

**THIRTY COMMON
AGRICULTURAL WEEDS
IN IDAHO**

**WEED IDENTIFICATION GUIDE
- AGRICULTURAL HERBICIDE EXAM -**



*Selections taken from Weeds of Utah,
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COMMON AGRICULTURAL WEEDS IN IDAHO

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INTRODUCTION

In the weed control exams administered by the Idaho Department of Agriculture, questions about specific weeds are included. In response to the need for appropriate study materials, weed study packets consisting of thirty common weeds have been prepared for the **Agricultural Herbicide, Ornamental Herbicide, and Right-of-Way** exams.

An initial list of weeds for each category was compiled with the help of commercial applicators, the University of Idaho Extension Service, and the Idaho Department of Agriculture. The final list (thirty per category) was compiled with the help of Drs. Don Thill, Robert Callihan, and Don Morishita of the University of Idaho, and Loal Vance of the Idaho Department of Agriculture. Narrative and drawings were taken from *Weeds of Utah. The information was compiled and edited K. Taylor Cox, Idaho Department of Agriculture.

NOTE: There may be many other common weeds which are not included in the packets. The packets are provided to study for exams, and not necessarily for reference materials. An attempt was made to reconcile the information in the weed study packets with Weeds of the West (Whitson, et.al., 1991), which is recommended as a reference manual.

What to study: common name, type of life cycle, morphology (structure or shape), phenology (time the plant grows), habitat, characteristics that make the plant a weed.

* Special Report 21, Utah Agricultural Experiment Station, November 1970, written by Arthur H. Homgren and Berniece A. Andersen. Kaye Hughie Thorne did most of the drawings (identified by the initials KH or KHT); a few are by Dean Fletcher (DF), O. Charles Walmo (OCW), and Berniece Andersen (BA)

GROWTH HABITS DETERMINE THE METHODS OF CONTROL

As the form and growth habits of weeds largely determine the best method of control, these features are emphasized in the descriptions. Since the length of life of the plant depends on the length of life of the the root, we have a basis for dividing plants into annuals, biennials, and perennials.

ANNUALS. Annual plants are those that complete their life cycles (i.e., grow vegetatively, produce flowers and seed, and then perish) in a single growing season. Winter annuals are those plants that germinate from seed in the fall or early winter and quickly complete growth and mature the following spring. Since a continued infestation of annual weeds depends on a yearly succession of seed crops, the simplest and most practical means of control is that which prevents the plants from maturing seed. Ordinary methods of weeding, hand pulling or hoeing, mowing, and clean cultivation are those chiefly employed. Under certain conditions herbicides may be used to advantage.

BIENNIALS. Biennial plants differ from annual plants in that they require two full growing seasons to develop flowers and mature seed. After maturing seed they die. During the first season a short taproot is usually formed and only a rosette of leaves grows from the rootcrown. During the second season, a leafy stem develops which produces flowers and seed, thus completing the plant's life cycle. Since perpetuation of the weed crop depends on seed production, the desirable control practices for biennial weeds are essentially those suggested for annuals.

PERENNIALS. Perennial plants are those that normally live for more than two years and usually do not produce seed until the second year of later. Since the underground parts (the roots, and frequently underground stems called rootstocks or rhizomes) persist from year to year, plants of this character are the most difficult to control or eradicate, and hence constitute the most serious group of weeds. Some perennials produce woody stems which grow from year to year and consequently develop into shrubs or trees. In our region the greater number of perennials produce leafy and flowering stems from the root or rootstock each year. These stems persist only through the one growing season, and die back to the ground at the end of the season. Most of our noxious weeds are perennials. The most important method of control is prevention. Early recognition of and subsequent eradication of weeds may prevent almost hopeless situations. Clean cultivation and proper cultural practices are still the best control methods known.

NAMES OF PLANTS

Scientific names for the most part are applied to families, genera, and species. The family name for the mustards, for instance, is **Brassicaceae** and this family contains many genera (plural for genus) such as **Brassica**, **Cardaria**, **Chorispora**, and **Descurainia**, to name a few of them. A genus may include from one to several hundred species. The name **Sisymbrium altissimum L.** is a species in the genus **Sisymbrium** in the **Brassicaceae** family, and is commonly known as tumble mustard. The "L" following the species shows that Linnaeus was responsible for naming this species.

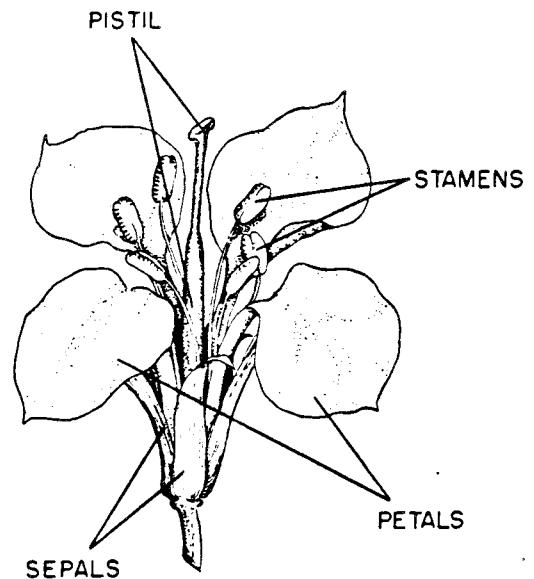
The scientific name for hoary cress is **Cardaria draba (L.) Desv.** In this case Linnaeus originally named the plant **Lepidium draba L.** and Desvaux later transferred it to the genus **Cardaria**.

The common names of plants are often more difficult to apply than scientific names. Some species have many different common names and sometimes a given common name will be used in referring to several different species. The common name given is the one thought to be most acceptable.

BOTANICAL TERMS

Every effort has been made to keep botanical terms to a minimum. Some terms are so necessary and helpful in describing flowers and plant parts that it would be undesirable to omit them from descriptions. The accompanying labeled illustration of a mustard flower will serve to identify the various parts of the flower. It should be kept in mind that the flower is the structure most commonly used in classifying and identifying plants.

The sepals are usually green when present and constitute the outside whorl of the flower. They are referred to collectively as the calyx. The collective term for the petals is the corolla. The stamens or pollen bearing male parts are encountered next. The pistil or female part of the flower is in the center. The seeds are matured ovules that develop inside the ovary of the pistil.



GLOSSARY OF BOTANICAL TERMS

- ACHENE*, a small, dry, one-seed fruit where ovary does not open to expel seed.
- ACUTE*, ending in a point less than a right angle.
- ALTERNATE*, one leaf or bud at a node.
- ANNUAL*, of one season's duration from seed to maturity and death.
- ANTHER*, pollen-bearing part of stamen.
- AXILLARY*, a flower or a bud that appears in the axil of a leaf or a bract.
- BARBED*, being reflexed like the barb of a fish hook.
- BARBELLATE*, with barb-like branches.
- BEAK*, applied here to prolongation of fruits and pistils.
- BIENNIAL*, of two seasons duration from seed to maturity and death.
- BLADE*, the expanded part of a leaf.
- BRACT*, a leaf subtending a flower or flower cluster. The leaf or bract is usually dissimilar to the foliage leaves and smaller.
- CALYX*, a collective term for the outer whorl of a flower, the sepals.
- CAPILLARY*, very slender and hair-like.
- CAPSULE*, a dry, many-seeded fruit pod that splits open at maturity.
- CARPEL*, a modified leaf forming the ovary.
- CATKIN*, a unisexual spike of willows and cottonwoods.
- CLASPING*, leaf base surrounding a stem.
- COROLLA*, a collective term for the inner whorl of a flower, the petal; usually colored.
- COTYLEDON*, the seed leaf of a germinated plant.
- CULM*, the hollow or pithy stem of grasses and sedges.
- DECUMBENT*, reclining on the ground but with the ends ascending.
- DEHISCE*, to split open along definite lines.
- DIFFUSE*, of open and usually dense growth.
- EMBRYO*, the tiny plant enclosed within the seed.
- ENTIRE*, the margin not in any way indented.
- EVERGREEN*, remaining green throughout the year.
- FLORET*, the small individual flowers of grasses and composites.
- FRUIT*, the ripened ovary or ovaries along with other united parts; the seed-bearing organ.
- GLANDULAR*, bearing glands. A glandular hair has an enlargement at the apex, making it appear somewhat like a hat pin.
- INFLORESCENCE*, the flowering segment of a plant and, specifically, the arrangement of the flowers.
- INVOLUCRE*, the bracts or leaf-like structures subtending a flower cluster, usually in the composite family.
- IRREGULAR FLOWER*, the parts of a whorl of a flower not all alike.
- LACERATE*, cut in an irregular manner as if the structure had been slashed.
- LANCEOLATE*, lance-shaped; several times longer than wide, broadest towards the base and tapering to the apex.
- LATERAL*, on or at the side.
- LEAFLET*, one part of a compound leaf.
- LEMMA*, the lower of two bracts, subtending a grass floret.
- LIGULE*, as referred to here it is the membranous projection up from the inside of a grass sheath at its junction from the blade.
- LINEAR*, long and narrow with the sides being parallel or nearly so.
- LOBED*, segments divided to about the middle.
- NECTARY*, a tissue for secreting nectar. Each petal of a buttercup has a nectary on the upper surface near the base.
- NODE*, the point on a stem where leaves or branches normally originate; also any swollen or knob-like structure.
- OB*, a prefix meaning reversed from the usual arrangement.
- OBLONG*, two or four times as long as broad.
- OBTUSE*, blunt or rounded on the apex.
- OPPOSITE*, two leaves or buds at a node.
- OVATE*, egg-shape or about one and one-half times as long as broad with the widest part near the base.
- PALMATE*, parts arising from approximately one point.
- PANICLE*, a compound cluster of flowers consisting of associated spikes or racemes. An example is the inflorescence of wild oat.

PAPPUS, the crown of bristles, scales, or capillary hairs on top of the achene in composites.

PERENNIAL, of three or more seasons' duration.

PERIANTH, a collective term for the sepals (calyx) and petals (corolla).

PETAL, one of the divisions of a corolla.

PETIOLE, the stalk of a leaf supporting the blade.

PINNATE, leaflets of a leaf arranged on each side of a common axis; feather-like.

PINNATIFID, pinnately cleft or parted.

PISTILLATE, a female flower having a pistil and no stamens.

PLUMOSE, like a feather, the term is often applied to hairs that have finer hairs along the side, making it appear feather-like.

POLLEN, the spores or grains borne by the anther.

RACEME, a flower cluster with one-flowered stalks arranged along a common axis.

RAY FLOWER, the modified outer flowers of a composite head with strap-like corollas; irregular flowers.

REFLEXED, part bent outward or backward.

RHIZOME, a horizontal underground stem that is sometimes called a rootstock.

ROOTSTOCK, the same as rhizome.

ROSETTE, a dense cluster of leaves at the base of a plant on a very short stem.

RUNNER, a trailing stem that roots at the nodes.

SCURFY, scale-like particles on a surface that resemble human dandruff.

SERRATE, the margin cut into teeth which point upward.

SHEATH, a tubular structure surrounding an organ or a part. An example is the basal part of a grass leaf that surrounds the stem or culm.

SINUS, the space between two lobes or divisions of a leaf or other expanded organ.

SPIKE, an inflorescence where the flowers are without a flower stalk and arranged on a single axis with the lowermost flower opening first.

SPORE, a simple one-celled reproductive structure found in ferns and horsetails.

STAMEN, the pollen-bearing or male organ of a flower.

STAMINATE, a male flower having stamens and no pistils.

STIPULE, one of a pair of appendages at the base of a leaf stalk. These structures vary considerably in different species of plants.

STOLON, an above ground shoot that takes root at its tip and gives rise to a new plant as in the strawberry.

SUBTEND, to stand below or close as a bract below a flower.

TAP-ROOT, a vertical usually stout root where main root is readily identified.

TENDRIL, a modified leaf or stem part, usually thread-like, by which a plant clings for support.

TOMENTUM, matted woolly hairs.

TRUNCATE, appearing as if the end had been chopped off.

TUBER, usually an enlarged underground stem.

TUBERCLE, a pimple-like or small rounded structure.

UMBEL, an inflorescence with the flower stalks appearing from approximately the same point.

UNISEXUAL, either staminate or pistillate, of one sex.

WHORLED, three or more leaves or buds or other structures at a node.

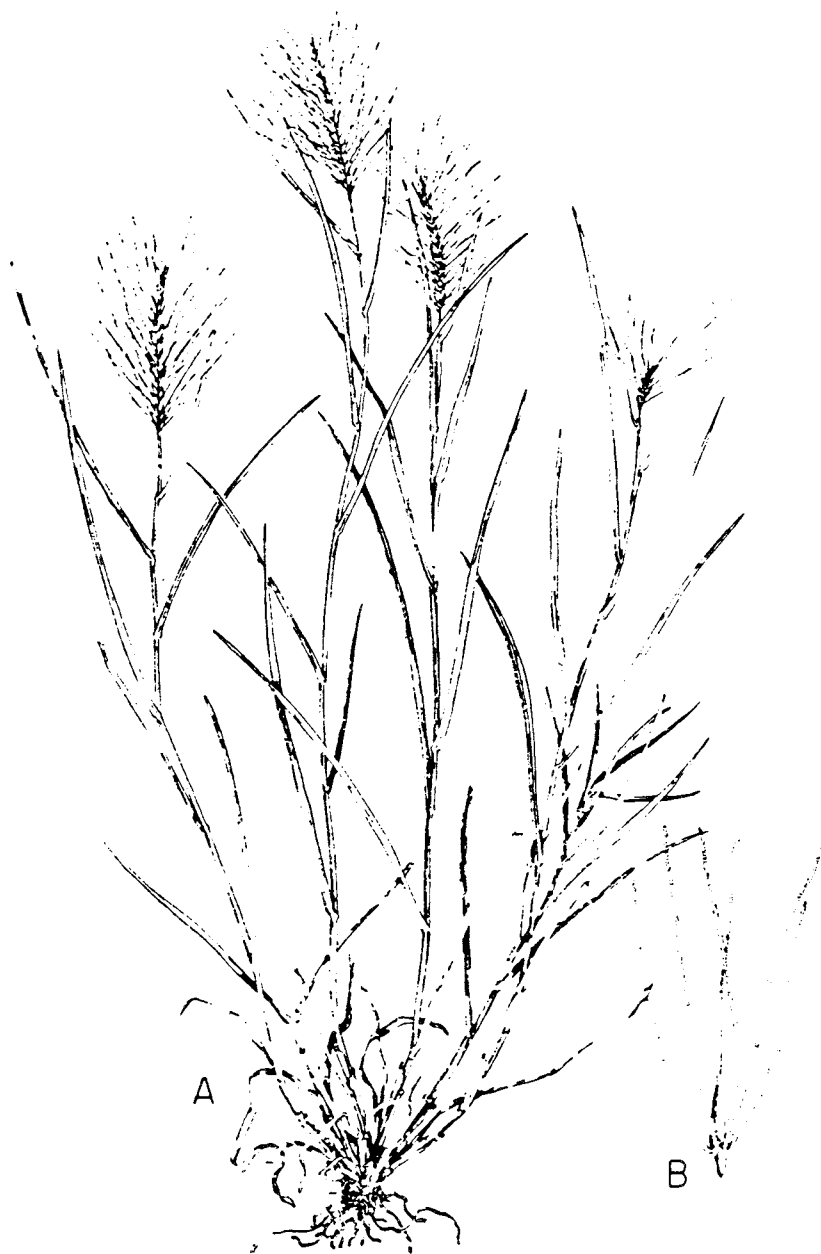
WOOLLY, provided with long, soft, matted hairs.

Hordeum jubatum L. Foxtail barley.

Foxtail barley is one of our few native weeds and is closely related to cultivated barley. It becomes especially troublesome in run-down meadows and is a familiar sight in moist areas along roads. The slender bristles of the spikes cause sore eyes and mouths in animals feeding on hay contaminated with this species.

Description--Foxtail barley is a perennial that reproduces by seeds. The stems are from 1 to 2 feet high. The leaves are often a lighter green color than those of other grasses associated with this species. The nodding heads break up readily into seven-awned clusters consisting of three spikelets. The center spikelet of this group bears the grain while the outer two are sterile.

Foxtail barley,
Hordeum jubatum:
A, plant; B, a seven-awned
cluster of three spikelets.



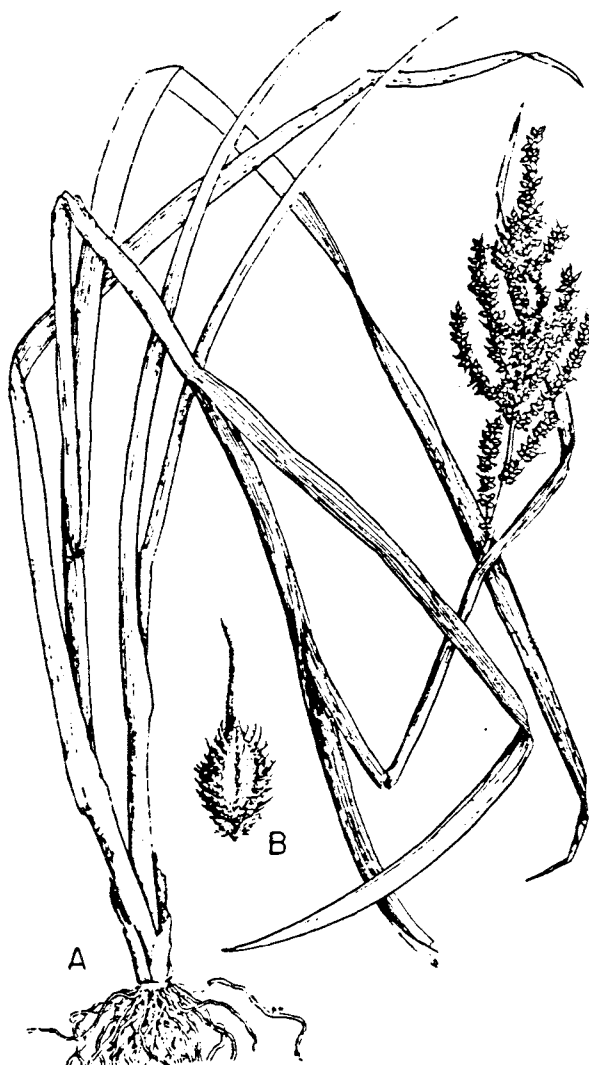
Echinochloa crus-galli (L.) Beauv. Barnyardgrass.

Barnyardgrass was introduced from Europe and has become widespread throughout the United States. It often becomes a pest in moist, fertile ground, but also does well in drier areas in cultivated fields and gardens.

Description--Barnyardgrass is a vigorous annual with considerable variation in our area. Under ideal conditions plants may attain a height of 3 feet or more or remain as low as 6 to 8 inches in less favorable areas. The stems may be erect or perhaps more often rest on the ground. The panicles are reddish to dark purple and even the upper part of the stems may be red. The spikelets are crowded with each one having a conspicuous awn and scattered stiff hairs. The grain is tightly enclosed within the flowering scales. It is approximately $\frac{1}{8}$ inch long, yellowish to brown, shining, rounded on one side, and flattened on the other.

Barnyardgrass may be recognized in the seedling state by the broad blades and the complete absence of a ligule.

Barnyardgrass
Echinochloa crus-galli
A, plant showing annual
roots;
B, detail of spikelet.

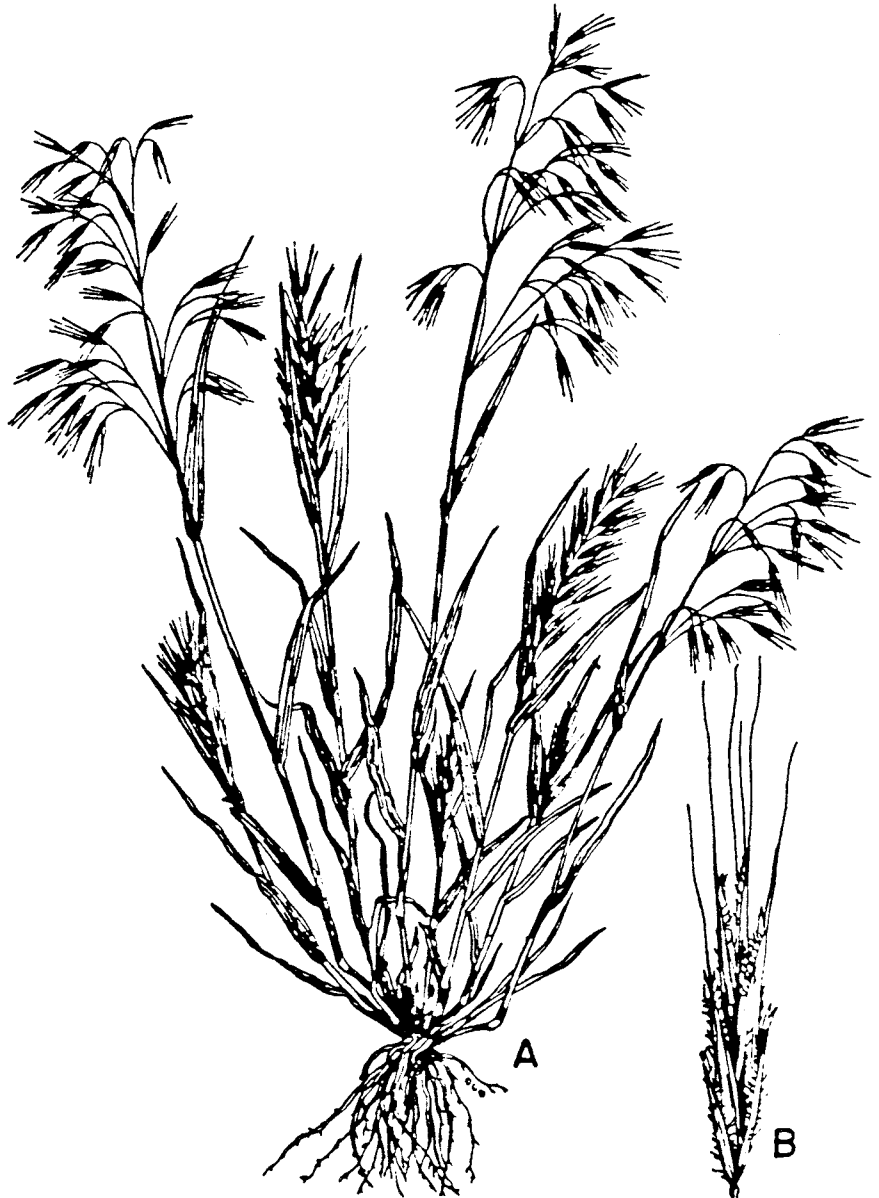


Bromus tectorum L. Downy brome.

Downy brome, or cheatgrass, is a common weed in the Western States that was originally introduced from Europe. It is a weed in waste places, roadsides, and spring-fall foothill ranges. The grass will grow and perpetuate itself in soil types that are free of excessive amounts of injurious salts.

Description--Downy brome is an annual or winter annual that reproduces only by seed. The plants are usually 10 to 15 inches high, although viable seeds may develop on plants no more than 2 inches high. The leaf blades and sheaths are hairy. The drooping flower stalks are awned and oatlike and turn a reddish brown late in the season.

Downy brome,
Bromus tectorum:
A, drawing showing
habit of plant;
B, spikelet.

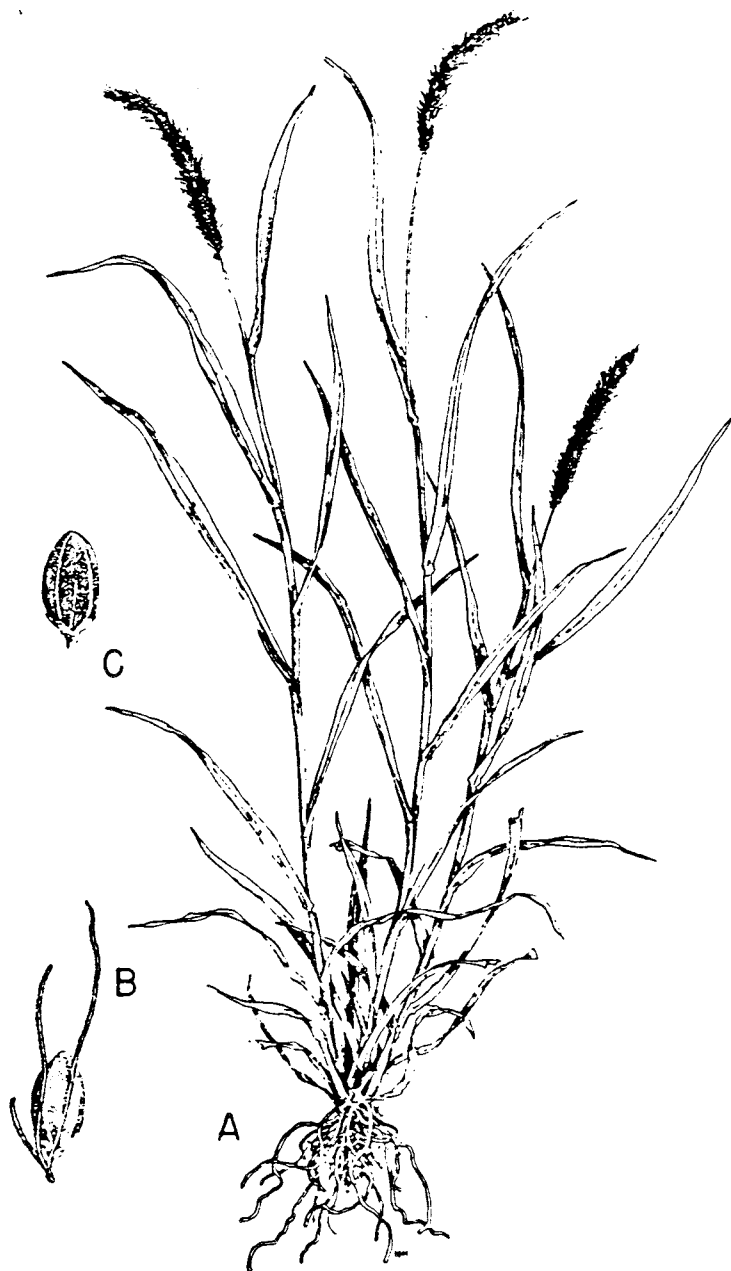


Setaria viridis (L.) Beauv. Green foxtail.

An annual grass that was introduced from Europe, green foxtail is a weed of cultivated fields and waste places.

Description--This species is an annual grass reaching a height of 1 to 2 feet. The stems branch from the base and may be erect or prostrate. Leaves often have wavy, crisp margins and short, inconspicuous hairs on the margins of the sheaths. The bristles below the spikelet are yellowish green and usually two or three in number. The lemma that encloses the grain is about a tenth of an inch long, pale yellow, and nearly smooth at maturity.

Green foxtail,
Setaria viridis:
A, drawing showing
annual habit of plant;
B, spikelet subtended by three
yellowish green bristles;
C, spikelet.



Aegilops cylindrica Host. Jointed goatgrass.

Jointed goatgrass is native to southern Europe occurs occasionally over much of the western U.S. In recent years, the plant has spread rapidly in the wheat producing regions. Apparently, much of the spread has been through the use of infested wheat seed. It is most difficult to control where wheat is grown continuously; hybrids of goatgrass and wheat sometimes backcross with wheat. The rough-awned spikelets may cause injury to the mouths and noses of grazing animals. Flowering and seed production occur from June to August.

Description--Annual, stems 6 to 24 inches tall; spikes cylindric, more than 10 times as long as wide; spikelets closely appressed and fitting into the contour of the rachis; spikelets awned, the longest awns at the top of the spike; seed heads breaking into individual segments at maturity; sheaths and blades usually rough and hairy; ligule very short; auricles inconspicuous. Aegilops is a genus of about 25 species, but only A. cylindrica is a weed in this area.

Jointed goatgrass,
Aegilops cylindrica
Photo showing habit
of plant.



Avena fatua L. Wild oats.

Introduced from Europe, wild oats is a troublesome weed in grain fields. Reproduction is by seed.

Description. Wild oats is an annual with stout, erect stems that may become 3 feet high under ideal conditions. The blades are flat and usually about one-fourth inch wide. The inflorescence is an open, loose, somewhat hanging panicle. Each spikelet bears from two to five florets which fall readily from the large papery glumes. The lemma, that part which encloses the grain, is clothed with stiff brownish hairs and bears a twisted dorsal awn.

Wild oats,
Avena fatua
A, portion of plant;
B, spikelet; C, florets
containing grains

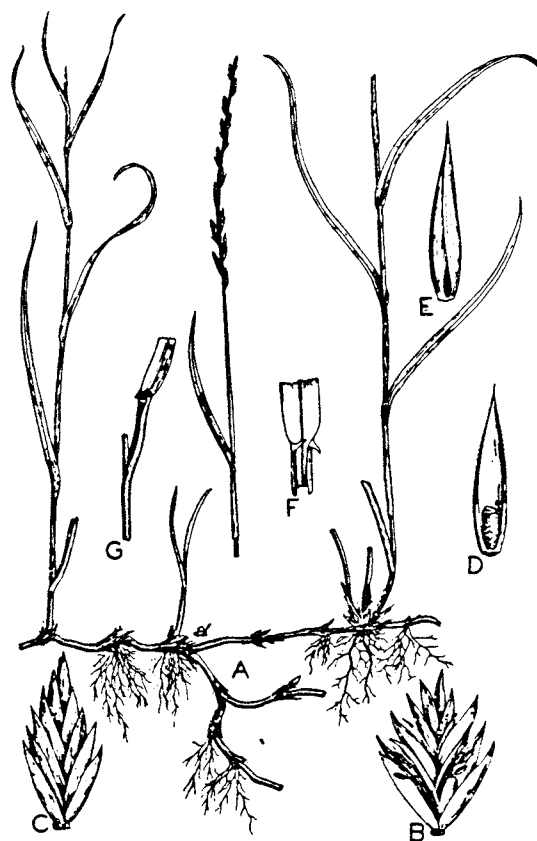


Agropyron repens (L.) Beauv. Quackgrass.

Quackgrass, introduced from Europe, has long been a troublesome weed in the United States, particularly in the northeastern states. It is widespread throughout Idaho as a noxious weed of low-lying valley areas. The grass will grow readily in most soils. It occurs in cultivated fields, along ditch banks, in pastures, and waste places and develops most vigorously in moist or wet lands. Quackgrass is often a vigorous lawn weed that we find objectionable because of its broad leaf blades. It is salt tolerant but will not grow on heavily saline areas. It resembles native western wheatgrass (*Agropyron smithii*) which occurs commonly in dryer benches and uplands.

Description--Quackgrass is a perennial with unbranched stems commonly 1 to 3 feet high; the leaf blades are flat, thin, and form one-fourth to one-half inch wide; the leaf sheath and blades may be thinly covered with soft hairs or sometimes with whitish, powdery bloom, but are mostly without the hairy covering; the flowering heads resemble those of wheat, but are more slender and have only one spikelet at a joint; each flattened spikelet bears two vertical rows of florets (grass flowers enclosed by two scales.) Two or three in each row. Grains are nearly ¼ inch long, slender, yellowish-brown, and are enfolded by the lemma (flower scale), which is drawn to a sharp point. Usually 20 to 30 viable seeds are produced in each head. The rootstocks are shallow, but in cultivated soil may penetrate as deeply as 8 inches. Rootstocks extend away from the parent plant for several feet, branch extensively, and form a tough, interwoven mass. The joints are conspicuous, clothed by a scaly brown sheath, and freely giving rise to slender fibrous absorbing rootlets.

Quackgrass
Agropyron repens:
A, habit of plant and
underground rootstocks,
B, spikelet at maturity;
D and E, florets containing
"seed" F, drawing showing
"ears" at junction of blade
and sheath; G, leaf sheath
attached to stem.



Panicum capillare L. Witchgrass.

Witchgrass is a native plant that often becomes common in gardens and along roadsides. When the plant is matured, the panicle breaks off and tumbles about, leaving a trail of seeds.

Description. Witchgrass is an annual with stems that are often prostrate at the base. The plants vary in height from $\frac{1}{2}$ to $2\frac{1}{2}$ feet. Both leaves and stems have conspicuous hairs. The diffuse panicle is densely flowered and produces an abundance of seeds. The individual grains are tiny and enclosed in the flowering scales.



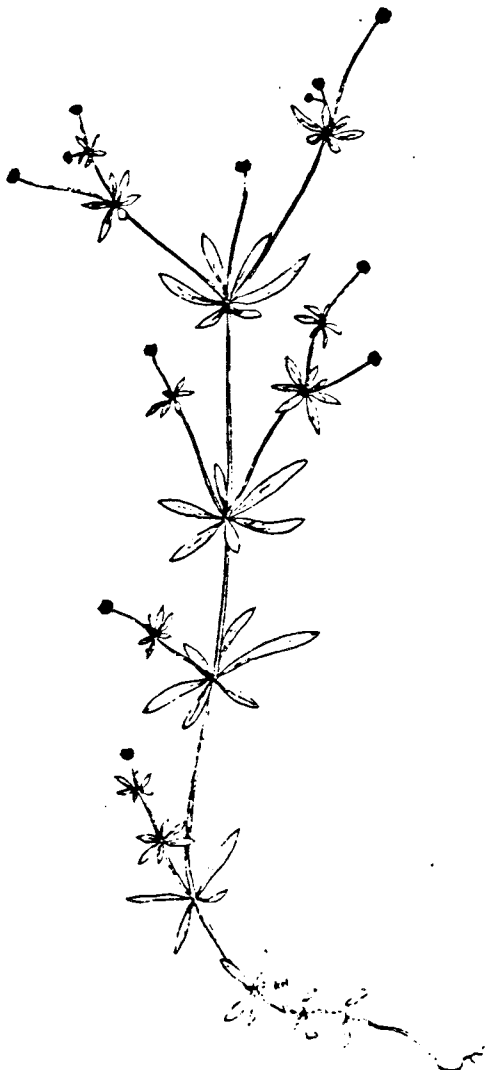
Witchgrass,
Panicum capillare:
drawing showing annual
habit of grass.

Galium aparine L. Catchweed bedstraw.

A native weed that may also have been introduced into our area from Eurasia, catchweed bedstraw is widely spread throughout the United States. The plant is often introduced into gardens with topsoil.

Description--Catchweed bedstraw is a weak-stemmed annual that is often supported by other vegetation. The four angles of the stem are beset with rigid downward pointed hairs so that weakly-rooted plants are easily pulled from the ground as plants become attached to clothing or animal hair. Narrow lanceolate leaves are in whorls of four to eight. The small fruits are clothed with hooked bristles which endow the plant with still another assurance of dissemination.

Catchweed bedstraw,
Galium aparine.



Convolvulus arvensis L. Field bindweed.

Field bindweed, introduced from Europe, is widespread and a serious weed throughout the country. In Idaho, it is extensively distributed in cultivated fields and waste places, and because of a remarkable adaptability to different environmental conditions, may be found at altitudes as high as 10,000 feet. It is a most troublesome weed to eradicate because of a large, fleshy, deep-seated taproot, which may penetrate the soil to a depth of 10 feet, and which may repeatedly give rise to numerous long rhizomes, even when cut off below the crown. It reproduces by seeds and rootstocks.

Description--Field bindweed is a perennial from a deep-seated taproot, which gives rise to several or numerous slender underground rhizomes or prostrate, twining stems. The leaves are alternate and arrow-shaped mostly about 1 to 2 inches long. The white or pink, bell-shaped flowers, frequently as much as an inch in length, are borne on stalks about 1 inch long, which rise from axils of the leaves. The fruit is a two-celled capsule, somewhat less than ½ inch in diameter, producing from two to four seeds. The seeds are angled, rough, gray-brown, often appearing nearly black.

Field bindweed,
Convolvulus arvensis:
A, drawing showing habit
of plant (note several
stems arising from the
underground rootstocks);
B, flower;
C, fruit;
D, seed.



Polygonum convolvulus L. Wild buckwheat.

Wild buckwheat is a weed of cultivated fields and waste places that was introduced from Europe. This weed is common in agricultural areas of Idaho. Notice that the Latin specific name of this weed is the same as the generic name of wild morning-glory. This provides a good example of how some plants will superficially resemble another species and yet be only distantly related.

Description--This weed is an annual with stems trailing on the ground or more often twining about other plants. Leaves alternate on the stem and are conspicuously taper-pointed. Careful observation will show that the base of the leaf has a sheath that circles the stem. Small greenish, drooping flowers are found in clusters in the axils of the leaves. Fruits are triangular, dull black, slightly roughened, and are nearly an eighth of an inch long.

The annual habit, leaf sheaths, and pointed leaves will readily separate this species from wild morning-glory.

Wild buckwheat,
Polygonum convolvulus:
drawing showing annual
habit of plant.

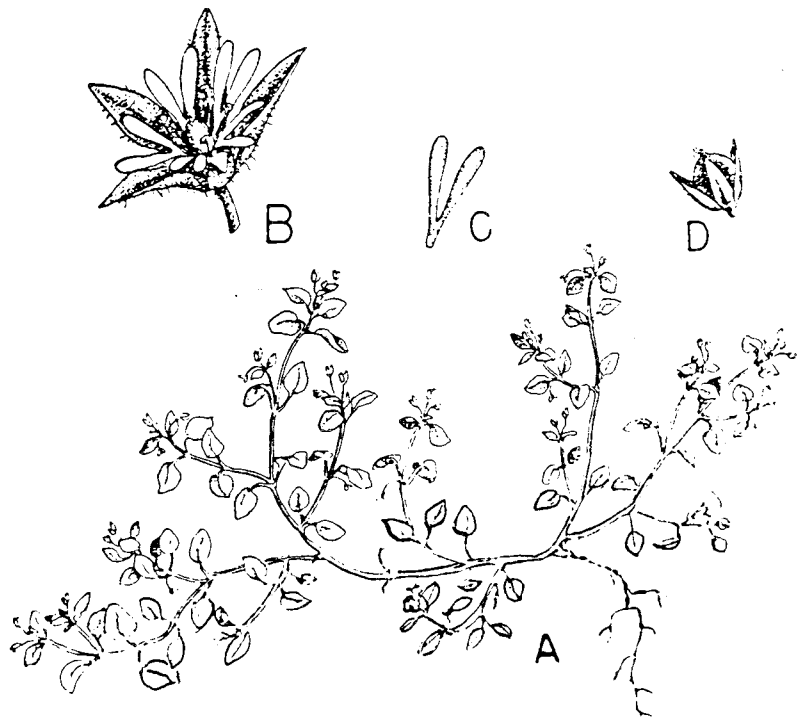


Stellaria media (L.) Vill. Common chickweed.

Common chickweed was introduced from Europe and has become a common weed of new lawns, gardens, around dwellings, and in fields. It is also a troublesome greenhouse weed.

Description--Common chickweed is an annual or winter annual with much-branched creeping or ascending branches with a conspicuous line of hairs on one side. The plants may root at the nodes and form mats. The leaves are broadly oval and pointed. Those on the lower part of the plant have definite stalks while those higher on the branches do not. The flowers are no more than 1/4 inch across, with petals somewhat shorter than the sepals. The capsules are many-seeded, extend beyond the sepals, and open by six teeth.

Common chickweed,
Stellaria media:
A, drawing showing
entire habit of
plant
B, flower;
C, an individual
two-parted petal
D, immature capsule
showing three stigmas
on top.



Centaurea cyanus L. Cornflower.

Cornflower is a native of the Mediterranean region that was introduced as a cultivated plant and is now widely established throughout the state in waste places around old settlements. Also known as bachelor's button.

Description--Cornflower is an annual or winter annual with stems up to 3 feet covered by woolly hairs in young plants. The plant gradually loses this tomentum on all parts, with the exception of the underside of the leaves. Small plants usually have narrow leaves with entire margins, while larger plants tend to produce toothed leaves or even a few with linear lobes. The lacerated bracts will identify this escapee. Flowers are in a head, usually blue, but a large population will show white, pink, or purple. Marginal flowers of the head are larger and more or less irregular.

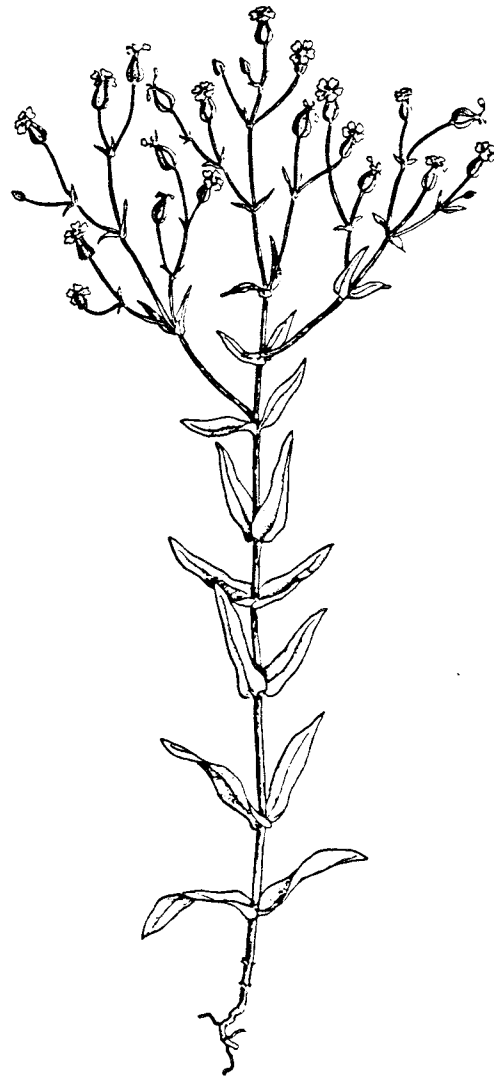
**Cornflower,
Centaurea cyanus:
plant and detail
of bract.**



Vaccaria pyramidata Medic. Cowcockle.

Cowcockle was introduced from Eurasia. It is a common weed in cropland and in waste places. The seeds are poisonous to livestock.

Description--Cowcockle is an erect, branched annual with stems up to 3 feet high. The leaves are opposite, somewhat limited at the base, and 3 inches long. The inflorescence consists of many flowers in the open and upper part of the stems. The sepals are united into a flask-shaped tube less than 1/2 inch long and distinctly five-ribbed. The five petals are pale red and toothed. The capsules open by four teeth and contain many roughened, dull, black seeds about 1/10 inch across.



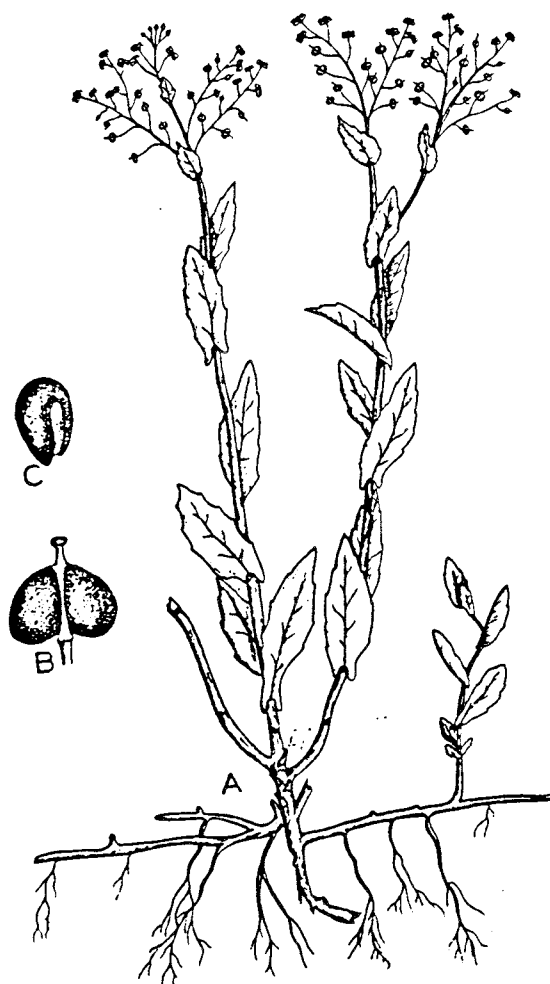
Cowcockle,
Vaccaria pyramidata:
annual plant showing
flowers

Cardaria draba (L.) Desv. Hoary cress. (Formerly called Lepidium Draba L.)

Hoary cress, also known as whitetop, was introduced into the United States from Europe about 50 years ago and has since become widespread in grain fields, cultivated fields, meadows, and waste places, particularly thriving in somewhat saline soils. It competes aggressively with other plants, forming dense, pure stands. Growing in extensive areas, its white flowers make it most conspicuous and easily recognized. Economically, Hoary cress is one of the most important of the noxious weeds of Idaho, and one of the most difficult to control.

Description--Hoary cress is a perennial, growing from extensive, coarse, underground rhizomes. The erect or spreading stems are 6 to 15 or 20 inches high, and are somewhat grayish in color, owing to rather dense hair covering. The large leaves may become 3 inches long; they are oval or oblong in shape and have entire or mostly coarsely toothed margins. The upper stem leaves are narrower, without petioles and are clasping. The flowers are numerous, small, and white, and are produced in a flat, broad inflorescence. As the pods mature, the flowering shoot becomes elongated. The mature seed pod is heart-shaped, usually inflated, and somewhat less than 1/4 inch broad. A single reddish-brown seed, which is a little flattened and about 1/8 inch long, is produced in each of the two cells of the pod.

Hoary cress,
Cardaria draba:
A, drawing showing
habit of plant (note
Perennial rootstock):
B, mature fruit;
C, seed.



Descurainia sophia (L.) Webb. Flixweed.

Introduced from Europe, Flixweed often occurs in abundance in waste places, grain fields, gardens, and roadsides.

Description--Flixweed is a winter annual with sparsely branched stems. The whole plant appears grayish green because of minute branched hairs. The leaves are finely divided into numerous narrow segments. The seed pods are somewhat longer than the spreading stalks. The seeds are in one row in each cell of the pod.

Several native tansymustards grow in Idaho and often become weeds in habitats similar to the above species. None of them have leaves as finely dissected as the introduced plant; at most they are once or twice dissected. Descurainia pinnata (Walt.) Britt., pinnate tansymustard, is a winter annual and has two rows of seeds in each cell of the pod; *D. californica* (Gray) Schulz has spindle-shaped pods (tapered toward both ends) and plants nearly destitute of hairs; *D. richardsonii* (Sweet) Schulz has cylindrical pods and minutely hairy herbage.

Flixweed,
Descurainia sophia:
drawing of an entire
plant. Note the finely
dissected leaves.

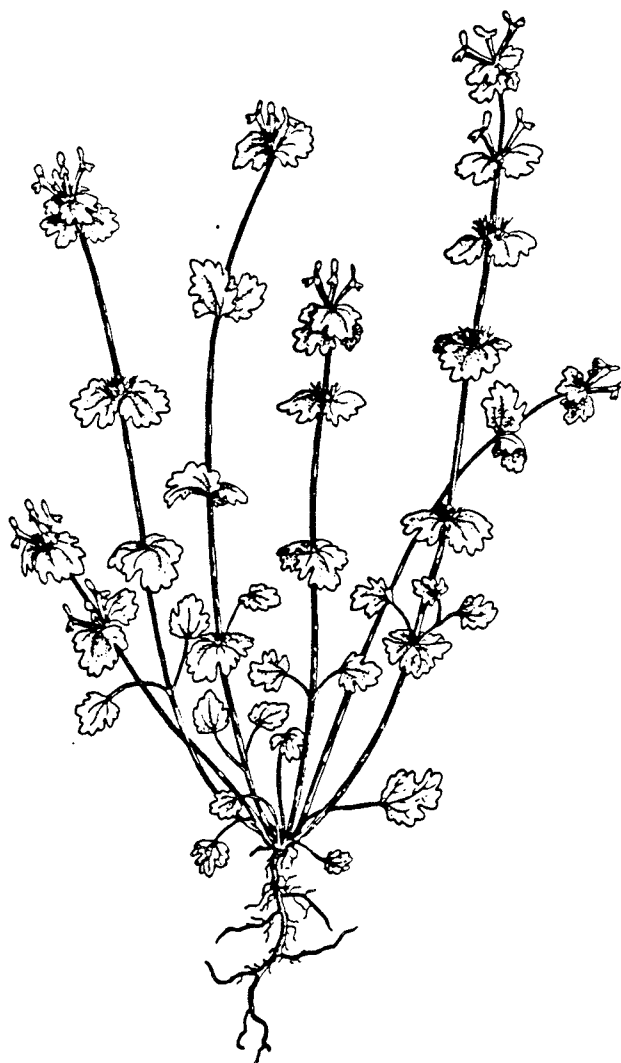


Lamium amplexicale L. Henbit.

Introduced from Europe, henbit becomes a weed in gardens, especially in rich soils.

Description--Henbit is an annual or winter annual 4 to 18 inches high with several four-angled stems arising from a somewhat decumbent base. The leaves are opposite with the veins radiating out from the base of the blade. The lower leaves have long stalks while the upper are stalkless and clasping on the stems. The showy purplish flowers are axillary in the upper stalkless leaves. The middle lobe of the lower lip of the corolla is spotted; the upper lip stands erect and is somewhat hairy.

Henbit,
Lamium amplexicaule:
drawing showing entire
plant.



Kochia scoparia (L.) Schrad. Kochia.

Kochia was introduced into this country from Eurasia. It superficially resembles smotherweed and occurs in similar habitats.

Description--Kochia is an erect annual that becomes much branched. The species is highly variable in color and form. Spherical and pyramidal plants in colors of varying green to reds are often grown in our gardens and escape from cultivation. The leaves are placed alternately on the stem and usually have a conspicuous hairy margin. The small flowers are in axillary clusters and the individual flowers have a five-lobed calyx that develops into wing-like appendages.

Kochia,
Kochia scoparia:
side stem and a small
part of the main stem.



Chenopodium album L. Common lambsquarters.

Common lambsquarters is a native of Eurasia that is common in gardens, waste places, and grain fields.

Description--This species is an annual from 1 to 6 feet high with ridged, green, or sometimes reddish-striped stems. Leaves are highly variable in shape but usually somewhat triangular in outline with coarsely toothed margins. The lower leaf surface is grayish green and densely covered with mealy particles. The small flowers are crowded in the leaf axils and at the stem tips. Each flower develops a tiny, single, shiny black seed that is often covered by a white papery envelope, the calyx. The seed has a coiled embryo.

Common lambsquarters,
Chenopodium album:
A, drawing of plant;
B, fruit surrounded by sepals.

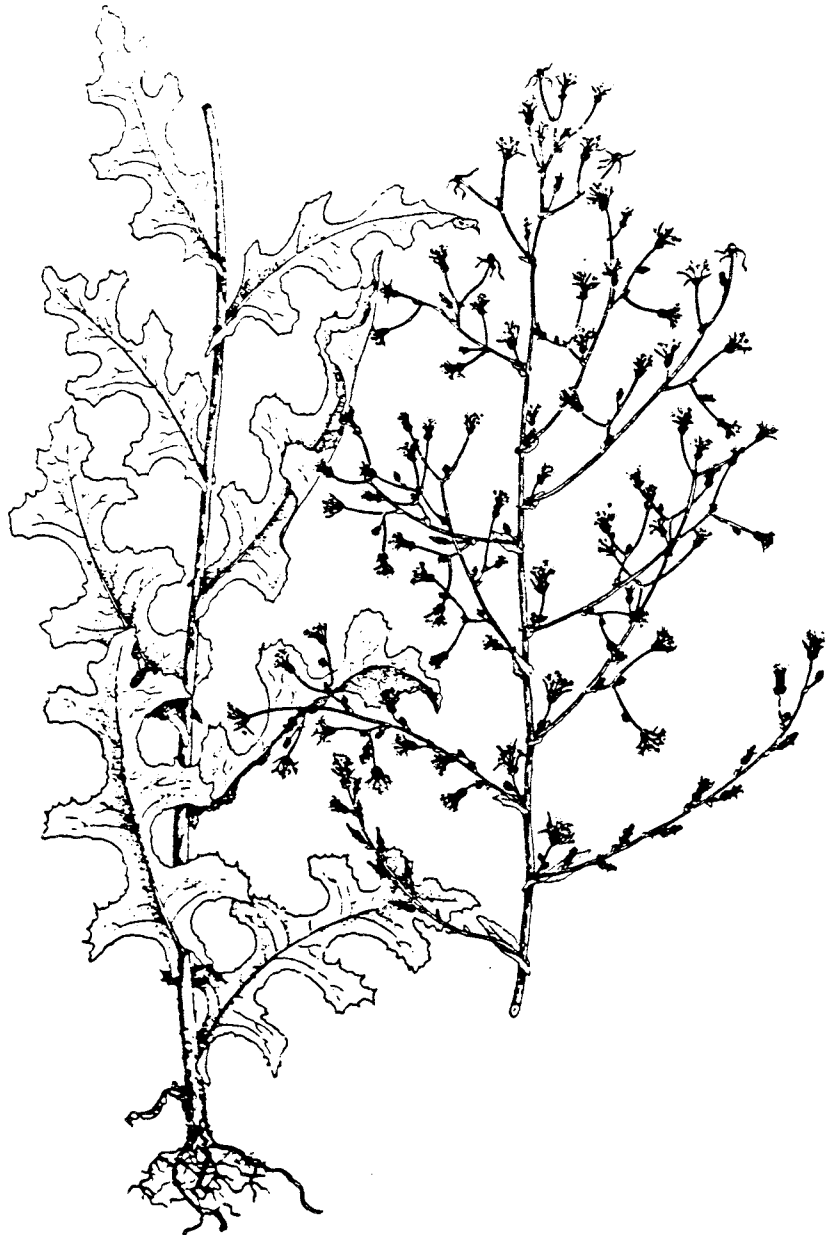


Lactuca serriola L. Prickly lettuce.

Introduced from Europe, prickly lettuce is a common weed of roadsides, waste places, gardens, and cultivated land.

Description--Prickly lettuce is biennial or winter annual with milky juice. The stems arise from a taproot and may vary in height from 1 to 5 feet. The leaves are alternate, deeply divided, and clasping the stem with pointed ear-like projections. The flowering heads are numerous, with bracts that elongate at maturity. The flowers of the head are all strap-shaped ray flowers, yellow and turn bluish with age. The seeds are roughened, contracted abruptly on top to form a beak with a parachute of bristles above.

Prickly lettuce,
Lactuca serriola:
drawing showing annual
habit of plant.



Chorispora tenella (Pall.) DC. Blue mustard.

Blue mustard is an introduction from Asia that is probably spreading faster in Idaho than any other mustard. It becomes abundant in grain fields, waste places, and along roadsides.

Description--This plant is an annual weed that has a disagreeable odor. The stems are branched from the base and 12 to 18 inches high. The flowers are showy with rose-purple petals. Blue mustard superficially resembles African mustard, but is readily distinguished by the seed pods that break into two-seeded segments, pods that have constrictions between the seeds, and a conspicuous beak about one-third the length of the pod.

Blue mustard,
Chorispora tenella:
drawing showing entire
plant with fruits and flowers.

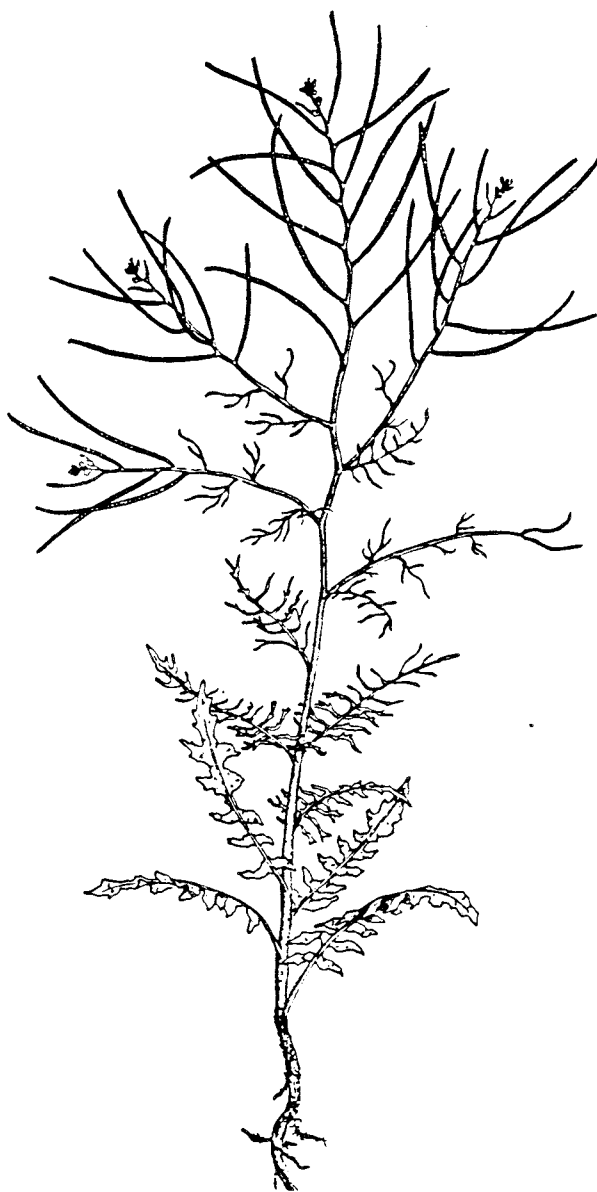


Sisymbrium altissimum L. Tumble mustard.

Tumble mustard is an abundant weed that was introduced into this country from Europe. It is found in grain fields, cultivated ground, and waste places.

Description--Tumble mustard is an annual or winter annual with stems from 3 to 4 feet high, often strongly spreading above. The leaves are deeply cleft and often with narrow segments, especially above. The seed pods are spreading stiff, cylindrical, from 2 to 4 inches long, and on short, thick stalks.

Tumble mustard,
Sisymbrium altissimum:
drawing of entire plant.



Thlaspi arvense L. Field pennycress.

Field pennycress is a common weed of grain fields, gardens, and waste places that was introduced from Europe.

Description--This weed is an annual or winter annual with erect stems to 18 inches high that become branched above. The stem leaves are somewhat clasping and stalkless. The flowers are white and showy. The seedpods are nearly spherical in outline, strongly winged, notched at the top, and each cell contains two to eight seeds.



Field pennycress,
Thlaspi arvense:
drawing of entire plant
showing winged fruits.

Amaranthus retroflexus L. Redroot pigweed.

Redroot pigweed is probably native in tropical America. It is so widely distributed throughout the world that its origin and history of spread are obscure. Dense stands are usually found in cultivated fields and especially so on well-manured soils. Toxic amounts of nitrates may be stored by plants growing in fertile soils.

Redroot pigweed is a coarse, erect annual from 2 to 3 feet high with reddish taproots. The leaves are long-stalked, dull green; the lower surface has prominent light-colored veins. The flowers are numerous, green, crowded into dense terminal spikes and also in the leaf axils below. Each flower is enclosed in three bracts that produce the bristly appearance of the spike. The seeds are a shiny black and no more than 1/23 of an inch broad.

Redroot pigweed,
Amaranthus retroflexus:
drawing showing annual
habit of plant (note thick,
heavy spikes).



Capsella bursa-pastoris (L.) Medic. Shepherdspurse.

Shepherdspurse is a European plant that was introduced into this country more than 250 years ago. It is widely distributed in Idaho and is a common sight around dwellings, waste places, and gardens.

Description--Shepherdspurse is an annual or winter annual. Robust plants become much branched and often reach heights of more than 3 feet. Basal leaves often occur in dense rosettes and vary considerably in form, from deeply cleft to nearly entire. Stem leaves are also variable in form, but are always stalkless and clasping with ear-like projections. The flattened pods are about $\frac{1}{4}$ inch long, triangular in outline, and notched on top. The seeds are orange-yellow, $\frac{1}{25}$ of an inch long, and about 20 per pod.

Shepherdspurse,
Capsella bursapastoris:
drawing showing entire
plant with fruits and
flowers.



Sonchus oleraceus L. Annual sowthistle.

This plant is a weed from Europe. Annual sowthistle is a weed of cultivated fields, gardens, and waste places.

Description--Annual sowthistle is an annual with milky juice. The stems arise from a short taproot and rarely exceed 3 feet in height. The leaves are usually divided into lobes and clasping on the stem and only slightly prickly on the margins. The ear-like projections on the clasping leaves are sharply acute. The flower heads are less than one inch across, downy white at the base when in bud. The flowers are yellow, only strap-shaped ray flowers present. The seeds are cross-wrinkled and obscurely ribbed.

Annual sowthistle,
Sonchus oleraceus:
A, upper part of
plant showing deeply
dissected leaves;
B, seed showing obscure
ribs.

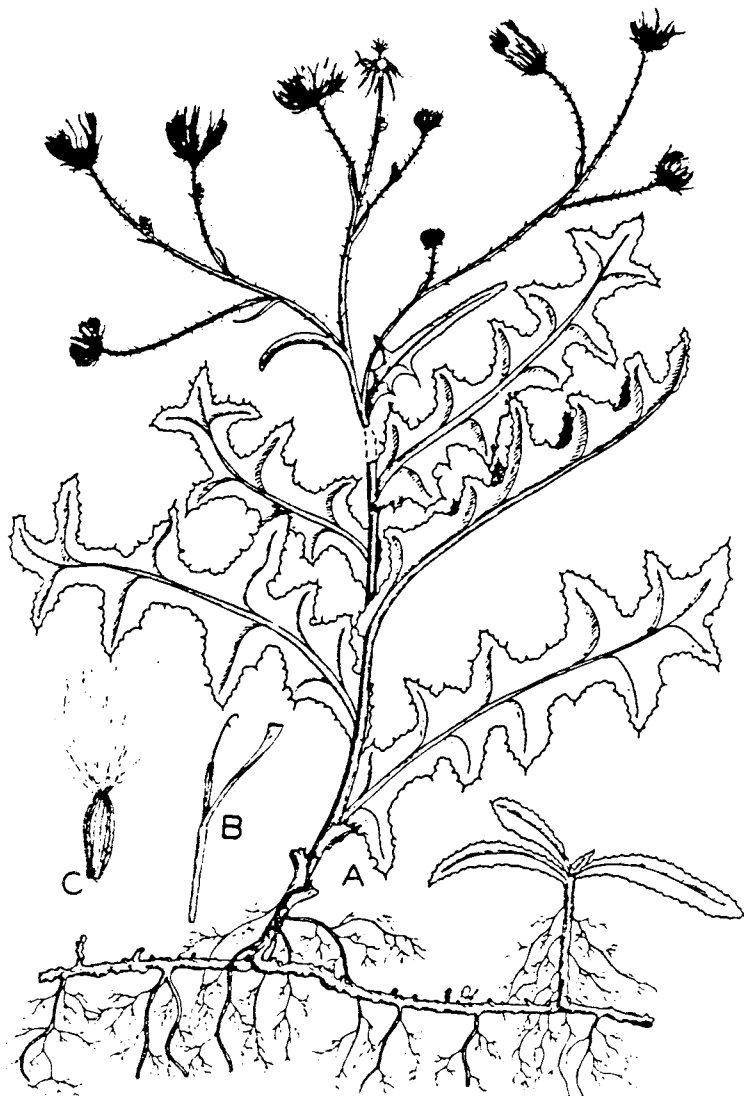


Sonchus arvensis L. Perennial sowthistle.

Introduced from Europe, perennial sowthistle is common in gardens and cultivated areas. There is little difficulty with this plant as a weed on poorer soils.

Description--Sowthistle is a perennial from a spreading, horizontal rhizome. The stems are mostly from 2 to 4 feet tall, succulent, and produce a milky juice as do the leaves. The leaves are large with clasping bases, and large, backwardly directed teeth, the margins finely and weakly prickly-toothed. The heads of yellow flowers are borne in flattened inflorescences. The branches of the inflorescence and the base of the heads are usually conspicuously covered with large, glandular hairs but may be non-glandular. All flowers are similar, the corolla is narrowly strap-shaped, and tubular only at the base. Numerous seeds (achenes) usually mature. They are coarsely five-ribbed, wrinkled, somewhat under $\frac{1}{4}$ inch long, and are surmounted by a crown of soft, white bristles.

Perennial sowthistle,
Sonchus arvensis:
A, drawing showing
plants arising from
underground rootstock;
B, single flower;
C, seed.

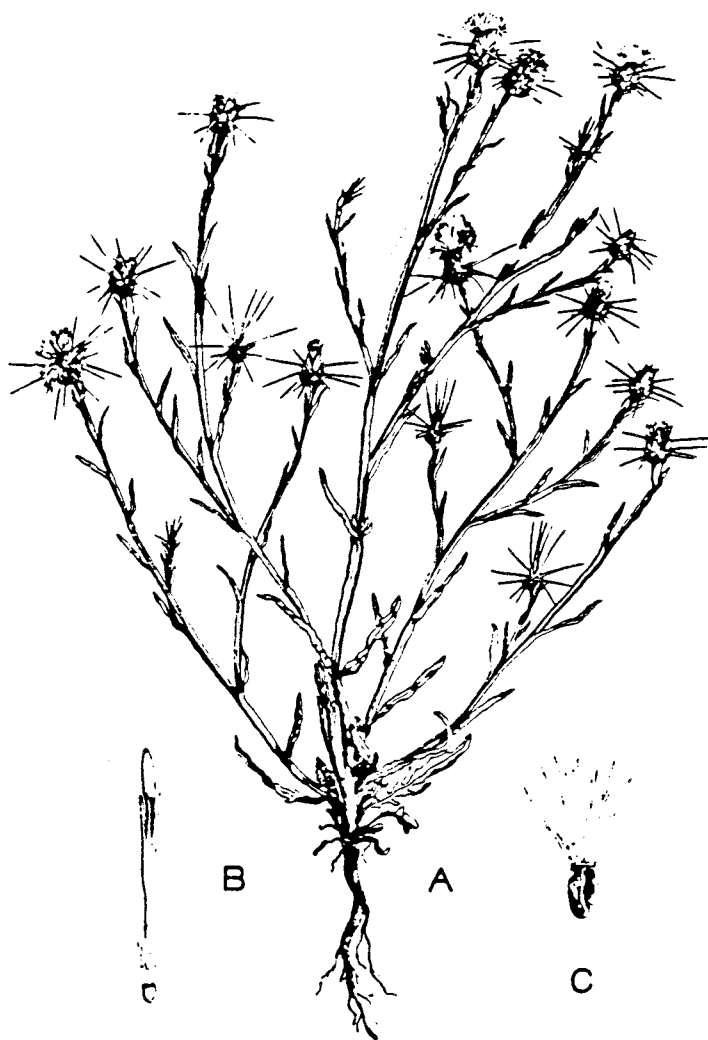


Centaurea solstitialis L. Yellow starthistle.

Yellow starthistle is becoming widespread in Idaho. It is a woolly annual that reproduces entirely by seeds. A native of Europe, it is closely related to the cornflower and Russian knapweed. This species has recently been introduced and it is likely that it will become a serious pest.

Description--The plant becomes much branched from the base and reaches a height of 12 to 20 inches. The leaves are alternate and extend down below the point of insertion, thus making the stem appear winged. The lower leaves are smooth-margined or sometimes with few teeth. The flowering heads are solitary on the ends of the branches and yellow in color. The bracts of the flowering head overlap like shingles. They terminate in stiff, yellow spines, which are frequently an inch long.

Yellow starthistle,
Centaurea solstitialis:
A, drawing showing annual
habit of plant;
B, single flower;
C, seed.

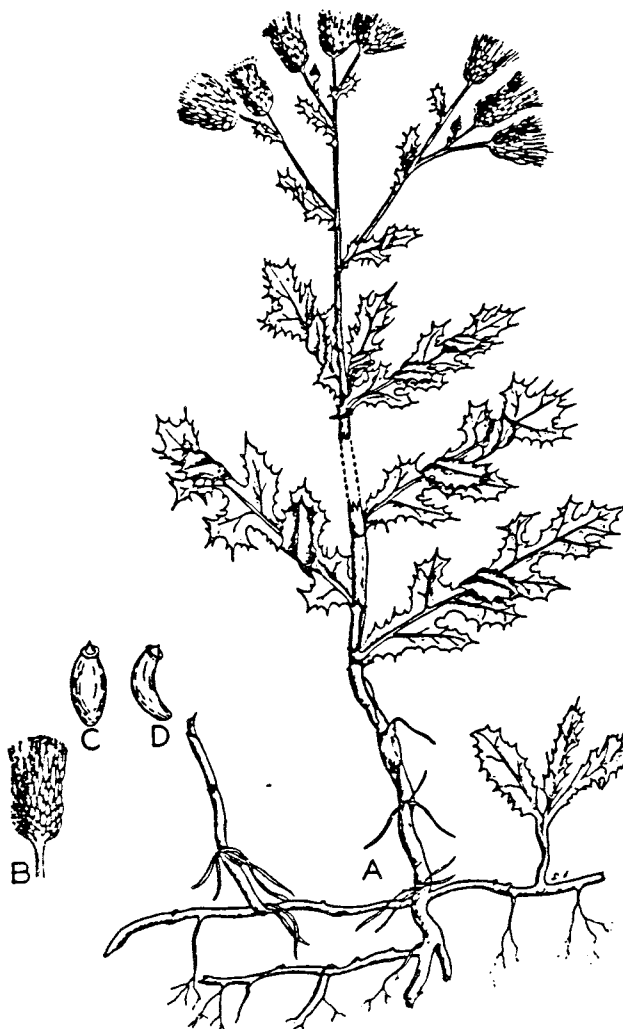


Cirsium arvense (L.) Scop. Canada thistle.

Canada thistle was early introduced into America from the Old World, and is now widely spread throughout the cooler portion of North America. Having become common and persistent, it is one of the more serious weeds of the state; it occurs in heavier, moister areas in pastures, along irrigation ditches, and low-lying fields.

Description--Canada thistle produces extensive coarse and branching rhizomes which give rise to numerous stems from 1 to more than 4 feet tall. The leaves are alternate, lanceolate, or oblong in outline, strongly and irregularly lobed with spiny-toothed margins. The small, tubular, usually purple flowers are aggregated in heads which are about $\frac{1}{2}$ inch across and which are arranged in a flat-top inflorescence. The heads (commonly mistaken for a single flower) of a single plant produce only one kind of flower, male or female. Female flowers (and plants) produce seeds (achenes) which are about $\frac{1}{4}$ inch long, flattened, smooth, brown, and oblong in shape. The crown of plumose bristles borne on the summit is naturally shed as the achene reaches maturity.

Canada thistle,
Cirsium arvense:
A, drawing showing habit
of plant;
B, head consisting of
numerous flowers;
C, and D, seed in
different views.



Salsola kali L. var Tenuifolia Tausch. Russian thistle.

Introduced from Eurasia, Russian thistle often occurs in abundance in abandoned fields, along fence rows, and highways.

Description--Russian thistle is an annual with many spreading or erect branches that are often reddish-striped. The leaves are tipped by a sharp point, narrow, and flattened on the upper side. The inconspicuous flowers are found in the leaf axils. They have five papery sepals that become winged at maturity. Each flower is situated in a depression formed by a leaf base and two rigid spine-tipped bracts. The coiled embryo of the seed can be seen through the transparent seed coats.

Russian thistle,
Salsola kali
var. *tenuifolia*:
A, drawing of plant showing
annual habit;
B, flower.

