



Coming back

With sand in the bottoms of suitcases, skinned knees from rafting, and maybe a sore back from working in the yard, the Aggies returned from spring break Sunday. Dennis Delaune, right, helps Patty Bell move back.

Battalion photo by Jana Hazlett

Petroculture — forerunner to drought-resistant crops

Energy crops capable of producing oil and rubber are the forerunners of a new agricultural study at Texas A&M University.

The new agricultural field is called petroculture. Using crops that can be grown on semi-arid soils with little or no irrigation, the plants are capable of producing oil, rubber and lubricants — even a replacement for sperm whale oil. Great interest is being shown here for three crops in particular: guayule (wy-oo-lee), joboba (ho-ho-ba), and euphorbia (you-four-bia).

All are drought-resistant plants which grow in the desert regions of many Southwest states, including Texas.

"The strategic value of these new crops is immeasurable to a nation dependent on imports," said Dr. Dan Bragg, a Texas A&M industrial economist. "The first of the plants that will be cultivated on a large scale will probably be joboba."

Bragg was part of a delegation of Texas A&M scientists testifying this week before a special meeting of the Texas House of Representatives Subcommittee on Alternate Energy Sources for Agriculture.

The joboba seed resembles a small green olive. Approximately 60 percent of its weight is a light yellow, odorless, liquid wax.

"This wax is almost identical to sperm whale oil, a key industrial lubricant," said Bragg. Sperm whale oil is used in automatic transmission fluids, electrical insulation and for other lubrication of precision instruments.

"Since 1971, however, the sperm whale has been declared an endangered species and importation of its products into the United States has been forbidden," Bragg said.

said. "With that restriction, industry has been pressed hard to develop synthetic substitutes. As a result, joboba oil is much in demand. Current world prices are about \$5 per pound."

In the late 1960s, about 44 million pounds of sperm whale oil were imported by the United States each year, he said.

Another plant showing a high degree of promise for future agricultural economics is the guayule.

Guayule produces rubber — rubber in quantities of 2 to 15 percent of the plant's dry weight. It is chemically and physically identical to that produced by the Asian rubber tree.

Guayule grows wild in Southwest Texas and northern Mexico.

"When rubber supplies were cut off during World War II, the United States spent \$45 million on the successful Emergency Rubber Project developing guayule as a domestic source of natural rubber," said Bragg.

"However, in 1946, with renewed availability of Asian rubber and the development of synthetic rubber made from low-cost petroleum, the guayule project was dismantled," he said.

Conditions have changed considerably since World War II.

Prices of both synthetic and natural rubber have soared. The security of both products is more uncertain today than it has been since 1946, he added. The United States in 1976 imported almost 700,000 tons of natural rubber, at a cost of one-half billion dollars.

Any increase in the development of guayule will have an effect in lessening dependence on imports.

"Over half of our crude oil is imported, while all rubber comes from

countries with shaky governments," Bragg said.

"It's been estimated that world demand will outstrip consumption in 1985 by as much as one million tons," he said. "This increased demand provides a golden opportunity for crop diversification by farmers in Texas and other Southwestern states."

Another plant being studied is the euphorbia. Called the "gasoline tree," the bush contains a latex similar to crude oil.

In the wild, euphorbia will yield two to 10 barrels of crude oil per acre, at a cost of \$3 to \$10 per barrel, said the Texas A&M scientist. It is possible genetic improvement could raise this to as much as 10 to 50 barrels per year. It is a low-sulfur product.

"This plant offers an opportunity for the United States to grow its own oil," said Bragg. "However, the magnitude of such an undertaking would be staggering. An area the size of Arizona would have to be cultivated with plants producing 40 barrels per acre to meet the needs of the nation's current gasoline requirements."

"It has advantages, too," he said. "Euphorbia is a renewable resource that is under our own control, rather than a foreign government. The plant is a resource without lethal hazards, such as radiation or air pollution. Finally, it uses land that is not presently suitable for the production of food and fiber."

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