

# ABOUT VANILLA ORCHIDS

**Kauai Nursery & Landscaping, Inc.**

Sponsored by  
**Garden Island Resource, Conservation & Development**



Aloha and welcome to  
Kauai Nursery and Landscaping's  
Vanilla Orchid Workshop.

We offer this workshop to introduce you  
to the "Vanilla World"  
so you can grow, use, and enjoy vanilla  
by yourself.

This is a project of the Kauai Agricultural Development Program  
made possible by Senator Daniel Inouye  
and administered by  
Garden Island Resource Conservation & Development Program (GIRC&D) Inc.

We also would like to thank  
Ken Wood of the National Tropical Botanical Garden  
who kindly allowed us to use his photograph.

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# Introduction

**V**anilla is a member of the orchid family (Orchidaceae) and there are 110 documented species of the genus *Vanilla*. It is native to Mexico. Two species of vanilla are used commercially, and *Vanilla planifolia* is the most common species in the food industry. In this diverse genus of *Vanilla*, there is a large leaf or “giant” vanilla species and other species that look leafless with small scales instead of traditionally shaped leaves.

All vanilla species are vines and will produce flowers under the right conditions. If the flowers are pollinated, they will produce a fruit or pod (commonly called a vanilla bean). These fruits are filled with tiny black seeds. In nature, a bee native to Mexico pollinates vanilla flowers; however, this bee is very specialized and has a small range so commercial growers pollinate vanilla by hand. Hand-pollinating is labor intensive and contributes to the high price of vanilla beans and of real vanilla extract. Much of the vanilla sold in the store is labeled as “imitation” vanilla extract and made synthetically.

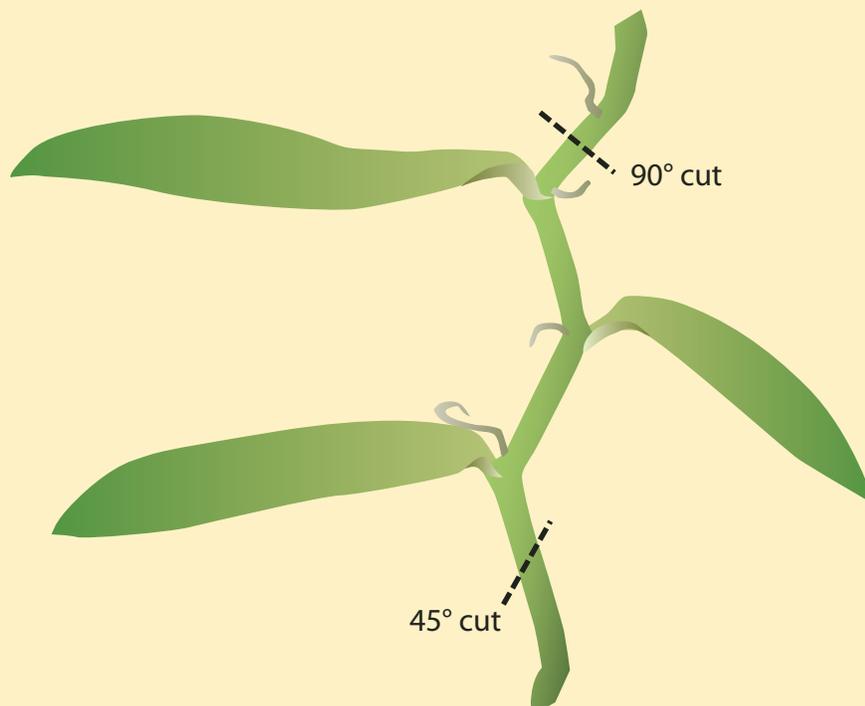
The Aztec Indians are credited with discovering vanilla’s aromatic properties and were using the vanilla bean as early as the 1500’s. The conquistador Cortez observed the ruler Montezuma drinking a vanilla-scented chocolate beverage and brought it to Europe. For 300 years vanilla was produced only in Mexico. In the 1800’s, a Belgian named Charles Morren discovered that the *Melipone* bee is the only insect capable of pollinating vanilla. Shortly after, a former slave in Madagascar, Edmond Albius, created an efficient method of hand-pollinating the vanilla orchid.



# Propagation

The easiest way to propagate vanilla is by two or three node cuttings. First, inspect the mother plant and make sure it is healthy and free of insects. Sterilize your clippers by dipping them in rubbing alcohol or in a 10% bleach solution, and make sure the clippers are sharp enough to make a clean cut.

At the base of where you will begin your cuttings, make a clean 45-degree angle cut about ½ inch from the bottom of the node. If you are doing a 3-node cutting, cut at a 90-degree angle just above the 3rd node.



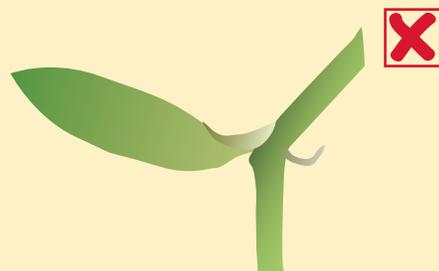


Trim off dead roots and the bottom leaves. There is some debate about what soil mix to use – we use a combination of sunshine mix and cinder, others use a combination of wood chips, peat, and perlite - ultimately you want something that retains some moisture without drowning the cutting.

Poke a hole in the potting media and place the cutting into the hole, making sure the bottom node is covered. Pinch the media around the base of the cutting so the media is all level and supporting the vanilla cutting. When propagating vanilla cuttings, keep the media moist and in a shaded area until the plant is rooted. The cuttings should be fully rooted in about 4 - 6 weeks.



Take care to put the cutting right-side-up: the easiest way to tell is by making sure the bulge where new growth would occur is just above (rather than just below) the joint of the stem and leaf.



**Transplanting:**

A vanilla orchid that has outgrown a 3" or 4" pot can be either planted in the ground or transplanted into a 3 or 5 gallon pot. It should be potted with clean media (bark, cinder, sunshine mix, peat moss or a combination) in a sterile pot, as vanilla orchids are susceptible to pests and fungus. If you plan to eventually plant your vanilla in the ground, add in some soil from where the vanilla would be planted to help it acclimate. Use a 13-13-13 slow-release fertilizer every 2-3 months; for best results, foliar feed weekly.

**Water:**

Keep the soil media moist. If the plant lacks water, the leaves curl up and will not recover. Use soil media that retains some water, but also allows good drainage. Orchids require 50% humidity or more to bloom, so if you are in a very dry area like Kekaha, you might need to keep water in a tray by the orchid to create humid conditions for your plant.

**Sunlight:**

Vanilla does not like full sun, nor will it tolerate full shade. Filtered light or partial sun is best. This can be accomplished with shade cloth or by growing your vanilla orchid in an area with some overhead shelter – such as near a tree.

The color of the leaves is a good indicator of whether or not your orchid is getting adequate light. Dark green leaves suggest the plant is not getting enough sunlight; yellow or brown leaves that otherwise look healthy are probably getting too much light. Plants with light green leaves are getting the right amount of sunlight.

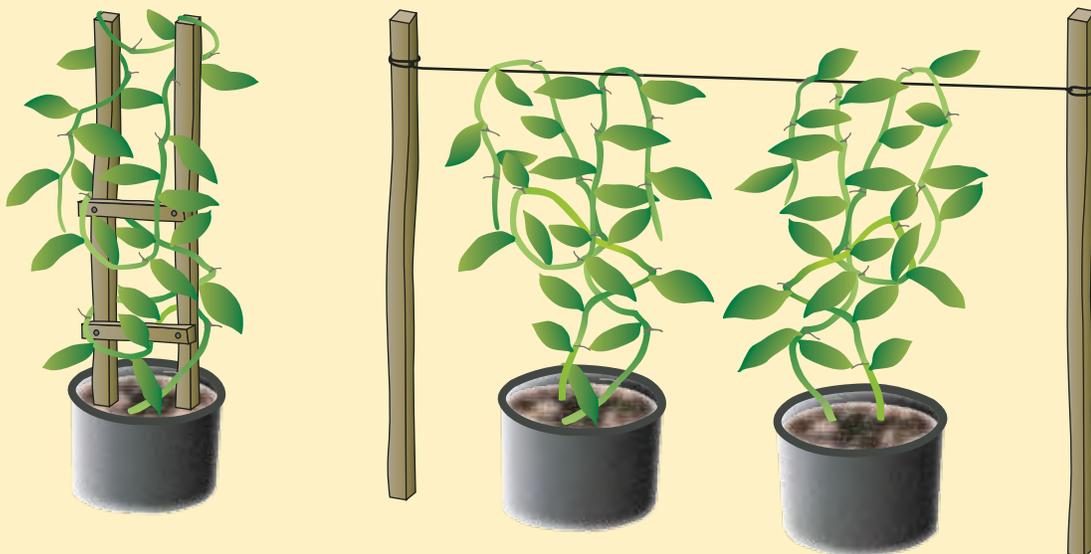


### Support:

Vanilla orchids will likely need a support so they can climb. There are various ways to do this. Some people use bamboo stakes or lumber to provide a place for the vine to grow. Others might use a tree or make a simple structure from metal. Professional growers sometimes rig up a cable above their pots and drape the vines over the cable, training the vine to grow up and down. Find what works for your space while still allowing the vanilla a place to crawl and spread. Vanilla orchids that are only allowed to grow upwards will not produce flowers. Train the vine to double back towards the ground and keep it at an accessible height for pollination and harvesting. Vines can grow to 40'- 75' long.



As the vine matures, it will not utilize the soil and only uses the tree or other structure for support. Vanilla will not kill or feed off of a tree it grows on, but rather will become epiphytic and get most of it's needs met from the air.





### **Flowering:**

Flowers usually occur after 2-3 years, when the plant is mature. In Hawaii, flowers appear annually from April until June. Each flower cluster may have up to 25 buds, with one bud opening per day. Flowering usually peaks at 7-8 years of age.

If a vanilla plant looks strong and vigorous but has not produced a flower after 3 years, you might consider stressing it by reducing the water and fertilizer from mid-February until April. Also look at the vine's orientation; if the vine is only allowed to climb upwards, it will not flower.

### **Fruit or "Beans":**

After the pollination is complete, the area below the flower will slowly lengthen and widen, turning into fruits or "beans". It takes about 8-9 months from pollination to harvest. Vanilla pods will start to turn yellowish at the tips when they are ready to be picked.

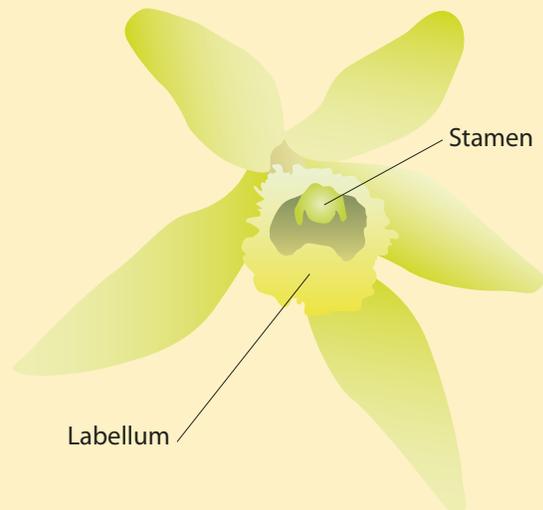
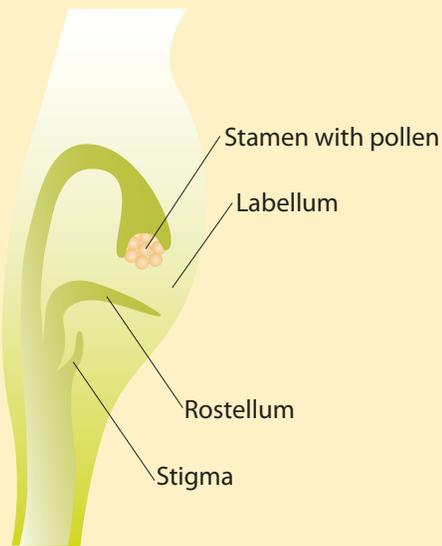
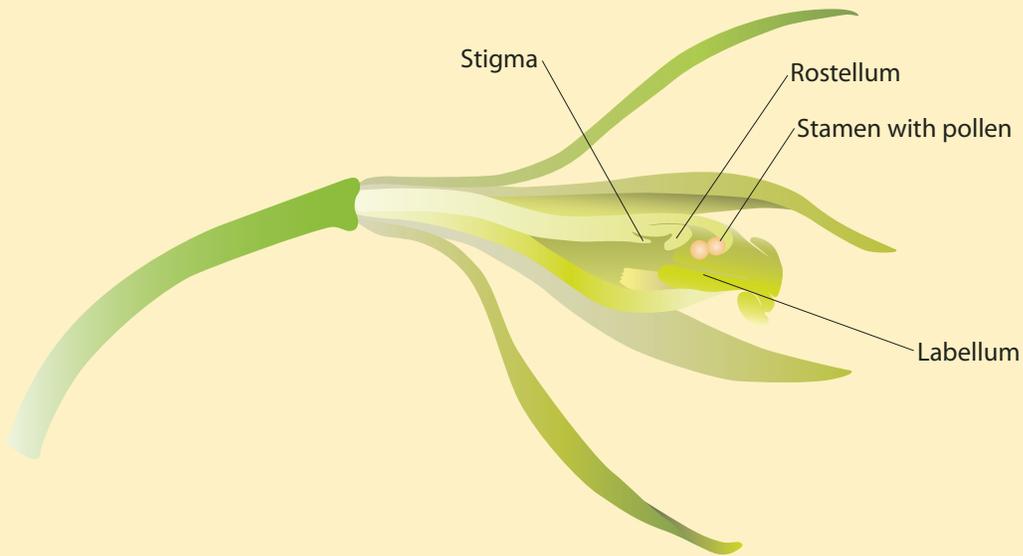
Inside the pod or fruit are hundreds of tiny seeds. If you cross-pollinate a vanilla orchid, some of these seeds will be viable. However, if you pollinate the stigma with pollen from same flower, seeds will not be viable.

Commercial growers of vanilla selectively chose how many flowers to pollinate. If there are too many pods on the vine, each pod will be smaller. Reducing the number of pods allows each pod to develop more fully and produces superior vanilla beans. The number of fruit varies greatly depending on the size and number of inflorescences on the vine. In a commercial operation, 8 to 10 flowers on a spike of 20 inflorescences would be pollinated, and perhaps 5-6 of those would be allowed to develop into pods. In this way, a mature vine might produce 30-150 beans.

The vanilla pod will need to be cured before it can be used. There are numerous ways to do this, but essentially you need to kill the pod with heat (submerging in boiling water, exposing the pod to direct sunlight), drying, and/or conditioning. We will be holding another workshop early next year to discuss curing and using vanilla.



# Morphology



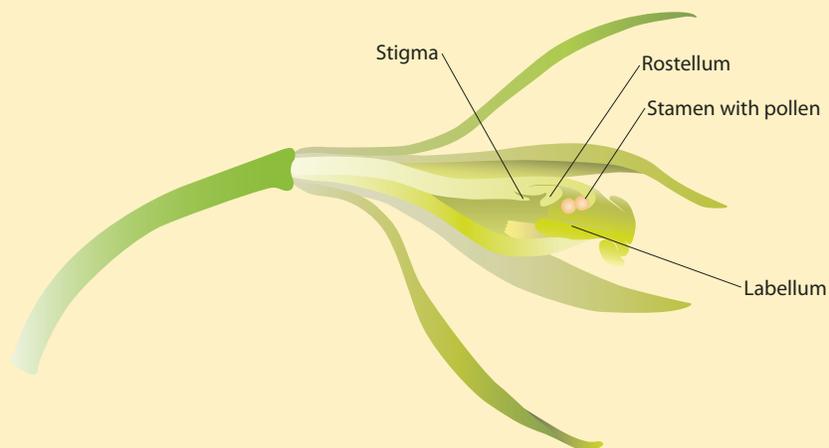


# Hand-pollinating Vanilla Orchids

**In** Hawaii, vanilla orchids usually flower between April and June. Flowers last for one day only. The flowers open around sunrise and start closing mid-day; optimal time for pollination is mid-morning. If the flower is not pollinated, it will wilt and fall off within about 24 hours.

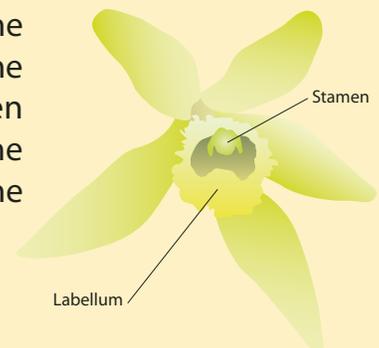
**To** pollinate an open flower, you will need to fashion a small, flat tool to remove the pollen and apply it to the stigma. This tool should be thick so it doesn't bend, and whatever length is comfortable for you. The one we use here at the nursery is made from a chopstick, with one end cut off at a 45 degree angle. Before using your tool on the flower, make sure it is clean and dry.

**F**irst, take a look at the flower and locate the labellum, stamen, and rostellum. Gently hold the flower and rip the labellum down the side to improve access to the stamen and rostellum. The stigma is behind the rostellum and not easily visible. To pollinate, you will need to take pollen from the stamen and place it on





**T**he labellum looks like a round tube. At the top of the tube, you will see a small, whitish protrusion. This is the front of the stamen. To remove the pollen, flip the stamen forward and up with the tool flat under the stamen. The small parcel of pollen should come loose easily; hold the pollen pocket on the tip of your tool.



**N**ext you must place the pollen on the stigma. It is hard to see the stigma, as the rostellum is in front of it. Gently bring the pollen behind the rostellum and lightly brush forward, staying behind the rostellum. The stigma is sticky, so the pollen will lightly adhere when it comes in contact with the stigma. Let go of the flower, being careful to not move abruptly or otherwise causing the pollen to fall off.

**I**f your pollination was successful, the flower will not fall off within 24 hours, but will stay attached for a few days before drying up. The flower stem slowly lengthens and will eventually become a vanilla pod. The pod will take about 9 months to fully develop and ripen.

Beginning pollinators usually have a 50% success rate, so don't worry too much if your first attempt does not work!



# *Sources for more research*

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