RELATÓRIO DE PARTICIPAÇÃO DA IV CONFERÊNCIA ANUAL DA SOCIEDADE DE BORRACHA DE GUAYULE/RIVERSIDE-CALIFÓRNIA

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Local de Realização: Riverside-Califórnia, Estados Unidos da América do Norte

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Participantes: Vide Anexo I.

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INTRODUÇÃO

Até o presente, apenas o guayule (Parthenium argentatum) e a seringueira (Hevea brasiliensis) têm sido utilizados como fontes comerciais de borracha natural.

O guayule é uma planta nativa dos desertos do estado do Texas, nos Estados Unidos, e dos estados de Chihuahua, Coahuila, Durango, Zacatecas, Nuevo Leon e San Luís Potosi, no México.

O fato de ser esta planta nativa de uma região de clima árido, onde a precipitação pluvial é baixa e irregular, despertou o interesse da EMBRAPA por esta cultura, como uma possível nova opção para a agricultura da zona árida/semi-árida do Nordeste do Brasil.

Desta forma, atendendo recomendação da Diretoria da EMBRAPA (feita através do Dr. Dalmo C. Giacometti), participei desta conferência, tendo como objetivo obter informações sobre o andamento dos trabalhos de pesquisa relativos a esta cultura e, principalmente averiguar as espectativas desta cultura do ponto de vista econômico.

DISCUSSÃO

A conferência foi iniciada com um dia de campo no qual visitamos alguns trabalhos de seleção e melhoramento de guayule.

I - Visita à "USDA Cotton Research Station", em Shafter-California.

Os trabalhos são conduzidos através de um projeto conjunto do "California Department of Food and Agriculture" e da "University of California", e são direcionados basicamente à seleção e melhoramento desta cultura.

Estes trabalhos são divididos em três partes:

a) Seleção recorrente
b) Hibridação interespecífica
c) Seleção entre linhagens apomíticas

A área total destes experimentos é de aproximadamente 6 ha, contendo coleções de germoplasma de P. argentatum, P. fructicosum, P. tomentosum e P. incanum.

Durante a condução destes trabalhos, procura-se também obter informações sobre todos os aspectos de condução da cultura.

Inicialmente, as sementes são plantadas em pequenos recipientes em casa de vegetação. Três a 4 meses mais tarde, estas plantas são levadas ao campo e plantadas em um espaçamento de aproximadamente 1,0 x 0,45 m. Durante as primeiras semanas efetua-se a irrigação do campo uma vez a cada 7 dias, passando depois a se irrigar uma vez a cada 15 dias.

Na condução destes trabalhos, deve-se tomar em conta que o guayule é uma planta monóica e a polinização é, aparentemente, entomófila. A altura das plantas é muito variável, devido à heterogeneidade genética observada nos "stands" naturais (as plantas podem ser haplóides, diplóides ou poliplóides). Da mesma forma, o conteúdo percentual de borracha nestas plantas é também muito variável. Os trabalhos de hibridação interespecífica procuram incorporar o alto teor de borracha de certas linhagens de guayule (P. argentatum) à grande capacidade de crescimento vegetativo de outras espécies do gênero Parthenium.

Da forma como esta cultura vem sendo conduzida, tem se observado que normalmente a produção de borracha aumenta bastante durante os primeiros 2 anos após o transplantio. No terceiro ano, o aumento é menor e, a partir de então, praticamente não há aumento de produção.

Não se tem observado nestes campos qualquer problema de

pragas. Existe entretanto problema de doença, causado principalmente por Verticillium sp.. Porém, a impressão de um pesquisador argentino (Ing. Ricardo Ayerza - Diretor Técnico da empresa "Jojoba S.A." de Buenos Aires) é de que este problema nestes campos de estudo está sendo agravado devido à irrigação (aparentemente) excessiva. As linhagens C 272 e C 273 (obtidas através deste projeto) são particularmente susceptíveis ao Verticillium sp. (vide foto 12 - Anexo III).

As linhagens C 250 e C 254 são as mais promissoras até o presente, produzindo cerca de 36% e 62% mais borracha por planta, respectivamente, que a variedade 11605, a qual é uma das melhores produzidas pelo USDA até o momento. Assumindo uma densidade de 25.000 plantas por hectare, estima-se que as produtividades das linhagens C 254, C 250 e 11605 sejam de aproximadamente 455, 382 e 280 kg de borracha por hectare, respectivamente, aos 8-9 meses de idade.

Também, próximo aos campos de guayule, visitamos o laboratório onde são realizadas as análises de conteúdo de borracha. O método empregado não é de grande precisão, mas é perfeitamente aceitável nestes trabalhos de melhoramento/seleção, além de ser rápido e barato. Em síntese, o processo é o seguinte: retira-se o segundo ramo (a partir do nível do solo) da planta que se quer analisar. Tritura-se este ramo (sem folhas) e deixa-se secar em estufa durante 24 horas. Pesam-se então 30g deste material triturado, junta-se a 250 ml de álcool e bate-se isto em um liquidificador. Passa-se então o sobrenadante para uma vasilha com água destilada, e obtém-se dessa forma a separação da borracha. Após a apresentação do método, alguns dos visitantes argumentaram que este não é muito preciso, e que existem outros, mais acurados. Respondeu então o Dr. A. Estilai (um dos líderes deste projeto) que embora não sendo exato, este método é atualmente o mais recomendável para este projeto, de vez que propicia uma comparação aceitável entre as linhagens em estudo, além de ser barato e rápido, permitindo que um número grande de comparações seja feito

em um curto período.

II - Comentários sobre trabalhos apresentados nesta Conferência.

Os trabalhos apresentados nesta conferência abrangeram diversos aspectos da cultura do guayule, dentre os quais: seleção, melhoramento, citologia, fisiologia (efeito de irrigação, salinidade, nutrição), doenças, pragas, condução da cultura e perspectivas econômicas.

Atualmente, os trabalhos de seleção e melhoramento se destinam básicamente à obtenção de linhagens mais produtivas que as que são atualmente disponíveis. A produtividade terá que ser grandemente aumentada para que o guayule seja competitivo. Existe também, na Califórnia, uma preocupação com doenças de solo e, por esta razão, este aspecto também está sendo levado em conta nos trabalhos conduzidos em Shafter. Um dos trabalhos apresentados (Ver página 38 do caderno de "Programm and Summaries"), conduzido no Arizona, tratou sobre o efeito de espécies do fungo Fusarium em raízes desta planta. Também o trabalho da página 63 mostra a importância dos fungos de solo nesta cultura.

Dois trabalhos sobre o efeito de insetos foram apresentados (Ver páginas 37 e 66). Entretanto, o trabalho da página 37 (Larval Growth Inhibitors from Guayule, and related species of Parthenium) refere-se a duas espécies de insetos (Spodoptera exigua e Heliothis zea) que não causam danos a esta planta. Também o trabalho da página 66 (Screening for Resistance to Insect Pests Infestations in some Parthenium Species and their Hybrids) se refere a um inseto (Trichoplusia ni) que não acarretam danos a esta cultura.

Oito trabalhos referiram-se ao efeito da irrigação nesta cultura (páginas 21, 42, 45, 46, 47, 48, 49 e 51). Os resultados destes trabalhos mostraram que a porcentagem de borracha por planta é reduzida com o aumento da quantidade de água fornecida às plantas. Entretanto, as plantas que receberam os maio-

res níveis de irrigação cresceram muito mais, e apresentaram uma produtividade de borracha significativamente maior. No trabalho conduzido em Mesa-Arizona, obteve-se uma produtividade de 830 kg de borracha/ha no maior nível de irrigação e 480 kg de borracha/ha no menor nível de irrigação (17 meses após o transplantio). Deve-se levar em conta, entretanto, que o solo de Mesa (Laveen Loam Soil) tem uma capacidade média de retenção de água. Este mesmo experimento, quando conduzido em Brawley - Califórnia, onde o solo (Imperial Silty Clay Loam Soil) tem uma alta capacidade de retenção de água, não mostrou diferença significativa entre os diversos tratamentos.

No experimento descrito à página 46, considera-s o potencial de se consorciar guayule e jojoba. Considera-se também a viabilidade de se conduzir a cultura através de irrigação por gotejo, colocando-se a tubulação a 10 cm abaixo do nível do solo. As plantas permaneceram em casa de vegetação durante 4 meses (atingindo então cerca de 6 cm de altura), antes de serem transplantadas. Este experimento ainda está em andamento, e existe uma preocupação de que este tipo de irrigação mantenha o solo muito úmido, o que poderia favorecer a incidência de doenças fúngicas das raízes.

O efeito da salinização sobre esta cultura foi tratado em 3 trabalhos (páginas 43, 44 e 50). Os dois trabalhos conduzidos por técnicos do "U.S. Salinity Laboratory", em Brawley-Califórnia mostraram que o aumento do teor de sais no solo parece não interferir ou até mesmo parecem aumentar a produção de borracha. Entretanto, deve-se salientar que nestes experimentos, o transplantio foi feito quando as plantas já tinham aproximadamente 3 meses de idade. Além do mais, os tratamentos de níveis de salinização só foram iniciados depois de cerca de 5 meses do transplantio. O trabalho da página 50 mostra um aspecto diferente, isto é, o aumento do teor de sais na água de irrigação causa uma grande redução na emergência das plântulas e uma acentuada mortalidade das mesmas até 3 semanas após a emergência.

Aparentemente, mesmo na ausência de salinização, o plantio direto de guayule é muito dificultado, devido à reduzida porcentagem de emergência e morte das plântulas. Tendo-se este fato em consideração, alguns trabalhos apresentados tratavam sobre técnicas de condicionamento de sementes antes do plantio (páginas 14, 15, 39 e 63). À página 39 (Latex Content and Biomass Increase in Mycorrhizal Guayule under Field Conditions) observa se que a aplicação de micorriza aumentou muito a sobrevivência das plântulas no campo.

Apesar da grande diversidade dos assuntos tratados nesta conferência, a preocupação primária ainda se relaciona à viabilidade econômica desta cultura (Ver páginas, 1, 5, 71 e 72). Esta é a razão pela qual os trabalhos de melhoramento e seleção se destinam principalmente à obtenção de linhagens mais produtivas (borracha produzida por hectare).

CONCLUSÕES

Já em 1910 o guayule era responsável pela produção de 10 porcento do total de borracha natural consumida. Durante a segunda guerra mundial, o governo dos Estados Unidos estabeleceu o Projeto de Emergência da Borracha, o qual teve uma duração de 3,5 anos, durante o qual mais 15.000 hectares de guayule foram cultivados. Estes dados mostram que esta não é na realidade uma nova cultura, mas tão somente uma cultura cuja viabilidade econômica está sendo atualmente testada.

Deixando de lado o aspecto econômico, já se dispõe atualmente de uma tecnologia quase que adequada para a produção do guayule. Existem, porém, diversos pontos que têm que ser resolvidos para facilitar a condução desta cultura. Ainda não se dispõe de uma técnica adequada para o plantio direto no campo, e o fato de precisarem as plantas serem mantidas em condições de viveiro por 3 a 4 meses antes do transplantio encarece, o custo

da produção. Também não se dispõe até o momento de informações exatas sobre a melhor forma de se processar o produto colhido.

Por outro lado, esta cultura, até o presente, não apresenta problemas sérios de pragas e doenças (um técnico mexicano informou, porém, que um percevejo do gênero Lygus causa problemas para a produção de sementes na região de Saltillo-Coahuila-México). É possível que o aumento da área cultivada seja acompanhado por uma intensificação dos problemas fitossanitários.

Existem diversos países interessados na produção de guayule. Nesta reunião estiveram presentes pesquisadores dos seguintes países: Estados Unidos, México, Austrália, África do Sul, India, França e Argentina. Todos estes países são importadores da borracha natural. Os Estados Unidos importa 100% da quantidade consumida, que provém dos países do Sudeste Asiático. O Departamento de Defesa dos Estados Unidos consome aproximadamente 40% do total importado, utilizando este material para a produção de pneus de aviões, ônibus, caminhões, etc. Por esta razão, em 1977, o Conselho de Segurança Nacional declarou a borracha natural como um material estratégico crítico. Além do mais, o Departamento de Defesa pretende reescrever as especificações para seus pedidos de material que usem borracha natural, para requerer o uso de borracha de guayule em todas as aplicações em que esta seja adequada, sempre que esta esteja disponível no mercado. Preço parece não ser o problema, de vez que o Departamento de Defesa está propenso a pagar mais por este material, para incentivar este cultivo.

Entretanto, no setor privado ainda não existe otimismo com relação ao uso do guayule. O Dr. R. Inman da Companhia "ARCO Solar Industries" espelha esta incerteza (Ver página 71). Para ser competitivo com a borracha natural produzida pela seringueira, teria-se que se esperar uma produtividade de cerca de 1.000 libras de borracha por acre, vendida ao preço de US$ 0.90 a US$ 1.00 por libra. O preço atual da borracha, é menor que US$ 0.60

por libra. Existe, entretanto, uma previsão do Banco Mundial de que haverá um déficit mundial de produção de borracha natural ao redor do ano 1990.

Na Austrália, por outro lado, existe apenas um interesse comercial pela borracha de guayule, e por esta razão, não se espera uma produção em larga escala, desta cultura num futuro recente. Neste país, assim como na África do Sul, procura-se dar maior ênfase à produção de guayule em áreas de sequeiro (apenas nas primeiras semanas após o transplantio faz-se a irrigação utilizando-se a água de escorrimento superficial armazenada).

Existe, porém, a possibilidade de que se possa utilizar os resíduos do guayule para diversas finalidades, dentre as quais a produção de ácido linolêico e de papel higiênico.

Para se ter uma idéia aproximada sobre a viabilidade econômica desta cultura, podemos tomar como base o preço aproximadamente US$ 0.55 por libra de borracha. Considerando-se a máxima produtividade obtida em condições experimentais (página 45) de 830 kg/ha (17 meses após o transplantio) tem que a renda bruta por hectare seria em torno de US$ 1,000.00. Se considerarmos porém a produtividade sem irrigação (480 kg/ha), temos que a renda bruta seria de aproximadamente US$ 580.00 por hectare, em um período de 17 meses após o transplantio.

Devemos considerar, entretanto, que no Nordeste do Brasil a temperatura é alta durante todo o ano, o que não se dá com o Sul dos Estados Unidos. Por esta razão, é possível que se possa conseguir uma produtividade maior nesta região, em termos de kg/ha/ano.

LISTA DE ANEXOS

Anexo Nº	Especificações
I	Lista de Partìcipantes
II	"Programm and Summaries-Guayule Rubber Soc., Inc.-Fourth Annual Conference".
III	Fotos (Vide FIGURAS 1 a 22).
IV	Publicação: TAYLOR, J.G. & K.E. FOSTER (1981). The feasibility of guayule commercialization in California. OALS Report/Univ. Arizona, 68p.
V	Publicação: BAIRD, L. (1981). VC first to grow guayule successfully. Valley Roadrunner, 19 Fev. 1981: páginas ? BAIRD, L. (1981). Will America's home-grown rubber plant be ignored? Valley Roadrunner, 26 Fev. 1981: páginas ?
VI	Notícia sobre a conferência, publicada pelo jornal "Press-Enterprise" de Riverside, 26 de junho de 1983.

ANEXO I

Fourth Annual Guayule Rubber Society Conference Attendees
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ANEXO V

VC first to grow guayule successfully

—Special to The Roadrunner—

By LESLIE BAIRD

I

The history of the domestication and cultivation of the native North American rubber shrub, guayule, began about 1912 in Valley Center.

Up until that time and for about a decade, a guayule rubber boom had occurred in Mexico, involving one big U.S. corporation and more than a dozen small firms whose ownership was spread between the U.S., Germany, Great Britain and Mexico.

A Texas guayule project started around 1907 in Marathon, Texas.

During the boom, thousands of tons of guayule rubber were being milled from wild shrub gathered by the peons over thousands of square miles of desert country in northern Mexico.

The collapse of the dictatorial regime of Porfirio Diaz and the ascendency of Francisco Madero in 1910, himself and his family owners and operators of guayule land and mills, brought about the revolution/civil war that put an end to the boom.

THE EMINENT botanist, Dr. Asa Gray, gave the generic name to a sprig of the plant brought to Harvard from Texas by a member of a border survey party around 1853-54. Dr. Gray named it Parthenium agentatum because of its silvery greenish-gray color.

The early Amerindians had called it by a variety of names, but finally guayule stuck, being a combination of quahu (wood, tree probably in Nahuatl) and the Spanish hule or olli, word for rubber.

Long before Christopher Columbus set foot on the Caribbean Islands, mainland natives were crudely processing the bark of the little shrub into rubber balls by chewing it, separating the rubber and spitting out the fiber.

At the same general period, it is presumed that the rubber trees in tropical Mexico were being slashed and the latex bled, a simpler and easier process.

It is quite possible that rubber balls made of guayule in the north accompanied the early migration of tribes to central Mexico, and not only balls but other crude artifacts were made from both natural rubbers. The remaining large circular stone "hoops" in the ruins of the ball courts attest their use.

II

THE EXACT acreage owned by the Continental Rubber Co. (also known as Intercontinental) at Valley Center has been given at various figures.

An article written for India Rubber World by Dr. William B. McCallum in 1941 lists 300 acres.

The final report of the wartime Emergency Rubber Project published in 1946 mentions 400 acres. A company report I recently obtained from the National Archives gives 200 acres. The last figure, however, doubtless refers to the acreage actually planted in guayule around 1932.

Dr. McCallum, who took over the botanical research from Dr. Lloyd in 1910, refers as follows to the area: "The soil of Valley Center was satisfactory and climatic conditions very good; and in the varieties excellent yields of rubber were secured. But the amount of land for large expansion was not available..."

In 1923, the guayule plants had been in the field for nearly ten years. A report written at that time noted that their height ranged from one foot to four feet. Since the seed had come from wild plants in Zacatecas on the company's Cedros ranch, and probably very little obtained from early experimental plantings, there existed a variety of sizes and leaf configuration.

IT WAS not until 1942-45 during the wartime rubber project at Salinas that Dr. Rollins and others discovered that guayule plants could be sexual (aphimictic) as well as asexual (apomictic). This opened a new phase of research and plant breeding, since previously, only selections of the highest rubber producers had been done by Dr. McCallum from asexual types.

Valley Center realtor, Paul Bos, was good enough to drive me out on Cole Grade Road to an area he thought the guayule plantation had been located, west of Cole Grade and Bartlow Road. This, of course, is only a guess. Inquiries made to Bob Hutchings and the Soil Conservation Service in Escondido are still to come in. It is hoped that VC old-timers may respond and settle the question. The photos taken years ago may help.

Bos said that the likely guayule land was now in oranges on the Roberts' property, and that some of the land had been graded, and part, filled, with rocks and boulders taken out about 1960.

Author's Note: Although not known to many people guayule, the plant, and guayule rubber, has been widely covered in more than 1000 technical and scientific articles and papers. In that respect this opus on Valley Center Guayule is scarcely a highlight of highlights.

One of the best recent reports has been published by National Academy of Sciences, Washington, DC, entitled "Guayule—An Alternative Source of Natural Rubber." Edward J. Flynn of 840 Sierra Madre Blvd., San Marino, CA 91106, puts out a monthly Newsletter on Guayule ($24/yr.) My own articles appear in Rubber World and Rubber and Plastic News, both in Akron, O.

-Valley Roadrunner

Feb. 19, 1981
Valley Center CA 92082
Tel: 749-1112

Voice of Valley Center, Pauma Valley and "The Palomar Country"...

VALLEY ROADRUNNER

Valley Roadrunner, Feb. 19, 1981

Rubber plantation—

SINCE the wild shrub in Mexico and Texas grows on sloping land and rocky, calcareous soil, domestication could follow this procedure except that the logistics of farm machinery specially designed in Salinas for the previous flatland projects might not be practical.

No records have come to my attention explaining whether or not irrigation was employed at Valley Center's guayule plantation, although the noted size of the plants would indicate that water had been used, if only to get the plant started.

NATIVE HABITAT of wild guayule shrubs in Texas and Northern Mexico.

Dr. McCallum laid out other experimental test plots in this general time frame, including one at Hemet and Banning.

Then, in 1916, the company purchased 4,338 acres of raw land between Tucson and Nogales, Ariz. This eventually became the town of Continental. Although several thousands of acres were planted in guayule, the rubber content did not meet expectations, and a million dollar investment went down the drain.

BUT Continental was determined to find suitable land and climate for its crops of the rubber shrub. Much had been learned about the plant that so stubbornly resisted domestication.

The favorable area was finally located in the Salinas Valley in 1925 and a mill built in 1930.

The last reference to Valley Center came in 1944 when the Emergency Rubber Project harvested the remaining shrub left on the property. This came to 23 tons which were cut and shipped to the Salinas mill in line with an all-out effort made to process every available guayule plant to produce rubber for the war effort. Then, with the liquidation of all properties, mills, nurseries and growing shrub at the end of the war, the Valley Center acreage was also sold.

(To Be Continued)

Guayule

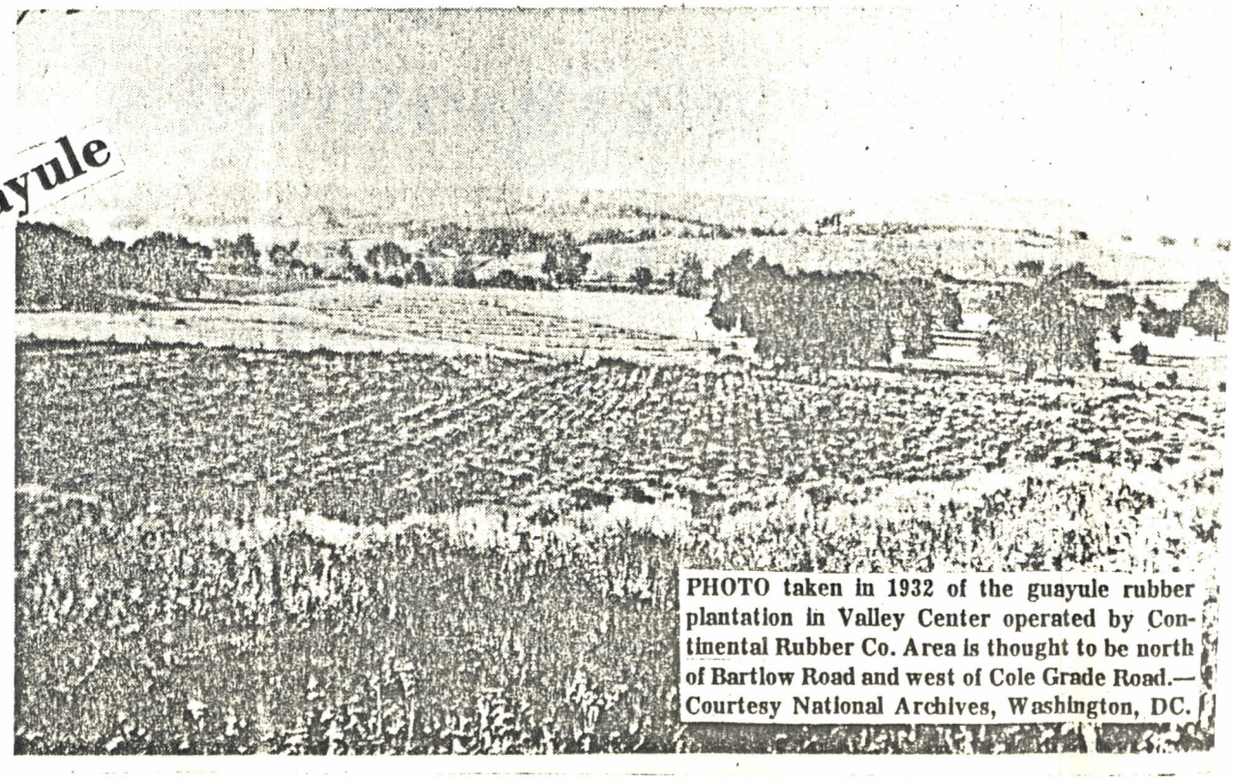
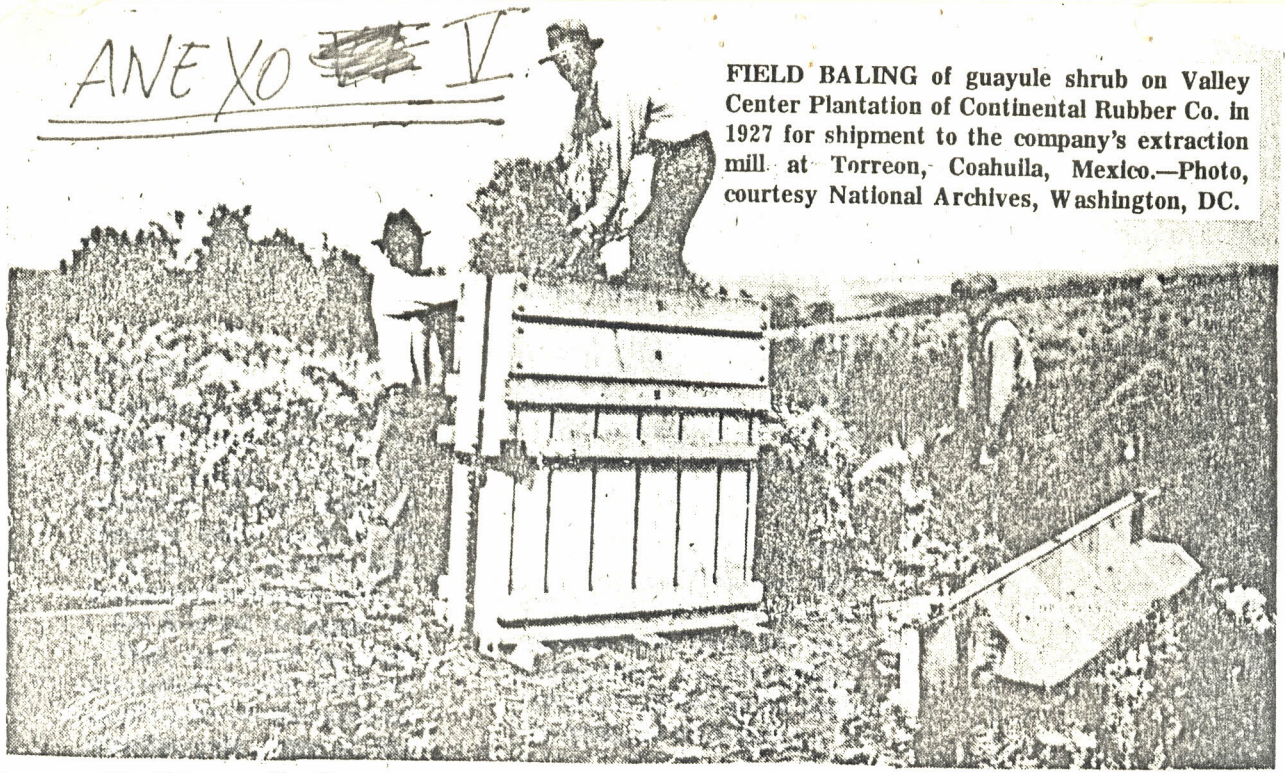


PHOTO taken in 1932 of the guayule rubber plantation in Valley Center operated by Continental Rubber Co. Area is thought to be north of Bartlow Road and west of Cole Grade Road.—Courtesy National Archives, Washington, DC.

ANEXO V



FIELD BALING of guayule shrub on Valley Center Plantation of Continental Rubber Co. in 1927 for shipment to the company's extraction mill at Torreon, Coahuila, Mexico.—Photo, courtesy National Archives, Washington, DC.

'Hard luck' guayule—

Feb. 26, 1981
Valley Center CA

Will America's home-grown rubber plant be ignored?

(Continued from the Feb.19th issue of The Valley Roadrunner)

— Special to The Roadrunner —

By LESLIE BAIRD
III

Guayule has been dubbed the hard-luck plant.

The Salinas mill was built just after the stock market crash of '29. A total of 8000 acres were planted in various parts of California, but not milled until the late 1930s, coming to a total of 3 million pounds. The best production amounted to 2000 pounds per acre.

One thing was sure. Guayule could be grown in the Southwest despite the early difficulties and long trial period. (Its successful development in Valley Center in the 30s was proof of that).

The strategic value of an American rubber was its home grown aspect. The 1920s had witnessed the British rubber cartel known as the Stevenson Plan, causing concern among U.S. rubber manufacturers, Firestone in particular.

Pearl Harbor's calamity and the Japanese armies overrunning Southwest Asian rubber plantations focused attention on guayule.

It looked as if the history of hard-luck was over.

Even after the wartime expenditure of a gross $45 million, the work of several thousand project employe[illegible] several hundred of them scientific and technical talent, the planting of 32,000 acres of guayule and the addition of another mill in Bakersfield produced only 3 million pounds of rubber for the war plants by the end of the conflict in '45.

THE resumption of Hevea rubber shipments, the great boost to synthetic rubber during the war and a hell-bent-for normalcy Congress and Rubber Board, tolled the death knell for the American rubber.

More than 20,000 acres of growing shrub were destroyed. All that was left was a small Salinas field, a Banning ranch, and the know-how far beyond what Intercontinental had developed. On second thought, a research project on rubber extraction and plant breeding resumed in Salinas in the 1950s about the time another threat to Hevea rubber occurred during the Korean crisis.

In 1953, Intercontinental sold its Mexican mills and property to Texas Instruments who seemed to value the New York Stock Exchange listing above the rubber or its prospects.

Between 1959 when the Salinas work ended and 1974 when OPEC's surprise price move endangered oil feedstocks for synthetics and skyrocketed the cost, guayule,

GUAYULE Continued on back page.

Guayule

(from 1)

now called the "rubber orphan of the wastelands" was dusted off and revived.

IV

ON THE face of it, the re-establishment of guayule as an industrial farm crop and a natural rubber needed in commerce, all that would be required might seem to be seed, land and farmers, plus processing/extraction mills.

But it is not so simple.

First, seed must be available, not only better seed than used to grow the 2000 pounds/acre/four-year crops of the past, but higher yield strains which would at least, double that figure. (One individual owns more than 2000 pounds of the former type seed but refuses to sell it for less than $1250 per pound).

Science and technology have greatly advanced since the 1950s, and these advantages must be applied to modern-day guayule if only to meet the higher land values, labor costs, expensive equipment, in fact every inflationary aspect. And imported natural rubber has not risen in price comparatively even at the current range of 70c/pound.

SO FAR, no extraction mills have been built or even designed, except for a Mexican pilot unit in Saltillo, Coahuila.

More than a $1 million have been spent by the National Science Foundation and other agencies, federal and state in the Southwest.

Reports have been published; conferences held, commissions appointed. All this since 1975.

Guayule advocates finally passed the Native Latex Commercialization Act in 1978 which was signed by former President Carter. So far, not a cent of the $35 million has been appropriated.

The rubber companies, two in particular, Goodyear and Firestone, with additional support from Goodrich, are cooperating, yet the entire project is far too big for them to swing as an industry.

THE JOINT Commision on Guayule (departments of Commerce and Agriculture) showed signs of pulling the forces together, but now the musical chairs of politics are changing in Washington where anything could happen.

The only bright and progressive program has resulted from the initial efforts of longtime guayule advocate, Edward J. Flynn of San Marino. Flynn sparked a guayule bill in the California Legislature, saw it through and now we have a half dozen excellent experimental projects in the practical phases of farming, albeit with federal funds.

No one can tell what will happen to guayule now, but if the program isn't continued, a lot of good money and work will have been wasted.

CLOSE-UP of guayule leaves and stem with ~~[achena]~~ seed pods ~~lower~~ right shown in comparison with size of author's hand.—Photo by ~~Duncan~~ Baird.

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Valley Roadrunner, Feb. 26, 1981-

ANEXO VI

Drab-looking guayule source of bright hopes

By EMANUEL E. PARKER
Press-Enterprise Staff Writer

Guayule. Not only is the name (pronounced wah-yoo-lee) hard to say, but the small grayish-green shrub is coarse and unremarkable in appearance.

But, except for the rubber trees of Malaysia and South America, guayule is the only plant that produces a high quality liquid latex usable to make rubber. Up to 15 perent of the dry weight of wild guayule is rubber.

That is why more than 100 botanists, plant biologists, agriculturalists and government officials from the United States and several foreign countries met for four days last week to discuss the drab-looking bush at the fourth annual conference of the Guayule Rubber Society at the University of California, Riverside.

The U.S. Department of Defense has declared natural rubber a critical strategic material that is in short supply, placing it in the same league as oil, rare metals and certain radioactive ores, all items necessary for war. The government wants the U.S. to develop a domestic natural rubber supply, one immune to events in Malaysia and other far off places. Several governments in Africa and in Mexico, Australia, France and India share the desire. Since rubber trees grow only in the tropics, their only hope to achieve the goal lies in the humble-looking guayule, native to Texas and northern Mexican deserts.

When the conference ended, the concensus was that the next steps for general production will be expensive, and that the outcome is uncertain.

Less than 1,000 acres of guayule are grown in the U.S., all in the Southwest and most for research. UCR maintains several guayule fields for research. Conference reports indicate the costs of planting thousands of new acres will be high.

Guayule needs four years to mature before it is harvested (the entire plant is uprooted) and its rubber extracted. Then another crop must be planted, and another wait of four years before another harvest.

One reason initial guayule costs are so high is that seedlings must be grown separately first. Research on starting crops directly in the ground from seeds is continuing, and conference reports indicate progress is being made.

Victor Youngner, a UCR plant scientist, said research also is aimed at "breeding for higher rubber content, larger plants and faster growth rates." He said researchers hope to produce a plant that matures in only three years and whose dry weight is 20 percent rubber.

Processing guayule rubber is complex, and the United States has not built processing facilities, which would be expensive.

Guayule rubber will have to compete with rubber from trees, which sells for about 54 cents a pound.

Conference speaker Robert Inman, of Arco Solar Industries, estimated an acre of guayule must yield 1,000 pounds of rubber selling for 90 cents to $1 a pound for growers to make a profit. Inman said Arco investigated going into guayule production and decided not to. "Guayule is not commercially feasible today," he told the delegates.

Others attending the conference were not so pessimistic. Guayule has several traits that make it a natural crop for arid areas such as the Southwest. Wild guayule requires little water and survives by extending tap roots up to 20 feet underground.

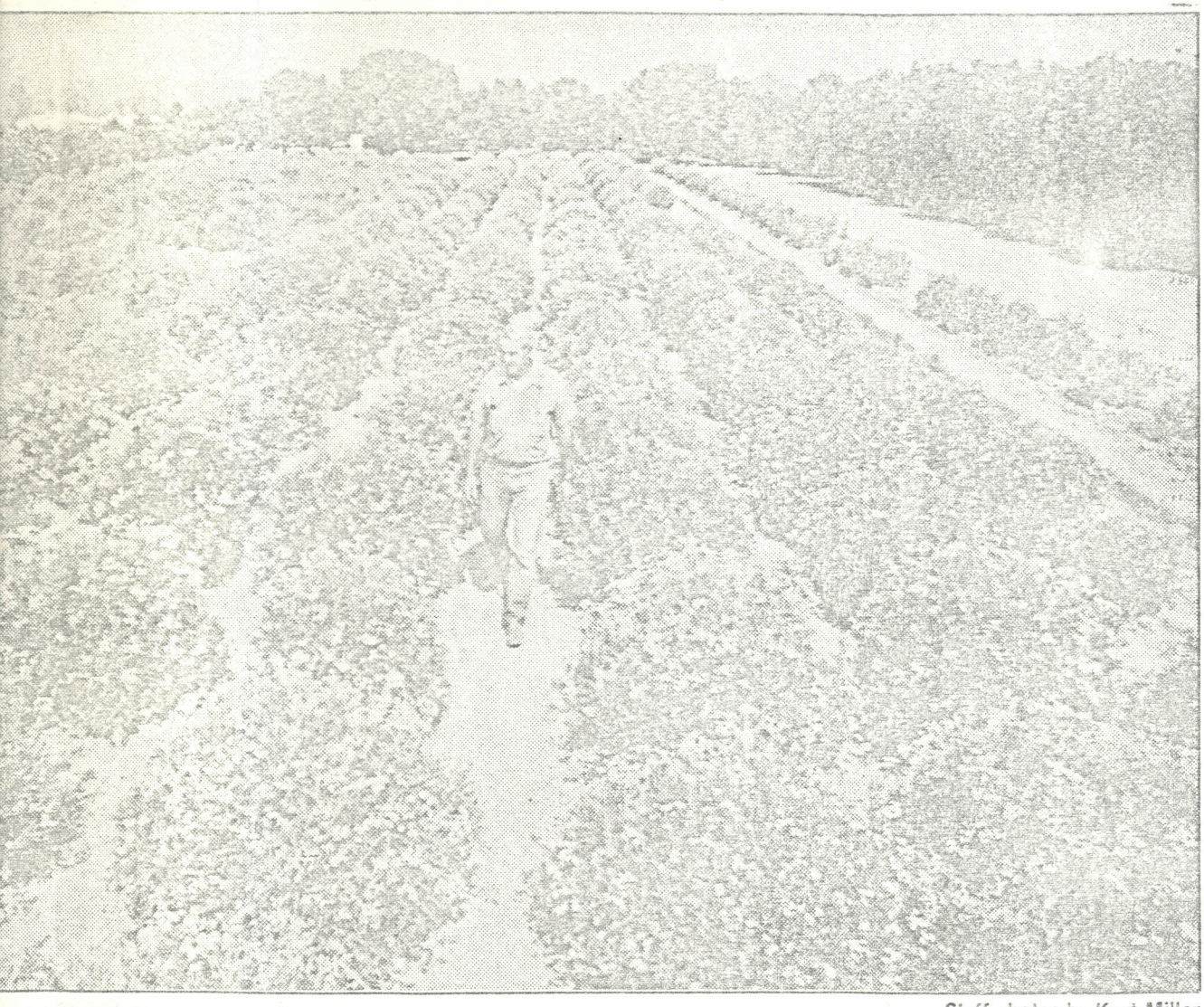
Virtually no desert is so dry it cannot produce guayule with some rubber content. While U.S. guayule growers irrigate their crops, Australia growers said they rely only on rainfall.

In the U.S., guayule has a guaranteed market — the Department of Defense. Judi K. Nelson, chairman of a ment guayule told the confe ment will buy can get its han

The depart cent of the c natural rubbe plans to begin s le for rubber She said the wants to stockp tons of rubbe stored only 10

Before and II, the U.S. m

Barney Power in one of several guay



Staff photos by Kurt Miller

one of several guayule fields maintained for research by University of California, Riverside.

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chairman of a Defense Department guayule technical group, told the conference the department will buy all the guayule it can get its hands on.

The department uses 40 percent of the country's imported natural rubber, she said, and plans to begin substituting guayule for rubber wherever possible. She said the department also wants to stockpile 850,000 metric tons of rubber but so far has stored only 102,000 metric tons.

Before and during World War II, the U.S. maintained substantial guayule crops. N. Gene Wright of the University of Arizona, in his conference report, said 10 percent of the world's natural rubber needs were met by guayule in 1910.

During World War II, the U.S. government sponsored the Emergency Rubber Project and cultivated more than 35,000 acres of guayule in the Southwest. After the war, synthetic rubber, made from petroleum, all but ended guayule cultivation in the U.S., Wright said.

Another conference report by Thomas E. Cole, vice president of the Rubber Manufacturers Association, said that the U.S. now uses 30 percent natural rubber and 70 percent synthetic.

After World War II, experts were certain synthetic rubber would end use of natural rubber. But synthetic rubber never equaled natural rubber's elasticity, resilience and heat resistance. What's more, as oil prices skyrocketed, synthetic rubber prices passed those of natural rubber. Today, demands for natural rubber far exceed supplies.