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How to Use A Plant Identification Key

Plants can be identified by means of keys based on plant characteristics, frequently the flower. Keys enable the user to distinguish one species of plant from another. However, a single key to all flowering plants would be so cumbersome it would be impractical to use. Thus plant manuals ordinarily contain keys for identification of only those plants found in a given area along with detailed descriptions of the plants. Select a manual covering the particular region where a plant is found.

The Key and Its Use

Keys present the user with questions about the plant. Each answer eliminates plants other than your specimen until the only choice left is the name of your plant. You make a series of "either-or" choices. A plant belongs in either the first or second choice. After this decision is made, you make another "either-or" choice. The process continues until the last choice brings you to the name of the plant.

The choices are guided by paired numbers. *It is important in every case to read both choices before deciding.* If you make the wrong decision, further choices will often end in a blind alley or with some other plant which has characters obviously not like your specimen. In such cases, start over.

In a few cases, a given species of plant may fit into two contrasting parts of the key. Where this is most likely to happen, the key has been designed to guide you to the correct name by putting the plant in both parts. If you have difficulty deciding whether a plant does or does not have some characteristic, you may have to look at several plants before deciding.

Many people identify plants by their common name only, however, plants also have scientific names. For example, the scientific name for corn is *Zea mays,* the scientific name for alfalfa is *Medicago sativa,* and the scientific name for tall fescue is *Festuca arundinacea.*

The scientific name is the same wherever the plant is located. Common names often vary from one country to another and even between areas of the same country. The plant we call corn *(Zea mays)* is known as maize in Britain. Corn in Britain refers to wheat or other small grains such as barley. What is commonly referred to as lotus in Oregon is known as birdsfoot trefoil *(Lotus corniculatus)* in most other parts of the U.S. The use of common names alone can lead to serious misunderstandings.

By common consent of the botanists of the world, Latin has been accepted as the language for scientific plant names. Since it is not a spoken language it does not change, and it is understood by all scientific workers.

The scientific name of any plant consists of two words. The first or "genus" name is always capitalized. The second or "species" name is written with a lower case initial letter. The genus name corresponds roughly to our last name and the species to our first name, as *Zea mays* would to Brown, John. The scientific name may be followed by the abbreviation of the name of the person who first named the species. *Zea mays* L. means that this species was named by the great Swedish botanist Linnaeus.

The species is regarded as a group of closely related individuals, such as brothers and sisters. Species that are different but related by descent are grouped together in a genus. We might think of this as the cousin relationship. Just as related species are grouped into genera, so related genera are grouped into families, such as relatives are grouped in a family tree. This grouping continues through several more steps but is beyond our purpose.

The first step in identifying a plant is to determine the major group or family to which it belongs. Do this by using a key to families. When the plant is keyed to a family, read the description of that family to determine if the plant fits the description.

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If the family description corresponds with your plant, continue with your key to a particular plant name. Turn to the illustrations or descriptive material for comparison when you have made a tentative identification.

Keep these points in mind when using a key:

- Read both choices given, for although the first choice may seem good, the second may be better.
- Be sure you understand the terms; consult a glossary rather than guess at a meaning.
- Use a hand lens or microscope to be certain of the exact structure of any small characters mentioned.
- When measurements are required, make them accurately.
- Once you have arrived at a name in the key, read the description carefully to be certain that the unknown plant corresponds with the description.

The most acceptable type of key is probably the *dichotomous key,* since it gives only two choices at each point. It is much easier to use than one having several choices. There are two principal types of dichotomous keys, *indented* and *bracketed.* The following are examples of each type.

Example of an *indented* key

1a. Leaves parallel-veined ..... GRAMINEAE
1b. Leaves pinnately- or palmately-veined
  2a. Stamens, more than 10 ..... ROSACEAE
  2b. Stamens, 10 or fewer
    3a. Ovary superior
      4a. Petals not all of the same size and shape ..... LEGUMINOSAE
      4b. Petals all of the same size and shape ..... CARYOPHYLLACEAE
    3b. Ovary inferior
      5a. Flowers in umbels; anthers not united ..... UMBELLIFERAE
      5b. Flowers in heads, surrounded by a cluster of bracts; anthers united ..... COMPOSITAE

Example of a *bracketed* key

(1) Leaves parallel-veined ..... GRAMINEAE
(1) Leaves pinnately- or palmately-veined ..... (2)
(2) Stamens, more than 10 ..... ROSACEAE
(2) Stamens, 10 or fewer ..... (3)
(3) Ovary superior ..... (4)
(3) Ovary inferior ..... (5)
(4) Petals not all the same size and shape ..... LEGUMINOSAE
(4) Petals all the same size and shape ..... CARYOPHYLLACEAE
(5) Flowers in umbels; anthers not united ..... UMBELLIFERAE
(5) Flowers in heads, surrounded by a cluster of bracts; anthers united COMPOSITAE

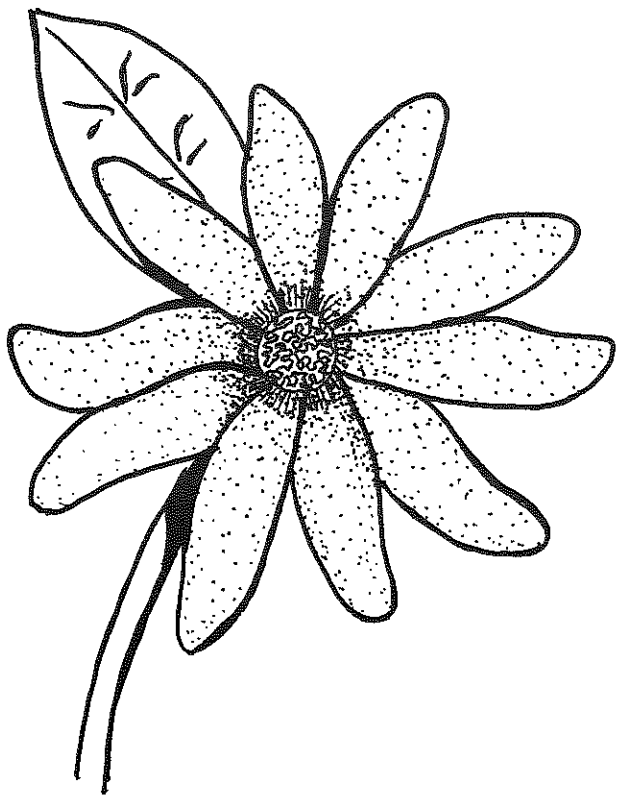
Using Simple Cereal and Legume Keys

Two simple indented keys follow. They illustrate the use of a key. The first is based on the foliage characteristics of the most common cultivated legume crops. The second is based on the foliage characteristics of the cereal crops. To use the keys you must understand the technical terms found in 4-H 1006, *Plant Identification Illustrated Glossary.*

Certain guidelines must be followed. First, you must realize that these keys are designed for identifying cultivated plant species grown in Oregon. Therefore the keys are limited to use on cultivated cereal and legume crops. Do not attempt to use these keys to identify uncultivated or wild species found along roadsides or in your yard.

A second guideline relates to the stage of plant maturity at the time of identification. With the legume key, only the foliage characteristics are necessary. For the cereals, the final separation between wheat and the two barley types requires that the heads be emerged.

These two simple keys are designed to show you how to use plant identification keys. They are considerably shortened in length and use a minimum of technical terms, so you can concentrate on the principles involved in the use of keys, while becoming more familiar with the plant species concerned. We suggest that you key each species several times before continuing, and become familiar with the characteristics used in the keys.



Key to Legume Foliage Identification

1a. Four or more leaflets
  2a. Five leaflets, tendrils absent
    3a. Not hairy on leaflets and petiole, pointed leaflets ..... Birdsfoot trefoil *(Lotus pedunculatus)*
    3b. Hairy on leaflets and petiole, blunt leaflets ..... Big trefoil *(Lotus uliginosus)*
  2b. More than five leaflets, tendrils present
    4a. Broad leaflets, tip square (⌐¬) or notched (⌒); stems and leaves relatively smooth (not hairy) ..... COMMON VETCH *(Vicia sativa)*
    4b. Narrow leaflets, tip rounded (∩); stems and leaves of some plants may be hairy ..... HAIRY VETCH *(Vicia villosa)*

1b. Three leaflets
  5a. Pubescence on petiole
    6a. Stipules rounded at tip, no water mark on leaflets ..... Crimson clover *(Trifolium incarnatum)*
    6b. Stipules tapering or narrowing to a fine point
      7a. Stipules with purplish veins, most plants with water mark on egg-shaped leaflets ..... Red clover *(Trifolium pratense)*
      7b. Stipules not purplish veined, no water mark on heart-shaped leaflet ..... Sub clover *(Trifolium subterraneum)*
  5b. No pubescence on petiole
    8a. Creeping stems
      9a. Stipules membranous, completely clasping the stem ..... White clover *(Trifolium repens)*
      9b. Stipules large, erect, tapering evenly to a point ..... Strawberry clover *(Trifolium fragiferum)*
    8b. Erect stems
      10a. Width of leaflet more than half the length, margin serrate throughout ..... Alsike clover *(Trifolium hybridum)*
      10b. Width of leaflet less than half the length.
        11a. Two-thirds or more of the leaflet margin serrate ..... Sweetclover species *(Melilotus* species)
        11b. Outer one-half or one-third of the leaflet margin serrate ..... Alfalfa *(Medicago sativa)*

Key to Cereal Identification

1a. Leaves 25.4 mm (1 inch) or more in width; with a tassle at end of main stalk ..... CORN *(Zea mays)*
1b. Leaves less than 25.4 mm wide; no tassle at end of stalk
  2a. Auricles absent; spikelets in an open arrangement (stalked) ..... OATS *(Avena sativa)*
  2b. Auricles present; spikelets sessile (not stalked) and closely compact
    3a. Auricles hairy (pubescent); one spikelet per spike joint ..... WHEAT *(Triticum species)*
    3b. Auricles not hairy
      4a. Auricles not clasping; one spikelet per spike joint ..... RYE *(Secale cereale)*
      4b. Auricles clasping; three spikelets per spike joint ..... BARLEY *(Hordeum* species)
        5a. Six distinct longitudinal rows of kernels on spike; three fertile florets per spike joint ..... SIX-ROWED BARLEY *(Hordeum vulgare)*
        5b. Two distinct longitudinal rows of kernels on spike; one fertile floret per spike joint ..... TWO-ROWED BARLEY *(Hordeum distichum)*

References

The cereal and legume keys in this publication are limited to only the most common plants. Other publications are available. If you cannot identify your plant specimen from these keys, or if you are interested in more advanced identification keys, the following manuals will be of value:

Gilkey, Helen M. and La Rea D. Johnston. 1975. Handbook of Northwestern Plants. Oregon State University Book Stores, Inc., Corvallis, Oregon.

Hitchcock, C. Leo and Arthur Cronquist. 1973. Flora of the Pacific Northwest. University of Washington Press, Seattle, Washington.

Peck, Morton E. 1961. A Manual of the Higher Plants of Oregon, 2nd ed. Binfords and Mort, Portland, Oregon.

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