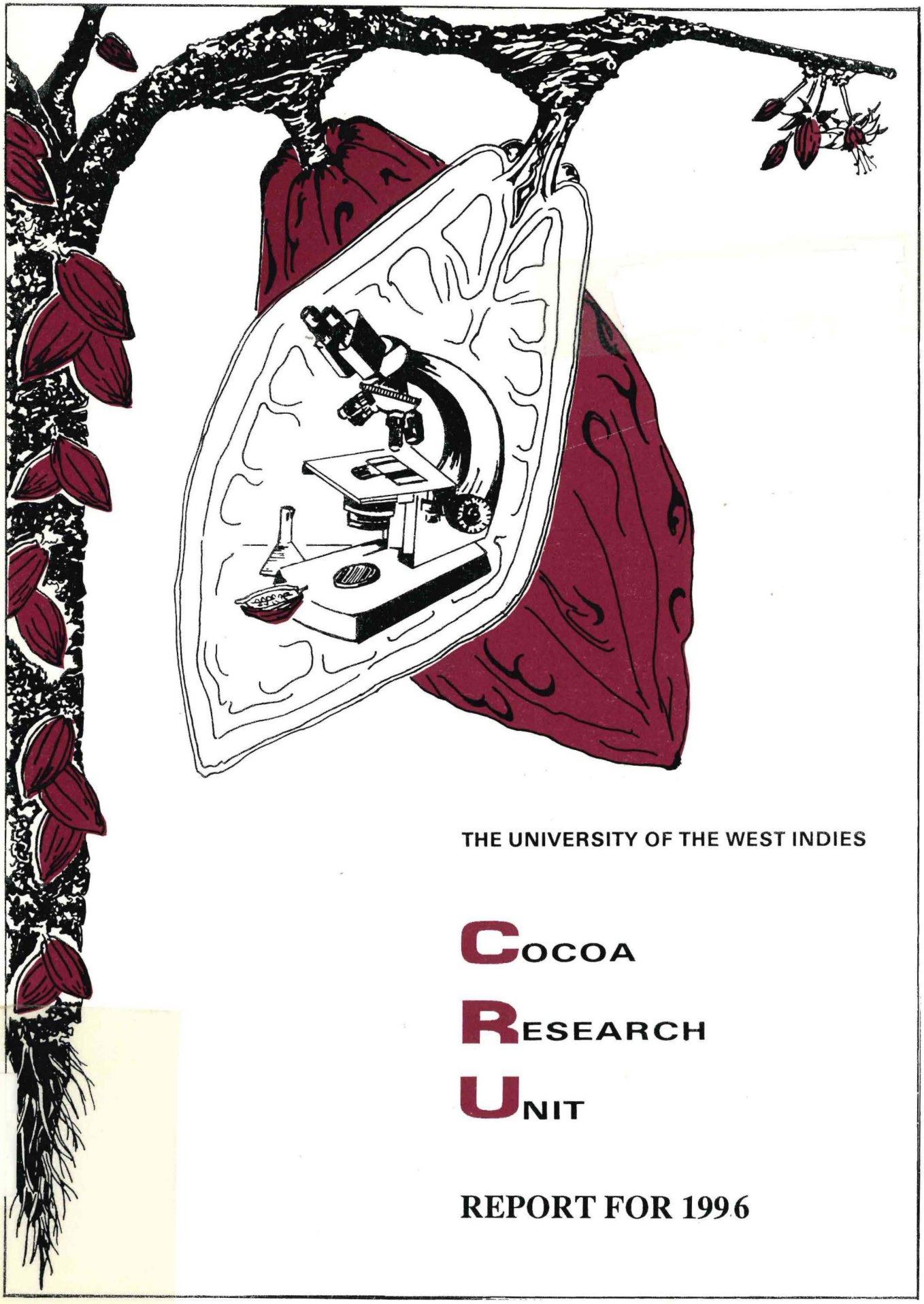

THE UNIVERSITY OF THE WEST INDIES

COCOA RESEARCH UNIT

REPORT FOR 1996

THE UNIVERSITY OF THE WEST INDIES
ST. AUGUSTINE, TRINIDAD & TOBAGO

COCOA RESEARCH UNIT

REPORT FOR 1996

BIOCHEMICAL CHARACTERIZATION

Overview of the Activities Performed in the Biochemistry Unit.

O. Sounigo, Y. Christopher, R. Umaharan and L. Motilal

Characterization and genetic diversity assessment

Genetic diversity was assessed within and among:

- Twenty-eight cacao populations, represented by 482 clones, using Isozyme Electrophoresis;
- Eleven cacao populations, represented by 127 clones, using RAPD analysis.

These activities are detailed in the research paper below entitled *Genetic Diversity Assessment of Theobroma cacao L. using Isozyme Electrophoresis and RAPDs* by O. Sounigo, Y. Christopher, and R. Umaharan. A comparative study of the genetic diversity data obtained with the two techniques will be performed once a sufficient number of clones has been studied using both techniques.

Genome mapping and research of markers linked to resistance to *Phytophthora*

This project, funded by CAOBISCO, was initiated in June 1995 with an initial series of pollinations to obtain the progenies for genome mapping. These progenies are now in a nursery, and have been used with biochemical and molecular markers since May 1995, when Lambert Motilal was assigned to the project. Preliminary experiments indicated that progeny from the IMC57 X Catongo cross was the most suitable. Subsequently, different types of markers were screened to select useful ones for genome mapping of these progeny.

Six isozyme systems were tested on IMC57 and Catongo, and three of them: ADH, ACP and IDH, were selected since they showed heterozygosity in the case of IMC57, and homozygosity in the case of Catongo.

Twenty-one pairs of primers, designed to allow a specific PCR amplification of "microsatellite" regions, were tested. Eleven pairs were selected which revealed heterozygosity with IMC57, or with both IMC57 and Catongo.

One hundred and fifty-eight decameric OPERON primers were tested for RAPD experiments on IMC57 and Catongo. Among these 96 were selected, for which the presence of markers in IMC57 and absence in Catongo was reproducible. Up to now, only 36 of these selected primers have been tested on a small sample (8 plants) of the progeny, and 22 of them have allowed us to obtain segregating markers from IMC57, with only one segregating marker per primer.

In conclusion, so far we have been able to select a total of only 36 potentially useful markers. Our aim is to obtain a moderately saturated map, which should be composed of at least 100 markers.