to two feet. This soil was spread out about one inch deep in flats and held in the greenhouse. All seedlings appearing during the ten month period, October 1, 1961, to July 31, 1962, were counted and identified.

A total of 1187 seedling plants was harvested from the 20 flats. These included most of the species collected from the field plus 12 new species representing 11 genera and 8 families (Table 2).

Of the 1187 plants grown in the greenhouse, 1033, or 87 per cent, were grasses and 42 per cent were *Setaria faberi*, a species introduced into the local area within the past decade. The tre-

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Figure 1. Weed development on an Iowa State University campus soil.

mendous abundance of this species is striking, since it is not yet widespread in the Ames area. *S. lutescens* and *S. viridis*, both long time inhabitants of central Iowa and very common in fields and gardens, were present in much smaller numbers. *Digitaria* (crabgrass) is common in all local lawns and probably represents seed from the site. Tree seedlings are probably from campus plantings. *Cladrastis lutea*, represented in the greenhouse populations by a single seedling, occurs 100 feet west of the heap, and elms are extremely common on the Campus. The single cottonwood seedling probably came from windborne seed, since there are no trees in the immediate vicinity.

A rough classification of the weed species was made according to their usual habitats. A few species fall in two categories. Each species in Tables 1 and 2 is marked to indicate habitat types according to the indicated code.

The 56 species counted may be classified as follows:

Lawn weeds	11 species
Field and garden	34 species
Pasture and grasses	12 species
Trees	3 species
Crop	1 species

Table 1. Plants identified on the soil heap, with numbers of seedlings grown from soil (L = lawn, F = field and garden, P = pasture and grasses, T = tree, C = crop, * = common or abundant)

	Habitat Type	No. of Seedlings
Aizoaceae		
Mollugo verticillata L.	L, F	1
Amaranthaceae		
*Amaranthus retroflexus L.	F	13

Chenopodiaceae		
*Chenopodium album L.	F	1
Kochia scoparia (L.) Schrader	F	0
Compositae		
*Ambrosia trifida L.	F	0
*A. artemisiifolia L.	F	4
Bidens vulgata Greene	F	0
Lactuca scariola L.	F	0
Taraxacum officinale Weber	L	1
Xanthium strumarium L.	F	0
Euphorbiaceae		
Euphorbia maculata L.	F	0
Gramineae		
Bromus inermis Leyss.	P	0
B. tectorum L.	F	16
Cenchrus longispinus (Hack.) Fern.	F, L	0
Digitaria ischaemum (Schreb.) Muhl.	L	72
*D. sanguinalis (L.) Scop.	L	297
Echinochloa crusgalli (L.) Beauv.	F	10
Eleusine indica (L.) Gaertn.	L, F	6
Hordeum jubatum L.	P	34
Muhlenbergia frondosa (Poir.) Fern.	P	0
Panicum capillare L.	F	2
P. dichotomiflorum Michx.	F	1
P. pratensis L.	P	21
*Setaria faberi Herrm.	F	497
*S. lutescens (Weigel) Hubb.	F	11
S. verticillata (L.) Beauv.	F	1
*S. viridis (L.) Beauv.	F	44
Leguminosae		
Glycine max (L.) Merr.	C	0
Medicago sativa L.	C	0
M. lupulina L.	P	0
Melilotus sp.	P	0
Trifolium repens L.	L	1
T. pratense L.	P	0
Malvaceae		
*Abutilon theophrasti Medic.	F	0
Oxalidaceae		
Oxalis stricta L.	F, L	44
Polygonaseae		
*Polygonum aviculare L.	L	2
*P. pennsylvanicum L.	F	0
*P. persicaria L.	F	0
Rumex crispus L.	P	4
Portulacaceae		
Portulaca oleracea L.	F	4
Salicaceae		
Populus deltoides Marsh.	T	0
Solanaceae		
Solanum nigrum L.	F	14
S. rostratum Dunal.	F	0
Urticaceae		
*Cannabis sativa L.	F. P	0

Table 2. Seedlings appearing in greenhouse of species not detected on the soil heap.

	Habitat Type	No. of Seedlings
Amaranthaceae		
Acnida sp.	F	13
Caryophyllaceae		
Stellaria media (L.) Cyrillo	L	1

Compositae		
Conyza canadensis (L.) Cronq.	F	8
Cirsium sp.	P	2
Gramineae		
Agrostis alba L.	P	17
Eragrostis pectinacea (Michx.) Nees	F	2
E. cilianensis (All.) Lutati.	F	4
Poa compressa L.	P	4
Leguminosae		
Cladrastis lutea (Michx.) K. Koch	T	1
Plantaginaceae		
Plantago sp.	L, P	4
Rosaceae		
Potentilla norvegica L.	F	7
Ulmaceae		
Ulmus americana L.	T	2

Cytological and Distributional Note on *Thladiantha dubia* (Cucurbitaceae)[1]

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Abstract. Thladiantha dubia, an Asiatic perennial Cucurbit, was found growing in northern Minnesota. The chromosome number is N=9.

The Asiatic cucurbit, *Thladiantha dubia* Bunge, was reported in the 8th edition of Gray's Manual as an escape from cultivation in the area from Quebec and New Hampshire to Manitoba. Very few exotic cucurbits are hardy in such northerly latitudes. During the past summer I encountered this species growing semi-wild in northern Minnesota.

Thladiantha plants are rather ornamental, producing campulate yellow flowers in profusion. The vines are perennial from deep-seated cylindrical tubers. The species is not available in the American horticultural trade, and the plants apparently become established from tubers which pass from hand to hand. We have grown a staminate vine from such a tuber obtained from the locality cited below. The vine grows rapidly and flowers profusely in the greenhouse. If it proves possible to secure the pistillate form of the species, these plants would be valuable as teaching examples of the Cucurbitaceae. Since there is no available illustration of this species in American literature, I have included a drawing of the plant (Figure 1).

The chromosome number of *Thladiantha dubia* was reported by Kozhuchow[1] as 2N=18 from somatic material. We have been able to obtain a meiotic count of N=9 from microsporocytes

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