In growing rubber from guayule, Parthenium Argentatum Gray, during the war emergency, the major production problem was that of devising methods of obtaining satisfactory yields of rubber in 2 or 3 years, as contrasted with the usual practices of the Intercontinental Rubber Company of requiring 6 or 7 years.

This paper reports the results of a study to determine if it was possible to shorten the time required to produce a satisfactory yield of rubber by seeding directly in the field instead of growing seedlings in a nursery and transplanting them into the field.

**METHODS AND MATERIALS**

Experiments were conducted at Indio and Salinas, Calif. At Indio, the experiment consisted of two dates of planting, November, 1942, and March, 1943; and two irrigation treatments referred to as heavy and moderate in addition to the direct seeding versus transplants. Plots to receive heavy irrigation were to be irrigated when 50% of the available moisture had been used in the first foot, those to receive moderate irrigation were to be irrigated when the moisture in the first foot was at the wilting percentage. The soil on which the experiment occurred at Indio was classed as Coachella loamy sand. The average field moisture capacity was about 11% with a wilting percentage of about 2. In the heavy irrigation treatment, the moisture percentage prior to irrigating was usually lower than planned and generally ranged between 5 and 6 instead of from 6 to 7. The irrigation season for the heavy treatment was from March 31 to November 24. During that time 21 applications of water were made, one each in April and May, three in June, four in July, three in August, four in September, two in October, and three in November. There was an average of 2.7 acre inches of water applied at each irrigation, or a total of 59.4 inches for the season.

On plots receiving moderate irrigation, the soil moisture in the first foot before irrigating was in all cases slightly above the wilting percentage. During the season, 14 applications of water were made, one each in April, May, and June, three in July and August, two each in September and October, and one in December. There was an average of 3.4 acre inches of water applied at each irrigation, with a total of about 51 inches for the season.

The treatments were replicated four times in randomized blocks and the plots were four rows 60 feet long with plants spaced 28 X 20 inches. To determine yield of rubber, two samples consisting of six plants each were taken from each plot. Only plants surrounded on four sides by neighbors were used. In the direct seeding the sample consisted of six hills, as the plants had not been thinned to one to a hill.

From December, 1943, the end of the irrigation season at Indio, up until the time the plants were sampled in March, 1944, there was 5.29 inches of rain.

At Salinas the experiment consisted of three irrigation treatments and three spacings, in addition to the direct seeding versus transplants. The planting occurred on Green field loam. The field capacity of this soil was about 12% in the upper 2 feet and about 13% in the third to the sixth foot, and the wilting percentage in the upper 2 feet was about 4 and in the third to the sixth foot 5 to 6. The three irrigation treatments were referred to as moderate, very light, and none. The plots to receive moderate irrigation were to be irrigated when the moisture

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