THE EFFECT OF MOISTURE STRESS ON NURSERY-GROWN GUAYULE WITH RESPECT TO THE AMOUNT AND TYPE OF GROWTH AND GROWTH RESPONSE ON TRANSPLANTING

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IN THE production of any crop it is of considerable interest to know the effect of moisture stress on the amount and type of growth produced. This is particularly true for plants such as guayule, *Parthenium argentatum* Gray, which are grown in irrigated nurseries for later transplanting to field sites. In the case of such plants, the moisture stresses under which they are grown not only affect the amount and type of growth of the nursery stock but may also affect the survival and the time required for resumption of growth after the plants are set in the field.

There is some disagreement in the literature as to the importance, in relation to plant growth, of soil moisture held at tensions or stresses below the wilting coefficient (1, 3, 4, 6, 8, 9, 12, 13, 14, 15, 24, 26, 32, 33). Several investigators have reported that continuously maintained low moisture stresses gave growth increases for various crops; others have held to the view that plants grow equally well over the range of moisture stresses between the field capacity and the wilting point.

Very few references to the growth and survival after transplanting of woody plants grown in the nursery under varying degrees of moisture stress are to be found in the literature. Shirley and Meuli (27) reported that the drought resistance and survival of transplanted conifer seedlings were affected by the moisture conditions under which they had been grown in the nursery, growth under conditions of low soil moisture resulting in increased ability to survive. George (10) stated that nursery stock grown under dry land conditions produced better hardwood nursery stock for tree plantings in the Great Plains area than plants grown with irrigation. The literature is particularly lacking in references to guayule culture. The unpublished data and records of the Intercontinental Rubber Company (16) are the principal sources of information.

It has been the normal practice to grow guayule seedlings in the nursery and, after they reach some arbitrary size, to subject them to a "hardening off" process and transplant them into the field. With this type of culture it is of primary importance to produce nursery stock which will survive transplanting and resume growth quickly.

When investigations on guayule were undertaken by the Emergency Rubber Project, the exact type of plant and treatment needed...