

Grape growers may get cloned vines in future

Researcher successfully clones woody plants

Navy uses island for mock war

United Press International
PROVIDENCE, R.I.— While scientists debate the possibilities of cloning human beings from a cell, a University of Rhode Island professor cloned a vineyard. William R. Krul, a professor of plant and soil science, discovered a single breed of grape that can be reproduced by cloning — taking one from an organism and getting it to multiply until there is a carbon copy of the parent.

able evidence of cloned human beings, but scientists have successfully cloned "soft" plants such as asparagus and carrots.

Krul is believed among the first scientists cloning "woody" plants: in particular, grapes.

Traditionally, vines are reproduced with cuttings rooted in sand. But Krul can put a single cell in his test tube and wind up with a healthy plant.

Dr. Michael Faust, chief of the

U.S. Agriculture Department's fruit laboratory in Beltsville, Md., said Krul's methods have "tremendous advantages" for the wine industry.

To clone a plant, Krul takes an individual cell from a "young, immature" section such as a stem, and places it in a medium which includes nutrients, sugar, vitamins and hormones.

The cell splits in two and new cells continue to divide until a "tumor-like mass" forms. Cells are

taken from the mass and put in a medium with different hormones until new plants begin to grow.

Once he figures out why it clones so easily, he hopes to get other types of grapes to reproduce from a single cell.

"Taking cuttings is perfectly acceptable but if you find a rare mutant and you only have one small piece of wood, it would take several years under conventional methods to grow many plants.

"With cloning, you get thousands and thousands of plants in a relatively short time," he said.

"It will be a tremendous advantage," Faust agreed. "When we develop a new variety, we can produce 10,000 plants in months."

Krul and Faust both say cloning also produces healthier plants. Botherome viruses, common to grape vines, aren't transmitted through cloning as they are through cuttings.

"There is a good demand for virus-free vines. Most people are limited in the number they can produce," Krul said.

Although most grape vines take three years to produce fruit, the scientist said his cloned vines had fruit after one year. The next step is to test the plants "for trueness to type — to make sure we've still got what we started with."

The few bunches of grapes he has harvested seem to be satisfactory, he said.

KAHOOLAWE, Hawaii — The Navy jet screams in low over the island. Its bombs tumble toward the concentric rings of stone below.

Artillery fire booms toward a nearby ridge. Flares light up the sky.

A war zone? No. It's the Navy's practice island of Kahoolawe, just six miles away from the luxurious resorts on the Hawaiian island of Maui.

For more than three decades, the 45-square-mile island has been pounded by explosives. Now there is a movement to bring the destruction to a halt.

A group called the "Protect Kahoolawe Ohana," made up mostly of native Hawaiians, wants the Navy to clean it up and turn it over to the state, perhaps for a park.

The word Kahoolawe in Hawaiian means "blowing red dirt" and it is hard to imagine a more fitting name. Even from the air, Kahoolawe obviously is not one of Hawaii's more hospitable islands. The red dirt and the kiawe bushes contrast sharply with the lush green vistas of Maui across the channel.

The wind whips across the island's barren plains and leaves a residue of red dust. It weaves itself into the fabric of clothes, it clings to hair and it insinuates itself into the lines at the corner of the Marines' eyes.

The island has been controlled since World War II by the U.S. military, which uses it for artillery and air bombardment practice. It is

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normally off limits to all but military personnel, but recently a group of reporters was allowed to visit the island for a tour.

The bombing and artillery show put on by the F-4 Phantoms from Marine Fighter Attack Squadron and two 155-millimeter howitzer crews from K Battery of the 1st Battalion, 12th Marines, was less spectacular than one might have expected.

The phantoms were dropping practice bombs, which don't make as big a bang as the 500-pounders they carry on combat missions.

Low clouds meant that the Phantoms had to fly almost parallel to the ground, which makes it harder to hit a target. Consequently, about half the bombs dropped failed to land within the stone circles.

Marine Gunnery Sgt. G.L. Thomas, a part-Hawaiian, probably has spent more time on Kahoolawe than anyone else. To his friends he is known as the "mayor of Kahoolawe."

Thomas and other said that the military has eliminated about 200 areas on the island as targets — mainly because possible historic sites have been discovered in those places. And indeed, as one travels about the island, numerous yellow markers designating historic sites can be seen.

To the untrained eye, the sites look like a jumble of rocks. However, the discoveries were made by archaeologists and if the prevalence of the markers is any indication, there must be a considerable number of historic artifacts on the otherwise desolate island.

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support. If it were not available, training would probably have to be conducted somewhere in the western United States, 3,000 miles away from the strategic base at Pearl Harbor.

Not only would there be the lost traveling time for carriers and their squadrons to commute between the West Coast and Hawaii, the military contends, but the cost in transportation would skyrocket.

In addition, the Navy estimates it would cost \$130 million to clean up unexploded bombs and other residue left from decades of military use.

But the Ohana says the price is worth it. They say the land is sacred to them and it should be restored to the people. To emphasize their case, Ohana members have trespassed on the island to force a halt to the bombing.

Kahoolawe used to be a penal colony in the days of the early Hawaiian monarchs and by the expressions on the faces of the Marines manning the guns, it looked as though it still was.

They had been on Kahoolawe for eight days and still had two more to go before they returned to Honolulu.

The happiest-looking enlisted men were two off-duty Marines who were snorkeling at Smugglers Cove, which the Marines call "the Riviera of Kahoolawe." It is the only good beach on the island and the surf is minimal.

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