Effect of Plant Spacing, Fall Irrigation, and Fertilization on Rubber Production During the Winter in 1-Year-Old Guayule

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After the vegetative growth in guayule is retarded in the fall of the year as a result of lowering temperatures and possibly other factors, the shrub continues to accumulate rubber. During the cold season from late November to February or March, rubber accumulation in guayule at Salinas, Calif., is usually as great or greater than for any comparable period of the year. During at least part of this interval, rubber may accumulate more rapidly than at any other season. The data herein reported were obtained from an experiment to determine the effect of plant spacing, early and late fall fertilization with and without irrigation, and the interrelation of these factors on rubber production in guayule during the winter.

Methods and Materials

Nursery seedlings were transplanted into the field during the middle of December in 1942. Except for the differential spacings, the plants all received uniform treatment up to July 30, 1943. On July 16, the plots all received a uniform irrigation.

Treatments consisted of fertilizer versus no fertilizer on July 30 and November 10 and irrigated versus nonirrigated on September 7. Since the fertilizer applied as late as November 10 showed no significant effect on pounds of rubber or tons of shrub per acre or percentage rubber during the winter, these treatments were averaged with those made prior to this date. The four treatments, namely, fertilizer versus no fertilizer on July 30 and irrigated versus nonirrigated on September 7 were repeated on three plant spacings, namely, 28 X 10 inches, 28 X 20 inches, and 28 X 40 inches. There were three replications of each plant spacing and superimposed on each replication of each spacing were four replications of each fertilizer and irrigation treatment, thus making 12 replications of these treatments. Plots consisted of 10 rows 117 feet long. In sampling the shrub for yield and percentage rubber, each plot was divided into two equal parts and a sample was taken from each part. The sample consisted of the eight inside rows, 6.5 feet long. Only plants surrounded by neighbors on four sides were used in the sample. The average field stand was about 82%.

The shrub was sampled on November 20, 1943, and March 1, 1944, which was about 11 and 14 months, respectively, from the time of transplanting. November 20 was about 4 months from the time of applying the first differential fertilizer treatments and 2 1/2 months from the differential fall irrigation treatments and

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3The effect of temperatures and possibly other factors at this season of the year is associated with the growth conditions of the guayule plant. In the fall the vegetative growth is distinctly retarded with lowering temperature (50°F or below) and in the spring, with similar temperatures the plant resumes vegetative and reproductive growth.