

Taxonomic Keys

For plant exploration, a large amount of specimens are assembled and this collection is further needed to place a specific location in Herbarium. For this a proper identification of these plant specimens is needed. First of all identification has to be done at family level

but thereafter it needs to go to the genera, species, and varietie etc. Initially botanists

compared the plant specimens with previously determined material which is harmful for the herbarium sheet, to present this damage some botanists prepared keys and provided with floras and manuals. Some botanists who prepared keys, especially for the identification of plants, are Davis and Cullen (1965), Hutchinson (1967), Saldanha and Rao (1974) and Naik (1977) etc. According to Davis and Heywood (1963), the main object of the key is identification of plant specimen and save the time to separate it from the different group by using one or two easily observable characters.

The keys are categorized in two types Punched card keys and Dichotomous keys. The Punched card keys are generally used for schools and college students which is an interesting learning exercise for taxonomic problems and identification but for the further study purpose, the dichotomous keys are used by most of the botanists.

Punched card keys: These keys are made up by cards of suitable size with the name of all taxa (all families, genera and species) printed on card for the identification of the taxa which is present in keys. Every card is given a number and one character printed near one of the corners. All the taxa showing this character are indicated by a perforation in front of their name and those do not have that character are without any perforation. So there are as many as cards as the characters chosen for the purpose. The plant specimen identified shows that only card which possessed character by the specimen for its recognition. Characters combination present in specimen will allow only one perforation through, in which the set of card selected. The specimen is then identified in belonging family by which the cards indicate the perforation.

Dichotomous key: These types of keys consist of pair of contrasting characters and each statement of which leads to recognition of taxa. The leads are numbered and both begin with the same word as far as possible. The character which used for key preparation should be easily observable and constant. Qualitative characters are preferred over quantitative characters. In closely related taxa with overlapping characters, it is useful to user more then one contrasting character so that the combination of character areconidered to decide the similarity or difference between the taxa. The following two examples were presented for the **dichotomous keys**:

1. The bracket or parallel key

In the bracket or parallel key, the two leads of the characters are always next to each other in successive lines on the page. At the end of each line there is a name or a number referring to character later in the key. An example of the bracket or parallel key to eight genera is showen below:

Bracket or parallel Key

1. Aquatic herbs; leaves alternate, corolla lobes

- Induplicate valvate in bud..... 1. *Limnamthemum*
 1. Terrestrial herbs; leaves opposite, corolla lobes
 Induplicate valvate in bud..... 2.
 2. Ovary with 2 celled 2. *Exacum*
 2. Ovary with 1 celled..... 3.
 3. Corolla lobes eglandular at the base..... 4.
 3. Corolla lobes with one or two glandular
 Nectaries each at the base..... 8. *Swertia*
 4. The corolla regular 5.
 4. the corolla irregular 7.
 5. Style linear 6.
 5. Style very short or absent 5. *Gentiana*
 6. Flowers in sessile axillary clusters 3. *Enicostema*
 6. Flowers in dichotomous cymes..... 4. *Erythraea*
 7. Flowers yellow; stigma subentire..... 6. *Hopea*
 7. Flowers pink or white; stigma deeply
 2-lobed..... 7. *Canscoria*

2. The indented or yoked key

The indented or yoked key is widely used for taxonomic literature. In this type of key, the collateral leads of a character are arranged in yokes and each lead is identified by a number of letters. Each of the consecutive characters is indented at a fixed distance from the margin of the page. An example of the indented or yoked key for eight genera of the Gentianaceae from a geographical region is given below:

Indented or Yoked Key

1. Aquatic herbs; leaves alternate; corolla lobes induplicate valvate in buds..... 1. *Limnathemum*
 1. Terrestrial herbs; leave opposite; corolla lobes contorted in bud
 2. Ovary with 2 celled..... 2. *Exacum*
 Ovary with 1 celled.....
 3. Corolla lobes eglandular at the base
 4. The corolla regular
 5. Style linear
 6. Flower in sessile axillary clusters 3. *Enicostema*
 6. flowers in dichotomous cymes 4. *Erythraea*
 5. Style very short or absent 5. *Gentian*
 4. the corolla irregular
 7. Flower yellow; stigma subentire..... 6. *Hopea*
 7. flowers pink or white; stigma deeply
 2-lobed..... 7. *Canscora*

3 – corolla lobes with one or two glandular

Nectaries each at the base 8. *Swertia*

Advantages and Disadvantages of indented and Bracket Key

There are advantages and disadvantages of each of these two types of dichotomous keys. The advantage of the indented key is that the similar elements are grouped so that they can be seen visually and this makes the identification easier. On the other hand, in the indented key the lines become indented for each character, the lines shortening from the right. This can be uneconomical since more page space is required. In bracket key the group of similar element is not immediately apparent as there is no opportunity to group similar elements having one or more characters in common. However, the bracket key make good use of page space as all leads are approximately of the same length as only alternate couplets indent. Some authors even do not indent alternate couplets and all couplets have a common margin at the left of the page.