

Sweet Success

In Hawaii, Jim Reddekopp, the first commercial vanilla producer in the United States, uses soilless culture to coax valuable pods from an orchid

Story and Photos by Gerald Kinro

Vanilla is an orchid classified as a spice and grown as a fruit. It's a Third World crop grown under First World conditions by Jim Reddekopp, owner of Hawaiian Vanilla Co.

Third World countries can produce vanilla in larger quantities and at a lower price than an American grower. "I could not make it if I were commodity-oriented," Reddekopp said.

He thus employs a value-added concept to his beans. His 200 pounds of vanilla is stretched into the various products he sells in his little store a quarter mile from his greenhouses. They include body scrubs, bath products, tea, coffee, truffles, curds, ice cream, strawberry jam, and fudge sauce. His customers are local residents and visitors to the island. He also hosts a vanilla lunch every week where guests are shown a video about vanilla and fed a lunch containing his bounty. His wife Tracy is the chef.

Finicky Crop

Vanilla is a finicky plant, bringing about several challenges. It only grows naturally within a narrow band within 20 degrees of the equator. Hawaii falls on the fringes of that band. The usable part of the plant is its beans, making it a fruit. In fact, it is the only edible fruit in the orchid family, the largest family of flowering plants in the world.

It is not, however, an ordinary fruit. The U.S. Environmental Protection Agency classifies it into the herbs and spices crop group. With this classification, vanilla becomes an extremely minor crop with few pesticides approved for controlling its pests. Much of the pest control is



Clockwise from top left: "Looping" vanilla vines may grow to 20 feet. An overhead system feeds and irrigates the plants. Hawaiian Vanilla Co. owner Jim Reddekopp inspects mature vanilla beans. Vanilla is a labor-intensive crop. Here it gets hand-pollinated. This media-filled perforated pipe attracts shoots that form new roots. Rooted shoots are cut and replanted to form new plants, which are started in sphagnum moss. Aged vanilla beans are used in a variety of products.



done through cultural practices and other control measures. There are diseases and other pests that will attack the plants. The fusarium wilt and the cymbidium mosaic are two of the pests. As a spice, there are limitations of chemicals that are allowed to be applied to vanilla.

Because it is a fruit, its flowers must be pollinated for set to occur. However, as an orchid, pollination does not happen

easily. Pollen is contained in sacs near the surface. The female part, the part to be pollinated, lies deep within the flower. Vanilla is a native of South America, where it has a natural pollinator. But that pollinator doesn't live in Hawaii.

Consequently, hand-pollination is standard practice. It is not easy, however, for there is a narrow window of opportunity for pollination. While most orchids are

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known for their longevity, vanilla can be pollinated only for a single day. If that day is missed, the usable pods will never form. This makes vanilla the most labor-intensive crop in the world. Nevertheless, Jim Reddekopp developed a love for this complex crop, so he and Tracy began the Hawaiian Vanilla Co., the first commercial vanilla producer in the United States.

While living in Kona, Hawaii, Reddekopp learned the tricks of the trade from orchid expert and vanilla pioneer, the late Tom Kadooka. Armed with his knowledge, Reddekopp, in 1991, moved to his present location in Paauilo on the Hamakua Coast, halfway across the island from Kona.

Good Beginnings

Reddekopp begins with rooted cuttings of *Vanilla planiflora* that he plants in artificial media—volcanic cinders, coconut fiber and fern fibers. He uses four parts of cinder to one part of coconut husks to start the new plant. Later, he adds sphagnum moss over the existing media. The plant grows more nodes and more roots. Orchids are epiphytes and able to get moisture and nutrients from the air. Therefore, Reddekopp takes advantage by employing an overhead system to irrigate his plants and to transport his nutrients. He tried a drip system that fed plants through their roots but abandoned it.

“The roots are still important for plant health,” he said. “With the drip, I found that air exchange and overall root health declined. Saturation led to root rot.”

Lack of oxygen due to saturation of water led to root rot. In his system, he adds a 15-5-5-fertilizer solution. As a vine, it is propagated by cuttings. Its time from cuttings to flowering is about 2.5 years.

Outliving the Root System

The plant, a vine, grows to about 20 feet long. To keep it at a reachable height, Reddekopp employs a technique called looping. The vines of the plant grow up onto and over a trellis, then downward towards a lower bar and back up onto the higher trellis again. This process is repeated several times.

Orchid is an epiphyte and able to get moisture and nutrients from the air. Its roots are important for structural support and for air exchange. The original roots soon become too old to perform their function. The plant, however, must still be maintained. For this, Reddekopp performs a layering technique onto one of the lower nodes by wrapping sphagnum moss then covering with a sheet of plastic. This forces new root formation. This new rooting system, still attached to the vine, he places into another container of media. These will become the new roots of the vine, bringing about a smooth transition and keeping the vine productive and healthy. With this technique, a single vanilla plant can produce for about 20 years. “Much easier than starting again.”

A perforated pipe containing sphagnum moss is placed upright next to the vine. In time, a new shoot will form and find the

pipe. Sensing the media, new roots form. It is these that Reddekopp will cut and propagate and start a cycle all over again. He plans on an eight- to 10-year rotation.

The Making of Fruit

With flowers comes the painstaking chore of hand-pollination. The Reddekopp family gets into the act as the two oldest of five children join in. He employs certain marking techniques to see who already pollinated a flower. What he has learned is that a plant cannot handle the pollination of all its flowers, so production must be kept to a minimum. “There is dieback with too many flowers.”

For this reason, his production is limited to about 200 pounds of beans per year from his 30,000 square feet of greenhouses. He keeps six to eight flowers per vine. After nine months, the beans are ready for harvest. “When the bean tips are yellow they are ready.”

Lessons for Any Grower

Challenges can be overcome by using the characteristics of the plant itself. Reddekopp uses the orchid’s epiphytic qualities for feeding and watering and its characteristics as a vine to force new roots that will sustain the plant for a many years. Also, employing a value-added concept and creating by-products with a crop can allow a grower to compete favorably with commodity-based Third World growers. 🌿

Gerald Kinro is a writer based in Hawaii.

Mentor Taught Him Everything He Knows

Jim Reddekopp credits the late Tom Kadooka for much of his success. An orchid grower who left his family’s Kona coffee business, Kadooka became one of Hawaii’s authorities on orchids. Kadooka founded the Kona Orchid Society and hybridized flowers. His learning was essentially trial-and-error.

An abandoned vanilla plant caught Kadooka’s eye in 1941 as he was collecting fern fiber for his artificial media. This began a love affair with the vanilla plant, and he envisioned vanilla growing all over

the Kona Coast amidst coffee trees.

Since Kona already had coffee and macadamia nuts, he felt vanilla to be a perfect addition—a non-perishable product that would last for decades. Vanilla’s intensive labor for pollinating took place in the spring, the down time for coffee. Furthermore, he figured that a quarter acre of vanilla would produce the same cash value as 5 acres of coffee.

With no serious takers, Kadooka continued his experiments and breeding of vanilla orchids until one day Reddekopp

showed up on his doorstep. In the young Reddekopp Kadooka saw a man with energy to carry his vision forward. He taught Reddekopp everything he knew. Together they dreamed of producing a quality of vanilla that would rival those from other parts of the world. Reddekopp took the step.

Tom Kadooka passed away in October 2004 and left a legacy through his incredible knowledge and incredible spirit. His picture graces the ice cream containers that Hawaiian Vanilla sells.