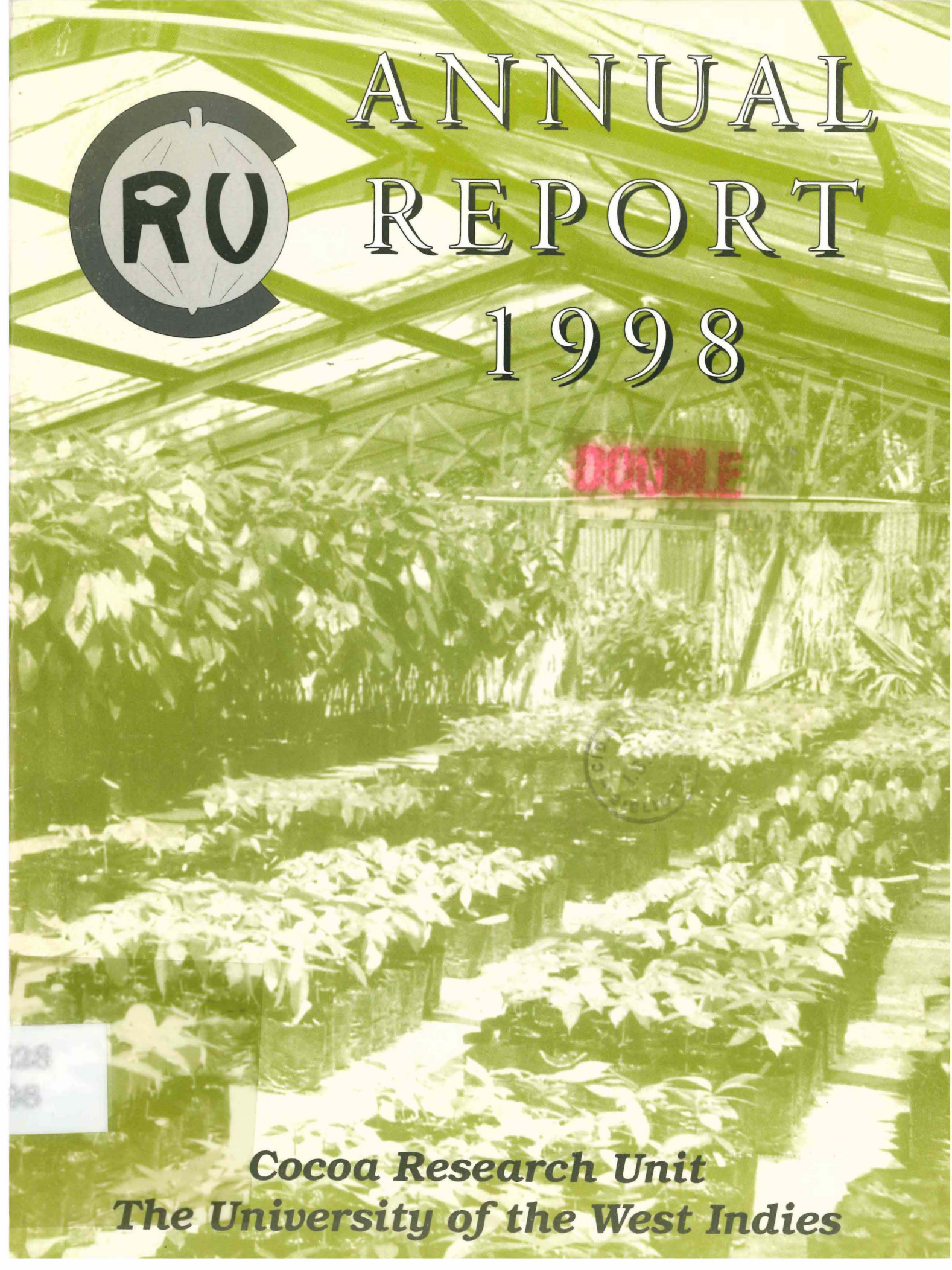

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Cover photograph. Cacao seedlings in the germplasm enhancement programme.

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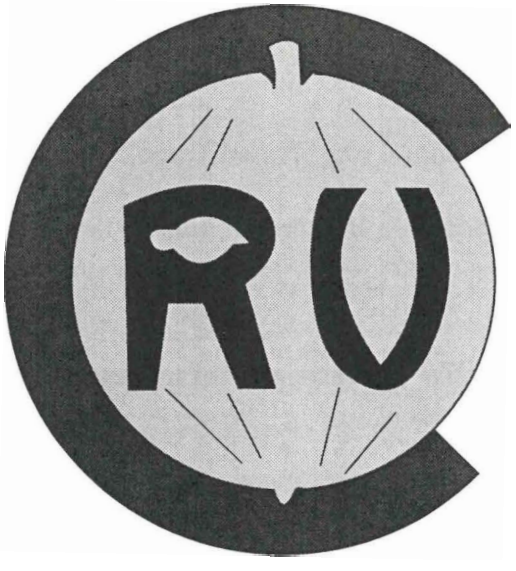

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Genome Mapping and Research on Markers linked to *Phytophtora* Resistance in Cacao

O. Sounigo and L. Motilal.

Introduction

The CAOBISCO project which aims at a better understanding of the genetic basis of the resistance of cacao to *Phytophthora* was initiated in 1995, in Trinidad , France, Cameroon and Côte d'Ivoire. Genome maps are being constructed from several progenies, and molecular markers linked to *Phytophthora* resistance are being sought.

Results

During a 3-month training period at the AGETROP laboratory (CIRAD, Montpellier, France), a staff member of CRU analysed the 223 plants of the progeny from the cross IMC 57 × CATONGO, using simple sequence repeat (SSR)-based polymerase chain reaction (PCR) and amplification fragment length polymorphism (AFLP) techniques. He obtained the following markers:

- 254 AFLP markers from 29 pairs of primers
- 8 microsatellite markers from 8 pairs of primers
- 9 RAPD markers from 9 primers.

The data were scored, and will be used to construct a genome map.

The AFLP data have been used to estimate the level of heterozygosity of both parents using the following formulae:

Percentage of heterozygosity in IMC 57:

$$(SB_{IMC\ 57} / (SB_{IMC\ 57} + NSB_{IMC\ 57})) \times 100$$

Percentage of heterozygosity in CATONGO:

$$(SB_{CATONGO} / (SB_{CATONGO} + NSB_{CATONGO})) \times 100$$

Where:

$SB_{IMC\ 57}$ = number of segregating markers present in IMC 57 but absent in CATONGO

$NSB_{IMC\ 57}$ = number of markers present in IMC 57 but absent in CATONGO and present in all plants of the progeny.

and:

$SB_{CATONGO}$ = number of segregating markers present in CATONGO but absent in IMC 57

$NSB_{CATONGO}$ = number of markers present in CATONGO but absent in IMC 57 and present in all plants of the progeny.

The following values were found:

Heterozygosity in IMC57 = 78.6%
Heterozygosity in CATONGO = 5.3%

This value for CATONGO was higher than the ones observed by Laurent *et al.* (1995), who found 0% and Crouzillat *et al.*(1996), who found 2%, from their restriction fragment length polymorphism (RFLP) studies.

Future prospects

Once the map has been constructed, data on *Phytophthora* resistance, assessed with a leaf inoculation test for plants of the progeny from the IMC 57 × CATONGO cross will be used to detect markers linked to this trait.

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