The Mildew Disease in East Java.

Results of the Mildew Inquiry made in 1927.

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Introduction.

IN the beginning of this year an inquiry was made regarding the increase of mildew disease in the rubber of East Java.

The results of this inquiry are shown in this paper.

It appears from the inquiry that on 70 of 105 estates the mildew disease has considerably increased during 1925 and 1926, as compared with previous years.

General Review.

From the general review (*vide* page 436) it appears that about 95 per cent. of the total number of rubber estates, suffered in a greater or lesser degree from mildew disease.

In East Java the increase of the disease is considerably larger than in West-Java, where as yet not one half of the total rubber estates have reported mildew.

Detailed Review.

From the review on page 437 it appears that on 48 per cent. of the total estates on which mildew was stated, the attacks of the disease had been severe.

Of the remaining 52 per cent. of the total estates, where the disease is less in evidence, there were 27 estates (=21 :6 per cent.) which had only sporadical cases of mildew.

According to answers, the disease also appeared on the seed and budding beds of 17 per cent. of the 'mildew estates'. Since the yellow mite (*Tarsonemus translucens*) had had free play, especially during the last year, on nearly all the nurseries, and the attacks of this insect appear much the same as mildew infection, the said percentage can, for a great part, be accounted to the attacks of the said insect.

At last it appears from this review that on 13 per cent. of the mildew estates the attacks were limited to definite complexes, so that on the greater part of the estates the disease spread over whole areas.

Wintering.

The beginning of the wintering, or rather the season during which the new leaves and blossom of the *Heveas* appear, confines the susceptibility to the mildew, because full grown and strong leaves are seldom attacked.

There are indications, that during the period in which the mildew mould (*Oidium Hevea*) is under the most favourable circumstances, all trees, strong as well as weak specimens, which have young leaf at the same time, are liable to be attacked by this disease.

According to further reports from estates, which suffered heavily from mildew, this period falls about the middle of the East monsoon (August and September). It follows from this, that trees, which have young leaf during a period when the mildew does not appear or is less virulent, will be either not, or less severely attacked.

From the reviews respecting the wintering reports, it appears indeed, that estates, where most *Heveas* winter about July and hence one till two months after (that is August and September) will be in the time of young leaf, have suffered more from the disease than estates where the leaf-fall is earlier (about April and May).

To procure young trees for the future which will be less susceptible to attacks from mildew, it will be as well to choose mother-trees which winter every year regularly at the same time, as far as possible during the end of the West monsoon (February-March) or the end of the East monsoon (October-November).

Further Communications Mentioned in the Inquiry.

It appeared that the practical information was contradictory.

The information showed a few indications of a possible influence of the dry season, in which the severe droughts of the past two years were chiefly responsible for the virulent attacks of mildew.

Rainfall Figures.

The average rainfall figures were taken from 60 mildew estates which had little or no mildew.

It appears that during the dry months, May till October, *less* rain fell on mildew estates, than on those estates which had no mildew or only sporadic cases.

The rainfall figures from so many different estates show, however, such variations that an average figure cannot be taken as a definition of the true conditions.

The rainfall figures were, therefore, again compared from 7 pairs of neighbouring estate, where one estate continually suffered severely and the other slightly from mildew attacks.

It was found, save in one exception, that on the mildew estate notably less rain fell than on the neighbouring estate, which had no or only sporadic cases of mildew.

To conclude herefrom, that more rain means less mildew is, in our opinion, rash, because we do not know exactly the nature of the influence of the rain on mildew-attacks and we must first find out when the young leaf period falls.

The mildew attack is indeed, in the first place, dependent on this last factor.

Geographical Spreading of Mildew.

It was seen from the reports that nearly all low-lying estates suffered more from mildew than high-lying estates, also in many cases the *Heveas* of estates lying on the east slopes of mountains were attacked less than those of estates lying on the south slopes.

The two estates in Borneo which also came into the East Java inquiry were, although low-lying, still free from the disease.

Graphs from Bandjarsarie Estate.

The manager of this estate has given us graphs of the rainfall, rubber production, wintering and mildew attacks, over the year 1924—1925—1926. The wintering and mlidew graphs show :—

For 1924.—A quick wintering and at the same time a short but severe attack of mildew in July and August.

For 1925.—A long wintering, and at the same time a longer attack of the disease which culminated definitely in July and August.

For 1926.—A shorter wintering than in 1925 and a mildew attack that was at its height in August and September.

The most important point, in our opinion, that is shown by the wintering and mildew graphs, is that the mildew came *suddenly* and vigorously to an outbreak (in July or in August), in spite of the fact that the wintering, and thus the number of trees susceptible to mildew, slowly increased from April.

Further that in and after October few or no trees were again attacked by mildew.

From the graph on page 453 can be seen that the total rubber production from 1924 till 1926 have increased.

As regards the rainfall-graphs (in connection with the mildew) the mildew attacks were severest during the abnormal dry year of 1925. In 1924, however, in which year was the heaviest rainfall, the mildew attacks were weakest. In 1926 the rainfall was heavier than in 1925 and less than in 1924, while the mildew attacks in 1926 were less than those in 1925 and more than in 1924.

Summary of the Results of the Inquiry.

1. The mildew disease has become considerably worse during the last few years, as compared to previous years.

2. Mildew has appeared on nearly all East Java estates.

3. The attacks of the disease has been severe on 48 per cent. of the total mildew infected estates.

4. Mildew has appeared on the budding-beds or nurseries of 17 per cent. of the estates.

5. Dying off of twigs was accounted to mildew by 37·6 per cent. of the managers of the diseased estates.

6. Decrease of production was accounted to mildew attacks on 6·4 per cent. of the "mildew estates."

7. Mildew taken over a whole, is not limited to definite complexes, but spread over whole areas.

8. In the district under observation of the Malang Experimental Station it is asserted that the trees which winter later in the East monsoon (about July) are attacked more severely than those which winter early (about May). It is this factor which must be remembered when approving plant-material.

9. The rainfall on mildew estates during the East monsoon was less than on "healthy estates".

10. Mildew is considerably worse on low-lying than on high-lying estates, and again more severe on the South than on the Eastern slopes of the hills.—*The Planters' Chronicle.* Vol. XXII. No. 53. December, 1927.