

## RUBBER RESEARCH IN CEYLON (1929).

The Annual Report of the Rubber Research Scheme of Ceylon for 1929 constitutes the Eighth Report of the Executive Committee to the Members of the Rubber Research Scheme and contains:—

- (1) The Report of the Executive Committee in Ceylon.
- (2) The Report of the Organising Secretary on visits to estates.
- (3) The Chemist's Report.
- (4) The Physiological Botanist's Report.
- (5) The Mycologist's Report.
- (6) Report of the London Advisory Committee.

In addition there is an Appendix to the Annual Report of the London Advisory Committee, a list of members of the Scheme, Income and Expenditure Account for 1929 and Estimates of Income and Expenditure for 1930.

It is proposed in this review to deal primarily with the scientific work carried out under the scheme so that planters and others in Malaya who are interested in rubber cultivation may know the nature and results of investigations carried out in Ceylon.

### REPLANTING AND REJUVENATION OF OLD RUBBER AREAS.

A tentative scheme of experiments has been discussed and it has been decided to remove completely all trees in areas which are to be replanted and to experiment with tapping-to-death methods over a period of three months, in order to obtain the maximum yield from the old trees before their removal.

The possibility of converting the rubber wood from the old trees into Adco synthetic farmyard manure has also been considered and small scale experiments are being carried out.

### RUBBER BUDDING AND SEED SELECTION.

A pamphlet is being prepared by the Physiological Botanist for the guidance of planters. Special attention is being given to the selection of mother trees on estates. Ninety estates are supplying budwood and keeping records of yields of mother trees. The establishment of isolated seed gardens has been delayed by the lack of available land, but it is anticipated that this will be remedied shortly.

### MANURING PROBLEMS.

In the manuring experiments previously laid down the lay-out did not allow of statistical treatment of the results by the latest methods and no significant increase in yield of rubber was recorded.

Definite benefit on foliage and bark renewal, however, as a result of nitrogenous manuring alone or in combination with phosphates and potash was obtained. A scheme for a further manuring experiment covering a period of ten years has been drawn up and adopted.

#### COVER CROPS.

*Calapogonium mucunoides* and *Centrosema pubescens* have proved the most successful of the low growing cover crops.

A number of indigenous plants found growing naturally, including three species of *Desmodium*, have been utilised. (This is of interest, since two species of *Desmodium*, indigenous to Malaya, have been established at the Institute's Experiment Station.) The herbaceous taller leguminous plants—*Crotalaria usaramoensis*, *Tephrosia candida*, *Clitoria cajanifolia* and *Indigofera arrecta* also grow well as they do in Malaya.

#### Diseases.

##### BROWN BAST.

The results of scraping combined with the isolation method advocated by Keuchenius have been successful when carried out carefully.

An experiment on the isolation method, without scraping, was not successful, when an area of bark of more than a few inches in diameter is affected. The spread of the disease is stopped but a cure is not effected. Isolation without scraping is recommended when it is observed that no great length of the tapping cut has gone dry.

##### OIDIUM LEAF DISEASE.

This disease is a serious menace to rubber trees in some districts and is more prevalent than in 1928. It is concluded that there is little correlation between rainfall and the incidence of the disease but that a relatively dry atmosphere, by favouring the production of spores, is conducive to severe attack. Trees growing in poor soil and on exposed ridges suffer more severely than trees in valleys on richer soils. (This agrees with observations in Malaya on the incidence and virulency of the attack. A long dry spell during the refoliation period after normal wintering has affected the incidence and extent of the attack in Malaya.)

There is no evidence of any inherent individual immunity or resistance to the disease and any tree which produces its young leaves at a time when the fungus is active will be attacked.

Experiments to test the effect of manuring (particularly the application of nitrogenous and potash fertilizers) as a means of in-

creasing the resistance of the leaf to infection have been commenced. Arrangements to carry out tests on spraying with Sulfinette and sulphur have also been made.

#### DISEASES OF BUD SHOOTS.

A new disease of young shoots of budded rubber has been investigated and a strain of *Phytophthora Palmivora* is stated to be the causal organism.

This disease has originated on material imported from Java and is thought to have been introduced from that country.

In view of the above, it has been considered desirable to find an effective and harmless method of disinfection of such imported material and experiments have been commenced. (Note:—In the Report of the Second Imperial Mycological Conference held in England in 1929, the attention of the Governments of Malaya and Ceylon is being drawn to the desirability of disinfection of imported rubber budwood, stumps, seeds, etc., and the matter is under consideration in Malaya. B.J.E.).

#### ROOT DISEASES.

The general position in respect of root diseases of rubber in Ceylon is considered satisfactory. Improved methods of treatment practised on most estates have proved effective in preventing the spread of *Fomes lignosus* and securing its eradication.

*Ustilina zonata* continued to be prevalent but in many cases a tree-to-tree examination has resulted in detection at an early stage. The concrete filling method advised has proved very successful.

#### “RUST” ON VIGNA.

The “rust” disease of Vigna caused by *Uromyces* sp. has been further investigated and it is concluded that the leaf-fall caused by the disease can be a serious factor in the destruction of this cover crop, especially under dry weather conditions, but the Vigna recovers on the advent of wet weather.

(Note:—In this connection it is of interest to remark that owing to diseases, *Centrosema pubescens* is being used extensively in Sumatra to replace Vigna, B.J.E.).

#### SNAILS (ACHATINA FULICA).

In view of the interest which has been taken in connection with the appearance of the giant snail in Malaya, it is noted that this continues to do much damage to areas of Vigna in Ceylon and that no satisfactory method of control has yet been devised in Ceylon.

## Preparation of Raw Rubber.

### SHEET RUBBER.

On account of shortage of wood fuel investigations are being carried out on methods of drying and curing sheet rubber other than by smoking.

The chief disadvantage of hot-air drying is that the surface of the sheet becomes sticky, but methods of eliminating this have been discovered (Note:—Similar observations have been made at the Rubber Research Institute).

### SPOT DISEASE OF CREPE RUBBER.

The addition of para-nitrophenol to latex in the preparation of crepe has been advocated in order to prevent "spot" disease caused by the growth of fungi. It has been found that discoloration of the crepe by para-nitrophenol only occurs if the crepe is exposed to direct light during drying.

A fungicide known as Mouldex recommended for the treatment of sheet rubber for the prevention of moulds, has been investigated and found to be less effective than paranitrophenol which is now used. (Note:—This agrees with the result of investigations made in the laboratories of the Rubber Research Institute. B.J.E.) It was also found to be unsuitable for the treatment of crepe rubber, owing to the colour imparted to the product.

Experiments on the effect of iron in water on the colour of crepe rubber indicated that small proportions of iron are likely to have an important detrimental effect.

### INVESTIGATIONS AT THE IMPERIAL INSTITUTE.

A memorandum was drawn up containing details of the various methods of vulcanisation and testing of rubber and this was used as a basis for discussion at the Rubber Conference in Java. (As stated in the Annual Report of the Rubber Research Institute of Malaya, 1929, arrangements were made at this Conference for a series of tests on the lines indicated to be carried out at the Imperial Institute, at the Central Rubber Proefstation, Buitenzorg, Java, and at the Rubber Research Institute in order to compare the results obtained at the three stations).

A series of experiments were carried out with the object of recommending methods for improving the uniformity of rubber in Ceylon.

An intensive study of variation in plasticity of first grade plantation rubber is also being made.

## REMARKS.

The results of the above investigations indicate that research work in Ceylon and Malaya is being carried out on similar lines, except where local conditions differ. The results are also in accordance with those obtained in the investigation of similar problems in Malaya.

## ORGANISATION.

It may be of interest to those interested in the organisation of rubber research in Malaya to add the following details in respect of the organisation and finance of the Rubber Research Scheme of Ceylon.

Under the present organisation, the Scheme is maintained by means of graded voluntary subscriptions from estates in Ceylon based on output of rubber, although estates not yet producing have to contribute 10 guineas a year in order to join the Scheme. Estates yielding a crop exceeding 700,000 lbs. contribute 50 guineas a year.

In addition, the Rubber Growers' Association contributes £2,000/- a year and the Ceylon Committee about £500/- a year for the investigations carried out in the vulcanising laboratories at the Imperial Institute, London, in connection with problems of preparation of raw rubber. The Government of Ceylon also contributed Rs. 67,500/- in 1929.

An Ordinance is under consideration by the Government of Ceylon for the future maintenance of the Scheme by means of the imposition of a cess on all rubber exported from Ceylon, similar to the method already adopted in Malaya for the maintenance of the Rubber Research Institute of Malaya.

B.J.E.

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