INCREASED RUBBER PRODUCTION FROM THICKLY SEEDED GUAYULE

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The foremost problem confronting the Special Guayule Research Project at its initiation shortly after the outbreak of the war in the Pacific was that of determining the means of producing the maximum amount of rubber in the minimum of time.

The usual procedure in guayule, Parthenium argentatum Gray, rubber production has been to sow the seed thickly in nursery beds, grow the plants to an arbitrary size, clip them to within a few inches of the crown, dig them, and transplant them to fields, at spacings ranging from 14 to 36 inches in rows 24 to 36 inches apart. It is usually more than a year under the most favorable conditions, and sometimes several years under less favorable conditions, before all the available area of fields transplanted in this way is fully occupied by plants. Rubber is a high-energy compound and it is reasonable to expect that, within limits, the denser the plant stand and the greater the photosynthetic area available per unit of land surface, the greater the possibilities for the maximum rubber production in the shortest time. There is, however, a practical limit to the density of guayule plant stand that can be obtained by the transplanting of nursery stock, due to the mechanical problems involved and the costs of seedling production. Direct seeding is necessary for the establishment of dense stands in the field. Intensive studies of the possibilities of establishing field stands of guayule by direct seeding were undertaken shortly after the initiation of the intensified guayule research program. By the fall of 1943 it was well established (1, 2, 10, 11) that satisfactory field stands could be obtained by this method.

In the latter part of 1943 it became apparent that the further planting of guayule as a war-emergency source of rubber was to be drastically curtailed. At that time the Special Emergency Rubber Project, an agency of the U. S. Forest Service, in charge of guayule production operations, had a number of large nurseries containing guayule stock that would not be used for transplanting purposes but would be grown in place and harvested for rubber. These nurseries provided an excellent opportunity to study the effects of various plant densities, or spacings, on the production of rubber by guayule. The plants had been growing for several months and were well established, thus saving several months time in comparison with the establishment at that time of dense field stands from seed, and the stand was sufficiently dense that it could be thinned to give

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2Soils Technologist, Assistant Soils Technologist, Assistant Soils Technologist, and Associate Soils Technologist, respectively.

3Figures in parenthesis refer to "Literature Cited", p. 612.