

# WHOLE PLANTS AS RENEWABLE ENERGY RESOURCES: CHECKLIST OF 508 SPECIES ANALYZED FOR HYDROCARBON, OIL, POLYPHENOL, AND PROTEIN

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## ABSTRACT

Since 1974, a total of 508 plant species representing 80 families have been analyzed by our laboratory for hydrocarbon, oil, polyphenol, and protein contents. Of these species, 372 were from Illinois, 26 from Wisconsin, 24 from Georgia, 20 from Arizona, 10 or less from 12 other states, and 36 from foreign lands. Families receiving the greatest emphasis were Leguminosae, Compositae, Gramineae, Labiatae, and Euphorbiaceae representing 97, 84, 42, 32, and 23 species, respectively.

## INTRODUCTION

Beginning in 1974, our search for potential multi-purpose crops for energy, food, feed, fiber, and strategic materials has concentrated on under-utilized plant species collected from the wild.

Petroleum shortages and the ensuing spiraling prices of crude oil and petroleum-based materials have resulted in programs to study many alternative forms of energy (Ableson 1979). Renewable plant biomass is one of the principal resources with the potential to meet some of our energy, strategic material, and chemical needs. Our research has focused on evaluation of 508 whole plants as a source of hydrocarbon for chemical feedstocks. We have compiled this checklist primarily as an aid to scientists wanting to know which species have been analyzed at the Northern Regional Research Center. Numerical crop ratings assigned to these plants are an indicator of their chemical/botanical nature.

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## MATERIALS AND METHODS

Our research has been conducted on mature whole plants from various regions of the United States, with 372 species collected in Central Illinois. Plant samples were collected mainly from natural stands and air dried, ground to pass a 1-mm perforated screen, and partitioned into major fractions by solvent extraction (Buchanan et al 1978, 1979; Roth et al 1980, 1981). A preliminary evaluation procedure for plant species was based on botanical characteristics, chemical composition, and fiber structure.

Decision factors were identified and criteria were established. Subsequently, a numerical rating system was developed which employs the factors and criteria. Each factor was assigned a score based on an arbitrary criterion range. The most desirable trait under consideration receives the lowest score. The sum of the scores provides the crop rating.

Botanical characteristics were classified into 5 groups according to their probable influence on crops for mechanized agriculture in the temperate United States and to their estimated yield of biomass. Using a scale of 1 to 5, we assigned (1) to vigorous soil-growing, perennial, temperate species which grow 1.5 m/yr with a moderate amount of moisture (mesic), are harvestable by clipping, and having coppicing potential. Other perennial and all annual temperate, mesic species are scored 2 or 3 according to growth rate. Annual species exceeding 1.5 m/yr and perennials reaching 0.5-1.5 m/yr score 2. Scores of 3 are assigned to species that produce hydrocarbon-rich fruit, roots, rhizomes, or bulbs, or that are lactiferous and could produce hydrocarbon by tapping. Furthermore, the annuals should grow 0.5-1.5 m/yr and the perennial less than 0.5 m/yr. A score of 4 applies to all species of marsh plants, vines, rosette plants, low-growing succulents and sod-forming grasses. A score of 5 applies to species that are aquatic, or tropical or are epiphytes or parasites.

Other decision factors are scored according to fiber characteristics and chemical contents. Fibrous or weedy species judged qualitatively to have potential for fiber, paper pulp, or hardboard are scored 1, while a score of 2 indicates succulent, pulpy, non-fibrous species. Apparent protein contents (Kjeldahl N x 6.25) exceeding 14 percent score 1, and all others score 2. Oil and hydrocarbon contents are determined by step wise acetone extraction followed by cyclohexane or hexane. Subsequently, the acetone soluble fraction is partitioned between hexane/aqueous ethanol. The first hexane fraction is referred to as hydrocarbon and the second as oil. These values are used to assign scores ranging from 1 to 4. Hydrocarbon values exceeding 2 percent score 1, 1.2-2.0 percent score 2, 0.4-1.2 score 3, and lower than 0.4 percent score 4. Similarly, oil values exceeding 8 percent score 1, 5-8 percent score 2, 2-5 percent score 3, and less than 2 percent score 4.

## DISCUSSION

Numerical plant ratings are indicative of the plant's potential as hydrocarbon crops. Species scoring 11 or less are considered either potential hydrocarbon or oil-producing crops and receive further attention in the laboratory and from plant scientists (Buchanan et al 1978, 1979; Roth et al 1980, 1981). For example, hydrocarbon and oil fractions occurring in sufficient quantities were examined by thin-layer and gel permeation chromatography, infrared spectroscopy, and  $^{13}\text{C}$

nuclear magnetic resonance spectroscopy (Buchanan et al 1979; Bagby et al 1981; Swanson et al 1979).

In the following checklist each plant is listed by family, genus, species, collection site (state), numerical rating, and common name. Analytical data for the more promising species (rating of 11 or lower) have been reported by Buchanan et al 1978, 1979, and Roth et al 1980, 1981. Chemical and botanical data for all species listed in this checklist are available from NRRC. Voucher specimens were prepared only from the Illinois and Wisconsin plants and deposited in our herbarium. Samples submitted by U.S. collaborators were generally received as air-dried plant material. A list of these species was submitted to the USDA Plant Taxonomy Laboratory to have names confirmed and authorities supplied.

CHECKLIST OF WHOLE PLANT  
(508 Species)

	Location <sup>1</sup>	Rating <sup>2</sup>	Common Name
<b>Aceraceae</b>			
<i>Acer negundo</i> L.	IL.	11	BOX ELDER
<i>A. platanoides</i> L.	IL	11	NORWAY MAPLE
<i>A. saccharinum</i> L.	IL.	10	SILVER MAPLE
<i>A. saccharum</i> Marsh.	IL	12	SUGAR MAPLE
<b>Amaranthaceae</b>			
<i>Amaranthus retroflexus</i> L.	IL.	14	PIGWEEED
<i>Celosia argentea</i> L.	IL.	13	GARDEN-ESCAPE CELOSIA
<i>Froelichia floridana</i> (Nutt.) Moq.	IL.	13	COTTONWEED
<i>F. gracilis</i> (Hook.) Moq.	IL.	13	COTTONWEED
<b>Anacardiaceae</b>			
<i>Rhus aromatica</i> Ait.	IL	11	FRAGRANT SUMAC
<i>R. aromatica</i> Ait., var. <i>arenaria</i> (Greene) Fern.	IL, CA	11	
<i>R. copallina</i> L.	CA	11	SHINING SUMAC
<i>R. glabra</i> L.	IL, CA	10, 10	SMOOTH SUMAC
<i>R. laurina</i> Nutt.	CA	9	LAUREL
<i>R. ovata</i> S. Wats.	AZ	11	SUGAR SUMAC
<b>Annonaceae</b>			
<i>Asimina triloba</i> (L.) Dunal	IL.	11	COMMON PAWPAW
<b>Apocynaceae</b>			
<i>Apocynum androsaemifolium</i> L.	IL	10	SPREADING DOGBANE
<i>A. cannabinum</i> L.	IL	11	INDIAN HEMP
<i>Trachelospermum jasminoides</i> (Lindl.) Lem.	TX	11	CONFEDERATE JASMINE
<i>Vinca minor</i> L.	IL.	14	COMMON PERIWINKLE
<b>Araceae</b>			
<i>Symplocarpus foetidus</i> (L.) Nutt.	IL.	12	SKUNK CABBAGE
<b>Asclepiadaceae</b>			
<i>Asclepias amplexicaulis</i> Sm.	IL	8	BLUNTLEAF MILKWEED
<i>A. hirtella</i> (Pennell) Woodson	IL.	10	GREEN MILKWEED
<i>A. incarnata</i> L.	IL.	10	SWAMP MILKWEED
<i>A. latifolia</i> (Torr.) Raf.	TX	9	
<i>A. sullivantii</i> Engelm.	IL.	7	SULLIVANT'S MILKWEED
<i>A. syriaca</i> L.	IL	9	COMMON MILKWEED
<i>A. tuberosa</i> L.	IL.	9	BUTTERFLY WEED
<i>A. verticillata</i> L.	IL	9	WHORLED MILKWEED
<i>Cynanchum nigrum</i> (L.) Per.	IL	11	
<i>C. unifarium</i> (Scheele)			

Woods	TX	12	MILKVINE
<i>Gonolobus gonocarpus</i> (Walt.)			
Perry	IL	12	CLIMBING MILKWEED
<i>Sarcostemma cynanchoides</i> Decne.	TX	14	CLIMBING MILKWEED
<b>Balsaminaceae</b>			
<i>Impatiens capensis</i> Meerb.	IL	16	JEWEL WEED OR SPOTTED TOUCH-ME-NOT
<i>I. pallida</i> Nutt.	IL	15	YELLOW JEWEL WEED
<b>Berberidaceae</b>			
<i>Podophyllum peltatum</i> L.	IL	13	MAY APPLE
<b>Bignoniaceae</b>			
<i>Campsis radicans</i> (L.) Seem.	IL	14	TRUMPET CREEPER
<i>Catalpa speciosa</i> Warder	IL	11	CIGAR-TREE
<b>Boraginaceae</b>			
<i>Cynoglossum officinale</i> L.	IL	12	COMMON HOUND'S TONGUE
<b>Buxaceae</b>			
<i>Simmondsia californica</i> (Link) Nutt.	CA	11	JOJOBA
<b>Cactaceae</b>			
<i>Opuntia humifusa</i> Raf.	IL	16	PRICKLY PEAR CACTUS
<i>O. engelmannii</i> Salm-Dyck	TX	15	PRICKLY PEAR
<b>Campanulaceae</b>			
<i>Campanula americana</i> L.	IL	10	TALL BELLFLOWER
<i>C. pyramidalis</i> L.	IL	10	CHIMNEY BELLFLOWER
<i>Lobelia siphilitica</i> L.	IL	13	GREAT BLUE LOBELIA
<b>Cannabinaceae</b>			
<i>Humulus japonicus</i> Sieb. & Zucc.	IL	12	HOPS
<b>Capparidaceae</b>			
<i>Folanisia graveolens</i> Raf.	IL	14	GLAMMYWEED
<b>Caprifoliaceae</b>			
<i>Lonicera tatarica</i> L.	IL	9	TATARIAN HONEYSUCKLE
<i>Sambucus canadensis</i> L.	IL, MT	10, 8	COMMON ELDER
<i>Symphoricarpos orbiculatus</i> Moench	IL	10	COBALBERRY
<i>Triosticum angustifolium</i> L.	IL, CA	12, 12	WILD COFFEE
<i>T. perfoliatum</i> L.	IL	10	TINKER'S WEED
<b>Caryophyllaceae</b>			
<i>Saponaria officinalis</i> L.	IL	12	BOUNCING BET
<b>Chenopodiaceae</b>			
<i>Atriplex caulescens</i> (Pursh) Nutt.	AZ	13	SALT BUSH
<i>Chenopodium album</i> L.	IL	11	LAMB'S QUARTER
<i>Kochia scoparia</i> (L.) Roth	IL	13	SUMMER CYPRESS
<i>Salsola kali</i> L. var. <i>tenuifolia</i> Tausch	AZ	12	RUSSIAN THISTLE
<i>Sarcobatus vermiculatus</i> (Hook.) Torr.	AZ	12	BLACK GREASEWOOD
<b>Commelinaceae</b>			
<i>Commelina erecta</i> L.	IL	14	DAY FLOWER
<i>Tradescantia ohiensis</i> Raf.	IL, WI	11, 12	SPIDERWORT
<b>Compositae</b>			
<i>Achillea millefolium</i> L.	IL	11	YARROW
<i>Actinomeris alternifolia</i> (L.) DC.	IL	11	WINGSTEM
<i>Ambrosia artemisiifolia</i> L. var. <i>elator</i> (L.) Descourtils	AZ	12	COMMON RAGWEED
<i>A. psilostachya</i> DC. var. <i>coronopifolia</i> (L. & G.) Farw.	IL	13	WESTERN RAGWEED
<i>A. trifida</i> L.	IL	10	GIANT RAGWEED
<i>Arctium lappa</i> L.	IL	10	BURDOCK
<i>Artemisia abrotanum</i> L.	IL	12	SOUTHERNWOOD

<i>A. vulgaris</i> L.	IL, CA	12, 10	COMMON MUGWORT
<i>Aster ericoides</i> L.	IL	13	HEATH ASTER
<i>A. laevis</i> L.	IL	11	SMOOTH ASTER
<i>A. novae-angliae</i> L.	IL	12	NEW ENGLAND ASTER
<i>A. pilosus</i> Willd.	IL	13	
<i>A. puniceus</i> L.	IL	15	SWAMP ASTER
<i>A. shortii</i> Lindl.	IL	12	SHORT'S ASTER
<i>Bidens cernua</i> L.	IL	14	NODDING BEGGARTICKS
<i>B. laevis</i> (L.) BSP	IL	14	SMOOTH BEGGARTICKS
<i>Boltonia latissuama</i> Gray, var. <i>decurrens</i> (T. & G.) Fern. & Grise.	IL	15	
<i>Cacalia atriplicifolia</i> L.	IL	8	PALE INDIAN PLANTAIN
<i>Carduus nutans</i> L.	WI	9	MUSK THISTLE
<i>Centaurea maculosa</i> Lam.	WI	13	SPOTTED KNAPWEED
<i>C. cochiniensis</i> Bernh.	WI	13	KNAPWEED
<i>Chrysopsis bakeri</i> Greene	IL	13	GOLDEN ASTER
<i>Chrysothamnus nauseosus</i> (Pall.) Britt.	AZ	5	RABBIT BRUSH
<i>Cichorium intybus</i> L.	IL	12	CHICORY
<i>Cirsium altissimum</i> (L.) Spreng.	IL	10	TALL THISTLE
<i>C. arvense</i> (L.) Scop.	IL	11	CANADA THISTLE
<i>C. discolor</i> (Muhl.) Spreng.	IL	10	FIELD THISTLE
<i>C. muticum</i> Michx.	IL	14	SWAMP THISTLE
<i>C. vulgare</i> (Savi) Tenore	IL	12	BULL THISTLE
<i>Coreopsis palmata</i> Nutt.	IL	12	TICKSEED
<i>C. tripteris</i> L.	IL	12	TALL COREOPSIS
<i>Dyssodia papposa</i> (Vent.) Hitchc.	IL	12	FETID MARIGOLD
<i>Echinacea purpurea</i> L.	IL	12	PURPLE CONEFLOWER
<i>Eriocameria laricifolia</i> (Gray) Shinners	AZ	15	
<i>Frigeron canadensis</i> L.	IL	13	CANADA FLEABANE
<i>Eupatorium altissimum</i> L.	IL	10	TALL BONESET
<i>E. maculatum</i> L.	IL	13	SWAMP JOE-PYE WEED
<i>E. perfoliatum</i> L.	IL	9	BONESET
<i>E. purpureum</i> L.	IL	12	
<i>E. rugosum</i> Houtt.	IL	12	WHITE SNAKEFOOT
<i>E. serotinum</i> Michx.	IL	12	LATE BONESET
<i>Gnaphalium obtusifolium</i> L.	IL	12	PEARLY EVERLASTING
<i>Grindelia squarrosa</i> (Pursh) Dunal	WI, NV	12, 11	GUMWEED OR TARWEED
<i>Helenum autumnale</i> L.	IL	11	SNEEZEWEED
<i>Helianthus annuus</i> L.	IL	12	COMMON SUNFLOWER
<i>H. divaricatus</i> L.	IL	11	WOODLAND SUNFLOWER
<i>H. giganteus</i> L.	IL	11	GIANT SUNFLOWER
<i>H. grosseserratus</i> Martens	IL	10	SAWTOOTH SUNFLOWER
<i>H. hirsutus</i> Raf. var. <i>trachyphyllus</i> T. & G.	IL	12	HAIRY SUNFLOWER
<i>H. occidentalis</i> L.	IL	11	WESTERN SUNFLOWER
<i>H. tuberosus</i> L.	IL, WA	12, 12	JERUSALEM ARTICHOKE
<i>Helioopsis helianthoides</i> (L.) Sweet	IL	12	OXEYE
<i>Lactuca canadensis</i> L.	IL, GA	11, 11	WILD LETTUCE
<i>L. floridana</i> (L.) Gaertn.	IL	12	BLUE LETTUCE
<i>L. floridana</i> (L.) Gaertn., var. <i>villosa</i> (Jacq.) Cronq.	IL	12	BLUE LETTUCE VARIETY
<i>L. scariola</i> L.	IL	13	PRICKLY LETTUCE
<i>Parthenium argentatum</i> Gray	8	8	GUAYULE
<i>P. hysterophorus</i> L.	FL	14	WHITETOP
<i>P. integrifolium</i> L.	IL, WI	13, 11	WILD-QUININE
<i>Polymnia canadensis</i> L.	IL	12	LEAF-CUP
<i>Rudbeckia laciniata</i> L.	IL	12	YELLOW CONEFLOWER
<i>R. subtomentosa</i> Pursh	IL	10	SWEET CONEFLOWER
<i>Senecio glabellus</i> Poir.	IL	11	BUTTER WEED
<i>Silphium integrifolium</i> Michx.	IL	10	ROSLN WEED
<i>S. laciniatum</i> L.	IL	10	COMPASS PLANT

<i>S. perfoliatum</i> L.	IL	11	CUP PLANT
<i>S. terebinthinaceum</i> Jacq.	IL	10	PRAIRIE DOCK
<i>Solidago altissima</i> L.	IL	11	TALL GOLDENROD
<i>S. graminifolia</i> (L.) Salisb.	IL	10	GRASS LEAVED GOLDENROD
<i>S. leucoworthii</i> Torr. & A. Gray	FL	8	EDISON'S GOLDENROD
<i>S. nemoralis</i> Ait.	IL	12	DYER'S WEED GOLDENROD
<i>S. ohioensis</i> Riddell	WI	10	OHIO GOLDENROD
<i>S. rigida</i> L.	IL	10	STIFF GOLDENROD
<i>S. speciosa</i> Nutt.	IL	11	SHOWY GOLDENROD
<i>S. ulmifolia</i> Muhl.	IL	11	ELM LEAVED GOLDENROD
<i>Sonchus arcensis</i> L.	IL	10	FIELD SOW THISTLE
<i>S. oleraceus</i> L.	IL	11	COMMON SOW THISTLE
<i>Tagetes minuta</i> L.	IL	14	MUSTER JOHN HENRY
<i>T. patula</i> L.	IL	13	FLOREST'S MARIGOLD
<i>Tragopogon pratensis</i> L.	IL	12	GOAT'S BEARD
<i>Vernonia altissima</i> Nutt.	IL	10	IRONWEED
<i>V. fasciculata</i> Michx.	IN	10	IRONWEED
<i>Xanthium italicum</i> Moretti	IL	13	COCKLEBUR
<i>Zinnia elegans</i> Jacq.	IL	14	CALIFORNIA GIANT ZINNIA
Convolvulaceae			
<i>Convolvulus arcensis</i> L.	IL	14	FIELD BINDWEED
<i>C. japonicus</i> Thunb.	IL	14	CREEPING JENNY
<i>Ipomoea pandurata</i> (L.) G. F. W. Mey.	IL	14	WILD POTATO VINE
Cornaceae			
<i>Cornus stolonifera</i> Michx.	IL	14	RED OSIER DOGWOOD
Corylaceae			
<i>Corylus americana</i> Walt.	IL	12	HAZEL
Crassulaceae			
<i>Sedum seiboldii</i> Sweet	IL	14	
<i>Sedum sp.</i>	IL	15	
Cruciferae			
<i>Barbarea vulgaris</i> R. Br.	IL	12	SPRING CRESS
<i>Brassica nigra</i> (L.) Koch	IL	12	BLACK MUSTARD
<i>B. oleracea</i> L. var. <i>botrytis</i> DC.	IL	14	PURPLE CAULIFLOWER
<i>Crambe abyssinica</i> Hochst. ex R. F. Fries	IL	13	CRAMBE
<i>Lepidium campestre</i> (L.) R. Br.	IL	13	COW CRESS
<i>Nasturtium officinale</i> R. Br.	IL	16	WATERCRESS
Cucurbitaceae			
<i>Cucurbita ovifera</i> (L.) Alef.	IL	14	GARDEN ESCAPE GOURD
<i>Sicyos angulatus</i> L.	IL	15	BUR CUCUMBER
Cupressaceae			
<i>Cupressus arizonica</i> Greene	AZ	12	ARIZONA CYPRESS
<i>Juniperus osteosperma</i> (Torr.) Little	UT	12	UTAH JUNIPER
<i>J. virginiana</i> L.	IL	11	RED CEDAR
Cyperaceae			
<i>Cyperus sp.</i>	IL	15	SEDGE
<i>C. esculentus</i> L.	IL	14	YELLOW NUTSEEDGE
<i>Scirpus validus</i> Vahl.	IL		BULRUSH
Dipsacaceae			
<i>Dipsacus laciniatus</i> L.	IL	12	CUT-LEAF TEASEL
<i>D. sylvestris</i> Huds.	IL	12	BLUE TEASEL
Elaeagnaceae			
<i>Elaeagnus multiflora</i> Thunb.	IL	10	CHERRY ELAEAGNUS
Ericaceae			
<i>Arctostaphylos pringlei</i> Parry	AZ	12	

<i>A. pungens</i> , HBK.	AZ	12	
<i>Xylococcus bicolor</i> Nutt.	CA	10	
<b>Euphorbiaceae</b>			
<i>Acalypha virginica</i> L.	IL	13	THREE-SEEDED MERCURY
<i>Aleurites moluccana</i> (L.) Willd.	FL	10	CANDLENUT TREE
<i>A. trisperma</i> Blanco	FL	10	SOFT LUMBANG
<i>Clusia affinis</i> Sond.	3	12	
<i>Croton glandulosus</i> L., var. <i>septentrionalis</i> Muell. Arg.	IL	12	CROTON
<i>Euphorbia antisiphilitica</i> Zucc.	8	10	CANDELILLA WAX
<i>E. corollata</i> L.	IL	11	FLOWERING SPURGE
<i>E. cyparissias</i> L.	IL	12	CYPRESS SPURGE
<i>E. dentata</i> Michx.	IL	10	TOOTHED SPURGE
<i>E. depauperata</i> A. Rich.	4	12	
<i>E. esula</i> L.	WI	11	LEAFY SPURGE
<i>E. fulca</i> Stapf	FL	8	
<i>E. geniculata</i> Ort.	FL	11	
<i>E. glyptosperma</i> Engelm.	TX	13	GOLONDRINA
<i>E. heterophylla</i> L.	IL	11	PAINTED LEAF
<i>E. lathyris</i> L.	CA	9	MOLE PLANT OR GOPHERWEED
<i>E. maculata</i> L.	IL	13	SPOTTED SPURGE
<i>E. marginata</i> Pursh	IL	12	SNOW-ON-THE-MOUNTAIN
<i>E. pulcherrima</i> Willd.	TX	10	POINSETTIA
<i>E. supina</i> Raf.	IL	13	PROSTRATE SPURGE
<i>Pedilanthus</i> sp.	TX	11	SLIPPER
<i>Ricinus communis</i> L.	NC	12	CASTOR BEAN
<i>Sapium caudatum</i> Pittier	7	10	
<b>Fagaceae</b>			
<i>Quercus imbricaria</i> Michx.	IL	10	SHINGLE OAK
<i>Q. macrocarpa</i> Michx.	IL	11	BUR OAK
<i>Q. marilandica</i> Muenchh.	IL	12	BLACK JACK OAK
<i>Q. muhlenbergii</i> Engelm.	IL	12	CHESTNUT OAK
<i>Q. palustris</i> Muenchh.	IL	12	PIN OAK
<i>Q. turbinella</i> Greene	AZ	12	SHRUB LIVE OAK
<b>Garryaceae</b>			
<i>Garrya wrightii</i> Torr.	AZ	10	WRIGHT SILKTASSEL
<b>Gramineae</b>			
<i>Agropyron repens</i> (L.) Beauv.	IL	10	QUACK GRASS
<i>Andropogon gerardi</i> Vitman	GA	12	BIG BLUESTEM
<i>A. scoparius</i> Michx.	IL, GA	11, 12	LITTLE BLUESTEM GRASS
<i>Aristida oligantha</i> Michx.	IL		THREE AWNEED GRASS
<i>Arundo donax</i> L.	IL	12	GIANT REED
<i>Avena sativa</i> L.	WI	14	OATS
<i>Bromus inermis</i> Leyss.	IL	14	SMOOTH BROME
<i>B. setcalinus</i> L.	IL	15	CHESS
<i>Cenchrus longispinus</i> (Hack.) Fern.	IL	15	SANDBUR
<i>Dactylis glomerata</i> L.	IL	16	ORCHARD GRASS
<i>Echinochloa crusgalli</i> (L.) Beauv.	IL	13	BARNYARD GRASS
<i>E. walteri</i> (Pursh) Nash	IL	15	WALTER'S BARNYARD GRASS
<i>Eleusine indica</i> (L.) Gaertn.	IL	13	GOOSE GRASS
<i>Elymus canadensis</i> L.	IL	11	WILD RYE
<i>Erianthus trinii</i> (Hack.) Hack.	CA	13	
<i>Festuca arundinacea</i> Schreb.	MO	11	FESCUE (KY-31)
<i>F. arundinacea</i> Schreb.	MO	11	FESCUE (KENNY)
<i>Hordeum jubatum</i> L.	IL	15	WILD BARLEY
<i>H. vulgare</i> L.	WI	12	BARLEY
<i>Hystrix patula</i> Moench	IL	15	BOTTLEBRUSH GRASS
<i>Leersia oryzoides</i> (L.) Sw.	IL	12	CUT GRASS
<i>L. virginica</i> Willd.	IL	14	WHITE GRASS
<i>Leptoloma cognatum</i> (Schultes) Chase	IL		FALL WITCHGRASS

<i>Miscanthus sinensis</i> Anders.	GA	12	EULALIA
<i>Panicum virgatum</i> L.	IL	13	SWITCHGRASS
<i>Paspalum exaltatum</i> Presl.	GA	12	
<i>P. quadrifarium</i> Lam.	GA	12	
<i>Pennisetum americanum</i> (L.) K. Schum.	GA	13	PEARL MILLET
<i>Phalaris arundinacea</i> L.	IL	12	REED CANARY GRASS
<i>P. canariensis</i> L.	IL	12	CANARY GRASS
<i>Phragmites communis</i> Trin.	IL	15	REED GRASS
<i>Setaria faberii</i> Herrm.	IL	13	GIANT FOXTAIL
<i>S. glauca</i> (L.) Beauv.	IL	15	YELLOW FOXTAIL
<i>Sorghastrum nutans</i> (L.) Nash	IL	15	INDIAN GRASS
<i>Sorghum alnum</i> Pairodi	GA	12	COLUMBUS GRASS
<i>S. bicolor</i> (L.) Moench.	GA	13	GRAIN SORGHUM
<i>S. halepense</i> (L.) Pers.	GA	11	JOHNSON GRASS
<i>Spartina pectinata</i> Link	IL	14	CORD GRASS
<i>Trioda flava</i> (L.) Smyth forma <i>cuprea</i> (Jacq.) Fosberg	IL	13	PURPLE TOP GRASS
<i>Tripsacum dactyloides</i> L.	IL	12	GAMA GRASS
<i>Triticum</i> sp.	IL	14	WHEAT STRAW
<i>Zea mays</i> L.	IL, GA	12, 12	MAIZE
<b>Cuttiferae</b>			
<i>Hypericum sphaerocarpum</i> Michx.	IL	12	ST. JOHN'S WORT
<b>Hamamelidaceae</b>			
<i>Liquidambar styraciflua</i> L.	IL	12	SWEET GUM
<b>Hippocastanaceae</b>			
<i>Aesculus hippocastanum</i> L.	IL	11	HORSE CHESTNUT
<b>Hydrophyllaceae</b>			
<i>Erydictyon trichocalyx</i> A. Heller var. <i>lanatum</i> Jepson	CA	10	
<i>Hydrophyllum virginianum</i> L.	IL	11	VIRGINIA WATERLEAF
<b>Juglandaceae</b>			
<i>Juglans nigra</i> L.	IL	11	BLACK WALNUT
<b>Labiatae</b>			
<i>Agastache nepetoides</i> (L.) Ktze.	IL	11	GIANT HYSSOP
<i>A. scrophulariaefolia</i> (Willd.) Ktze.	IL	11	PURPLE GIANT HYSSOP
<i>Ajuga reptans</i> L.	IL	13	BUGLEWEED
<i>Glechoma hederacea</i> L.	IL	15	GILL-OVER-THE-GROUND
<i>Hedeoma hispida</i> Pursh	IL	15	PENNYROYAL
<i>Lamium galicobdolon</i> Cranz.	IL	11	YELLOW ARCHANGEL
<i>L. maculatum</i> L.	WI	12	HENBIT
<i>Leonurus cardiaca</i> L.	IL	11	MOTHERWORT
<i>Lycopus americanus</i> Muhl.	WI	11	WATER HOARHOUND
<i>Marrubium vulgare</i> L.	IL	13	HOREHOUND
<i>Melissa officinalis</i> L.	IL	11	LEMON BALM
<i>Mentha alopecuroides</i> Hull	IL	12	MINT
<i>M. arvensis</i> L. forma <i>glabra</i> (Benth.) S.R. Stewart	WI	11	
<i>M. arvensis</i> L. var. <i>villosa</i> (Benth.) S.R. Stewart	WI	12	
<i>M. piperita</i> L.	IL	13	PEPPERMINT
<i>Mentha</i> sp.	WI	12	MINT
<i>Monarda citriodora</i> Cerv. ex. Lag.	IL	14	LEMON BALM
<i>M. didyma</i> L.	IL	12	OSWEGO TEA
<i>M. fistulosa</i> L.	IL, WI	11, 11	WILD BERGAMOT
<i>M. punctata</i> L.	IL	11	HORSE MINT
<i>Nepeta cataria</i> L.	IL	11	CATNIP
<i>Ocimum basilicum</i> L.	IL	11	PURPLE BASIL
<i>Physostegia virginiana</i> (L.) Benth.	NC	13	OBEDIENT PLANT
<i>Prunella vulgaris</i> L.	WI	14	SELFHEAL

<i>Pycnanthemum incanum</i> (L.) Michx.	IL, IN	10, 10	MOUNTAIN MINT
<i>P. virginianum</i> (L.) Durand & Jackson	WI	12	
<i>Salvia officinalis</i> L. var. <i>tenuoif</i> Alef.	IL	13	SAGE
<i>Scutellaria lateriflora</i> L.	IL	13	SKULLCAP
<i>Stachys palustris</i> L.	IL, WI	13, 13	WOUNDWORT
<i>S. palustris</i> L. var. <i>homotricha</i> Fern.	IL	13	HEDGE NETTLE
<i>Teucrium canadense</i> L.	IL	10	AMERICAN GERMANDER
<i>T. occidentale</i> Gray	IL	13	GERMANDER
Lauraceae			
<i>Sassafras albidum</i> (Nutt.) Nees	IL	10	SASSAFRAS
Leguminosae			
<i>Acacia</i> sp.	AZ	11	
<i>A. constricta</i> Benth.	AZ	11	WHITE THORN
<i>A. greggi</i> A. Gray	AZ	12	CAT'S CLAW
<i>Amorpha canescens</i> Pursh	IL	10	LEAD PLANT
<i>A. fruticosa</i> L.	IL	11	FALSE INDIGO
<i>Amphicarpa bracteata</i> (L.) Fern.	IL, WI	15, 13	HOG PEANUT
<i>Apios americana</i> Medic.	IL	14	GROUNDNUT
<i>Arachis hypogaea</i> L.	IL	14	PEANUT
<i>Astragalus americana</i> (Hook.) Jones	5	11	MILK VETCH
<i>A. absurgens</i> Pall.			
var. <i>striatus</i> Nutt.	5	11	MILK VETCH
<i>A. canadensis</i> L.	WI	13	MILK VETCH
<i>A. miser</i> Dougl. ex Hooker var. <i>miser</i>	5	14	
<i>Baptisia leucantha</i> T. & G.	IL	12	WHITE INDIGO
<i>B. leucophaea</i> Nutt.	IL	13	CREAM WILD INDIGO
<i>B. tinctoria</i> (L.) R. Br.	OH	10	YELLOW WILD INDIGO
<i>Calliandra eriophylla</i> Benth.	AZ	10	FALSE MESQUITE
<i>Cassia didymobotrya</i> Fresen.	4	12	
<i>C. hebecarpa</i> Fern.	IL	12	PARTRIDGE PEA, WILD SENNA
<i>C. kirkii</i> Oliv.	4	14	
<i>Coronilla varia</i> L.	IL	15	CROWN VETCH
<i>Crotolaria incana</i> L.	GA	14	SHACKSHACK
<i>C. juncea</i> L.	GA	13	SUNN HEMP
<i>C. lasiocarpa</i> Polh.	4	13	
<i>C. ochroleuca</i> G. Don.	GA	13	
<i>Cytisus scoparius</i> (L.) Link	5	10	SCOTCH BROOM
<i>Desmanthus illinoensis</i> (Michx.) Mac M.	IL	11	PRAIRIE MIMOSA
<i>Jesmodium canadense</i> (L.) DC.	IL	13	TICKSEED
<i>D. cuspidatum</i> (Muhl.) Loud	IL, WI	11, 10	
<i>D. glutinosum</i> (Muhl.) Wood	IL, WI	12, 13	
<i>D. illinoense</i> Gray	IL	13	TICK PREFOIL
<i>D. nicaraguense</i> Oerst. ex Benth.	CA	12	
<i>D. repandum</i> (Vahl) DC.	4	13	
<i>Droogmansia pteropus</i> (Baker) De Wild.	4	12	
<i>Eriosema montanum</i> Baker F.	4	12	
<i>Flemingia grahamiana</i> Wight & Arn.	4	12	
<i>Gleditsia triacanthos</i> L.	IL	11	HONEY LOCUST
<i>Glycine max</i> (L.) Merr.	IL	13	SOYBEAN
<i>Gymnocladus dioica</i> (L.) K. Koch	IL	9	KY. COFFEE TREE
<i>Humularia drepanocephala</i> (Baker) Davign.	4	13	
<i>Indigofera hiliaris</i> Eckl. & Zeyh.	4	13	
<i>I. longibarbata</i> Engl.	4	12	

<i>Kotschyha aeschynomoides</i> (Baker)				
De Wit & Davign	4	12		
<i>K. africana</i> Endl.	4	12		
<i>K. africana</i> var. <i>bequaertii</i> (Dewild.) Verde.	4	12		
<i>K. recurvifolia</i> (Taub.) F				
White	4	12		
<i>Lathyrus hygrophilus</i> Taub.	4	16		
<i>L. japonicus</i> Willd.	5	13		MARITIME PEA
<i>L. latifolius</i> L.	IL	15		PERENNIAL PEA
<i>L. ochroleucus</i> Hook.	5	14		CREAM PEA
<i>L. palustris</i> L.	WI	14		MARSH PEA
<i>L. palustris</i> L. var. <i>linearifolius</i> Ser.	WI	14		MARSH PEA
<i>L. venosus</i> Muhl.	WI	14		VEINY PEA
<i>Lespedeza capitata</i> Michx.	IL	12		BUSH CLOVER
<i>L. striata</i> (Thunb.) H. & A.	IL	10		JAPANESE CLOVER
<i>Lotononis laxa</i> Eckl. & Zeyh.	4	13		
<i>Lotus corniculatis</i> L.	IL	12		BIRD'S FOOT TREFOIL
<i>Lupinus arboreus</i> Simms.	5	9		TREE LUPINE
<i>L. nootkatensis</i> Donn.	5	10		NOOTKA LUPINE
<i>L. princei</i> H. Harms	4	13		
<i>Macrotyloma axillare</i> (E. Meyer) Verde.	4	12		
<i>Medicago falcata</i> L.	IL	12		SICKLE ALFALFA
<i>M. lupulina</i> L.	5, IL	13, 10		BLACK MEDIC
<i>M. sativa</i> L.	IL	12		ALFALFA
<i>Melilotus alba</i> Desr.	IL	11		WHITE SWEET CLOVER
<i>M. officinalis</i> (L.) Lam	IL	12		YELLOW SWEET CLOVER
<i>Oxytropis splendens</i> Dougl.	5	12		CRAZY WEED
<i>Parkinsonia aculeata</i> L.	AZ	10		JERUSALEM THORN
<i>Petalostemum candidum</i> (Willd.) Michx.	IL	12		WHITE PRAIRIE CLOVER
<i>P. purpureum</i> (Vent.) Rydb.	IL	13		PURPLE PRAIRIE CLOVER
<i>Phaseolus coccineus</i> L.	IL	14		SCARLET RUNNER
<i>P. vulgaris</i> L.	IL	12		PURPLE BEAN
<i>P. vulgaris</i> L.	IL	13		GREEN BEAN
<i>Phyllocarpus septentrionalis</i> J.D. Sm.	FL	11		
<i>Pisum sativum</i> L.	IL	17		GARDEN PEA
<i>P. sativum</i> L.	IL	15		AMERICAN WONDER PEA
<i>Prosopis juliflora</i> DC.	AZ	11		MESQUITE
<i>P. velutina</i> Wooton	AZ	12		VELVET MESQUITE
<i>Psoralea onobrychis</i> Nutt.	IL	11		
<i>P. tenuiflora</i> Pursh	IL	13		SCURF PEA
<i>Pueraria lobata</i> (Willd.) Olive	IL	14		KUDZU VINE
<i>Robinia hispida</i> L.	IL	18		BRISTLY LOCUST
<i>R. pseudo-acacia</i> L.	IL	11		BLACK LOCUST
<i>Samanea saman</i> (Jacq.) Merr	IL	10		RAIN TREE
<i>Sesbania arabica</i> Hochst. ex Steud.	GA	12		
<i>S. cannabina</i> Poir.	GA	12		
<i>Strophostyles helveola</i> (L.) Ell.	IL	14		WILD BEAN
<i>Tephrosia virginiana</i> (L.) Pers.	IL	10		GOAT'S RUE
<i>Trifolium hybridum</i> L.	IL	13		ALSIKE CLOVER
<i>T. pratense</i> L.	IL	12		RED CLOVER
<i>T. procumbens</i> L.	IL	14		LOW HOP CLOVER
<i>T. repens</i> L.	IL	15		WHITE CLOVER
<i>Vicia americana</i> Muhl.	5	15		VETCH
<i>V. gigantea</i> Hook.	5	15		GIANT VETCH
<i>V. hirsuta</i> (L.) S.F. Gray	5	15		TINY VETCH
<i>V. villosa</i> Roth	IL	12		HAIRY VETCH
<i>Wisteria sinensis</i> Sweet	IL	16		CHINESE WISTERIA

## Liliaceae

<i>Asparagus officinalis</i> L.	IL	11	GARDEN ASPARAGUS
<i>Heimerocallis fulva</i> L.	IL	15	DAY LILY
<i>Polygonatum biflorum</i> (Walt.) Ell.	IL	12	SOLOMON'S SEAL
<i>Smilacina racemosa</i> (L.) Desf.	IL	13	FALSE SOLOMON'S SEAL
<i>Smilax glauca</i> Walt.	IL	13	SAW BRIAR
<i>S. herbacea</i> L.	IL	13	CARRION FRUIT
<i>S. rotundifolia</i> L.	IL	15	GREENBRIAR
<i>S. tannooides</i> L. var. <i>hispida</i> (Muhl.) Fern.	IL	15	CAT BRIAR
<i>Ucularia perfoliata</i> L.	IL	12	BELLWORT

## Lythraceae

<i>Ammannia coccinea</i> Bottb.	IL	17	
<i>Cuphea viscosissima</i> Jacq.	IL	13	CLAMMY CUPHEA
<i>Lysimachia nummularia</i> L.	IL	15	MONEYWORT
<i>Lythrum alatum</i> Pursh	IL	14	WINGED LOOSESTRIFE
<i>L. salicaria</i> L.	WI	13	SPIKED LOOSESTRIFE

## Malvaceae

<i>Abelmoschus esculentus</i> (L.) Moench	6, CA	12, 12	OKRA
<i>Abutilon theophrasti</i> Medic.	IL	11	VELVETLEAF
<i>Althea rosea</i> Cav.	IL	12	HOLLYHOCK
<i>Hibiscus cannabinus</i> L.	IL, IN, LA	13, 13, 13	KENAF
<i>H. cisplatinus</i> St.-Hil.	GA	12	OKRA
<i>H. militaris</i> Cav.	IL	12	HALBERD-LEAVED MALLOW
<i>H. trionium</i> L.	IL	13	FLOWER-OF-AN-HOUR
<i>Napaea dioica</i> L.	IL	15	GLADE MALLOW
<i>Sida spinosa</i> L.	IL	12	PRICKLY MALLOW

## Menispermaceae

<i>Menispermum canadense</i> L.	IL	13	MOONSEED
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## Moraceae

<i>Ficus elastica</i> Roxb.	TX	14	RUBBER PLANT
<i>F. obtusifolia</i> HBK.	7	14	
<i>F. yoponensis</i> Desv.	7	13	
<i>Maclura pomifera</i> (Raf.) Schneid.	IL	11	OSAGE ORANGE
<i>Morus alba</i> L.	IL	11	WHITE MULBERRY

## Nyctaginaceae

<i>Mirabilis jalapa</i> L.	NC	13	FOUR-O'CLOCK
<i>M. nyctaginea</i> (Michx.) Mac M.	IL	13	WILD FOUR-O'CLOCK

## Oleaceae

<i>Fraxinus nigra</i> Marsh.	IL	12	BLACK ASH
<i>F. americana</i> L.	IL	12	WHITE ASH
<i>F. pennsylvanica</i> Marsh.	IL	12	GREEN ASH
<i>Syringa vulgaris</i> L.	IL	12	COMMON LILAC

## Onagraceae

<i>Epilobium coloratum</i> Biedler	IL	13	PURPLE LEAF WILLOWEED
<i>Gaura biennis</i> L.	IL	11	GAURA
<i>Oenothera biennis</i> L.	IL	12	EVENING PRIMROSE
<i>O. rhombipetala</i> Nutt.	IL	13	EVENING PRIMROSE

## Oxalidaceae

<i>Oxalis stricta</i> L.	IL	13	YELLOW WOOD SORREL
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## Paeoniaceae

<i>Paeonia lactiflora</i> Pall.	IL	11	GARDEN-ESCAPE PEONY
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## Papaveraceae

<i>Chelidonium majus</i> L.	IL	11	CELANDINE POPPY
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## Phytolaccaceae

<i>Phytolacca americana</i> L.	IL	10	POKEWEED
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Plantanaceae			
<i>Plantanus occidentalis</i> L.	IL	12	SYCAMORE
Pinaceae			
<i>Larix decidua</i> Mill.	IL	11	EUROPEAN LARCH
<i>Picea abies</i> (L.) Karst.	IL	11	NORWAY SPRUCE
<i>Pinus banksiana</i> Lamb.	IL	11	JACK PINE
<i>P. edulis</i> Engelm.	AZ	11	PINYON PINE
<i>P. sylvestris</i> L.	IL	11	SCOTCH PINE
Polygonaceae			
<i>Polygonum cuspidatum</i> Sieb. & Zucc.	IL	13	JAPANESE KNOTWEED
<i>P. orientale</i> L.	IL		
<i>P. pennsylvanicum</i> L.	IL	13	PINKWEED
<i>P. scandens</i> L.	IL	14	CLIMBING FALSE BUCKWHEAT
<i>Rumex crispus</i> L.	IL	13	YELLOW DOCK
Portulacaceae			
<i>Portulaca oleracea</i> L.	IL	15	PURSLANE
Primulaceae			
<i>Lysimachia ciliata</i> L.	IL	13	FRINGED LOOSESTRIFE
Ranunculaceae			
<i>Anemone canadensis</i> L.	IL	12	CANADA ANEMONE
<i>A. cylindrica</i> Gray	IL	12	THIMBLEWEED
<i>Thalictrum dasycarpum</i> Fisch. & Lall.	WI	13	TALL MEADOW RUE
Rhamnaceae			
<i>Ceanothus americanus</i> L.	IL	10	NEW JERSEY TEA
<i>C. tomentosus</i> Parry	CA	12	WOLLY LEAF CEANOTHUS
<i>Rhamnus alnifolia</i> L'Her	WI	12	ALDER BUCKTHORN
Rosaceae			
<i>Adenostoma fasciculatum</i> Hook. & Arn.	CA	12	GREASEWOOD
<i>Aruncus dioicus</i> (Walt.) Fern.	IL	13	GOAT'S BEARD
<i>Cercocarpus betuloides</i> Nutt. ex Torr. & A. Gray	AZ	12	
<i>Crataegus mollis</i> (T. & G.) Scheele	IL	12	HAWTHORN
<i>Heteromeles arbutifolia</i> (Ait.) M.J. Roem.	CA	11	CHRISTMAS BERRY
<i>Prunus americana</i> Marsh.	IL	10	WILD PLUM
<i>P. armeniaca</i> L.	IL	11	APRICOT
<i>P. persica</i> (L.) Batsch	IL	11	PEACH
<i>P. serotina</i> Ehrh.	IL	12	BLACK CHERRY
<i>Pyrus ioensis</i> (Wood) Bailey	IL	12	WILD CRAB
<i>Rosa carolina</i> L.	IL	11	CAROLINA ROSE
<i>R. multiflora</i> Thunb.	IL	12	MULTIFLORA ROSE
<i>R. setigera</i> Michx.	IL	12	PRAIRIE ROSE
<i>Rubus allegheniensis</i> Porter	IL	11	BLACKBERRY
<i>R. occidentalis</i> L.	IL	12	BLACK RASPBERRY
<i>Spirea bumalda</i> Bury	IL	11	SPIREA ANTHONY WATERER
Rubiaceae			
<i>Cephalanthus occidentalis</i> L.	IL	12	BUTTONBUSH
Rutaceae			
<i>Dictamnus albus</i> L.	IL	11	GAS PLANT
<i>Xanthoxylum americanum</i> Mill.	IL	12	PRICKLY ASH
Salicaceae			
<i>Populus alba</i> L.	IL	11	SILVER POPLAR
<i>P. deltoides</i> Marsh.	IL	11	COTTONWOOD
<i>P. nigra</i> L. var. <i>italica</i> Muenchh.	IL	12	LOMBARDY POPLAR
<i>P. tremuloides</i> Michx.	IL	11	TREMBLING ASPEN

<i>Salix babylonica</i> L.	IL	10	WEeping WILLOW
<i>S. discolor</i> Muhl.	IL	13	LARGE PUSSY WILLOW
<i>S. interior</i> Rowlee	IL	14	SANDBAR WILLOW
<i>S. nigra</i> Marsh.	IL	14	BLACK WILLOW
<i>Salix</i> sp.	IL	15	WILLOW
Saururaceae			
<i>Saururus cernuus</i> L.	IL	16	LIZARD'S TAIL
Saxifragaceae			
<i>Ribes americanum</i> Mill.	IL	12	WILD BLACK CURRANT
<i>R. cynosbati</i> L.	IL	11	PRICKLY GOOSEBERRY
Scrophulariaceae			
<i>Linaria vulgaris</i> Hill	IL	13	BUTTER & EGGS
<i>Mimulus ringens</i> L.	IL	14	MONKEY FLOWER
<i>Pedicularis palustris</i> L.	IL	15	SWAMP LOUSEWORT
<i>Scrophularia marilandica</i> L.	IL	13	CARPENTER'S SQUARE
<i>Verbascum blattaria</i> L.	IL	12	MOTH MULLEIN
<i>V. thapsus</i> L.	IL	12	COMMON MULLEIN
<i>Veronicastrum virginicum</i> (L.) Farw.	IL	12	CULVER'S ROOT
Simarubaceae			
<i>Ailanthus altissima</i> (Mill.) Swingle	IL	11	TREE OF HEAVEN
Solanaceae			
<i>Capsicum annuum</i> L. var. <i>grossum</i> Sendt.	IL	13	CALIFORNIA WONDER PEPPER
<i>Datura stramonium</i> L.	IL	11	JIMSON WEED
<i>Nicotiana tabacum</i> L.	IL	10	TOBACCO
<i>Physalis heterophylla</i> Nees	IL	13	CLAMMY GROUND CHERRY
<i>P. virginiana</i> Mill.	IL	12	VIRGINIA GROUND CHERRY
<i>Solanum carolinense</i> L.	IL	13	HORSE NETTLE
<i>S. dulcamara</i> L.	IL	15	DEADLY NIGHTSHADE
<i>S. nigrum</i> L.	IL	12	BLACK NIGHTSHADE
Tiliaceae			
<i>Tilia americana</i> L.	IL	12	BASSWOOD
Typhaceae			
<i>Typha angustifolia</i> L.	IL	12	NARROW LEAVED CATTAIL
<i>T. latifolia</i> L.	IL	15	BROAD LEAVED CATTAIL
Ulmaceae			
<i>Ulmus rubra</i> Muhl.	IL	11	SLIPPERY ELM
Umbelliferae			
<i>Angelica atropurpurea</i> L.	IL	13	PURPLE ANGELICA
<i>Berula pusilla</i> (Nutt.) Fern.	IL	16	WILD CELERY
<i>Bifora radians</i> Bieb.	9	9	
<i>Cicuta maculata</i> L.	IL	15	WATER HEMLOCK
<i>Conium maculatum</i> L.	IL	12	POISON HEMLOCK
<i>Daucus carota</i> L.	IL	15	QUEEN ANNE'S LACE
<i>Foeniculum vulgare</i> Mill.	IL	13	FENNEL
<i>Heracleum maximum</i> Bartr.	IL	13	COW PARSNIP
<i>Osmorhiza claytoni</i> (Michx.) C.B. Clarke	IL	14	HAIRY SWEET CICELY
<i>Zizia aurea</i> (L.) W.D. J. Koch	IL	11	GOLDEN ALEXANDER
Urticaceae			
<i>Boehmeria cylindrica</i> (L.) Sw.	IL	13	FALSE NETTLE
<i>Urtica procera</i> Muhl.	IL	12	TALL NETTLE
Verbenaceae			
<i>Lippia lanceolata</i> Michx.	IL	13	FOG FRUIT
<i>Verbena hastata</i> L.	IL		BLUE VERVAIN
<i>V. stricta</i> Vent.	IL	13	HOARY VERVAIN
<i>V. urticifolia</i> L.	IL	12	WHITE VERVAIN

Vitaceae			
<i>Vitis riparia</i> Michx.	IL	14	FROST GRAPE
Zygophyllaceae			
<i>Larrea tridentata</i> (DC.) Cov.	AZ	12	CRESOTE BUSH

Nomenclature in accordance with Gray's Manual of Botany, 8th Edition, 1970, D. Van Nostrand Co. Horticulture species according to Hortus Third, L. H. & E. Z. Bailey, 1976, MacMillan Publishing Co., Inc.

<sup>1</sup>South Africa and Tanzania samples were obtained from Baltech Inc., Madison, WI.

<sup>2</sup>Species without ratings are being evaluated.

<sup>3</sup>South Africa.

<sup>4</sup>Tanzania.

<sup>5</sup>Vancouver, British Columbia.

<sup>6</sup>Puerto Rico.

<sup>7</sup>Canal Zone.

<sup>8</sup>Mexico.

<sup>9</sup>Plant was grown in Jacksonville, IL from seed collected in Yugoslavia.

### ACKNOWLEDGMENTS

We wish to thank the following collaborators and their staffs for collection and identification of samples for our evaluation.

USDA, Plant Taxonomy Laboratory, Beltsville, MD.

USDA, Regional Plant Introduction Station, Experiment, GA.

USDA, Subtropical Horticulture Research Unit, Miami, FL.

USDA, Forest Service, Forestry Sciences Laboratory, Arizona State University, Tempe, AZ.

USDA, Northern Regional Research Center, Peoria, IL.

Arizona State University, Department of Chemical and Bio-Engineering, Tempe, AZ.

AID/ROCAF APO, Miami, FL.

Also a special thanks to our colleagues Forest Long and Bliss Phillips for collecting samples and Dale Ehmke and Bliss Phillips for analytical data.

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