

BAMBOO SOURCERY

ALL ABOUT BAMBOO

INFORMATION SUPPLEMENT

Open to all by appointment

666 Wagnon Road, Sebastopol, CA 95472
Tel: **707.823.5866** Fax: **707.829.8106**
www.bamboosourcery.com

Contents

Introduction	Containment	Bamboo Plant Selection
Fascinating Facts about Bamboo	Flowering of Bamboos	Regional Recommendations
How Bamboos Grow	How and When to Plant	Bamboos Indoors
Clumping and Running Bamboos	Site and Soil Preparation	Indoor Plant Selection
Runners vs Clumpers: Choosing the Best Type	Potting Mixes	Books on Bamboo
	Fertilizers for Bamboo	Definitions
	Watering of Bamboo	Species Descriptions
	Possible Bamboo Pests	

Introduction

Bamboos are among the Earth's most beautiful and useful plants, providing outstanding texture and form as screens, hedges, ground covers and specimens. They enhance and transform gardens into peaceful sanctuaries of light, movement and space, touching our spirits and stirring our souls. Bamboo can beguile and possess. So be forewarned, you may shortly find yourself becoming ensnared with bamboo magic.

Over 1000 species of bamboo in 90 genera have been described and named. The current rate of discovery suggests many more are still unknown. They come in a staggering variety of colors, sizes and shapes. Some creep along the ground only a few inches tall, others soar freestanding to over 100 feet. Some grow in tight clumps, others in open groves. Some even clamber up trees. The leaves of some species grow only half an inch long, while others reach a couple of feet. Many species have beautifully variegated culms (stems) and leaves. Bamboos come in many colors, shapes and sizes.

The diversity of species is perhaps not too surprising when one considers the many environments in which they have evolved. Indigenous bamboos are distributed widely throughout Asia, Africa, Australia, and North and South America. They have evolved to fill a variety of ecological niches ranging from tropical lowland to Alpine highland, from rain forest to dry chaparral, and from acid to alkaline soils.

Bamboo Sourcing offers an extensive variety of bamboo plants in many sizes, ranging from the 1 gal and 5 gal sizes to magnificent giant timber specimens 30 to 40 feet tall in large tubs. Our beautiful and unique demonstration garden and expert advice enable you to select the best varieties for your needs. All stock is container-established and ready for planting. Special orders are welcome, and we deliver within the greater Bay Area. Delivery cost is based on distance. Removal services are offered on a case-by-case basis when staff time is available. We also carry bamboo root barriers, fertilizer, fencing, poles, garden accessories and books. Most of these items and many of our plants can be viewed in color photos on our website at bamboosourcery.com.

We distribute our Bamboo Price List on request, which is also accessible on our website. This list is updated frequently and includes information about size, running/clumping type, sun exposure, cold tolerance, maximum heights possible in their ideal native environments, and current availability.

The nursery and garden, located 1¼ hrs drive north of San Francisco, is open by appointment only. Days and hours may vary seasonally. If you wish to visit the nursery, please call ahead Tuesday through Saturday to schedule an appointment at (707) 823-5866.

Fascinating Facts about Bamboo

- ◆ **Helps Reverse Global Warming:** Incredible and true, bamboo produces 35% MORE OXYGEN and CONSUMES 4 TIMES MORE CARBON DIOXIDE than a forest of young trees!
- ◆ **Sustainably Harvested & Annually Renewable:** Mature bamboos produce new shoots and canes each year, which can be harvested individually without destroying the plant. No clear-cutting and no replanting are required.
- ◆ **Fastest Growing Plant on the Planet:** New shoots of some tropical species have been clocked growing up to 4 FEET PER DAY in their shooting season! Its lumber yield (weight per acre per year) is up to 25 TIMES THAT OF TIMBER!
- ◆ **Environmental Cleanup:** Bamboo plants are very effective at removing nitrogen, metals and other toxic substances from soils and water.
- ◆ **Diverse:** There are over 1500 SPECIES of bamboo in the world.
- ◆ **Stronger Than Steel:** Bamboo has a TENSILE STRENGTH of 28,000 lbs per square inch, vs. 23,000 lbs for steel.
- ◆ **Provides Safe Housing:** Over 1 billion people in the world live in BAMBOO HOUSES. Bamboo buildings have proven to be exceedingly earthquake proof.
- ◆ **Nutrition for Humans and Animals:** BAMBOO SHOOTS have been eaten throughout Asia for centuries, and branches and leaves make good fodder for animals. It contains Germanium, which reverses the aging process in cells.
- ◆ **Ancient Healing:** Various parts of many bamboo species have been used in CHINESE AND AYURVEDIC MEDICINE for centuries.
- ◆ **Did You Know?** Thomas Edison used bamboo filaments in his first LIGHT BULBS, and one of those bulbs is STILL burning today at the Smithsonian in Washington, DC!
- ◆ **Hardy:** Bamboo was the FIRST PLANT LIFE to return after the atomic bombings in Japan. Also, some bamboos are cold hardy to 620 degrees F.

How Bamboos Grow

Bamboos grow in fits and starts. For much of the year nothing much appears to be happening, and then in one brief season they explode with growth. In general, the first year or two after transplanting, you will not see tremendous above-ground growth, as the plant is putting most of its energy into its root system.

During the summer and fall, most species manufacture and store sugars in their rhizomes. Rhizomes produce the roots, top growth, and new rhizomes. Then in spring and sometimes fall, they pump the accumulated energy into new shoots (culms), which achieve all of their height in about 30-60 days. The branches and leaves develop in another 30-60 days. Shoots of some species in mature groves in tropical climates have actually been clocked growing 4 feet in one 24-hour period! As a young plant's rhizome system expands, its ability increases to produce larger, taller, and more numerous culms. Thus, each year's crop of shoots is larger than the last, until the mature size for the species is reached and new culms continue to come up at the mature size. This may take a number of years, depending on the size and age of the original planting, the species, and the growing conditions.

Individual culms and rhizomes only live an average of 5-10 years, and the culms grow no taller or bigger with age. That is why the older parts of the plant are frequently the smallest. Old or dead culms can be thinned out to make more light available for new growth.

The shooting period varies from species to species and genus to genus. In general, the temperate climate bamboos are runners, which shoot in the spring, while the tropical and sub-tropical varieties are clumpers, which shoot in the late summer and fall.

The size and appearance of any particular bamboo variety may vary significantly depending upon climate and conditions. Size alone is greatly affected by location, temperature, nutrition, water, and sun exposure.

Clumping and Running Bamboos

There are two main types of bamboo: *Running bamboos* (monopodial or leptomorph) are the ones that spread through the growth of long, horizontal roots, called rhizomes. *Clumping bamboos* (sympodial or pachymorph) have short roots and form discrete clumps which are noninvasive. There are also a few species of clumpers which have slightly longer roots (6-18ö), and we refer to these as “*open clumpers*.” With a little knowledge and proper materials, running bamboos and open clumpers can be effectively contained. The information in this catalog will enable you to grow beautiful, well-behaved bamboo.

Clumping types have a very short root structure, are genetically *incapable* of expanding more than few inches a year and will generally form discrete clumps. The clumps slowly enlarge as new culms emerge every year, but may ultimately need to expand to anywhere from a 3 to 10 ft. diameter (or more, especially taller types) in order to reach their mature height, depending on species. The dense root system can exert strong pressure on structures in contact with it, and thus clumpers should be planted at some distance from fences, sidewalks, etc. Clumpers make excellent specimen plants and will also form very dense screens, but more slowly than runners. Except for the *Fargesias*, clumpers tend to be less cold-hardy than runners.

Running types spread variously, sending out underground runners, or rhizomes, which sometimes emerge far from the parent plant. Runners fill in the spaces between plantings faster, making them ideal for screens, hedges, and the popular open grove look. Runners may be easily contained, as described below, since the rhizomes grow sideways, typically at a depth of about 2-18 inches. Most are also very cold-hardy.

Runners vs Clumpers: Choosing the Best Type for Your Needs

We provide here some tips and criteria for how to choose between runners and clumpers for a given purpose or planting location. These are very general guidelines and there can always be exceptions, depending on the situation.

Runners are recommended for:

- ♦ Fast privacy screens with quick fill-in, in narrower spaces than clumpers.
- ♦ Greatest height in the SF Bay Area ó some species grow up to 50 feet. In more tropical climates, some giant timbers may reach 60-70 feet.
- ♦ Large open groves.
- ♦ Ground covers and erosion control.
- ♦ Container planting.
- ♦ Less expensive plants (but may require root barrier installation).
- ♦ Greater variety of species to choose from.

Runners are not recommended for:

- ♦ Situations where barrier installation is desirable but problematic (e.g. tree roots or on steep slopes)
- ♦ Where fear of invasiveness is insurmountable.

Clumpers are recommended for:

- ♦ Dense screens (but slower to fill in).
- ♦ Height: Maximum SF Bay Area height is 30 ft, 40 ft. in some locations. Some of our giant

timber clumpers may grow up to 55 ft. in tropical climates.

- ◆ Specimen plants and ornamental accents.
- ◆ Wherever spreading is undesirable.
- ◆ Where root barrier installation is too expensive or difficult (e.g. tree roots or on steep slopes).
- ◆ Large, wide planting spaces or containers. Clumpers may need to expand to anywhere from a 3 to 10 ft. diameter, or more, in order reach their mature height, depending on species.

Clumpers are not recommended for (again, these are very general guidelines and there can always be exceptions, depending on the situation):

- ◆ For fastest screens or fill-in. (They do gain height rapidly, however).
- ◆ Narrow planting beds or small or narrow containers, especially ceramic ones which can be broken by root pressure. Clumpers cannot easily adjust their circular shape to a long, narrow space, and height of culms may be limited if too small a space is allowed for the roots. Annual thinning can extend the length of time a clumper can grow in a small, contained space, however.
- ◆ Cold winter areas which receive lots of frost or temperatures below 20 degrees F. (except the Fargesias, which are hardy to 620 degrees).
- ◆ For wide choice of species. There are fewer clumping species to choose from for any given micro climate or sun exposure, but there are some clumpers appropriate for almost every area. About 1/3 of the bamboo species are clumpers.

Containment of Bamboos

Runners:

Runners should generally be contained if on a property line or in a small yard, even if bordered by surface structures such as brick or cement patio, cement sidewalk or driveway, or shallow walls. *The safest methods for containing running bamboos are:*

1) Planting in containers.

2) Installing high-density polyethylene plastic rhizome barrier, 40-60 mil thick and 22-34 inches deep, vertically around the perimeter of the area in which the bamboo is to be contained. This material is thicker than a credit card and comes on a 300 ft. roll in different widths, 24" x 40 mil, 30" x 40 mil, 30" x 60 mil, and 36" x 60 mil. It can be cut to any length and installed in any shape desired. Even large plantings of bamboo can be surrounded with a single length of plastic, requiring only one seam. The polyethylene is superior to cement and metal (cement often develops cracks, and metal rusts and requires many seams), is less expensive, and can last 20-30 years when installed according to our barrier installation instructions. We typically recommend using the 30ö barrier for most plants in the Phyllostachys genus.

Note: When planting *along a fenceline*, if there is sufficient space it is advisable to leave an 18-24ö corridor between the fence and the bamboo barrier to allow a space for maintenance along the back side of the planting area. Also, when planting on *very steep slopes* or *planting very large giant timber runners in soft, sandy soil*, it may be necessary to use a 36ö deep barrier.

Less defined ways to contain runners are:

Bamboo Flowers/Seed Heads

3) Water only the area in which the plants are wanted and nowhere else within 10 to 20 feet (in climates that have several dry months).

Dry soils are a barrier to root growth. Spreading rhizomes require moisture and grow primarily during the warm summer months when most of the western states are dry. Cutting off new shoots coming up wherever they are not wanted complements and completes this method.

4) A water-filled stream or ditch can also effectively block the spread of bamboo, since rhizomes and roots cannot tolerate extended periods of saturation. Water need only be present for one season a year.

In some situations it is easiest to wait and see if there is going to be a problem before installing containment measures. Many species require 3 years of growth before they begin to spread. Some running bamboos behave as clumpers under certain circumstances, such as lack of exposure to sun or very cold winter temperatures. On a large property where invasion of neighboring land or other parts of a garden are not issues, one may simply let the rhizomes go where they wish and remove new cane shoots by breaking them off if they emerge in any areas where canes are not desired. The tender shoots of larger species may also be harvested for food when just breaking ground. Since the rhizomes generally grow quite shallow, usually within the top 12" of soil, roots may also be curbed annually by cutting with a shovel and pulling them out while still young. The hazards of bamboo cultivation are often overstated.

We also occasionally remove unwanted bamboo free of charge if we have time and have a use for it. If further advice or clarification is needed, please call Bamboo Sourcery.

Clumpers:

With clumpers, it is not necessary or effective to surround the plant with a plastic root barrier. However, when selecting clumpers and planning the space, one must keep in mind that the root ball of a clumper must be allowed to reach a certain size in order to grow culms of a mature height. The circular space required may vary from 3ø to 10ø in diameter, or more, depending on size of species. Clumpers cannot adjust their circular shape to a long, narrow space, and height of culms may be limited if too small a space is allowed for the roots.

In addition, clumpers may be shaped and prevented from putting pressure on any surrounding structures (such as a fence or sidewalk) by removing new shoots at soil level when they begin to encroach more closely on those structures. It is advisable to plant a clumping bamboo 2-4ø from a fence to allow some room for growth, top spread, and space for maintenance between the bamboo and the fence.

Flowering of Bamboos

One of the mysteries of bamboo is how some species are able to flower periodically all over the world at the same time. This is called "gregarious flowering." This was the case with *Phyllostachys bambusoides* when it flowered during the 1970's, as it has done every 120 years through recorded bamboo history. Being an important timber variety, records of its flowering go back many centuries. To our knowledge, no one yet knows what triggers the flowering. While the flowering of some bamboos is periodic, others seem to be triggered by environmental conditions such as drought or stress. We do not sell plants that we know to be going into "gregarious flowering" stage; however, we also do not have records adequate to predict when most species will flower. Flowering of the

individual plant may continue for 2 to 7 years and is often fatal; but with extra care and feeding, the mother plant may survive and just be smaller. In addition, the numerous seeds may be planted and will reproduce the mother plant identically, but may occasionally produce new and interesting variations. By the time the mother plant finishes flowering, you may already have new seedlings well on their way!

Bamboos belong to the grass family, and their flowers look a lot like the flowers of other grasses, usually nothing spectacular, but quite varied. Traditionally, botanists describe species on the basis of their flowers. Because the flowering interval of some bamboo species is so long, botanists in the field often have difficulty finding flowers and defining species on that basis. This sometimes results in multiple names for the same plant and a great deal of confusion. Promising genetic research and international cooperation should help clarify the situation.

How and When to Plant

There are no hard and fast rules about planting bamboo. But we offer the following guidelines:

Bamboos grow best in rich, moist, well-drained soils. Often the addition of compost or other additives is beneficial (see section below). Place the plant at approximately the same soil level as it is in the pot, in a hole somewhat larger than the pot. After filling in around the plant, pack the soil firmly to eliminate air bubbles and soak thoroughly. Through the first year, make sure the plant remains moist but not waterlogged. Do not fertilize for the first 6 months. Plants have been fertilized at the nursery, and additional fertilizer at this point could shock the plant.

The best time to plant varies from area to area and species to species. In **cold winter** climates the best planting time is in the spring when likelihood of frost is past and when the ground can be worked. Bamboos do not develop their full cold-hardiness until well established, and planting in spring gives the plant a longer growing season to get established and develop its cold-hardiness before the next cold season. If planting in the late summer, we recommend planting even the most cold-hardy bamboos at least 3 months before first frost (although planting season may be somewhat extended by using frost covers). Thick mulch is recommended to protect the plants over the first winter regardless of when planted.

In **very hot summer climates**, the best planting times for bamboos are early spring and late fall. Bamboos will more readily establish themselves when weather is milder and rain is more likely. Mid-summer planting can sometimes be accomplished by using shade cloth to protect from intense sun.

In **mild climate** areas such as coastal California, it doesn't make as much difference, except for the least cold hardy clumpers, for which spring is still the best. Here every season has its advantages, with spring and summer offering the most active growing periods and fall, winter and spring sharing the rainy season.

Site and Soil Preparation

Most bamboos grow best in deep, well-drained, fertile soils, and they generally prefer neutral to slightly acid soils. If your soil is deficient, the extra time and expense of improving it is usually well worth the effort.

Sandy soils and *alkaline soils* may be improved with the addition of organic materials such as compost, peat, manures, nitrolized sawdust, or bark chips. These materials help retain moisture, acidify the soil, and also provide nutrition to the plants. Acid fertilizers can also be added to compensate for extremely alkaline soils. For *overly acidic soils* with pH of 5.5 or lower, add lime to

reduce acidity to a pH of 6.0 - 7.0. *Clay soils* may be improved to provide better drainage with the addition of sand and organic materials. Most bamboos suffer root damage if submerged in water for several weeks. Drainage may also be improved by mounding the soil or ditching around the planting. Bamboos can be grown well in very shallow soils if adequate fertility and moisture are maintained. It's always a good idea to consult with your local nurseryman about how best to amend your local soils. (Note: If you have gophers in your area, be sure to read the section on *Pests* before planting).

Potting Mixes

If you plan to grow your bamboo in containers, make sure to use a good potting mix. Most commercial potting or nursery mixes are adequate as they are.

The soil you use should both drain well and retain moisture. Most mixes contain both organic and inorganic elements. Sand, volcanic cinders, and perlite are excellent stable inorganic components. Sand has the virtue of being cheap, while cinders and perlite not only promote good drainage but also hold water. Fir bark, compost, and peat are good organic components. In general, larger organic particles last longer before breaking down; therefore, drainage improves with larger particles, decreases with smaller ones. It may also be advantageous to add a small proportion of loam or clay for micronutrients. In a potting mix one basically looks for texture rather than nutrition, however. Nutrition is easy to supplement.

Repotting every third year is often helpful to keep the plant growing vigorously and looking its best. One may either repot it into a larger pot or divide the plant with a saw or hatchet. Annual pruning of old and dead wood will also improve the appearance and health of the plant.

Fertilizers for Bamboo

It is not necessary to use brands listed here. Any fertilizer with roughly matching numbers is OK.

Bamboo in the Ground:

Mar – Sep: Turf Supreme Fertilizer, 16-6-8. High in nitrogen to keep leaves green. Use one cup per 64 sq. feet (8 oz per 8' x 8' area), applied once a month.

Oct – Feb: Apex Fertilizer, 6-20-20. For greater growth of roots and shoots. Use two cups per 64 sq. ft. (8 oz per 8' x 8' area), applied every 6 weeks.

After plants in the ground reach the desired height & density, maintain with 16-6-8 twice a year in March & June.

Also highly recommended for plants in the ground is composted horse manure, which is the bamboo fertilizer of choice in Asia. Every other year we spread it about 4" deep in late fall to allow time for nitrogen conversion and use the rest of the year. For exceptionally tall growth, two applications per year may be used (early spring and late fall). During manure application years, additional chemical fertilizers are unnecessary. Use other manures if you have them available, but avoid nitrogen-hot ones, such as chicken and steer manure.

Bamboo in Containers:

Year 'Round, Indoors or Outdoors: Apex or Osmocote Fertilizer, 14-14-14 or 16-16-16, four to six month slow-release. Apply the following amounts once every four to six months:

1-gallon planter ó 1 Tbsp

5-gallon planter ó 2 Tbsp

15-gallon planter ó ¼ Cup

25-gallon planter ó ½ Cup
3ø x 3ø planter ó 1 Cup

Watering of Bamboo

First and foremost, keep your bamboo well watered. Bamboo likes plenty of deep watering - soaking down to at least 12 inches - and also good drainage. If you are keeping your plants in containers, or unable to transplant for a while, make sure the water is running out of the bottom of the pot each time you water. With ground plantings, a deep soaking less frequently is best, rather than a shallow watering every day. Then wait until the soil is just slightly damp - not wet, and not bone dry - before watering again. After the first few months, you can usually depend on a spray emitter irrigation system, using 2 to 4 high volume emitters per plant. (We do not recommend "drip" systems, as they do not emit a large enough volume of water and do not cover an area widely).

You will need to keep a close eye on your bamboo for a while to determine how much and how often to water in your particular microclimate, soil type and season. Occasionally, check moisture in the ground by digging down to a depth of at least 4 inches. If the soil is dry at 4 inches, water is not getting to the roots adequately. This is especially important during the first 2-3 months after transplanting. Also, as a rule of thumb, if the leaves are curling sideways (lengthwise) this means your bamboo is stressed and not getting enough water. If the leaves are drooping downward, your bamboo might be getting too much water and/or not enough drainage.

Also, in full sun, dry, windy or hot situations, it is ideal to spray the foliage with water once a day for an initial transition period of 2-4 weeks, and/or all summer in dry, hot climates. Regular overhead watering will reduce the amount of leaf drop during the transition, help your bamboo get established quickly, and increase its growth rate and ultimate height in dry climates.

Possible Bamboo Pests

Bamboo doesn't have many pests, but the pests they do have can be unsightly, if not a serious problem, unless some simple steps are taken.

Gophers and Squirrels - In northern California we have an abundance of gophers and squirrels, who think tender new rhizomes, bamboo shoots, and even new branch buds are a delicacy. To protect the rhizomes from gophers, the best solution is to plant inside of a ¼ inch mesh metal gopher basket (which can be purchased). By the time the basket has rusted away, your bamboo is usually large and well established, and gophers cannot do enough damage to seriously harm your bamboo. If you find that new shoots or new branch buds are being chewed up by squirrels or gophers, painting on tabasco sauce is quite effective! (It may leave permanent stains on culms, however).

Insects: Mites, Aphids, Mealy Bugs, Scale, & Ants - It is much easier to keep mites out of your bamboo than it is to get rid of them once they have established themselves. Therefore, inspect any new bamboo you import into your garden and clean thoroughly with a high-powered hose if there is any sign of mites. Also, mites live in grass, so make an effort to keep grasses away from the base of your bamboo.

The symptoms of mites are small, regular, bleached-looking spots on the leaves. If you look very closely at the underside of the leaves, you will also see a very fine white web. The mites themselves are silvery grey and so small it is hard to see them without a magnifying glass. Often mites and aphids can be found together, and the treatment for both is the same.

Aphids are small crawling insects, either green or black in color. Mealy bugs appear usually in branch joints as little spots of "white cotton" which seem not to move at all. Scale looks like little, flat cones on branches and leaves, and are light colored when young, growing darker and more visible with age.

Aphids, mealy bugs and scale are sometimes accompanied by ants and/or sooty mold. These insects all produce a sticky secretion that can be eaten by ants, and sometimes a black sooty mold grows on it as well. So the presence of ants or sooty mold is often a sign of insect problems. The ants themselves do not harm the bamboo.

With the interests of the environment in mind, below you will find our approaches to insect problems, with the most environmentally friendly listed first:

- If you have a pressure washer, use it once every week or two on the bamboo. This can be very effective against mites and other insects, and will not harm the leaves.
- Create an insecticidal soap made with Arm & Hammer laundry detergent (powder), using 1 tablespoon per 1 gal water in a sprayer. Apply no more than once every two weeks. It turns leaves somewhat yellow, but is our treatment of choice because of its high effectiveness and low toxicity to the environment.
- Niem Oil: organic insecticide which kills mites, aphids, mealy bugs, white flies, and other insects. Follow directions on bottle, including all safety precautions. (Other ultra-fine oils can also be used).

If the above are not sufficiently effective and you have a large area of infested bamboo, you might consider the following more toxic substances:

- Malathion: kills pretty much all insects - follow directions on bottle, including all safety precautions.
- Avid: kills specifically only mites and leaf miners, no other insects or birds. Very expensive and hard to find in retail stores - follow directions on bottle, including all safety precautions.

Scale - In areas that do not get a good winter frost, scale can be a problem (sometimes in conjunction with ants which farm scale, and sometimes independent of them). There are good scale sprays available, so if you live in such an area and have discovered scale, visit your local garden store and get their recommendations.

Other possible pests - Bamboo in the West is a deer-proof plant. We have lots of deer here in Northern California, specifically the western mule deer, but have never had a problem with them. However, if bamboo is the only fodder for miles around they might eat it, especially tender new plants, and in that case deer fencing around your new bamboo plants is a good idea. In the eastern U.S., the white-tailed deer co-evolved with our one native American species of bamboo, *Arundinaria gigantea*, and developed a taste for bamboo; and therefore deer fencing is more imperative in the eastern states.

Bamboo Plant Selection (how to choose plants for your location)

There are several factors involved in selecting the plants that will best suit your needs from the myriad of bamboos available. You will find the first four of the characteristics listed below described for each species on our Price Lists.

Temperature: Cold-hardiness, the lowest temperature tolerated by the root system of each species for 2-3 nights at a time, is listed on our Price Lists for each plant. (We tend not to use zone systems, since there are so many different systems). It's best to select bamboos that will tolerate temperatures well below what you've experienced in perhaps the last 10 years in order to ensure healthy plants long-

term. The cold-hardiness rating generally represents the threshold for root death. Somewhat less cold temperatures may cause only leaf burn and the loss of some leaves. If the canes are not damaged, new leaves will bud out again when the weather warms up. Colder temperatures experienced for several nights may kill the tops or even whole canes, causing them to turn beige. The parts of canes which are dead will not produce new leaves and may be cut off. However, if the roots survive, they will produce new shoots (culms) in spring or summer. Cold-hardiness can be extended considerably by putting a very deep mulch over the bamboos in the fall.

A few plants may also suffer from summer heat, such as *Fargesias* and some *Chusqueas*, which do not tolerate hot summer nights (over 70 F).

Sun: Sun needs are listed on the Price Lists. Compare with the number of hours of direct sun which your plants will receive, and what part of the day they will be in sun. AM sun is cooler, but PM sun may be harsher, and is especially harsh in dry climates.

Height & diameter: Maximum height and diameter reached by each species in the *climate of origin* is listed in the Price Lists. This is the known reference point universally used in the bamboo world. However, height and diameter are affected by all aspects of climate: high and low temperatures, sun/shade exposure, humidity/aridity, water supplied, length of growing season, etc. For example, for many of the bamboos humidity and warmth make them taller and larger in diameter; but aridity combined with cooler winters will prevent some plants from reaching their maximum size. Certain plants, when grown in northern California, reach 50% of the height they achieve in the climate of origin.

However, if your climate has hot, humid, long summers and stays well within the plant's cold tolerance, the plant is located in an appropriate amount of sun or shade and will have year-round water, you can generally expect the maximum height. Height in relation to climate is somewhat predictable for most of the species, so if in doubt, check with us about height for a species in your climate.

Running or clumping type: Listed on the Price Lists. Read the section on *Runners & Clumpers* (above) and consider the advantages and disadvantages for you: clumpers grow tall faster and don't require root barrier, but spread wide more slowly and won't get tall in very narrow spaces. Runners spread wide quickly to form screens, are less expensive, do better in narrow spaces, but sometimes require root barrier.

Look desired: There is amazing variety in bamboos to choose from. There are canes with colors, stripes, large/small diameters, exposed or covered with foliage. Leaves may be striped and variegated, yellow or white with green, long and thin, large and wide, or very small. Growth habit may be vertical & narrow, bushy & wide, weeping, arching at the top, dense or airy, etc. Selection is all a matter of taste and purpose. Read on in the *Species Description List* for more information and color photos. Keep in mind, also, that young plants may not immediately show colors and variegation when you receive them, but these features will become more prominent after the first year or two. And some features appear only in certain conditions and may not yet be present when you receive the plant. For example, red and purplish coloration of canes is only brought out by direct sun consistently hitting the canes themselves.

Regional Bamboo Recommendations

We provide these suggestions to help you make your selections, however *no guarantee of success is implied*. The following recommendations are generalizations, and do not account for microclimatic differences. Before selecting a species for your garden, always check the temperature, sun/shade ratings, height, and running/clumping type, and take into account your humidity levels.

Far South (Tropical, semi-tropical, humid, warm year round, no frost)

Recommended: Bambusas, Chusqueas, Dendrocalamus, Drepanostachyums, Himalayacalamus, and all Phyllostachys, including Ph. nigra -Henon,øexcept those noted below. Can plant any time of year.

Not recommended: All Phyllostachys nigras except the Ph. nigra -Henon,øand Semiarundinarias, which need cold winters and cooler summer nights to do well. Fargesias, Himalayacalamus hookerianus øBlue Bamboo,ö and two of the Chusqueas, Ch. circinata and Ch. sulcata, will not do well in areas where the temperatures exceed 100 F. and summer nights are above 70 F.

South East (Hot, humid summers, some winter frost and down to 10 F. in some areas)

Recommended: Almost anything will grow in this area if minimum temperature rating of species is appropriate. It is one of the few areas that Phyllostachys heterocycla pubescens øMosoö grows well. All bamboos in this region are best planted in spring, to maximize growing season. In the fall, be sure to plant at least 3 months before your first frost. In colder areas, clumpers should be mulched before wintertime.

Not recommended: Fargesias, Himalayacalamus hookerianus øBlue Bamboo,ö and two of the Chusqueas, Ch. circinata and Ch. Sulcata, will not do well in areas where the temperatures exceed 100 F. and summer nights are above 70 F.

South West (Low desert, with hot dry summers and very light or no frost in winter)

Recommended: Phyllostachys, Otateas, Bambusas and Semiarundinarias (except as noted below), Hibanobambusa, Pseudosasa japonica øArrow Bambooö and -Pleioblastoides,øand most Pleioblastus species. Drepanostachyum sengteeatum, Borinda boliana, Chusquea nigricans, and Ch. pittieri may also do ok. In shade, Yushania, some Himalayacalamus, and other Drepanostachyum may be grown as well. All variegated forms of the above genera and dwarf forms of Pleioblastus should also be grown in shade only. Itø best to plant in mild fall weather to give plants time to get established before hot summer temperatures and take advantage of winter rains. Shield plants from extreme heat, cold, and sun when first planted. They will also need frequent watering in this climate, probably daily in summer. All plants will look somewhat better if in a little shade some part of the day. Installation of misters to mist the foliage daily is an optional but useful aid to help plants get established, look their best and grow ultimately taller.

Not recommended: Fargesias, Sasas, Indocalamus, Bambusa multiplex -Silverstripe,øB. vulgaris vittata, Himalayacalamus hookerianus "Blue Bamboo," Semiarundinaria fastuosa, and the two Chusqueas circinata and sulcata.

High Desert (Hot, dry summers, cool nights, cold winters)

Recommended: Phyllostachys, but all will grow shorter. Pleioblastus, Semiarundinarias (except as noted below), Sasella masamuneana albostrata, Psuedosasa japonica øArrow Bambooö and -Pleioblastoides,øand Hibanobambusas. Be sure to check that the temperature rating for the species is appropriate for your area. Chusquea nigricans may do all right, but there are no other clumpers that will do well in this climate. All variegated forms of the above genera and dwarf forms of Pleioblastus should be grown in shade only. Early spring after danger of frost is past is the best time to plant, in order to allow them to get established before the extreme heat arrives, and itø good to shelter plants from extreme heat, cold, or sun when first planted. Plants in this climate will need frequent watering, probably daily in summer. All plants will look somewhat better if in shade some part of the day.

Installation of misters to mist the foliage daily is an optional but useful aid to help plants get established, look their best and grow ultimately taller.

Not recommended: Bambusas, Fargesias, Sasas, Indocalamus, Semiarundinaria fastuosa.

North (Cold winters down to 0 to –20 F.)

Recommended: All Fargesias are a good choice (shade plants which are native to high mountain environments). Also many Phyllostachys, with bissetii, nuda, rubromarginata being among the most cold-hardy; Pleioblastus, particularly simonii and simonii heterophyllus; many Semiarundinarias and Sasas. Be sure to check that the temperature rating for the species is appropriate for your area. Spring is the best planting season, allowing the whole growing season to get established before the next winter. In fall, plant at least 3 months before first frost. Mulching deeply in the cold season is also important, using 12ö or more of wood shavings, leaves, or hay and then removing the mulch in the spring. Some plants may freeze back in winter, but if mulched deeply will shoot up again in the spring. In the coldest regions mature heights will be lower.

Not recommended: any plants *not* designated to be cold-hardy enough for your lowest nighttime winter temperatures.

Near Ocean (At least 200' away from water, with salt laden air, but not salt spray)

In general, bamboo does not like salt laden air and is prone to leaf tip burn. However, the following bamboos are relatively more salt tolerant.

Recommended: Assuming the species' temperature rating is appropriate for your area, some good choices are the Bambusas, Otatea acuminata, Pseudosasa japonica, Chimonobambusa quadrangularis, Semiarundinaria fastuosa, Pleioblastus hindsii, Pl. gramineus, Pl. simonii and simonii heterophyllus. (Certain other families of bamboo can grow here but are much more vulnerable to leaf tip burn: Phyllostachys, Dendrocalamus, Fargesias and some Chusqueas, such as Ch. pittieri, sulcata, circinata, foliosa, and the culeous).

West Coast

This region has many highly varied microclimates, and thus can sustain a multitude of bamboo species. Hot and dry climates may choose from recommendations made for the southwest or high desert, colder mountain climates from the northern recommendations, etc. *Again, always make sure your temperatures, sun exposure, sun-shade, and humidity are appropriate for any particular species you may choose.* One nice feature is that Bamboo in the West is a deer-proof plant! Because there is no bamboo native to the west coast and the deer did not co-evolve with it, they will not eat bamboo unless it is the only fodder for miles around.

Bamboo Indoors

Bamboos can sometimes be successfully and beautifully grown indoors, but only if you have a very green thumb and can give them adequate light, humidity, moving fresh air, and attentive observation and care. Also, because indoor environments are usually less than ideal, rotating your plants outdoors in mild conditions is often a wise practice for their long-term health. It is very important to read and apply *all of the following guidelines* if you want your bamboo houseplants to look healthy and beautiful for more than a few months. We provide no guarantee for plants placed in indoor environments, but if you are feeling adventurous and have a good green thumb, read on!

Humidity: Bamboos need *high ambient moisture levels*. Daily misting is recommended to compensate for the lower humidity of most interiors, especially while winter heating is in use.

Humidity may also be provided by placing a small fountain or humidifier nearby. It's best to keep plants in cooler locations and away from heaters.

Light: Bamboos do best indoors with *at least all day bright indirect natural light*. Most will do better with a few hours of *direct sun*. The less light, the slower growth will be. Also, severe leaf drop may occur as a plant adjusts to less light and ambient moisture. If this occurs, often the plant will grow new leaves which are more acclimated to the indoor conditions. Please check the Sun/Shade Ratings on the next page (or on our Price Lists for other plants that interest you).

Soil: We recommend a "*light*" *potting mix*, consisting of 1/3 soil, 1/3 peat moss, and 1/3 perlite in order provide excellent drainage and enable the soil to aerate and dry out more quickly after watering, to prevent root rot. If you also place a layer of gravel in the bottom of your pot (which must have holes for drainage, of course), you can place the pot in a saucer of water. Without the layer of gravel, the pot must be raised up to keep it out of the water that collects in the saucer.

Watering: For the same reasons, close attention to watering is very important for bamboos kept indoors. They should be *watered in small amounts*, deeply enough that roots are kept moist (a little water should run out the bottom), but not so much that the soil stays soggy for days. The top 2-3 inches of soil should be allowed to dry out before watering again. Below the 4" depth, soil should be lightly moist around the roots at all times.

Air movement: We have found it very helpful to have *some air flow* in the area with your indoor bamboo, fresh air from outdoors, if possible. For this reason, entryways or rooms with windows near the plants that can be kept partially open seem to work best.

Fertilizer: For container-grown bamboos, we like the *slow-release fertilizers* supplemented with trace minerals. We use Apex 14-14-14 (a product similar to Osmocote 14-12-14), with a 4-6 month release rate, depending on temperature. Dosage depends on size of container: 1 gal ó 1 Tbsp, 3 gal ó 2 T, 15 gal ó 4 T, 25 gal ó ½ C, etc.

Height: Indoors, bamboos generally grow only a *fraction of their maximum height and diameter*, so we recommend that you buy a plant that is already as close as possible to the size you ultimately want.

Troubleshooting: *Yellowing leaves* usually indicate either too little or too much water. If there is too much water and the roots are rotting, the leaves may look pale and droopy. Too little water may cause leaves to have brown tips, curl up, look dry and yellow, and begin to drop. The roots may have dried out just once or are root-bound and not absorbing water well. When under- or over-watering is corrected quickly, the plant will often re-leaf in a month or two and be healthy. Dig down 3-4" into the soil frequently to monitor moisture. Root-bound plants may be placed in a large saucer of water for a half-hour or so to soak up water from the bottom.

Bamboos grown indoors are more vulnerable to *insect pests and disease*, as they are generally more stressed than they would be outdoors. Insects may be treated with the usual sprays (best applied outdoors). If the plant is small, simply washing the leaves under running water can be effective. (Please also see section on Possible Pests, above).

Indoor Plant Selection

Almost any bamboo can be grown indoors given sufficient expertise and attention. But the following are some bamboos that are more likely to do well indoors, under the conditions indicated: good light, high humidity, moving fresh air, proper watering, regular fertilizer, and attentive observation and care.

Plant Code	Bamboo Species	Light Requirements:		Running/ Clumping Type
		1-	2-	
		Deep shade	2-	
		Bright light	3-	
		1/2 d am sun	4-	
		1/2 day pm	5-	
		Full sun		

Most Hardy, Least Fussy

BMA	Bambusa malingensis	2-5	C
BTU	Bambusa tuldooides	2-5	C
BVE	Bambusa ventricosa "Buddha's Belly"	2-5	C
BVUV	Bambusa vulgaris 'vittata' "Painted B."	2-5	C
CHCI	Chusquea circinata	2-4	C
CHCO	Chusquea coronalis	2-5	C
CHPJ	Chusquea pittieri	2-4	C
CHSU	Chusquea sulcata	2-5	C
OAAZ	Otatea acuminata aztecorum "Mex. Weeping"	2-5	C

More Care Required

BRF	Fargesia fungosa	2-4	C
HCFD	Drepanostachyum hookerianum "Red"	2-4	C
INLA	Indocalamus latifolius	1-3	R
INT	Indocalamus tessellatus (Sasa tessellata)	1-3	R
SBMS	Sasaella masamuneana 'Albostrata'	3-4	R
SHK	Shibataea kumasaca	2-3	R
TAR	Thamnocalamus aristatus	2-4	C
YUC	Yushania chungii	2-4	C

More Care, and only with Moving Air

HBTS	Hibanobambusa tranquilans 'Shiroshima'	3-5	R
INLO	Indocalamus longiauritus	2-4	R
HCA	Neomicrocalamus microphyllus	3-4	C
PLCM	Pleioblastus chino murakamianus	2-4	R
PLSH	Pleioblastus shibuyanans 'Tsuboi'	3-5	R
PSJ	Pseudosasa japonica "Arrow Bamboo"	3-4	R
PSJT	Pseudosasa japonica 'Tsumumiana'	3-4	R
SAPN	Sasa palmata nebulosa	2-5	R
YUANP	Yushania anceps 'Pitt White'	2-3	O

Books

American Bamboo - by Judziewicz, Clark, Londono, & Stern. Few people realize that nearly half of the world's 1,200 species of bamboo are native to North and South America and the Caribbean, and that they are more diverse than their Asian counterparts. This book draws on two decades of fieldwork and covers current knowledge of plant structure, ecology, human uses, conservation value, evolution, and diversity of the forty-one genera of American woody and herbaceous bamboos. Generously illustrated with color photos and line drawings. Hardbound, 7ö x 10ö, 376 pages,.

Bamboo – A Material for Landscape and Garden Design – by Jan Oprins, Harry van Trier, et al. A large book with spectacular photos, touching on a broad sweep of bamboo-related topics written by several expert contributors: bamboo morphology, cultivation and propagation; environment benefits of bamboo; the diverse uses for bamboo in landscaping, construction, crafts, and cooking; and descriptions of selected species. Jan Oprins is the owner of Oprins Plant, a large scale plant production

company in Europe which specializes in *in-vitro* micropropagation, and the extensive discussion of micropropagation and large scale uses of bamboo is unique to this book. Hardbound, 143 pages, 13 1/2 x 10.

Bamboo for Gardens - by Ted Jordan Meredith. An excellent multifaceted treatment of bamboos, covering origins, history, structure, cultivation, propagation, landscaping, and insights into plant selection. Half the book is an encyclopedia of over 300 bamboos with detailed descriptions and color photos, many of which were taken at Bamboo Sourcing, and also including an unusually large section on Chusqueas. A wonderful book for the home gardener and professional grower alike. Hardbound, 406 pages, 8" x 11".

Bamboo in Japan – by Nancy Moore Bess. A stunning collection of photos and essays takes readers on a tour of bamboo in Japan, illustrating its uses in art and architecture, textile designs, furniture, crafts, foods, gardening and the home. Nowhere is bamboo used more elegantly and distinctively than in Japan, where its presence touches every part of daily life, even reaching into language, literature and ritual. Over 250 photographs and illustrations. Hardcover, 220 pages, 9" x 11".

Bamboo Rediscovered - by Victor Cusack. Growing and using non-invasive, clumping bamboo. Covers species selection, timber plantations, furniture, housing, fencing, food, and musical instruments. Contains b/w photos & many excellent scale drawings. 95 pages, 8 1/2 x 11, soft cover.

Bamboo Building & Culture – by Darrell DeBoer. Treatise on modern uses of bamboo in buildings and architecture, generously sprinkled with color photos. Discusses the fabulous designs of Simon Velez, et al, structural qualities of bamboo, building codes, joinery, cultivation, etc. Soft cover xerox.

Bamboo Style - by Gale Beth Goldberg. An exciting review of the aesthetic uses of bamboo in houses, gardens, art & architecture in all parts of the world, including both traditional and contemporary designs, beautifully illustrated with dozens of color photos. A wonderful inspiration for homeowners, designers, and craftsmen. Includes a 20-page Sourcebook listing suppliers, designers, workshops, craftspeople, nurseries, gardens, etc. Hardbound, 170 pages, 8 1/2 x 10 1/2.

Bamboo Sourcing Catalog – by Gerald Bol et al. Bamboo Sourcing's informational catalog (the one you're reading right now), with cultivation instructions and descriptions of approximately 150 bamboos. May also be printed directly from our website: www.bamboosourcing.com.

Bamboos, The – by F.A. McClure. Reprint of landmark book on morphology and propagation of bamboos. Originally published in 1966, this book still provides the best general overview of the subject today. Paperback, 345 pages, 6 1/2 x 9 1/2, 130 b/w illustrations.

Building Bamboo Fences – by Isao Yoshikawa. A unique how-to book, showcasing 20 traditional Japanese bamboo fence styles in color photographs and detailed instructional diagrams, illustrating bamboo working techniques, ties and knots, and joinery. Complete with information about materials, history and classification of Japanese fences and a glossary of Japanese terminology. Softcover, 141 pages, 7 1/2 x 10.

A Compendium of Chinese Bamboo – by Shilin, Naixun, Maoyi. This is one of the most complete monographs in the field of bamboo research. Hardbound book filled with over 400 beautiful color photographs of 31 genera, 209 species, and 50 varieties and forms. A reference for taxonomists, arboriculturists, bamboo professionals and all bamboo lovers. Hardbound, 241 pages, 8 1/2 x 11 1/2.

The Craft & Art of Bamboo – by Carol Stangler (2nd edition, now available!). Contains detailed instructions for creating 30 elegant projects, including Japanese fences, gates and screens, and many

home and garden accents. Provides information on harvesting, purchasing, finishing and preservation of bamboos, along with a list of materials, tools and supplies for each project. Includes over 200 photographs, 25 illustrations, and a list of suppliers. Softcover, 157 pages, 8 ½ x 10ö. HIGHLY RECOMMENDED.

Farming Bamboo – by Daphne Lewis & Carol Miles. Finally! A great book on commercial farming of bamboo! Takes the reader from planting through harvest and marketing of poles and shoots, with fine detail about propagation, maintenance and care, containment, pest management, suggested field layout, and various uses of bamboo, including uses as food for animals and humans. Suggests and describes species for use in the northeastern U.S. Softcover, 8 1/2" x 11", 204 pages.

General Catalog – Nurseries of the Bamboueraie. 81 varieties of bamboo listed and illustrated with color photos, generally showing both close up and distant angles. Useful at-a-glance information on cultivation and use of temperate climate bamboos. This booklet with its color photos complements our own catalog by illustrating much of what we offer. Paperback, 93 pages, 5ö x 11 ½ö. [Conversion list](#) to Bamboo Sourcing plant names is available.

Grow Your Own House – by Simon Velez. Depicted in full-page color photos and text, this book illustrates the spectacular bamboo architecture of Simon Velez of Colombia, arguably the most renowned architect using bamboo today. Velez's impressive engineering achievements are manifested in generously overhanging roofs, ingenious loadbearing structures, sophisticated joints, and an innovative combination of materials. Featured is the bamboo pavilion for the ZERI Foundation at Expo 2000. Published by the Vitra Design Museum of France, the book also includes illustrations of a variety of bamboo structures and products from around the world. Softcover, 254 pages, 9½ö x 11½ö.

Hardy Bamboos, Taming the Dragon – by Paul Whittaker. Besieged by winter wet, summer drought and drying winds, Paul Whittaker's garden has been a rigorous testing ground for the hand-picked selection of hardy bamboos presented in this book. In addition to all the basics about bamboo, the book contains extensive plant descriptions covering 140 pages, propagation techniques, and a discussion of hardiness in both the U.S. and U.K., all illustrated very generously with color photos and diagrams. Quite unique are the 13 pages listing specific plants which exhibit certain qualities, such as variegation, color, or unusual culm shapes, and plants for for specific applications. A distillation of 20 years of hands-on growing experience, this is the ultimate bamboo reference book for cool-climate gardeners. Hardbound, 300 pages, 10 ½ö x 7 ½".

Ornamental Bamboos – by David Crompton. A gardener's guide to nearly 200 ornamental bamboos, based on the author's long experience in a cool-temperature climate in Hampshire, England, where his nursery holds the national Collection of Bamboos for the U.K. Emphasis is on the unique qualities of bamboo, uses for bamboo, and plants recommended for specific landscaping purposes. 171 pages of species descriptions, generously sprinkled with color photos. Hardbound, 8" x 10".

Pocket Guide to Bamboos – by Ted Jordan Meredith. *The Timber Press Pocket Guide to Bamboos* covers 35 genera of bamboos in cultivation and describes more than 300 species and cultivars. Each entry includes the plant's maximum height, maximum culm diameter, light requirements, and minimum temperature tolerated. Includes 300 color photographs for easy identification. Packed with all the authority of an encyclopedia in a pocket-size format, this book is a perfect reference for taking to the nursery, or if you are a landscaper, it is great for sharing quick visuals with your clients. Softcover, 8 1/2" x 6", 208 pages.

Definitions

Culm A stem which is hollow except at the nodes, as are the bamboo canes.

Diaphragm	The rigid membrane which forms the partition within the nodes, adding strength to the cane.
Internode	Portion of the culm or cane between nodes.
Node	Point on the culm from which branches and leaves grow on the outside and where the diaphragm appears inside, separating hollow segments of the culm.
Rhizome	A type of rootstock consisting of a creeping stem, usually growing horizontally underground. In the case of bamboo, the rhizomes are woody and segmented just like the culms.
Sheath	An enclosing sheath which protects the young shoots, culms, and sometimes branches, as well. May be dropped or retained as shoot matures.
Shoot	New culm which has just broken ground, arising from a rhizome underground, completely covered with sheaths, and poised to demonstrate bamboo's reputation for phenomenally rapid growth. Bamboo shoots are a delicacy in Chinese cuisine.
Sulcus	A groove along the length of the internode, sometimes of a different color from the rest of the cane.