

Growing markets bring potential for rubber and oilseed crops

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Changing and growing markets have renewed interest and research on guayule and lesquerella, two native Big Bend plants that might be grown in other parts of Texas, a Texas AgriLife Research scientist said.

Dr. Mike Foster, a research scientist with the Texas AgriLife Research and Extension Center at Lubbock, said he is looking at the possibility of developing the two plants into alternative crops in the Trans-Pecos and High Plains. Foster, who is located at the Texas AgriLife Research Station in Pecos, spoke at the recent High Plains Vegetable Conference in Canyon.

The reason guayule is back on the forefront now is medical products, Foster said. Many people are allergic to natural rubber products, but guayule rubber does not seem to cause the allergic reactions.

“There are about 300 medical devices that require natural rubber,” he said. “Many occupations require people to wear gloves and the guayule natural rubber does not produce the allergic reactions because of fewer proteins. That’s where we are headed with this.”

Guayule is a native shrub in the Big Bend area and produces natural rubber, Foster said. This plant was harvested in the early 1900s in Mexico and Texas and received attention in the U.S. during World War II.

The Emergency Rubber Project was created in 1942-1944, and that is

when the first studies were performed on the reaction and limitation of guayule to low-temperature environments in Texas and New Mexico.

The experiments looked at 23 locations in the two states, Foster said. Little injury was seen on dormant shrubs at temperatures as low as 0 degrees, he said. Even in Dalhart, the plants had a 31 percent survival at minus 10 degrees.

Following the war, interest decreased and the U.S. became primarily an importer of rubber that is derived from rubber trees, Foster said. The rubber from guayule is structurally the same. In the late 1970s, interest in domestic rubber production was revived because of the oil embargo, he said. That's when researchers started trying to increase the biomass of these plants. And now Foster is again looking at the plant with plots at the Texas AgriLife Research Station at Halfway, near Plainview. The Trans Pecos and Plainview areas have similar elevations and temperatures, but the Plainview area receives almost two times as much rain. The freeze dates are similar.

The plants were transplanted in May 25, 2006, and received a total of 23 inches of water (rain and irrigation) during the growing season. Foster said he has already determined the high biomass lines that have been recently developed will not work in the colder regions because they lost their cold tolerance during the breeding process.

He has determined winter survival requires a dry period in the fall followed by a gradual temperature decline. Problems can arise if plant growth is induced by a winter warm period that is followed by frost. However, two breeding lines are showing potential.

The shrubs are harvested at two years of age when the whole plant can be dug up or it can be clipped and left to regrow, Foster said. It will need to be grown under irrigation, but the water requirements for the High

Plains have not been determined.

“One of the advantages here (in the High Plains) is you get some rainfall, so it can reduce the water inputs,” he said. “The Trans Pecos, where it is native, has trouble with salinity in the water, so we’re just trying to see how adaptive it is in this region.

“If this really happens, I think the High Plains would be in position to cash in on the market,” Foster said. “One of the last reports I saw, natural rubber varied from \$1.30 to \$1.60 a pound. With the medical application, the demand is growing.”

Foster said the co-products may be as valuable as the rubber. To process guayule for rubber, the plant has to be ground up and the rubber comes from the bark. The resin can be used to treat wood, and the leftover pulp can be used for composite boards and as an energy source, i.e. fire logs, briquettes and fuel pellets.

Lesquerella, the other crop Foster is working with, has potential as an industrial oilseed crop, he said. It also is found in Mexico and the Trans Pecos, but can be found growing as far north as Kansas.

The cool season perennial produces oil similar to that of castor, he said. All U.S. castor oil is imported.

The plant produces yellow flowers that develop into capsules containing numerous small, flat seeds. One million seeds weigh only 20 ounces, Foster said.

The seeds can be crushed to produce oil that could be used as the base-stock to improve viscosity of 2-cycle engine oil, motor oil and hydraulic fluid, he said. It also can be used in biodegradable gear oil with off-shore drilling applications, and it has potential as a biodiesel/biofuel additive.

“We certainly see this can be a potential new crop for the Trans Pecos and High Plains regions,” Foster said.

He said he is working with a research group at Pecos and Halfway research stations. The first planting at Halfway in 2006 had a weed problem and they were not able to harvest. A second crop was planted in 2007 and will be harvested this spring.

Foster said once the viability of the crops is determined, the acceptance of them as an alternative crop will depend on the ability to get them processed and to a market with a reasonable profit.

Source: Texas A&M University

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