

QUANTIFICATION OF RUBBER AND RESIN IN GUAYULE

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A method for the quantification of rubber and resin in guayule involving extraction with hexane followed by acetone has been standardised. The accuracy of the method has been compared with the one using these solvents in the reverse order. Results on the effect of the sequence in which the two solvents are used on the quality and quantity of rubber and resin are presented.

Key words : Rubber, Resin, Guayule.

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INTRODUCTION

Guayule (*Parthenium argentatum* Gray) is one of the few plant species that contain rubber. The rubber content in different strains varies widely from less than 1 to 26 per cent on dry weight basis (National Academy of Sciences, 1977). Examination of over 75 genotypes indicated a range of 6 to 17 per cent rubber content on an average in different groups (Goss, 1991). Estilon and Ray (1991) commented that the rubber content in wild stands was reported to range from 3.6 to 22.8 per cent and also that higher values upto 26 per cent though mentioned are not confirmed. A simple and rapid method of screening plants for rubber content would be extremely valuable in the development of this plant as a commercial crop. A method which can be used for the determination of rubber content in the field itself would be a boon for selection purpose.

The various methods reported for the estimation of cis-polyisoprene in guayule are photometric determination, differential staining technique (Bauer, 1979), trichome and leaf morphology (Mehta *et al.* 1979), ¹³C-NMR (Visitainer *et al.* 1981, Hayman *et al.* 1982) ¹H-NMR (Tonnet and Downes, 1983), attenuated total reflectance IR spectroscopy and IR spectroscopy (Banigan *et al.*, 1982). These methods are either time consuming or require specialised technical experience and sophisticated instruments and hence are not likely to be used for routine analysis. Further, for purposes of whole plant utilization it will be desirable to have information on all the components like rubber, resin and bagasse. In an effort to introduce guayule plant with good rubber content to India, a large number of guayule samples received from the various participating organizations were screened using an extraction method with hexane and acetone for rubber and resin respec-