Begonia Registration Handbook

written and illustrated by Brad Thompson

Foreword and Acknowledgments

This guide was prepared to make the begonia registration process more easy to understand. This is accomplished with illustrations, examples, and detailed descriptions to show how to fill out the form. This guide is designed to be easy to use by anyone from the complete novice to someone who already has an understanding of the scientific terms. By following the steps outlined and using the illustrations for comparison, anyone should now be able to complete the ABS registration form. This guide is in binder form so that updates and additions can be added periodically.

Many hybridizers have desired to register their hybrids but were hindered by the complexity of the registration form. Until now, finding the correct terms to use, and knowing what items the form required, could be a daunting task. It is hoped that by having this information together in this guide that more hybridizers will begin to register their hybrids.

This guide is only part of a planned hybridizer's handbook which will contain this guide and many more parts to aid persons interested in hybridizing begonias. The eventual handbook will probably contain this guide, work sheets for records keeping, hybridizing information, a computerized version of the registration form that can be filled out on your computer, and the John Ingle's Memorial Checklist, both in printed and computer database form. The part of this guide that deals with describing begonias at this time only lists and describes terms needed for the registration form. In the future it will be expanded to include all terms needed to describe begonias in scientific terms. That is my eventual aim. Any suggestions you have for future additions will be appreciated.

I wish to thank **Freda Holley** for being a sounding board and for many helpful suggestions in preparing this guide. I also wish to thank **Ruth Pease** for inspiring me to actually start working on this guide. It had been planned for several years but it was Ruth's prodding that got me going on it finally. I can't forget to also thank **Gene Salisbury**, ABS Nomenclature Director, who thought this guide was needed, who encouraged me to write it, and who acted as a consultant. Last I would like to thank all the other helpful begonia enthusiasts over the years that have shared their knowledge with me. The list is too long to list them all, that would require a whole other book.

The terms and descriptions used in this guide were gleaned from the writings of **Jack Golding** as they appeared in the ***Knickerbacker News***, Newsletter of the Knickerbacker Branch of ABS. Terms were also gleaned and referenced from ***Begonias, The Complete Reference Guide*** **by Mildred L. Thompson and Edward J. Thompson** published by Times Books.

American Begonia Society

Begonia Registration Handbook

written and illustrated by Brad Thompson

This handbook contains all the information needed to complete the official ABS registration form. It contains a copy of the registration form, detailed instructions, examples and terms, illustrations showing the various parts and terms, and an example of a completed form for reference. Any errors you notice or clarifications you would like to suggest can be sent to the Nomenclature Director for ABS who will forward the suggestions to the author of this guide for future updates.

Rules for naming and registering a begonia.

1. Name must be original. You can't use a previously used name on a begonia you wish to register. Even if the name wasn't previously registered, if the name is found to have been used and published in various official publications it will be disqualified. You may find it useful to purchase a copy of the John Ingles Memorial Checklist from the ABS bookstore to help determine whether your name is original. If the plant has already been circulated under an illegal name or previously used name you can still register the plant. For example if I wanted to register B. 'Josephine'. I discovered after circulating the plant that the name B. 'Josephine' had already been used. To register the plant I could change the name to B. 'Brad's Josephine' and list B. 'Josephine' in the synonym blank.

2. The name must be no more than three words long. Abbreviations count as a word. Preferably names should consist of one or two words.

3. An initial article such as the word "the" should not be used. For instance you shouldn't name a begonia 'The Whispering Wind' or 'A Nice Day'.

4. Don't combine latin names or use latin sounding names. Combining the species names of parents to coin a new name is not allowed. Names must be in modern language.

5. Avoid using terms such as "reddest" or "tallest" since these terms are arbitrary and can change with time.

6. Hybrid names are written B. for begonia followed by the name in single quotation marks such as B. 'Looking Glass'.

7. Use names that are distinctive and won't be easily confused with other similar names. For instance if there is a B. 'Black Cat' you shouldn't name a begonia B. 'Black Cats'. Although technically you came up with a new name, it adds to confusion between names and shouldn't be done. Also avoid using overly long names.

8. If you want to register a plant for someone else you must have their permission.

9. Any questions about rules should be referred to the Nomenclature Director for ABS. The American Begonia Society is the official registrar for begonias and follows the rules given in "The International Code of Nomenclature of Cultivated Plants".

10. The fee for registering a begonia is currently $2.00 per form. If you send more than one form to the Nomenclature Director you need to include $2.00 for each form. Check with the Nomenclature Director to be sure there has been no price change since this guide was published.

American Begonia Society **Sample Form**

Begonia Registration Record

Type _____

File Number _____

Name of Cultivar B. 'Brad Begonia'

Originator Brad Thompson

Synonym (if any) _____

Address 2436 W. Lomita Bl. #1
Lomita, CA 90717

Cultivar Development:

Year Developed 1990

Year of first bloom 1991

Year first distributed 1992

Date of any previous publication none

Name of publication _____

Derivation:

Hybrid X Chance Seedling _____

Mutation or Sport _____

If mutation give parent's name _____

And how many times propagated _____

Parents or Parent:

Seed parent B. 'Mother Begonia'

Pollen parent B. 'Father Begonia'

Description of Cultivar

*(**Circle** applicable items or list other characteristics)*

Plant Growth:

Cane-like - Superba, Mallet, All others (describe if neccessary)

_____

Height at maturity _____

S**hrub-like**- Bare-leaved, Hairy-leaved, other (describe)

_____

Height at maturity_____

Rhizomatous- Creeping, Erect, Jointed at or below the soil, distinctive foliage, other (describe)_____

_____

Size: miniature, small, medium, large_____

Thick-stemmed- brittle, woody, thickset, other (describe)_____

_____

Height at maturity_____

Rex Cultorum- creeping, erect, other (describe)_____

_____

Size: miniature, small, medium, large_____

Semperflorens-

Height at maturity_____

Trailing/Scandent- bare-leaved, hairy-leaved, other (describe)

_____

Length at maturity_____

Tuberous- dregei/semi-tuberous type, bulbous, Heimalis, Cheimantha, tuber hybrida, other (describe)_____

_____

Height or length at maturity_____

Leaves:

Color Dark bronze, slight purple cast

_____

Shape- (describe) cordate base, cupped, obicular, sharply acute apex

Dimensions 5 1/2" x 4 1/2"

Margin- (describe) double serrate, cleft, (seven clefts)

_____

Surface- (describe) slightly bullate

_____

Main Veins (number) 8

Petioles- length 4 1/2" Color red Hairs none

_____

Stipules- Length 3/4" Width 3/4" Color green

Type- marcescent, reflexed, scarious

Flowers:

Color- tepals white ovary white & green

Shape of tepals ovate

Diameter of flower- Male 1/2" Female 1/2"

Number of tepals- Male 4 Female 3

Size of flower cluster (amount) Male 18 Female 30

Ammount of clusters (many,) few, solitary

Length of flower peduncle (stalk) 8 1/2"

Season of bloom spring

Describe unusual characteristics,(hairy, double, etc)

flower tepals have red specks

Description: Describe how this begonia differs from others of its type, how it is to be distinguished from begonias now in cultivation, especially from its parents and others closely related or similar. Basically, how can one recognize this plant. very unusual shade of bronze coloring to the leaves. very heavy bloomer, flowers uniquely speckled with red. very easy to grow and sturdy.

Additional Information

This variety has been inspected or tested (circle one) and recommended for registration by: (only one listing is required)

Name Some Friend Address her address

Name Some Friend Address her address

Name Address

Description prepared by:

Name Brad Thompson Address 2436 W. Lomita Blvd. #1

Lomita, CA 90717 Date prepared 1-10-02

Indicate if photographs, drawings, or herbarium specimens are being submitted (at least one type is neccessary)

photo enclosed

If begonia variety is available to the trade, furnish name and address of propagator:

Name Kartuz Greenhouses Address his address

Any additional comments (use this space for any additional info or comments)

Date registration applied for 1-20-02 Signature of registrant Bradley S. Thompson

Date registration approved Approved by

ABS Nomenclature Director

How To Use This Guide

This guide has all the descriptions, examples, illustrations, and definition of terms needed to complete the ABS Registration Form to register begonia hybrids. If you don't have a blank form, one is provided for you to make copies from. On the preceding two pages is a sample pre-filled form for you to make reference to.

The first part of this guide goes step by step through each line of the registration form. It explains what information you need to provide for each part.

The second part of this guide is illustrations with the various terms needed to describe the various leaf and flower parts. It also has illustrations to show where the various parts are located and their scientific names.

The third part shows an example of a scanned leaf and how you would describe it using the various illustrations and terms.

The final part of the guide is a glossary of all the botanical terms with clear definitions of what they mean for reference. It contains additional terms that may not be illustrated or listed in other parts of this guide.

Also included in this guide is a work sheet that you can make copies of. This work sheet is something you can keep around the garden in a binder or clipboard to record the various measurements and counts required in the form for your various hybrids. This way you'll have that information handy for when you're ready to complete the registration form. Many times you are in the mood to fill out the form only to find your plant isn't in bloom or has only female flowers. By recording the bloom counts and measurements as you have time using the work sheet you'll have that information ready. For instance rhizomatous begonias mostly only bloom in the spring. I don't know how many times I've been in the mood to fill out the registration form for a rhizomatous at another time of year but am unable to because I didn't count the flowers in the Spring. For myself I find the work sheet handy. Besides, I can correct mistakes on the work sheet beforehand instead of having to correct mistakes on the registration form.

First Section

Example

(1) Name of Cultivar B. 'Good Example'

(2) Synonym (if any) none

(3) Originator Bertha Begonia

(4) Address 1111 Begonia Street, Begonia City, CA 90000

1. This space is for the name you have chosen for your begonia hybrid. Remember to follow the rules laid out on the previous pages about types of names that are allowed. Name must be in quotation marks signifying a hybrid.

2. This space is for another name the begonia might be known as. An example of this situation is B. 'Rose' which is also known as B. 'Hazel's Front Porch'. It is preferable to not have a synonym.

3. This space is for the name of the person registering the begonia.

4. This space is for the address of the person registering the begonia.

Cultivar Development Section

Example

1. Year Developed 1990
2. Year of first bloom 1991
3. Year first distributed 1992
4. Date of any previous publication 1992
5. Name of publication The Begonian, Nov/Dec 1992 page 200

1. This is the year the seed was planted.

2. This is the year that the begonia bloomed for the first time,if it blooms.

3. This is the year that the plant was first shared with anyone else for testing.

4. This is the date of any review or description of the begonia being registered, in an official publication such as; The Begonian, Regional Newsletter, Club Newsletter, Horticultural Journal, etc.

5. This is the name and issue of the publication in which this description first appeared.

Derivation Section

Example

1. Hybrid _____ Chance Seedling _____
2. Mutation or Sport **X**
3. If mutation give parent's name B. 'Best Example'
   And how many times propagated 24 times

(if hybrid or seedling box was checked)

Parents or Parent:

4. Seed parent B. 'Mother'
5. Pollen parent B. 'Father'

1. The three choices; hybrid, chance seedling, and mutation, refer to what type of cultivar this begonia is. A hybrid is a cross between two different parents, a chance seedling is a self pollinated or unk parentage plant, and a mutation is a new plant created when a hybrid changes character. Put a check in the box that applies.

2. If the begonia was a creation of mutation give the name of the original begonia that mutated.

3. List how many new plants were propagated from this original. This is important to prove that the plant is stable and that subsequent vegetatively propagated plants hold true. If the begonia has only been propagated a couple of times there is the chance that it will revert back to the original form after a few generations if it was a mutation.

Hybrids may prove not to propagate true also

4. If the hybrid or chance seedling boxes were checked list the female or seed parent NOTE: The rules for registering a chance seedling may have changed, check with Nomenclature Director before trying to register a plant where one or both parents are unknown

5. If the hybrid box was checked, also list the male or pollen parent. If the begonia was a seedling, the father is either unknown or the same as the mother so no pollen parent is required.

Description of Cultivar section

Plant Growth: ***Example***

Cane-like- Superba, Mallet, All others (describe if neccessary)

Height at maturity **18 to 24 inches**

Shrub-like- ,Rhizomatous-, Thick-stemmed- ,Rex Cultorum-Semperflorens- ,Trailing/Scandent, Tuberous-

This part is pretty self-explanatory. Circle the description that best describes your hybrid. This is simple to determine if both parents are the same type. If both were hairy leaved shrubs and your hybrid also has hairy leaves then of course it's also hairy leaved shrub. If you crossed a bare-leaved shrub and a hairy leaved shrub and your hybrid has hairy leaves then it's also a hairy leaved shrub. It has to be a shrub because both parents were and by looking at it you can tell if it's hairy or not.

You can run into a problem however if two different types are crossed. Sometimes you can create a type that is considered different from either parent.

Some examples are:

B. 'Argenteo-Guttata' which is a hybrid between the cane B. albo picta and the thick stemmed B. olbia and is classed as a shrub.

B. 'Tiny Gem' which is a cross between the cane B. 'Tiny Orange Rubra' and B. solananthera which is a trailing/ scandent. It is classified as a shrub. It could reasonably be considered trailing also. When two different types are crossed a decision has to be made as to what type this new hybrid falls under.

B. 'Patti Thompson' which is a cross between a cane B. 'Lenore Olivier' and a semi-tuberous B. dregei 'Glasgow'. It could be considered a cane because it has some cane qualities. It couldn't be considered semi-tuberous be cause it doesn't have the caudex of a semi-tuberous. I consider it a shrub because it has more of a shrub-like growth habit. You'll just have to choose which type you think your hybrid most resembles when the decision is somewhat arbitrary such as the examples above. The hybridizer does have some discretion choosing the classification of begonias where the parents are of dissimilar types.

Begonias sizes are variable but you should be able to make a rough estimate based on your knowledge of the begonia. In the example at the top; this begonia has been grown by several people and usually gets about 20 inches tall, give or take a couple of inches. There is no exact figure you can put in but chose a range or a rough average height. This applies to all the upright growing categories but rhizomatous and rexes are sized differently than the rest. These two are graded according to the size of the leaf.

Miniature is extremely small under 1 inch, small-leaved is 1 to 3 inches, medium-leaved is 3 to 6 inches, and large-leaved includes any that are over 6 inches. Choose the size that best fits the size the leaves usually are under most conditions. We all know people that take normally small-leaved little begonias and grow them into monsters. Don't take those people's plants into account when averaging the size if everyone else's test plants are all roughly the same at 2 inch leaves.

In the tuberous category: Semi-tuberous are dregei hybrids and have a caudex. Bulbous types are B. soctrana hybrids. Heimalis are B. soctrana crossed with tuberous such as B. boliviensis or a tuberhybrida (a Reiger begonia is a heimalis). Cheimanthas are crosses between tuberous and B. dregei or rhizomatous. Tuberhybrida are the common tuberous hybrids such as nonstops and other large flowered tuberous of mixed tuberous parentage.

Where the categories say to describe if necessary, that is in case you really can't determine a type for sure. Possibly you've created something that won't really fit exactly in any category. Describe what type you think it is. An example is if you crossed a superba cane and an all others type, maybe you think your plant should be a superba but you aren't quite sure. Do your best to describe why you think it's a superba. If it's a cross between two unrelated types, choose what you think it most closely resembles and then describe why you think it belongs in that category.

Leaves:

1 Color_____

_____

2 Shape- (describe)_____

_____

3 Dimensions_____

4 Margin- (describe)_____

_____

5 Surface- (describe)_____

_____

6 Main Veins (number)_____

7 Petioles- length_____ Color_____ Hairs_____

_____

8 Stipules- Length_____ Width_____ Color_____

Type- _____

This part of the form is probably the hardest part and the part which usually causes people the most headaches. It can be trickier, especially if you've never done it before. Hopefully the illustrations and descriptions included in this book will help ease your fears and make describing a leaf simpler and easier for you.

1 Color

Describe the color which most typifies the leaf color for the begonia you're describing. Be as accurate as possible and if color is variable include that also. For instance if it's a light green leaf with a black edge and also sometimes has some brown markings you would describe it as light green with a black edge and variable brown markings.

If it has silver markings or spots include that in your description. Note the size, amount, and color of the spots. For instance a leaf with lots of maculata type spots you may describe as; many evenly spaced large round white spots. If the spots are variable you may describe it as having some variable large white spots.

When describing the color if there is a pattern try to describe the pattern. For instance if you were describing B. masoniana you wouldn't describe it as green with dark markings. You would describe it as bright green with wide, nearly black markings along the main veins that form a central cross-like pattern in the center of the leaf. Use whatever terms you can think of to describe the coloring accurately. If the coloring is an odd color or odd shade, stipulate that. If the color is in bands like in some rex begonias state that also.

2 Shape

This category actually is comprised of three parts, the rough shape of the leaf, the base of the leaf and the tip. The illustrations and descriptions on the following pages should explain this fully. For instance if you had a rounded leaf with a double spiral you would describe it as double spiraled base, orbicular, roundly obtuse. The base is double spiraled, the shape is orbicular, and the tip is roundly obtuse. Start with the base and describe your way to the tip. Even a cleft leaf has an overall shape. If you took a cleft leaf, laid it down on a plate and the tips were basically touching all the way around, the leaf is still round, even though cleft. The cleft description is part of the leaf edge description. If the leaf is compound you will want to use that description in the leaf shape description along with how many separate leaflets make up the compound leaf.

3 Dimensions

For this you should average, no begonia has exactly the same size leaves on the same plant or even on the same variety in different growing conditions. Pick a leaf that most typifies the normal size and measure it. If it's variable in size then use a size description such as width 6 to 12 inches.

To get the width, measure the leaf across to its two widest points. For the length you measure the same way in the opposite direction. Even if the leaf is basically round you should put both a height and a width even if they're both roughly the same.

4 Margin

Use the illustrations to help determine the margin that most closely matches the leaf you're describing. Many times this will be a combination of terms. For

that most closely matches the leaf you're describing. Many times this will be a combination of terms. For instance if you were describing a leaf that had a serrated edge, that was lobed and had hairs along the margin you would describe it as lobed, ciliate, serrate. You may also need to add an adjective to help clarify the description. For instance if it just has a few saw-like teeth along the edge, you may describe it as sparsely serrate. If the saw-like teeth were different sizes so didn't really fit either the serrate, serrate, or doubly serrate description you may call it variably serrate. Using the adjective variably describes perfectly that all the teeth are not the same.

(5) Leaf Surface

There are several terms used to describe the leaf surface and three parts. One part is the texture of the leaf. The second part is the surface. The third part is hairs or sheen. Like with the other leaf part terms you may need to add adjectives to further clarify the description. As with the other descriptions you may need to combine terms. For example if you were describing a thin flat leaf with a felted surface you would call it chartaceous, surface even and felted.

Texture

Chartaceous: papery thin and opaque
Coriaceous: medium thick, but with the texture and feel of soft leather.
Fleshy: thick, firm, juicy and often brittle (breaks or cracks easily when the leaf is bent)

Surface

Even: meaning the surface of the leaf is flat or has no elevations or depressions. example: B. dichroa
Rugose: surface covered with a network of veins (reticulated) causing irregular outward curving projections. example: B. rajah
Bullate: surface irregularly puckered or blistered. example: B. paulensis
Muricate: surface with uniform rounded projections. example: B. 'Pebble Lane'
Pustulate: surface covered with numerous uniform pointed elevations like pimples. example: B. imperialis
Foveolate: surface with shallow distinct depressions. example: B. 'Tom Ment'

If none of the descriptions exactly matches the leaf you're describing either add adjectives to the terms or try to describe in plain English.

Hairs and sheen

Begonias have an additional element to the leaf surface such as hair. A leaf with no hair is glabrous. You should add glabrous to your description if there is no hair. Some begonias may have a surface sheen like waxiness also. Use the following terms to describe the hairiness or sheen of the leaf. You can also use terms such as sparsely hairy or add adjectives to the terms.

bearded: having a tuft of hairs.

chatoyant: having a velvety sheen

downy: covered with short and weak soft hairs

floccose: (felted) having locks of soft wooly hairs that rub off easily

glabrous: without hairs

glaucous: having a powdery or waxy covering which rubs off easily.

hirsute: covered with short stiff hairs.

lanate: covered with long soft entangled hairs or wooly

pilose: covered with long soft hairs.

scabrous: covered with scattered harsh hairs often not visible without magnification but evident to touch.

setaceous: having bristles, bristle-like

strigous: having short straight stiff hairs

tomentose: thickly covered with matted wooly hair

velutinous: velvety, cover with soft fine hairs

villous: having moderately long soft hairs, somewhat shaggy.

6 Main Veins

For this description you need to count the number of main veins in the leaf. Main veins are any veins that are attached directly to the main sinus of the leaf where the petiole is joined. Any veins, even if the same size as the main veins, that aren't attached directly to the main sinus are branches of the veins. On the example provided later in this booklet you'll see the main veins highlighted if you have questions about what a main vein is. Spiral based leaves can be more difficult to determine. Spirals are usually composed of just one main vein along the inside margin of the spiral. All the other veins in the spiral are branches of the main vein so you can usually be safe just counting each spiral as one main vein. Some leaves such as cane leaves may only have two main veins. They may have one main vein running to each end of the leaf and all the other veins just branches off the main veins. Some rhizomatous begonias, however, may have a dozen or more main veins. If unsure of what is meant by main veins refer to the illustrations.

7 Petioles

Length

Measure the petiole from the main stem to where it attaches to the leaf. If variable measure several and make an average.

Color

This is pretty self explanatory. Just pick a color that best describes the petoile color on your plant such as red or green. You can also had adjectives to define it further such as bright red.

Hairs

Use the terms for hairiness on the previous page to describe the hairs on the petiole. If no hairs then say the petiole is glabrous, just like with the terms for the leaf surface. Some petioles may have more than one type of hair or may have an additional bearded collar where the leaf is attached.

8 Stipules

Stipules are the bracts that surround a leaf petiole.

Length

Measure the stipule from its base where it attaches to the stem to its tip. If they are variable in size make an average by measuring several.

Width

Measure the stipule at its widest point which is usually the base where it is attached to the stem.

Type

There are several terms used to describe stipules. You will have to use a combination of terms from the three categories. Category one deals with persistence of the stipules, category two deals with its habit, and category three deals with its appearance or texture.

Persistence

caudacious: falls off early as the leaf matures
persistent: neither withers or falls off until long after the leaf matures
marcescent: withers but doesn't fall off until long after the leaf matures.

Habit

ascending: having a general upward direction
erect: having a straight up direction
perpendicular: at a right angle to the stem
reflexed: downward curving

Texture

membranous: thin and semi-transparent
fleshy: thick firm and juicy (succulent)
scarious: shriveled, thin and dry

There are other terms that may be applied but the preceeding terms cover most stipules. You can also use adjectives to clarify such as "slightly" reflexed. You can also use other terms not listed that may apply.

Flowers:

1. Color- tepals_____ ovary_____
2. Shape of tepals_____
3. Diameter of flower- Male_____ Female_____
4. Number of tepals- Male_____ Female_____
5. Size of flower cluster (amount) Male_____ Female_____
6. Ammount of clusters- many, few, solitary
7. Length of flower peduncle (stalk)_____
8. Season of bloom_____
9. Describe unusual characteristics,(hairy, double, etc) ____

_____

_____

_____

Flowers

This section deals with all the various parts of the blooms on begonias. Begonias have no petals or sepals in case you're confused by the term tepals. Tepals are the petal-like structures on begonias.

1 Color

Tepals: Describe to the best or your ability the exact or approximate color of the tepals on the plant you're describing. You can use adjectives to define the color such as rose red, off white, light orange, orange/red, etc. Some flower colors can be variable depending on the light conditions they're growing in. If the plant can be somewhat variable, use that in your description such as "dark pink to red".

Ovaries: Describe the color of the ovaries on the female flowers. If they're a solid color describe them as a solid color such as "solid red". If they have some other additional color such as a stripe describe that such as red with green stripes, or green with red wings.

2 Shape of Petals

Describe to the best of your ability the shape of the tepals. You can use the terms used to describe the leaf tips and shapes if possible or to the best of your ability in plain English. For instance if the petals are round you can say round or use the correct term of orbicular. If the tip of the petal is rounded you can say rounded or use the proper term of roundly obtuse. All the terms that apply to leaf shapes can correctly describe the tepal shape.

3 Diameter of flower

If the flower is round measure across the face and put in the measurement. If the flower is some odd shape or oval in shape use a combination of measurements both height and width. For instance the flower could be three inches high by two inches wide so you would put 2" x 3" on the line. The same instructions apply to both male and female flower and remember you're measuring across the face of the flower to get these measurements.

4 Number of tepals

This pretty self explanatory. Just count the tepals for both male and female flowers. For many cane begonias it's usually four tepals for male flowers and five tepals for girl flowers as an example. If the number of tepals varies put that in your description. For instance the plant you're describing could have semi-double flowers that range between 8 and 15 tepals to a flower. Put 8 to 15 in the space in this example.

5 Size of flower cluster

This can be hard to determine sometimes. With most begonias the male flowers come out first and then start falling off as the female flowers emerge. Many times the first male or female flowers may fall off before the last ones emerge or mature. You should be as accurate as possible and if there is some variability to the flower cluster size include that in the count. Just do your best. I may take observation over several days to make this count. Some types like rhizomatous begonias that only bloom once a year put out male flowers followed by the female flowers, then they're done. If you didn't count the male flowers and the female flowers each at their particular time you'll have trouble filling out this part. In the illustrated part of this booklet you will find illustrated a way for you to questimate the number of male flowers there were by counting backwards from how many females there are.

(6) Amount of clusters

Circle which term applies. A plant that has dozens of flower clusters would be many, one that only has a few clusters at a time would be few, and a plant that rarely blooms or only maybe a cluster or two would be solitary.

(7) Length of flower peduncle

The peduncle is the stalk that rises from the main stem and supports the flowers. To measure correctly, measure from the main stem to the point where the peduncle makes its first branching. If the peduncles are variable, the either use an average or give a range such as 5" to 7" for example. You will see in the pages of illustrations for flowers exactly which part of the peduncle to measure if this description is unclear to you

(8) Season of bloom

This category has to do with when the begonia blooms. If it's strictly a winter blooming plant, put winter blooming. If it blooms all year put everblooming. If it only blooms occasionally use a term like sporadic. If it blooms most of the time you can use an adjective to clarify such as "nearly" everblooming. If it doesn't bloom at all or at least hasn't bloomed yet put non-blooming or rarely blooms.

(9) Describe

Use this space to add any clarification to what the flowers look like or additional characteristics such as hairy flowers. You can also use this space if you didn't have enough space in any of the other lines to finish or fit an entire description. You may also use this space to clarify that flowers are double or semi-double, etc.

Final Note: Once the Registration is complete make sure to include the required picture and also the $2.00 registration fee for each registration sent in. The fee was $2.00 at the time this booklet was put together, you should check before mailing to see that the rate hasn't been changed. If sending multiple forms make sure to write the name and info about any pictures on the backs of the pictures in case they become separated from the form. Don't paperclip the pictures, it can make them unusable for scanning and publication.

Description: Describe how this begonia differs from others of its type, how it is to be distinguished from begonias now in cultivation, especially from its parents and others closely related or similar. Basically, how can one recognize this plant._____

_____

_____

Description

This section is pretty self explanatory. You can use plain English to further describe your begonia and tell its unique qualities. The more detail the better.

Additional Information

This part is reasonably self explanatory. In the first part list a couple of people that test grew the plant for you and their addresses.

In the prepared by section put your name or the person who filled out the form for you with the address and date.

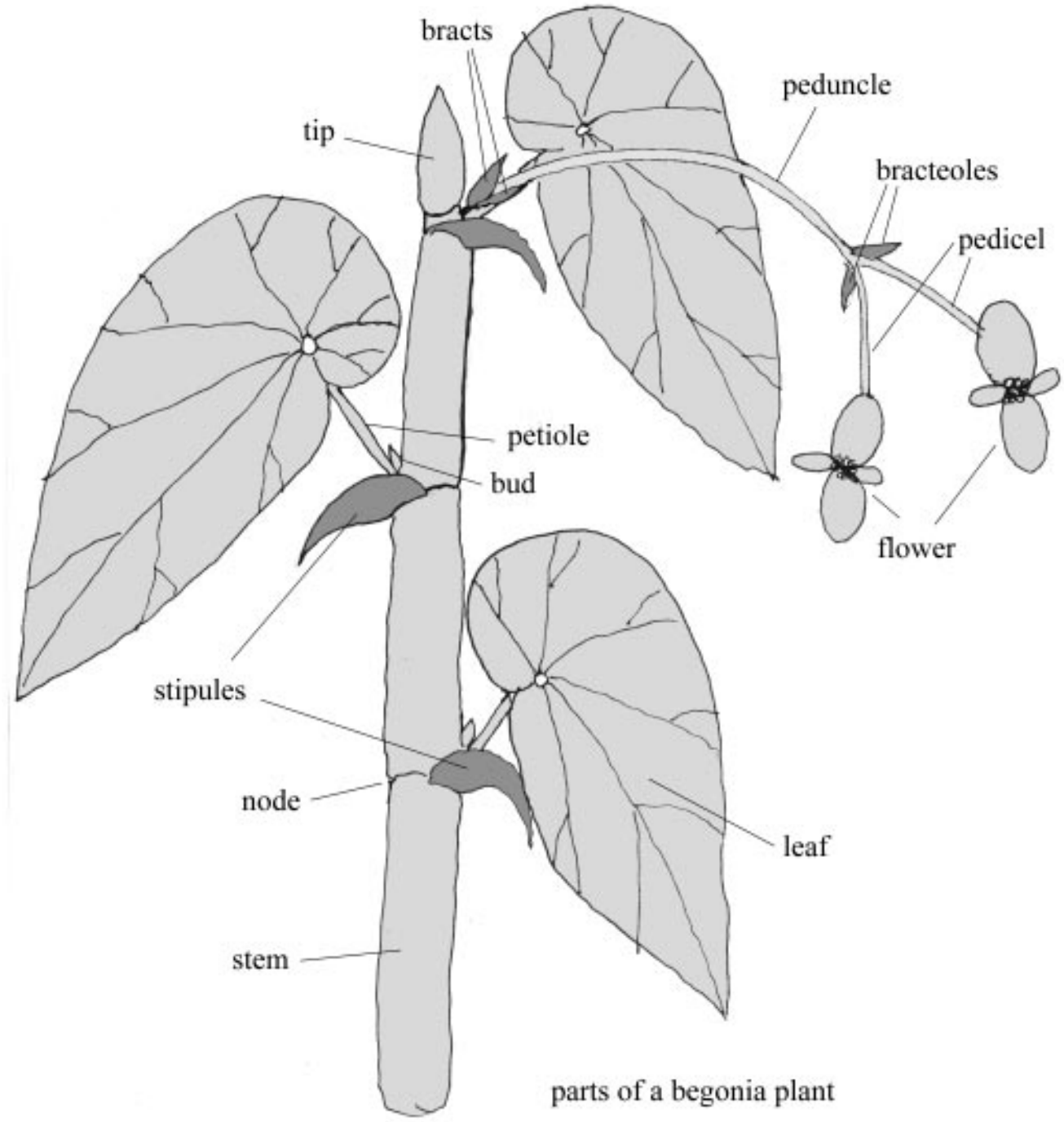
The registration form requires a drawing, photograph, or herbarium specimen to be included. Most people just send photos and you really need a clear photo anyway for the registration's publication in the Begonian. Try to use a photo that shows the plant in bloom if possible, if it does bloom. Plants that bloom seasonally can be shown out of bloom though.

If the plant you're registering is available from some commercial business list them with their address.

In the Any additional comments section use this space for anything additional you want to add or to clarify why you described certain aspects of the plant a certain way.

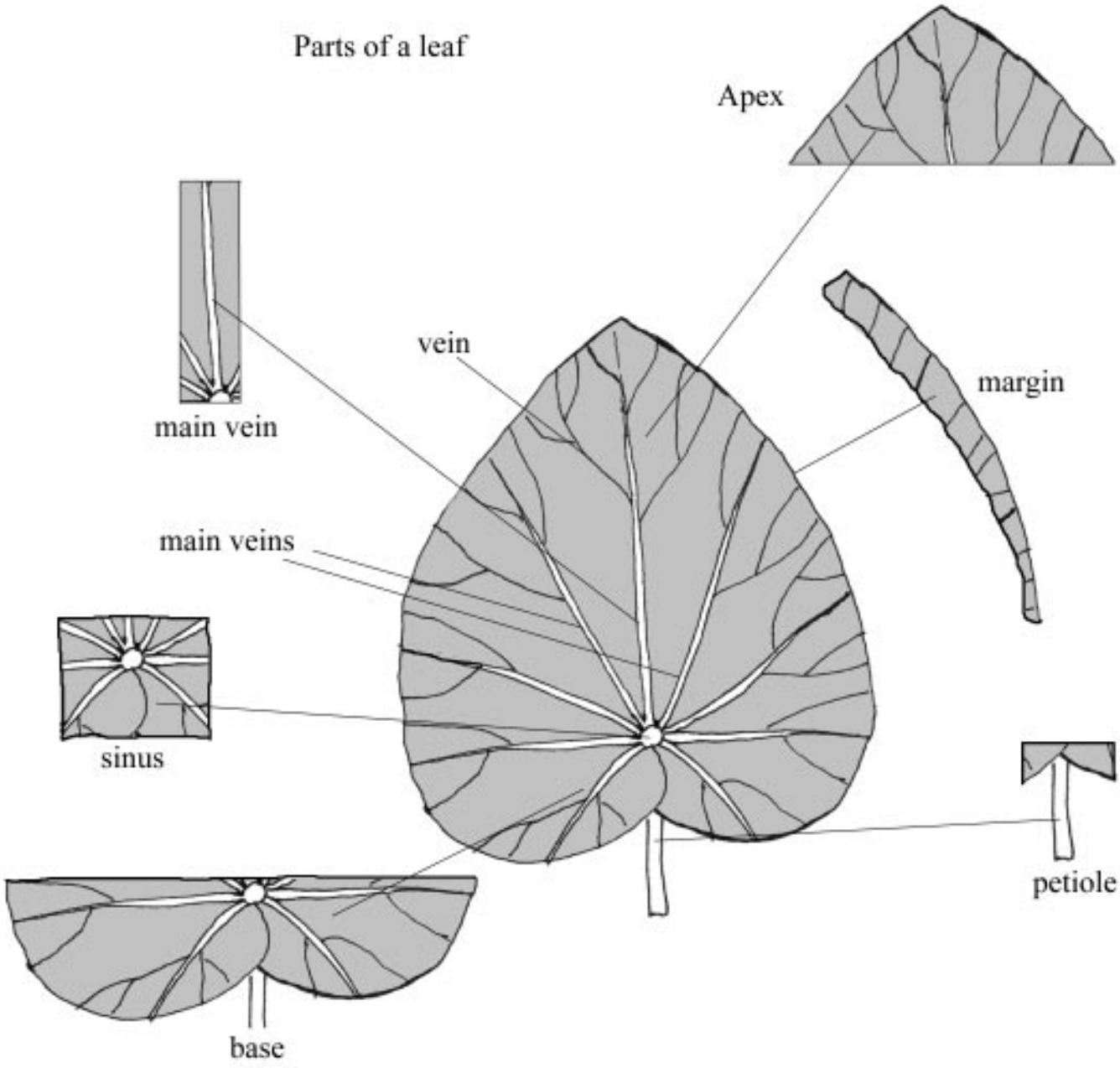
On the last part, the bottom line should be left blank, the date registration approved and the Approved by line are for the Nomenclature Director to fill out after your registration is completed. You do need to fill in the line that says date registration applied for and also sign your name in the Signature of registrant line.

Makeup of a Begonia



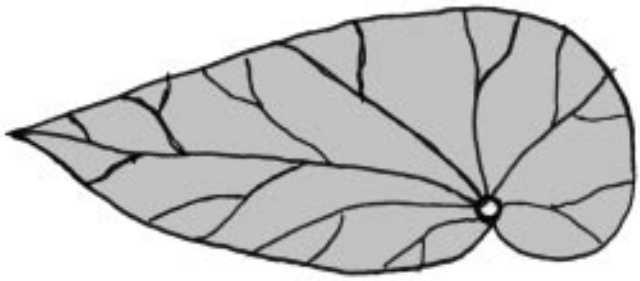
This illustration shows the various parts of a begonia. This is to help familiarize you with the terms used to describe begonia elements and where the various elements are located on the begonia plant. The registration form requires descriptions of most of these parts and they are each described and illustrated in more detail on the following pages. This illustration is just to give you a basic understanding in a stylized view of a begonia plant..

Elements of a leaf



Leaf Margins

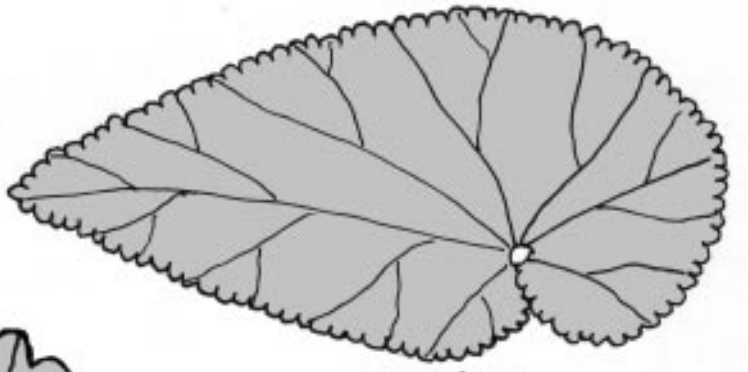
The margin on a leaf is its outside edge. On begonias, they come in a wide range of variously accented margins. A leaf with no dentation or indivisions is called entire. All possible margins have been illustrated on the following pages. Many times margins can also be a combination of one or more types of margins so require combining descriptions to properly describe. For instance if a leaf is serrated with hairs along the edge you would combine serrate (serrated edge) and ciliate (hairy edge) as serrate ciliate margin. The next few pages have illustrations combined with the exact description of the term.



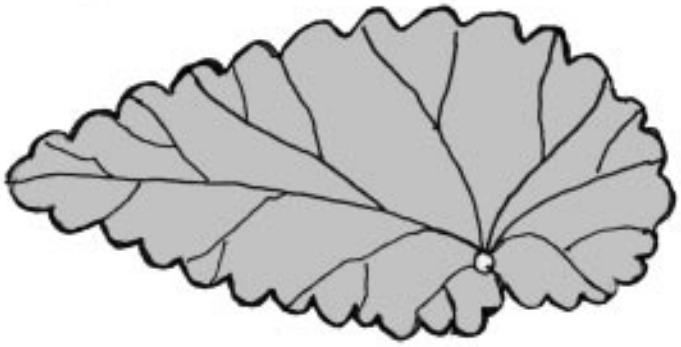
entire

Entire: An entire margin is a margin with a bare edge with no indentations or divisions along the margin. A margin with extremely slight waviness or slight uneveness should still be described as entire.

Crenulate: A crenulate margin is minutely crenate. That means it has a scalloped edge but the scallops are very small and fine.



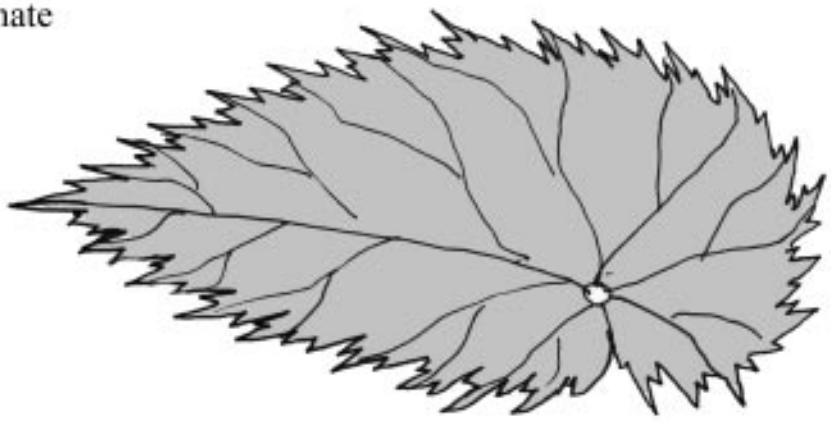
crenulate



crenate

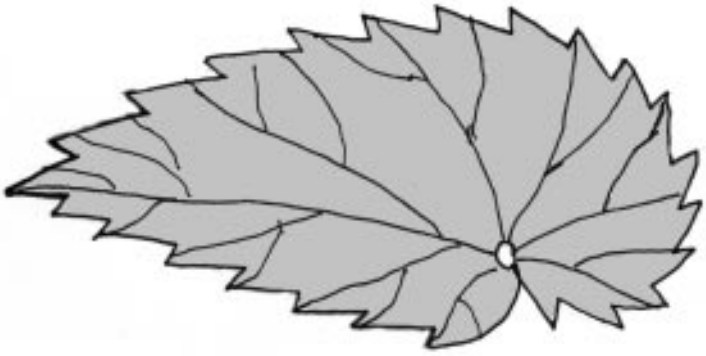
Crenate: A crenate margin is a margin with obtuse or broad rounded teeth or scallops.

Double serrate: A double serrate margin is a serrated margin that also has extra serration on the teeth of the serration.

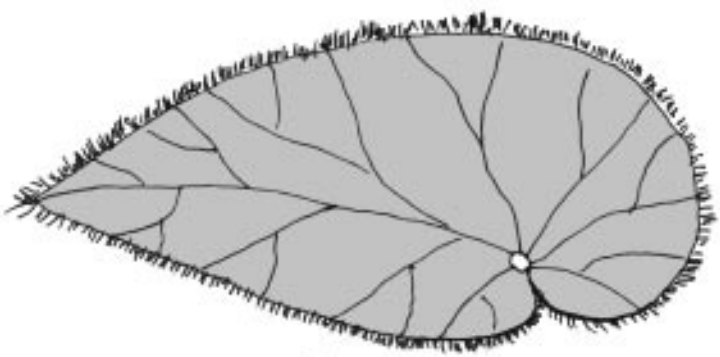


double serrate

Serrate: A serrate margin is a margin with sharp saw like teeth that slant towards the apex or tip of the leaf.



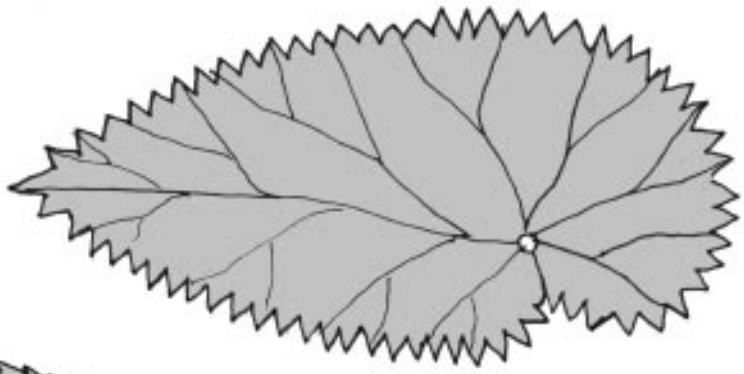
serrate



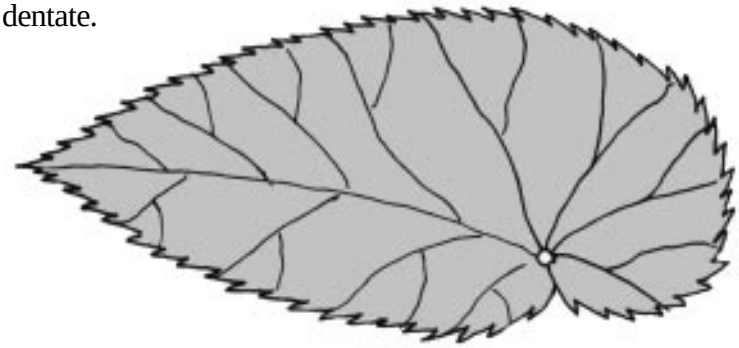
ciliate

Ciliate: A ciliate margin is a margin with small hairs along the edge.

Denticulate: A denticulate margin is a minutely dentate margin. It is similar to dentate in that the points are upright along the margin but are finer than dentate.



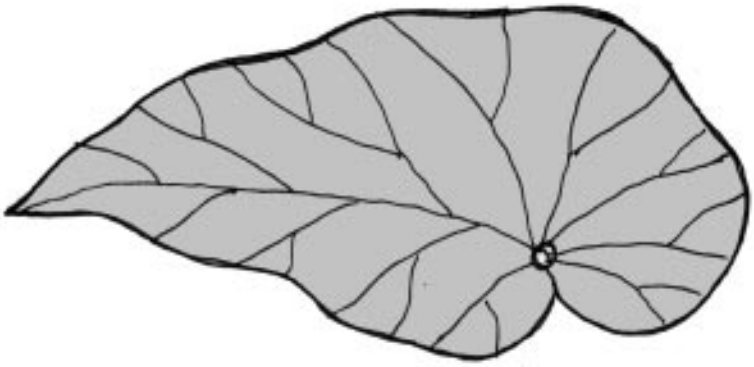
denticulate



serrulate

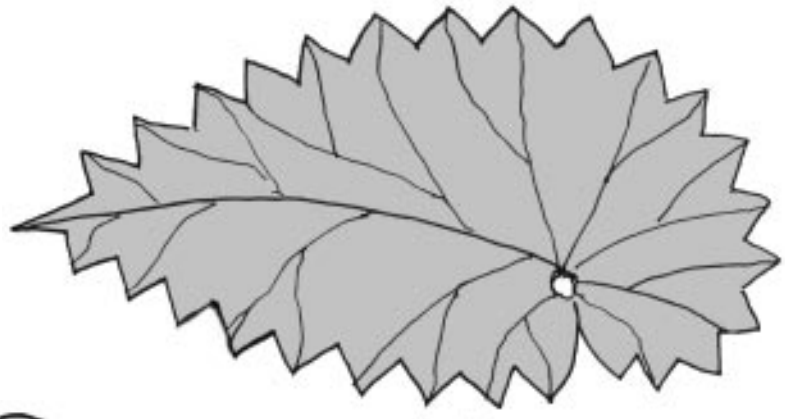
Serrulate: A serrulate margin is a minutely serrate edge. Similar to serrate but the teeth are smaller.

Repand: A repand margin is a margin with an unevenly slightly sinuous edge.

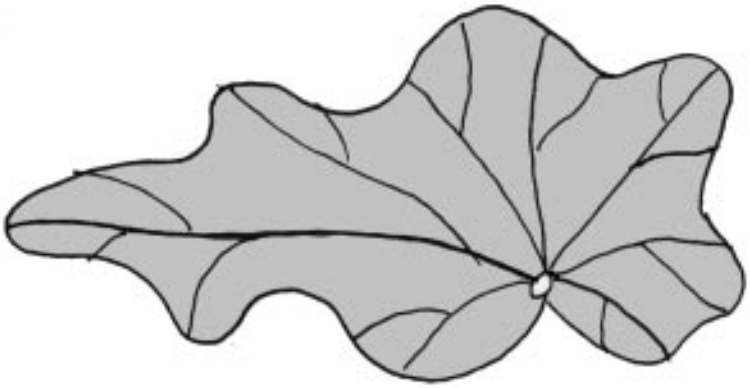


repand

Dentate: A dentate margin is a margin which has upright pointed projections along its edge. This differs from serrate margins in that the teeth point away or upwards from the main vein instead of slanting towards the tip of the leaf. The teeth can be straight sided or concave but come to a point.



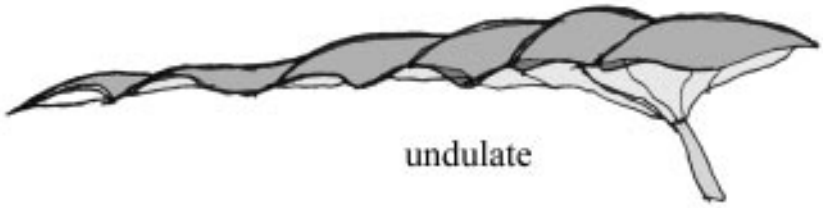
dentate



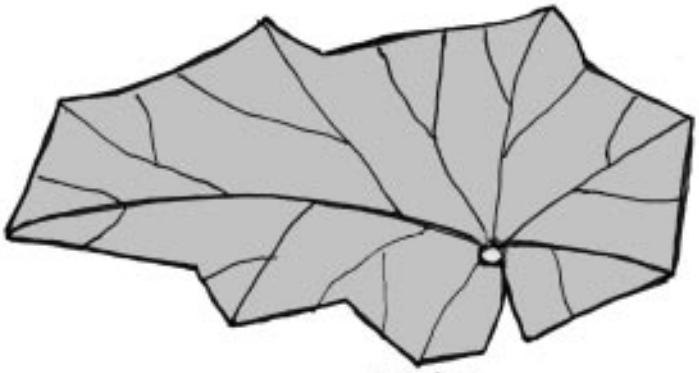
sinuate

Sinuate: A sinuate margin is an uneven margin with alternate deep concavities and conventions. Kind of a lobed and wavy appearance.

Undulate: An undulate margin is a margin that is wavy from the horizontal or side view of the leaf. This is unlike the other leaf margins which are described and viewed while looking down at the surface of the leaf.



undulate



angulate

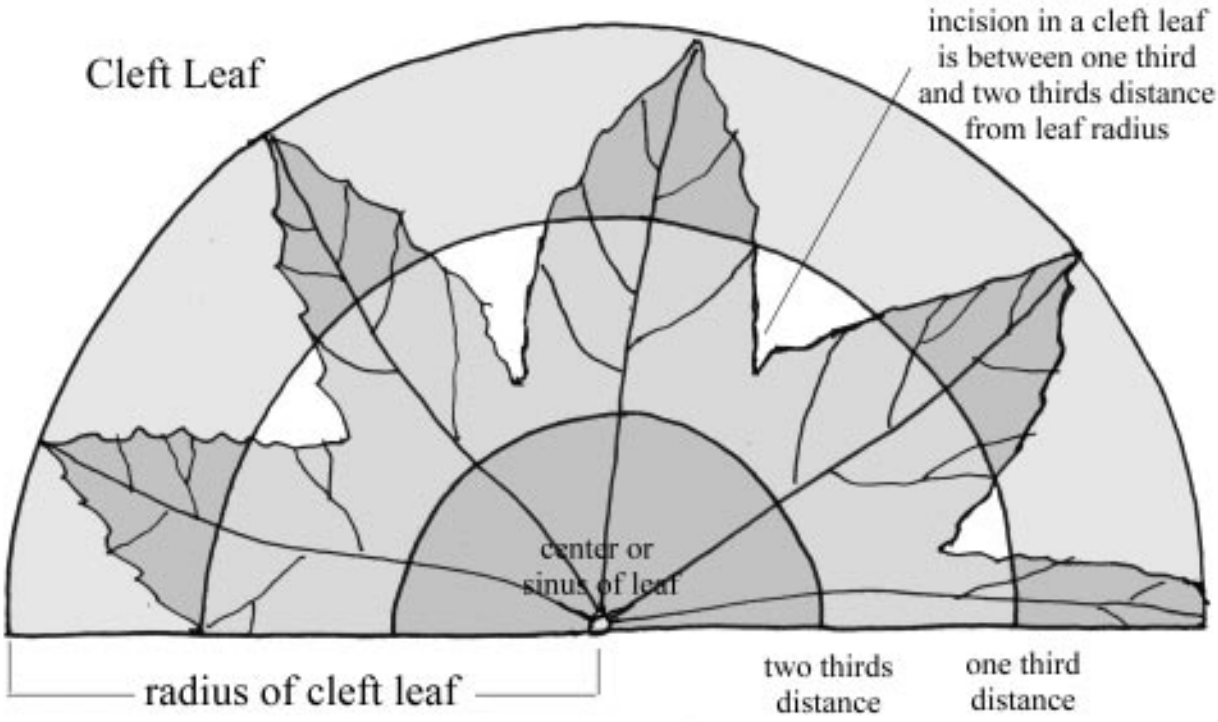
Angulate: An angulate leaf is similar to a lobed leaf but the margin is very angular with various salient angles to the edge.

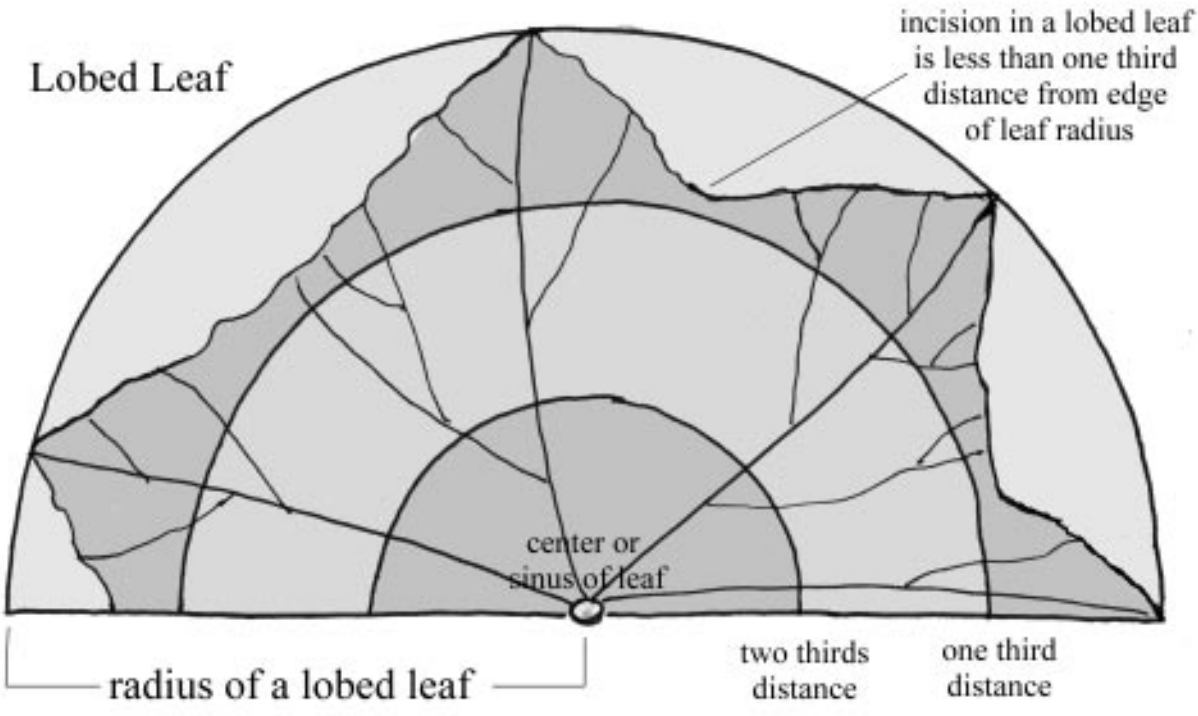
Crested: Although not illustrated, a crested margin is any margin that has a ruffled, wavy, overlapping edge.

NOTE: It may be necessary to also use additional adjectives to define a leaf margin. For instance if a leaf has an irregular scalloped edge you may describe it as irregular crenate.

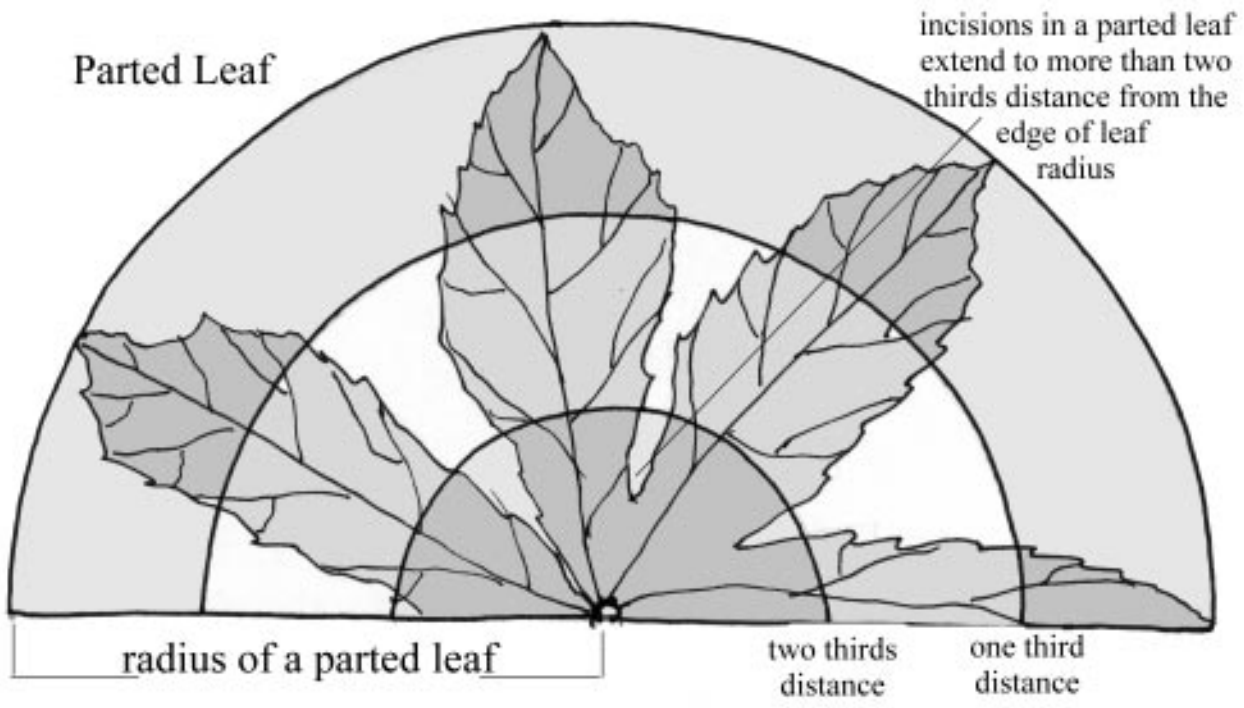
Incisions

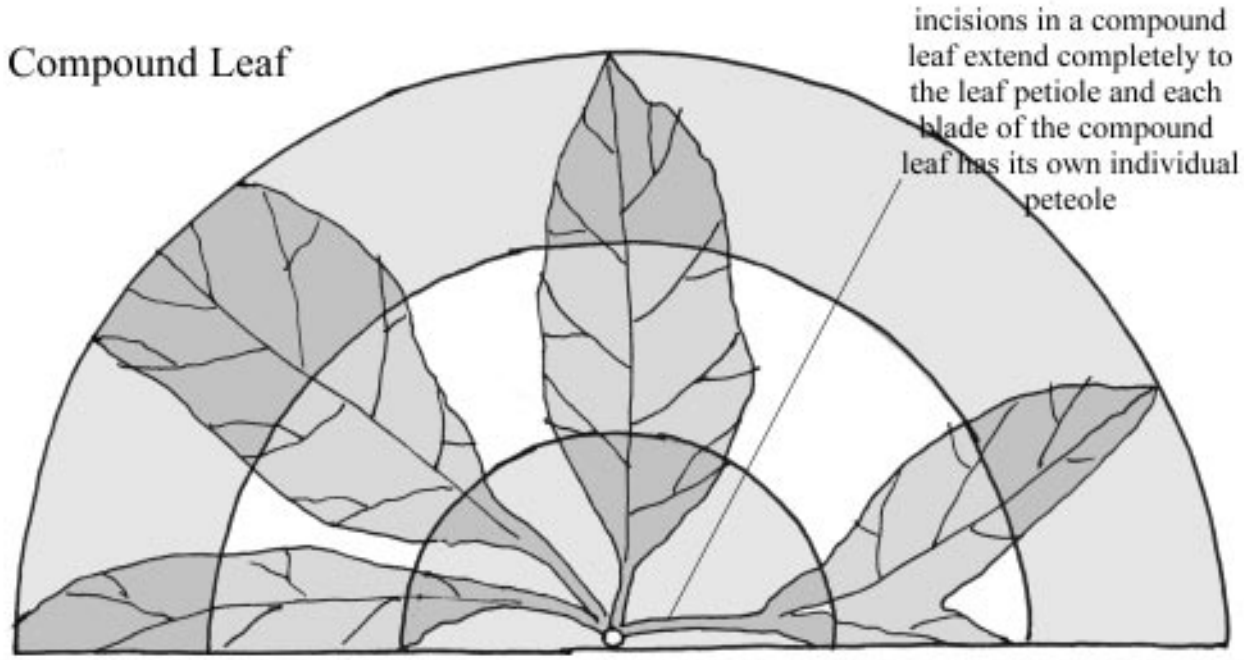
On the previous pages, various leaf margins were shown. Some begonias also have various incisions on the leaf such as clefts and lobes. When describing a begonia with incisions, add the incision type to the margin type to correctly describe the margin. For instance a cleft leaf with a serrate margin would be cleft serrate. Clefts and lobes are differentiated by how deep the incision is. The illustrations on these two pages will try to show how the types are determined. The distances used are from the tips of the leaf to the main sinus of the leaf where the petiole is attached. In some instances, long narrow leaves, the measurement may be from the leaf tip to the main central vein. If the incision is less than one third of the distance from the tip, the leaf is lobed. If the incision is more than a third but less than two thirds it is cleft. Any incision more than two thirds the distance from the tip is parted. The parting can go completely from the leaf tip to the main sinus and still be parted. A leaf can be a combination of the various incisions. One side of the leaf can be cleft while one side is parted so could be called cleft and parted.





pa

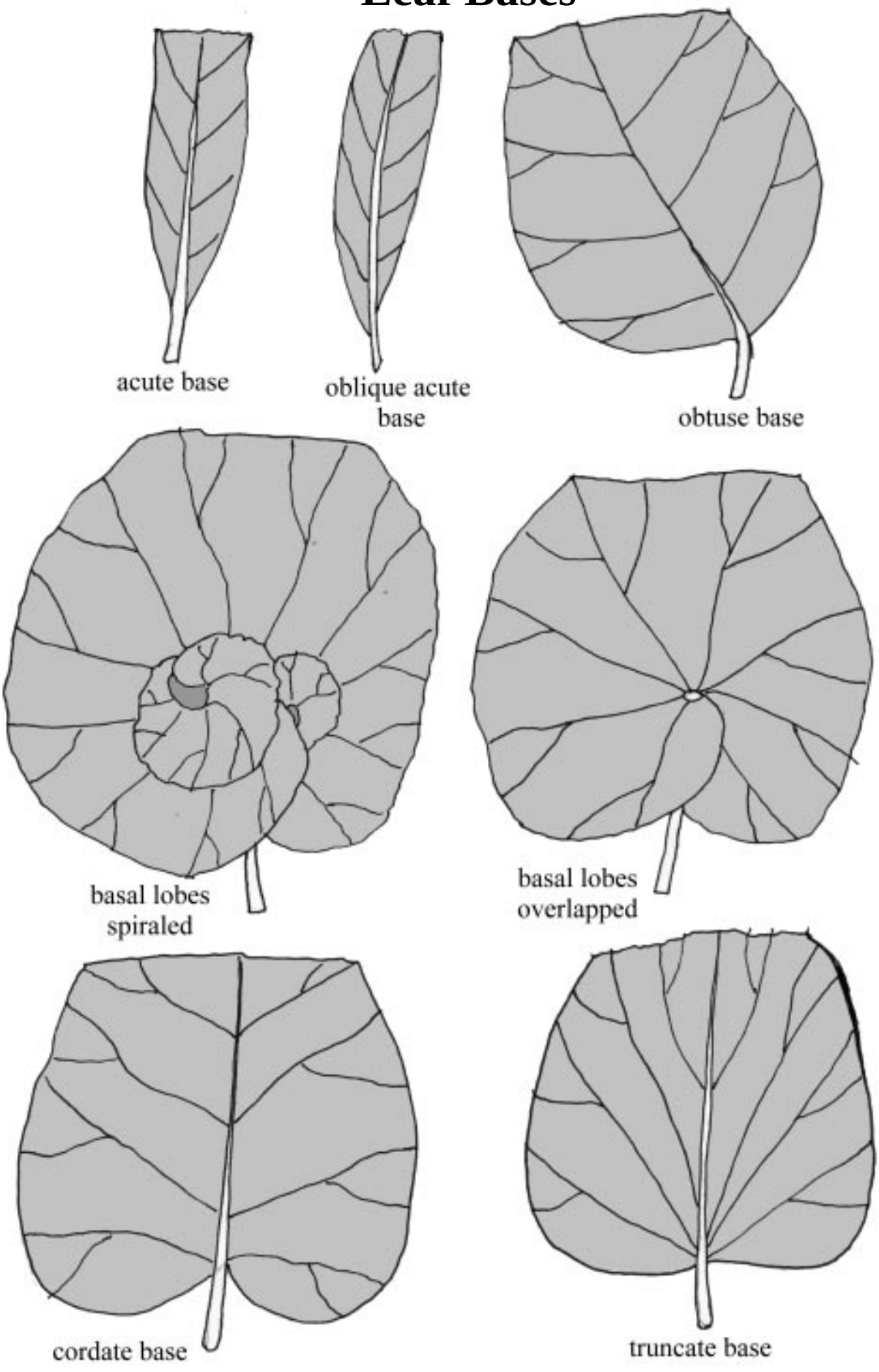




Radius of a compound leaf. Distance of incisions from the edge is not important for this type but is only shown for comparison to the other types of leaf incisions

Compound leaves have been included in this section for lack of a better place to put them. On compound leaves the distance from the tip to the sinus or the radius of the leaf have no bearing on what comprises a compound leaf. The illustration was made in the same format as the types of incisions to make comparison to the those types easier. Just remember that a compound leaf has separate leaflets joined together at the main petiole of the leaf. When describing compound leaves, describe a separate leaflet as you would a single leaf if all the leaflets are identical like B. luxurians. An example would be compound, oblanceolate, dentate margin. If one part of the leaf is compound and the other half is different describe the leaf as a whole such as lobed, partially compound, dentate margin, etc.

Leaf Bases


acute base
oblique acute base
obtuse base
basal lobes spiraled
basal lobes overlapped
cordate base
truncate base

Leaf Base Definitions

Acute Base: sharply tapering to a point at the base

Oblique Base: unequally sided lobes, can be used in conjunction with other base descriptions.

Oblique Acute Base: combination of oblique and acute, meaning sharply tapering to a point but two sides unequal.

Obtuse Base: rounded or blunt base with no lobes.

Basal Lobes Spiraled: base with lobes that curl around to form a spiral. Can be double spiraled or spiraled on one side only. You may wish to expound on whether it's double or single spiraled when using this term.

Basal Lobes Overlapped: base with the lobes overlapping at the sinus.

Cordate Base: base with rounded lobes at the sinus.

Truncate Base: base with no lobes and blunt at the base, nearly straight across.

Leaf Shape Definitions

Ovate: oval shaped

Peltate: leaf with petiole attached to the center of the leaf with no break in the margin of the leaf. (*Peltate is both a shape and base decription*)

Orbicular: round or nearly round leaf.

Broadly Ovate: flattened oval shape.

Oblanceolate: narrow pointed leaf wider at the top sharply narrowing at the bottom.

Lanceolate: opposite of oblanceolate. Narrow pointed leaf, wider at the bottom, tapering to a point at the top.

Eliptical: oblong shaped leaf.

Obtrullate: wide diamond shape.

Narrowly Trullate: long narrow diamond shape.

Narrowly Triangular: triangle shape forming less than 45º angle.

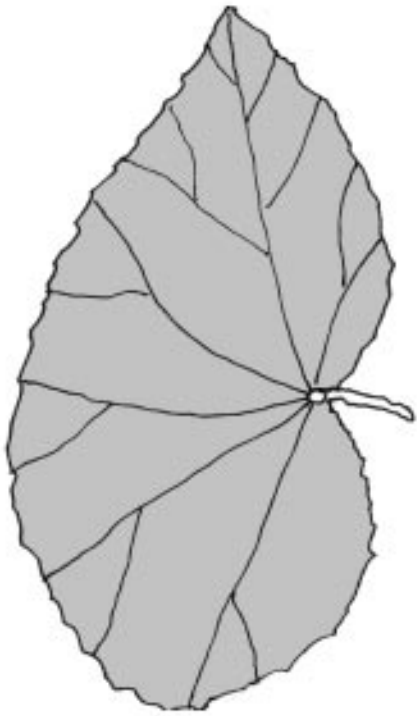
Broadly Triangular: triangle shape of more than 45º angle.

Obovate: oval shape at top tapering to a point at the base.

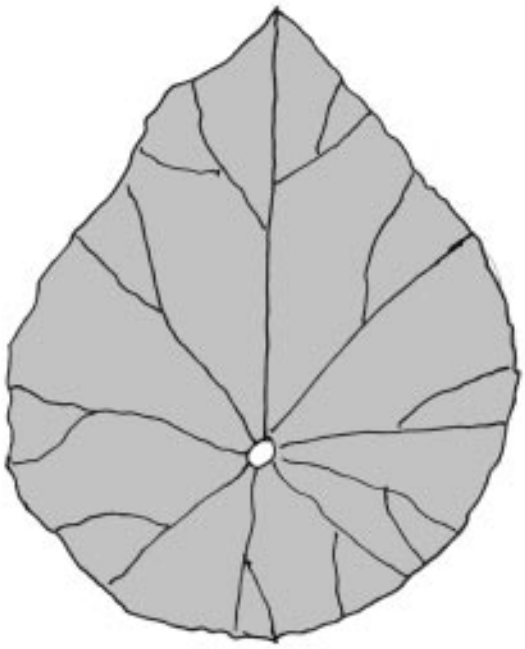
Notes:

Use this space to add the definitions of other shapes and bases you may come across.

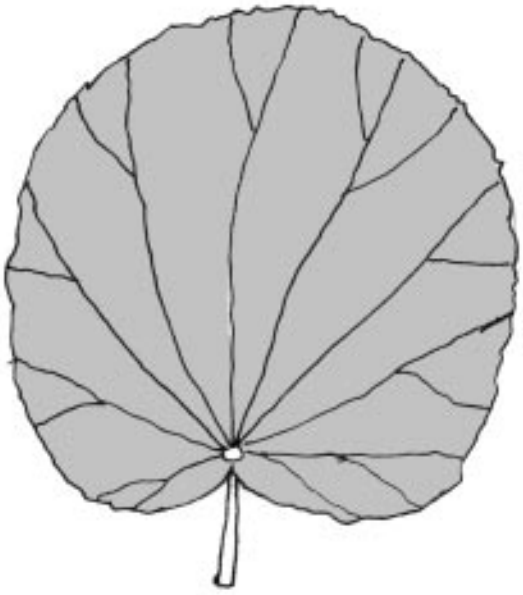
Leaf Shapes



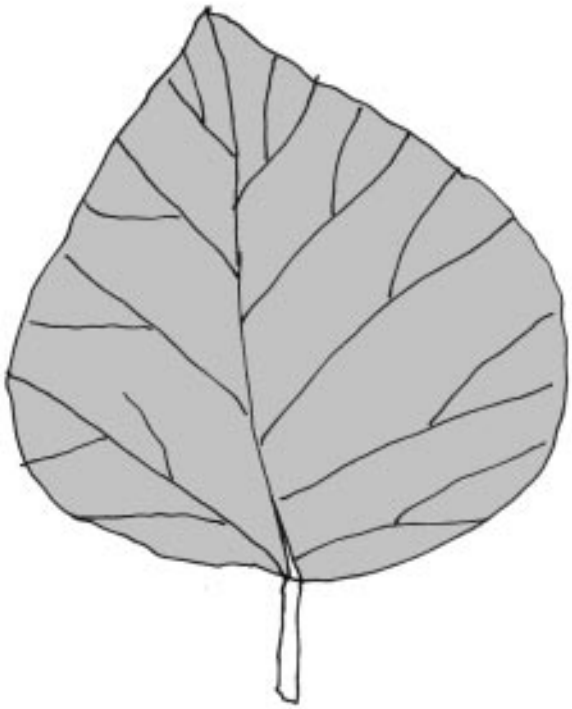
ovate



peltate



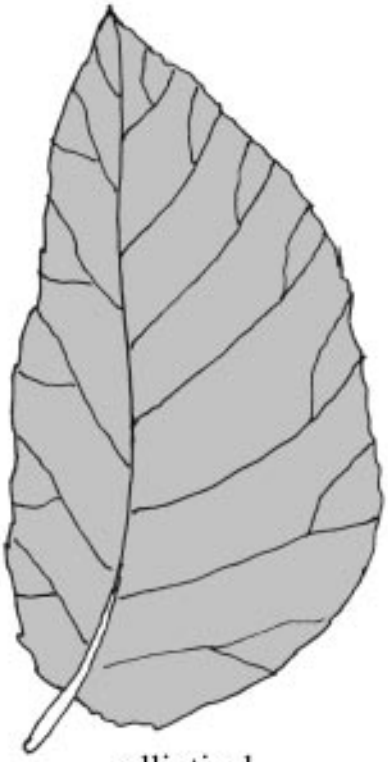
orbicular



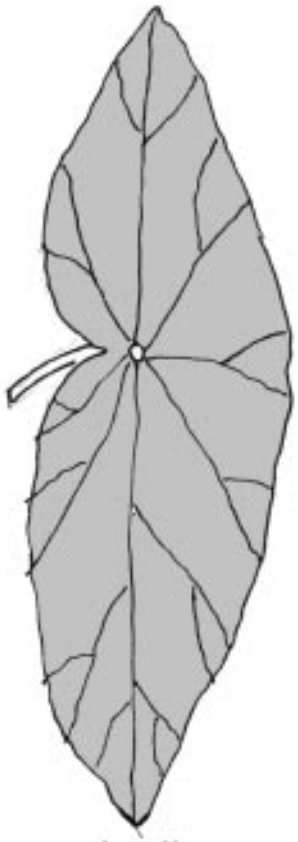
broadly ovate

pa

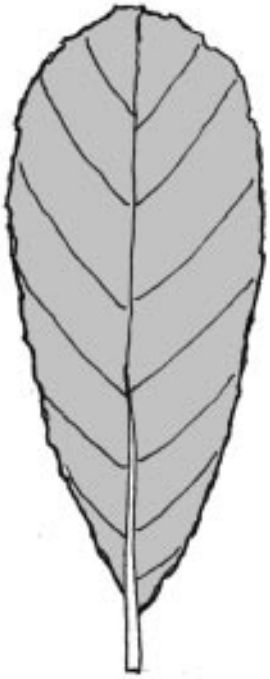
oblanceolate



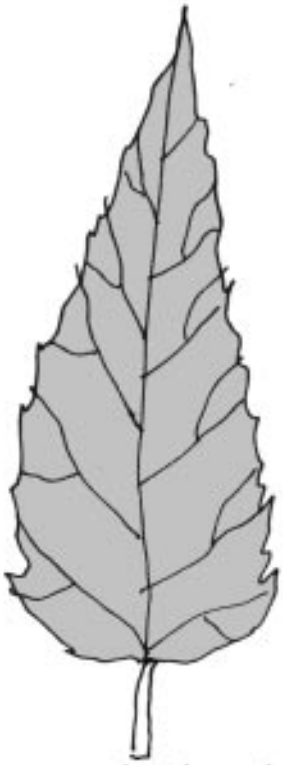
elliptical



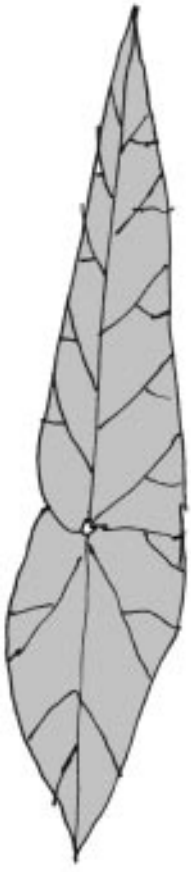
obtrullate



obovate



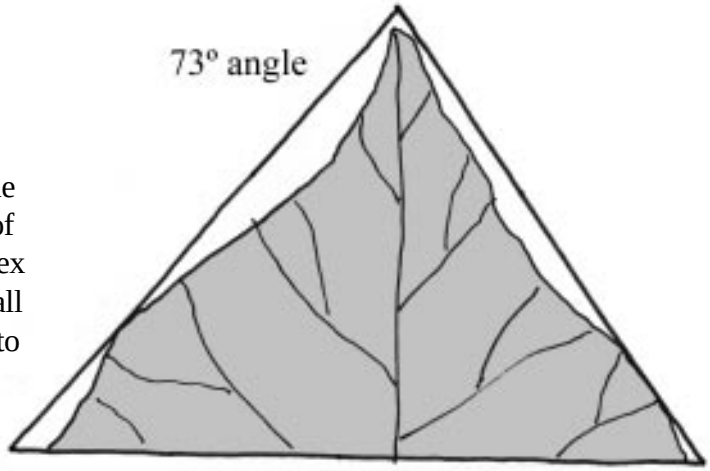
narrowly triangular



narrowly trullate

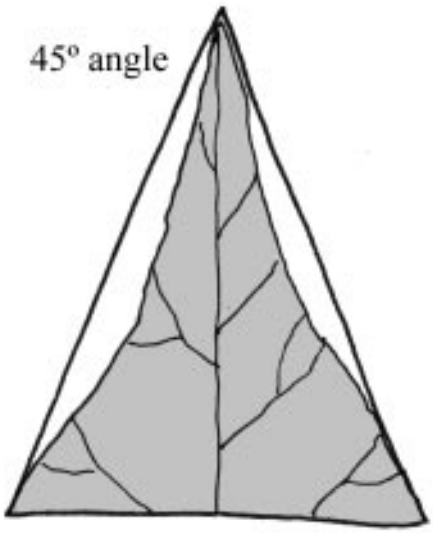
Leaf Tip (apex)

Leaf tip types are determined by the angle they form, by the pointedness of the tip, and by the curving either convex or concave towards the tip. As with all descriptions, you can add adjectives to further clarify.

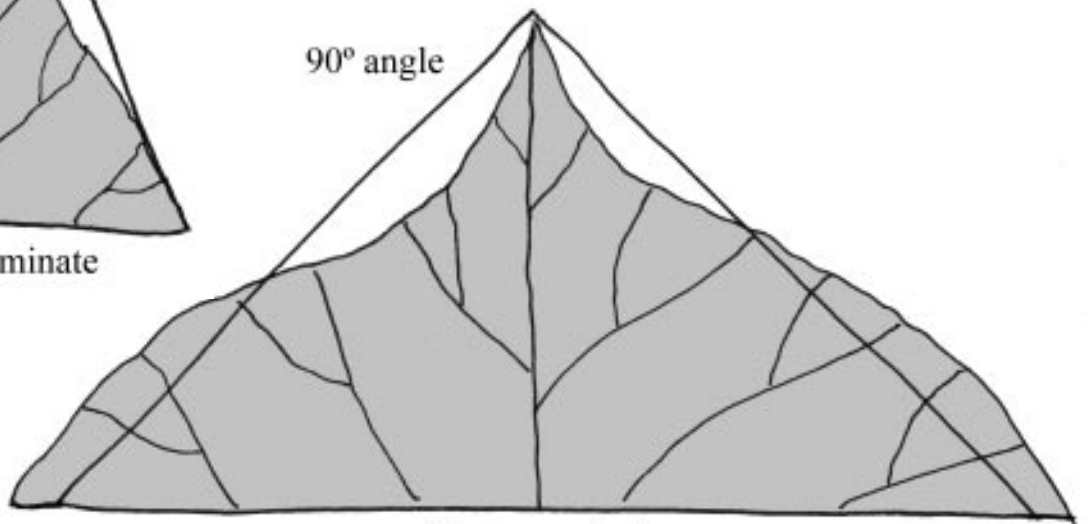


Acuminate

An **acuminate apex** starts out straight or convex then changes to concave and gradually comes to a point. The angle should be between 60º and 90º. If the angle is greater than 90º it is a **short accuminate apex** and if the angle is less than 60º it is a **long acuminate apex**.

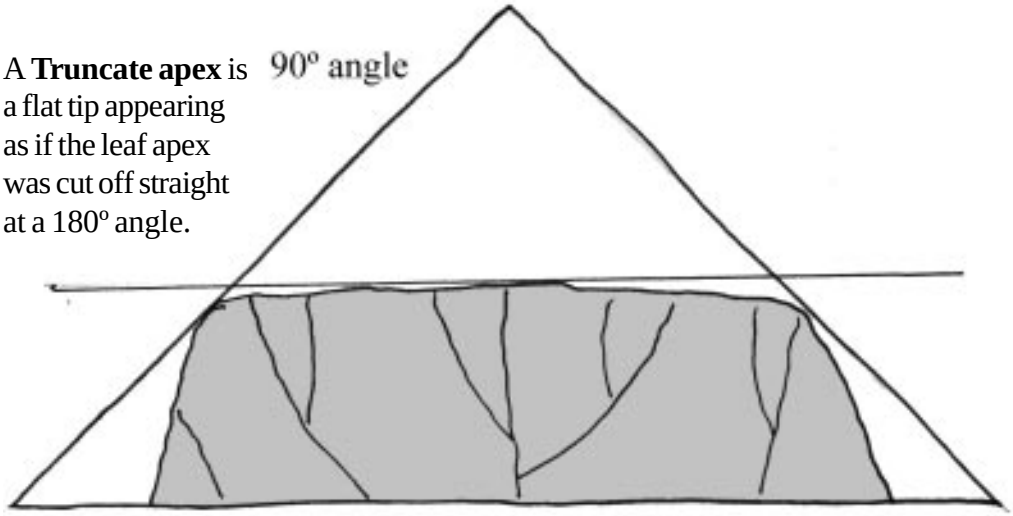


Long acuminate



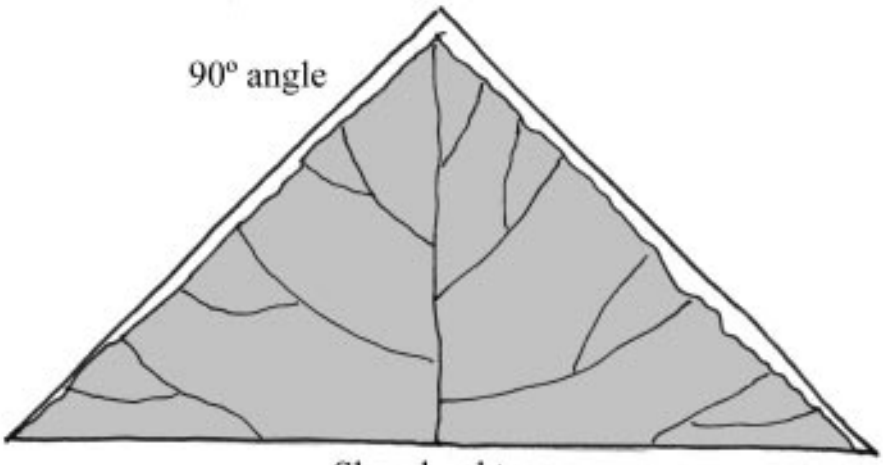
Short acuminate

A **Truncate apex** is a flat tip appearing as if the leaf apex was cut off straight at a 180º angle.

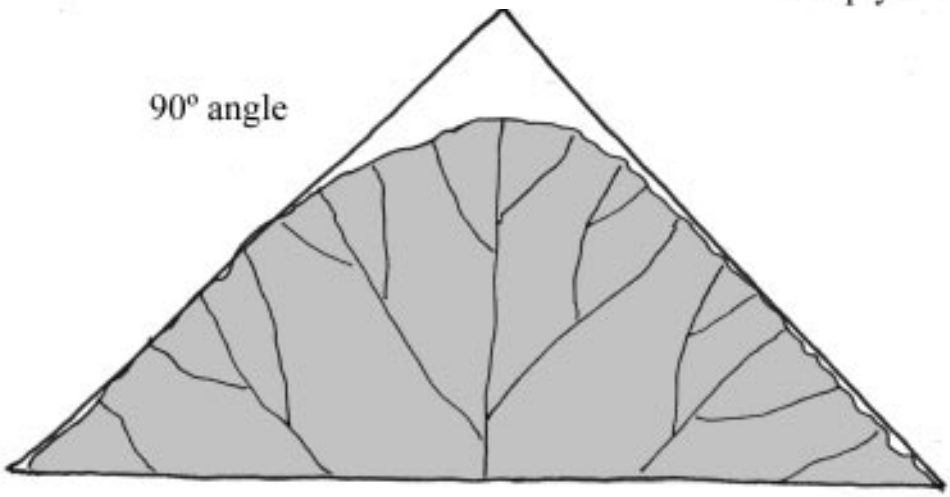


Truncate

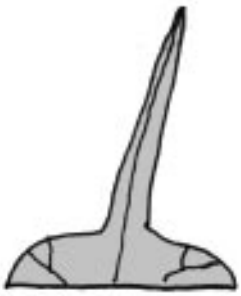
An **Obtuse apex** is an apex that has an angle between 90º and 180º and has sides that are reasonably straight with the angle. If the apex is pointed it is a **sharply obtuse apex** and if apex is rounded off it is a **rounded obtuse apex**.



Sharply obtuse

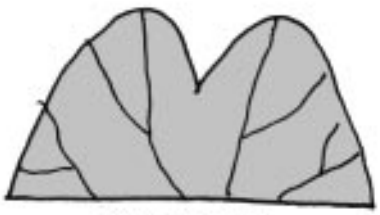


Roundly obtuse



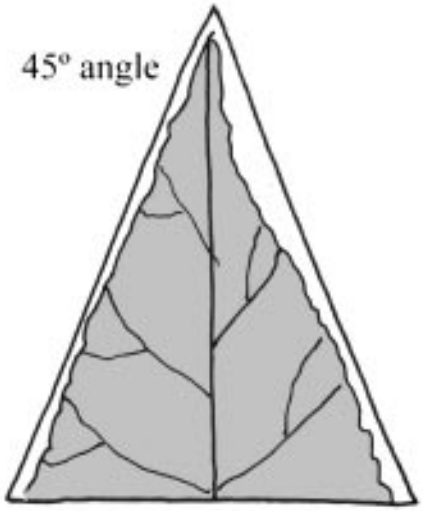
Caudate

A **caudate apex** is one that has a rounded blunt end with a fine pointed tail-like tip.

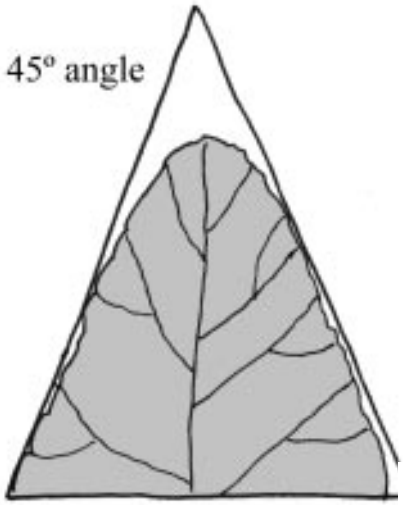


Emarginate

Emarginate apexes and Retuse apexes have an indented rounded tip forming two humps on the tip. If the humps are deep and narrow it's an **Emarginate apex** and if flat and broad it's a **Retuse apex**.

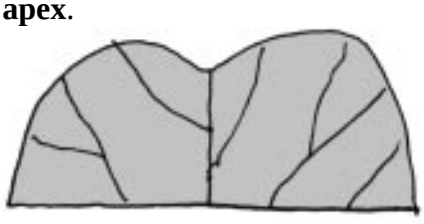


Sharply acute

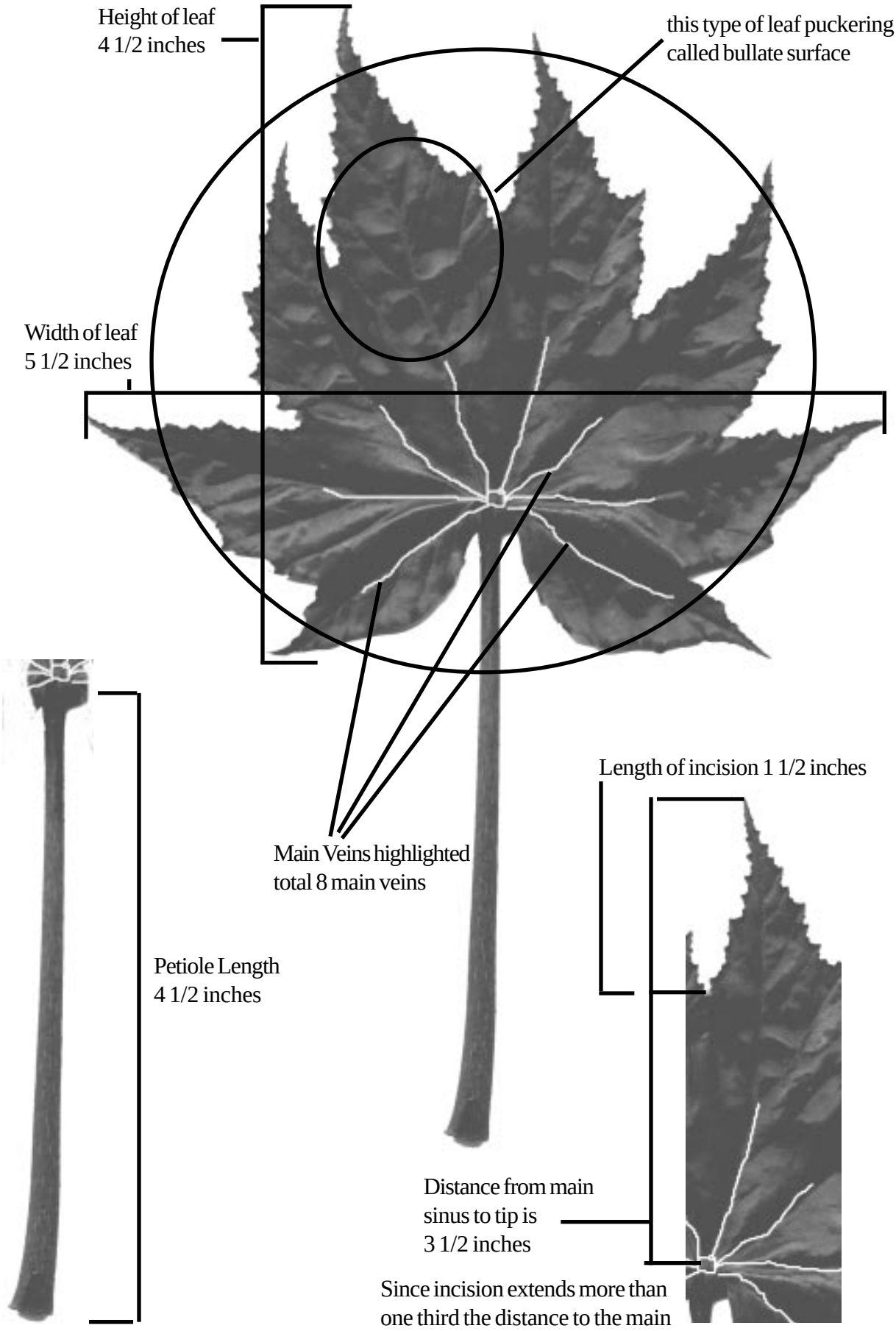


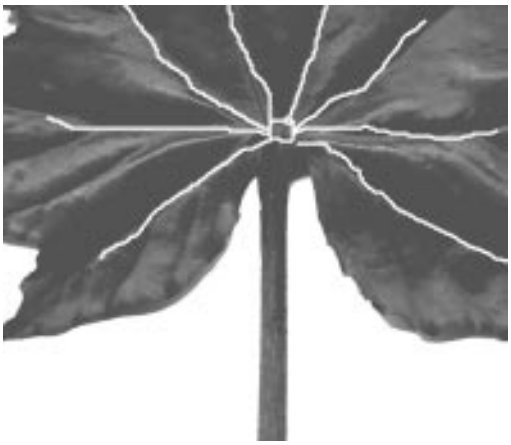
Roundly acute

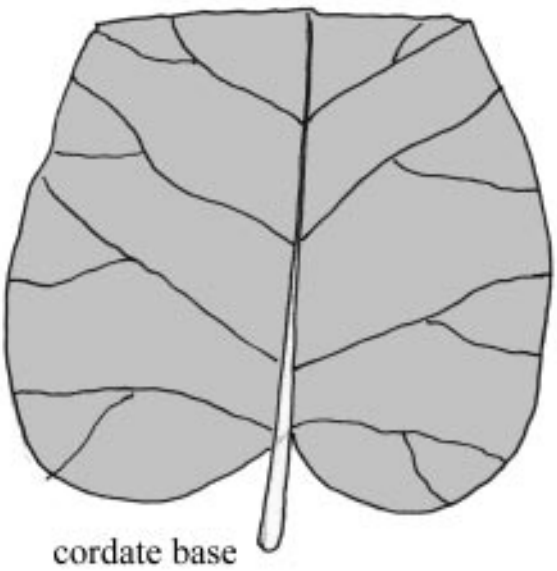
An **acute apex** is an apex of less than 90º that follows the angle in a reasonably straight line. If the apex has a point it is a **sharply acute apex** and if the tip is rounded off it's a **roundly acute apex**.



Retuse

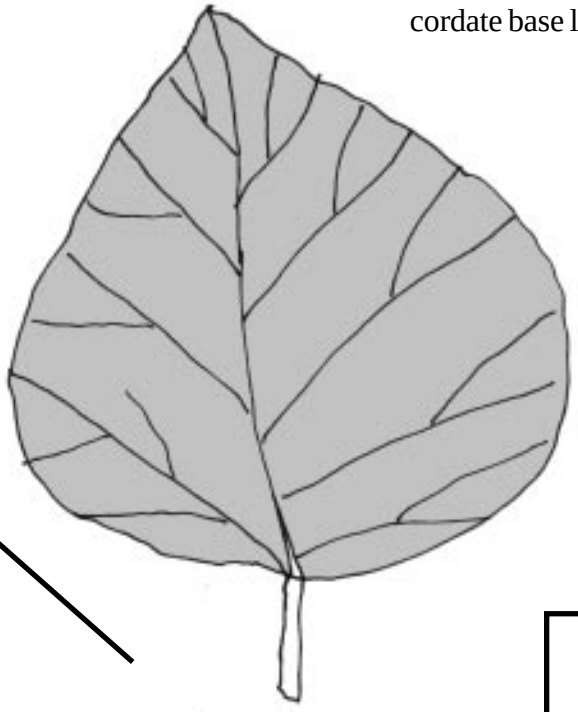

Height of leaf
4 1/2 inches
this type of leaf puckering is
called bullate surface
Width of leaf
5 1/2 inches
Petiole Length
4 1/2 inches
Main Veins highlighted
total 8 main veins
Length of incision 1 1/2 inches
Distance from main
sinus to tip is
3 1/2 inches
Since incision extends more than
one third the distance to the main
sinus but less than two thirds, that
makes this leaf a cleft leaf





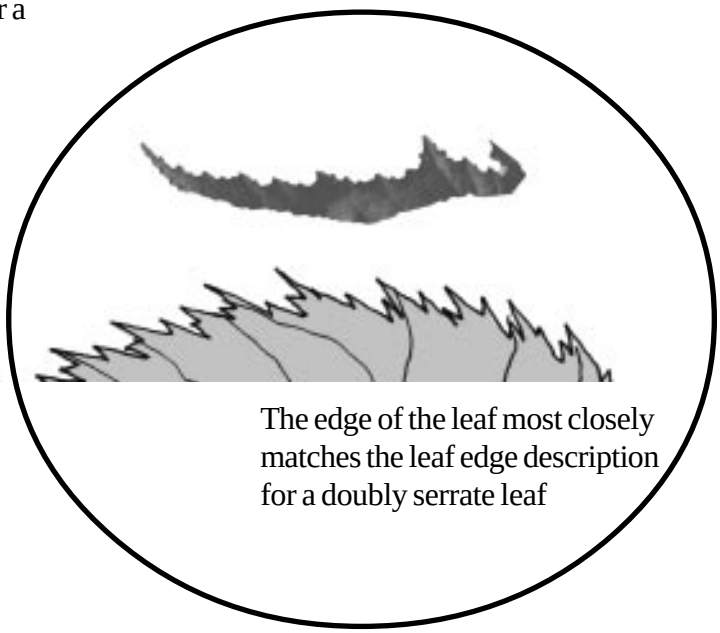
cordate base

You can see that the leaf base matches the illustration for a cordate base leaf.

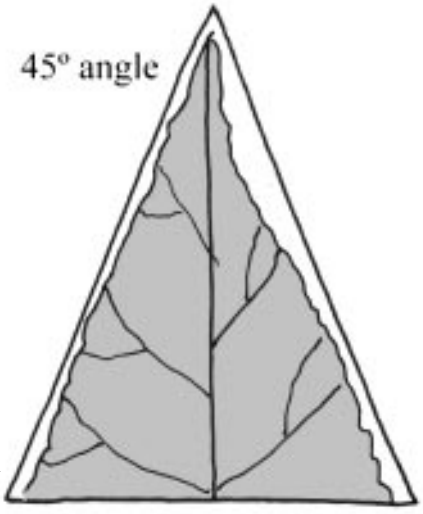


broadly ovate

If you compare the general outline shape of the full leaf to the left you can see that it most closely matches this shape. Orbicular means round or nearly round.



The edge of the leaf most closely matches the leaf edge description for a doubly serrate leaf

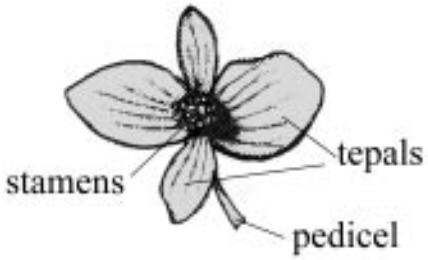


The leaf tip matches the definition and illustration of a sharply acute leaf tip.

Sharply acute

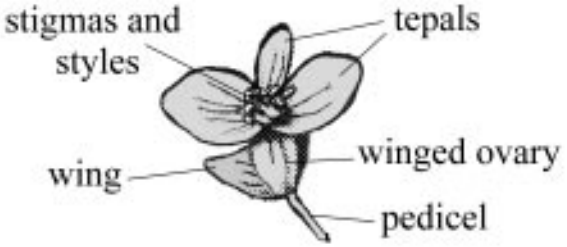
Begonia Flowers

Male Flower

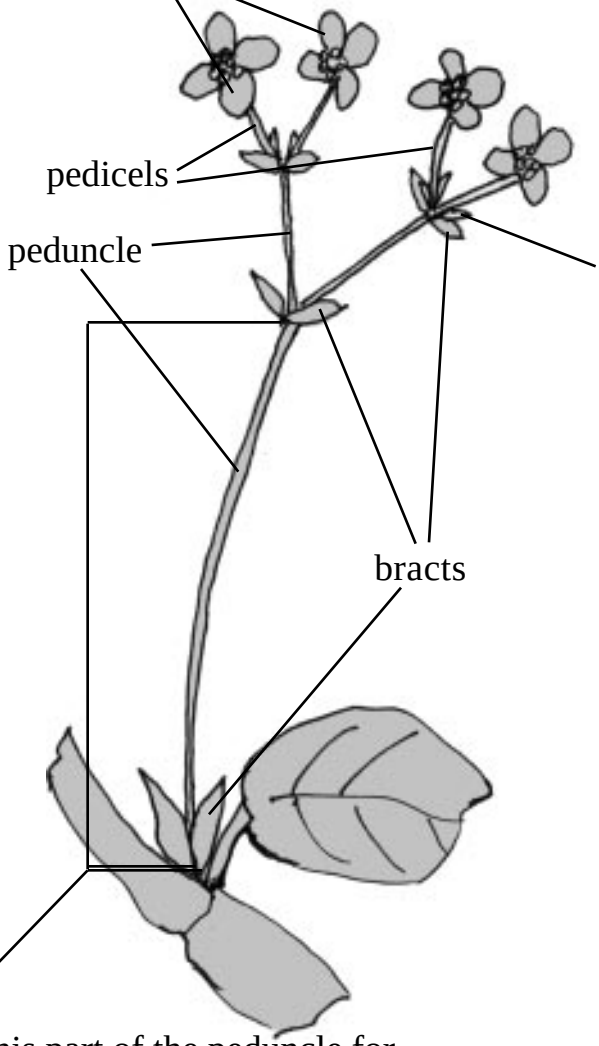


begonia flowers don't have petals,
they have petal-like structures called tepals

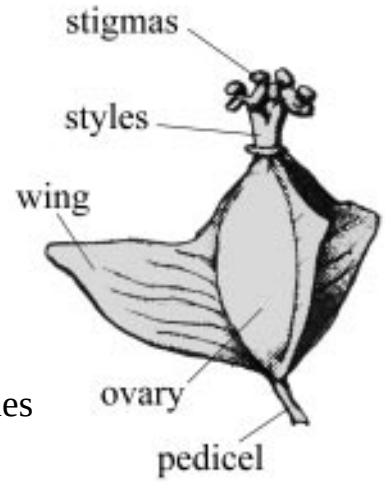
Female Flower

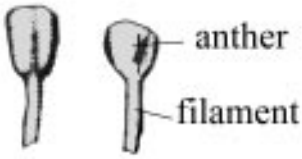


begonia flowers don't have petals,
they have petal-like structures called tepals

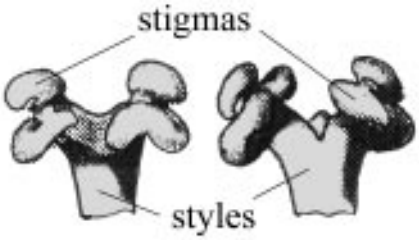


measure this part of the peduncle for
registration form peduncle measurement



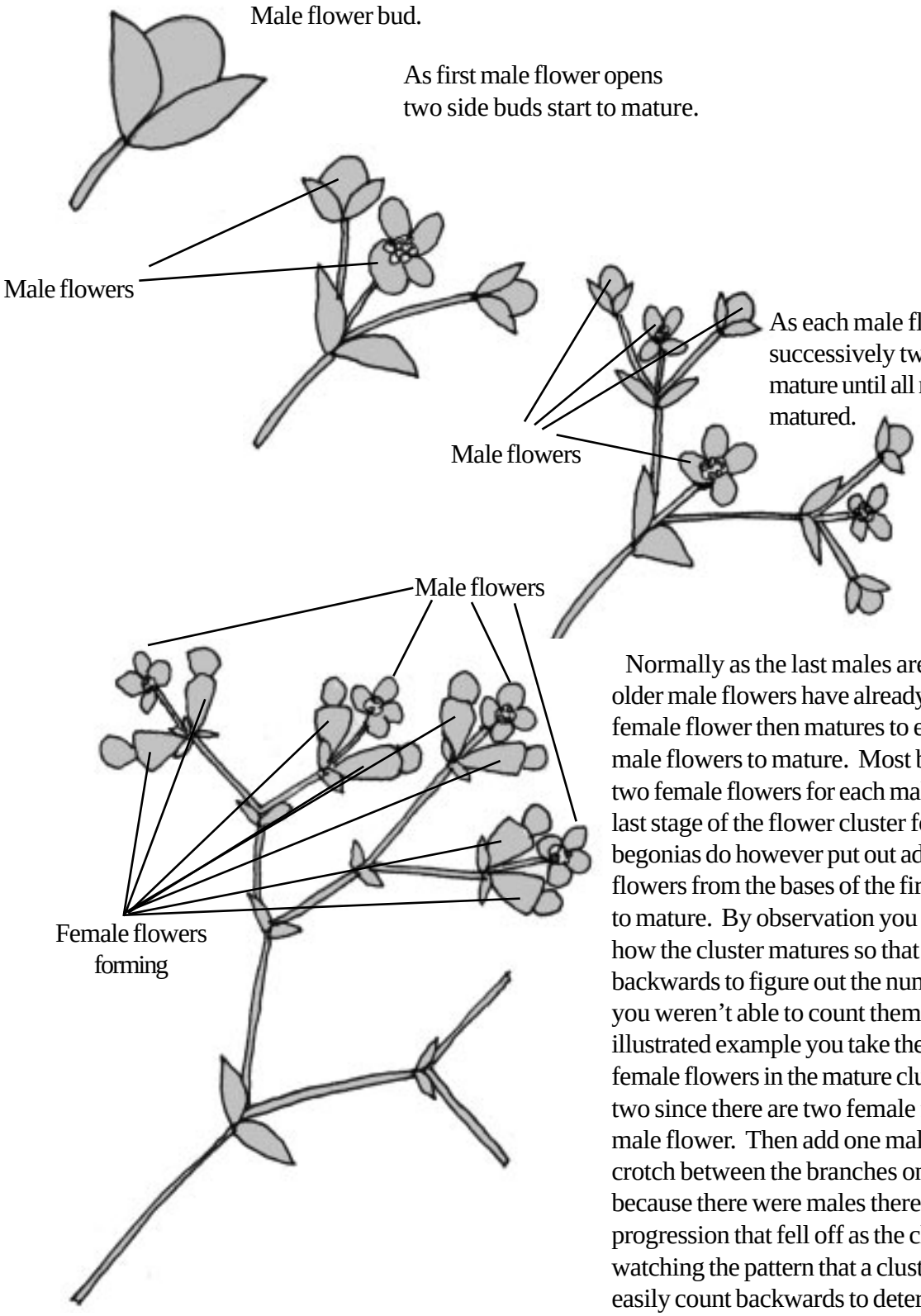


stamens



styles and stigmas

Typical Progression of a Begonia Inflorescence



Normally as the last males are matured, the older male flowers have already fallen off. A female flower then matures to each side of the last male flowers to mature. Most begonias produce two female flowers for each male flower in this last stage of the flower cluster formation. Some begonias do however put out additional female flowers from the bases of the first female flowers to mature. By observation you can determine how the cluster matures so that you can count backwards to figure out the number of males if you weren't able to count them earlier. In the illustrated example you take the total number of female flowers in the mature cluster and divide by two since there are two female flowers for each male flower. Then add one male flower for each crotch between the branches on the peduncle because there were males there earlier in its progression that fell off as the cluster matured. By watching the pattern that a cluster follows you can easily count backwards to determine the number of male flowers.

Glossary of Botanical Terms

abortive - imperfectly developed

acaulescent – inconspicuous stems or having no stem.

acuminate - tapering to a point with somewhat concave sides

acute - sharply pointed with the sides straight or somewhat convex

adventitious growth - leaves or plant parts appearing in abnormal places such as leaves growing out of a flower stalk

alate -having wings.

androecium - reproductive portion of male flower composed of one or more stamens

angulate - having noticeable angles

anther - pollen producing part of the stamen

apex - terminal end or tip

apiculate - tipped with small sharp point

articulated - jointed

ascendent - directed upwards

asexual - sexless

attenuate - gradual narrow tapering

auriculate - having ear-like lobes

axil - the angle formed between any two plant parts

axis - main stem

bare leaved - glabrous or hairless leaves

base - lowest point of attachment of any plant part

basifixed - attached at the base

Begonia - genus of the family *Begoniaceae*

Begoniaceae - the family of plants to which the genus *Begonia* belongs

binomial - species name consisting of name of genus and specific epithet

bipinnate - compound leaved with leaflets on both sides of the petiole (like a feather) which are pinnate

blade - expanded part of a leaf

bract - leaf like structure surrounding the base of flower cluster stem (peduncle)

bracteole - similar to bract but surrounding the base of the stem of an individual flower (pedicel)

bud - undeveloped shoots such as in leaf nodes of the stem

bulb - modified underground bud that consists of a very short stem covered with leafy scales or layers

bulbel - miniature bulb asexually produced about the base of scales of bulb

bulbil - small bulb like structure formed in leaf axils of the plant.

bulblet - diminutive for bulb, regardless of where it originates

bullate – leaf surface irregularly puckered or-blistered

caducous - dropping off early before maturity. Usually applied to begonia stipules which fall off after leaf matures.

cane-like - having wooden jointed stems like bamboo

carpel - the reproductive parts of the female flower

caulescent - obvious upright stems above ground

chaff - small membranous scales

chartaceous - papery thin texture

chatoyant - having a velvety sheen or luster

Cheimantha - winter-blooming tuberous group of begonias derived from *B. socotrana* crossed with *B. dregei*

chromosomes - microscopic bodies in cells carrying the hereditary material

ciliate - fringed with very fine hairs

classification - the placement of a plant and/or plant group in a category

cleft - deep lobes on a leaf which indent two thirds of the way from the leaf edge to the sinus of the leaf.

clone - descendants derived asexually, vegetative propagation such as from cuttings is cloning

compound leaf - a leaf which consists of two or more leaflets

cordate - heart shaped basal lobes

coriaceous – leathery

creeping - rhizomatous rhizomes growing on the surface of the soil

crenate - with round broad teeth; scalloped

crenulate - minutely crenate or tiny scallops

crested - frilled and ruffled edge

crispate - minutely undulating edge

cucullate - hooded; hood shaped

cultigen - plant known only in cultivation

cultivar - a variety that has originated in cultivation

cuneate - wedge-like shape

cuspidate - having a short sharp point which is concave

dehiscent - splitting or opening into parts

descendent - gradually going downward

deltoid - triangular

dentate - sharp outward facing teeth on leaf edge

denticulate - finely dentate

dichotomous - divided in two parts

dicotyledon - having two cotyledons (seedling leaves)

digitately lobed - having fingerlike lobes

dioecious - unisexual

divaricate - spreading far apart

double-serrate – with the teeth of a serrate leaf margin being themselves serrated

elliptical - oblong shape

emarginate - having a notched apex

endemic - confined to specific area or region; native

entire - leaf margin without incisions; uncut

epiphyte - plants which normally grow in and are attached to trees but which aren't parasitic.

epithet - name

erect - upright, perpendicular to the ground

Fl - first generation offspring of the mating of two different varieties

family - made up of one or more genera whose similarities are greater than their differences

fascicle - a close bundle or cluster

ferruginous - rust colored

fertile - seed bearing, when the term is applied to seed, it means seed which is capable of producing plants.

fibrous - with fibers; fiber-like

filament - supporting stalk of the stamen

fimbriate - fringed

flaccid - limp and lax; without rigidity

fleshy – succulent; thick, firm and juicy

flexuose - bent alternately in opposite directions

floccose - having soft hair or wool that rubs off easily

flora - plants of a specific region

foliage – leaves of a plant

foveolate – surface pitted with shallow distinct depressions

frutescent. - shrubby

fulvous - yellow, tawny

fuscescent - dusky

genus - classification of plants with common distinguishing characteristics; main subdivision of plant family; (plural - genera)

glabrous – bare without hairs

glaucous - waxy or powdery surface

glutinous - sticky or gluey

grex – group, when following the name of a cultivar designates that the name of all cultivars created using the same parents are identical and must carry the cultivar name.

gynoeuium - reproductive portion of a female flower

hastate - basal lobes turned outward

herbaceous - plants without woody stems

herbarium - collection of dried plants used for botanical study

herbarium specimen - dried specimen plant

hermaphrodite – flowers containing reproductive parts of both male and female

Hiemalis - a group of winter-blooming begonias derived from a cross of *B. socotrana* and a Tuberhybrida variety

hirsute - hairy

hispid - bearing dense straight harshly stiff hairs

holotype –species specimen conforming to naming author's description

hyaline - colorless or transparent

hybrid - plant resulting from crossing two different parents or by selfing a hybrid

incised - deeply cut margin

indumentum - any hairy covering

inferior ovary - ovary below the stigma and perianth

inflorescence - the flowering parts of a plant

internode - space between two successive joints or nodes

joint - node

keel - longitudinal ridge

lacerate - irregularly cleft

laciniate - cut into narrow deep lobes

lamina - expanded part of a leaf; leaf blade

lanate - covered with long, soft, dense and curled hairs

lanceolate - shaped like a lance tapering to the apex

leaf base - the portion of leaf where the petiole attaches to the leaf

leaf blade - lamina

leaflet - separate leaf-like part of a leaf

lianes - plants whose stems are vine-like

ligneous - woody

linear - long and narrow like a blade of grass

lobe – rounded or pointed projections to shape of a leaf

lobed - leaf having lobes

lorate - strap-shaped with obtuse apex

maculate - having spots or blotched coloring

marcescent – withering without falling off

midrib - main vein of a leaf

monoecious - plant has separate flowers of both sexes on same plant

monograph - a systematic account of a particular group of plants

muricate - uniform low rounded elevations on surface of leaf

muriculate - diminutive of muricate

mutation - a sport or variation from the norm

node - a joint in a stem where leaves and/or flower stalks originate

nomenclature - correct naming of plants

oblanceolate - broad end near leaf tip tapering to leaf base

oblique - slanted unequal sides

obovate - broadest part above the middle with narrower end near the base

obtrullate - angularly obovate

obtuse - rounded at the end

orbicular - with circular margin

ovary - female part of flower where seed is formed

ovate - egg shaped; broadest part below the middle

ovule - the bodies in the ovaries that develop into seeds after fertilization

palmate - radiating from place of petiole attachment (palm-like)

panicle - loose irregularly branched flower cluster

parted - leaf incisions cut more than 2/3 from perimeter of leaf to place of petiole attachment

pedate - divided into three main divisions with two outer divisions forked into two smaller ones

pedicel - stalk supporting a single flower in a cluster

peduncle - main flower stalk supporting either a cluster or solitary flower

peltate - a leaf with central attachment of the petiole and no incisions in the edge.

pendant - hanging

pendulous - hanging

penninerved - feather like veining

petiole - attaches the leaf blade to the stem; leaf stalk

petiolule - petiole of a leaflet

pilose - covered with soft long hairs, not dense

pinnate - feather-like arrangement

pinnatifid - with margin pinnately cleft or parted

pistil - the ovary, style, and stigma of a female flower

polymorphic - having various forms

procumbent - growing flat on the soil

prostrate - laying flat

puberulous - densely covered with very short fine hair barely visible to the naked eye

pubescent - covered with hairs; a general term of hairiness

puncticulate - marked with dots, depressions, or translucent glands

purpurascent - purple or becoming purple

pustulate – texture having uniform elevations like blisters or pimples

ramified - branched

reniform - shaped like a kidney

repand - with even and slightly sinuous edge

reticulation - network pattern showing weak groves outlining veining

retuse - apex is rounded very slightly notched at the end mid-vein

rhizomatous - possessing rhizomes

rhizome - stem which enlarges on or under the ground with nodes and internodes producing roots on the underside when it touches the soil

rotundate - rounded in outline

rugose - reticulation deeply grooved over the veins of the leaf creating uneven raised elevations

sagittate - basal lobes downward shaped like an arrow

scabrous - covered with scattered harsh hairs which are not erect

scandent - climbing; vine-like

scape - flower stalk which arises directly from the soil

scarious - thin and dry; appearing shriveled

section - optional division of a genus

seedling - plant raised from seed

semi-tuberous - caudex forming

sericeous - silky, satin-like sheen

serrate - with sharp saw-like teeth that point toward the leaf tip

serrulate - finely serrated

setose - bristly

setulose - minutely setose

shoot - a young growing branch or stem

shrub-like - a woody plant which produces shoots from base

simple leaf – leaf with one blade

sinuate - uneven indented margin

sinus - the point of the leaf where the veins meet the petiole

species - subdivision of a genus of a plant family (species is both the singular and plural)

squarrose - rough or scruffy

stamen - the pollen bearing organs of a male flower

stem - a stalk which supports leaves, flowers or fruit

sterile - lacking functional sex organs or infertile

stigma - the part of the pistil that receives the pollen

stipule - appendage at the base of the petiole

stomata - pores in the leaf formed by two guard cells

strigose - with harsh, stiff, straight short hairs

style - stalk-like part between stigma and ovary

subentire - having very slight marginal incisions

subspecies - rank of a taxon between species and variety

subulate - awl-shaped

succulent - juicy; fleshy; soft and thickened

suffrutescent stems - stems which are woody at the base

sulcate - with longitudinal grooves

synonym - alternate or previous name

taxonomy - the science of identification, nomenclature, and classification of plants

tepals – petal like structures of begonia flowers (begonias don't have petals or sepals)

terrarium - a container with enclosed atmosphere

thecae - pollen sacs of anther; anther cells

thick stemmed - type of begonia with overly thick upright stems

thickset - short jointed stem thickly leaved

tomentose - thickly covered with matted wool-like hairs

trullate - angular ovate

truncate - nearly straight across the base of the leaf

tuber - greatly thickened short fleshy portion of underground stem

umbel - pedicels arising from the same point

undulate - wavy edge

variety (var.) - a subdivision of a species

veinlets - small veins

velutinous - velvety, covered with soft fine hairs

venation - the pattern of veins in the leaf blade

verrucose - having a wart-like surface

villous - having moderately long soft hairs not necessarily straight which are somewhat shaggy