

A Trial with Ethrel Stimulant on Rubber at Bisianumu

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A small trial on the effects of Ethrel stimulant on latex flow in rubber was begun at the Department of Agriculture, Stock and Fisheries' Rubber Centre, Bisianumu, in late 1970. The following is an outline of the results up to the end of May, 1972.

The only trees available for the trial were unfortunately not typical of commercial rubber plantings. They were 30-year-old seedling trees which had been tapped for only a very short part of their life, and the trial tapping was on virgin bark on the lower part of panel A. The tapping system was a half circumference V-cut every second day, Monday to Saturday (V/2 d/2 6d/7). Two plots A and B were used, each of 110 trees.

Recording of latex yields began in November, 1970 for the purpose of comparing the yields of the plots with and without stimulation. Stimulant was first applied in February, 1971. However, the treatment used was a locally prepared mixture of Ethrel concentrate with peanut oil and the components did not mix satisfactorily. There was no obvious treatment effect, and tapping was therefore discontinued until a commercial preparation of pre-mixed Ethrel in palm oil became available. This was first applied on 10th March, 1971 and application was repeated at 2-month intervals thereafter. One pint of commercial preparation was used at each treatment.

At the first application, a 3in. band of bark below the tapping panel was scraped and, after one or more days, the mixture was applied to the scraped bark with a paint brush. From the May, 1971 application the band of scraped bark was reduced to 2in. as this proved to be the amount of bark consumed. At the November, 1971 treatment, the stimulant was applied immediately after scraping the bark, but from January, 1972 the bark was scraped, left for 2 days, then lightly scraped again immediately before the stimulant application.

The stimulant was applied to trees of plot A over the period March to November, 1971, while plot B remained untreated as a control. From January, 1972, the treatments were reversed; stimulant was applied to plot B and plot A received no further stimulant.

Results

Latex yield over the full period of recording is summarized in *Figure 1*. In order to reduce the complexity of the graph, yields shown have been totalled over three consecutive tappings when morning collection was successful. Rainy days and holidays are omitted, so the three tappings sometimes covered a period longer than 1 week.

After the first Ethrel treatment, there was a big increase in the volume of latex flow and in the duration of flow, so that it became necessary to make a second latex collection at 3 p.m. on the treated plot. On 15 per cent of days when the morning collection was successful, the afternoon collection was lost because of rain.

As well as increasing the latex flow, Ethrel stimulation caused a decrease in dry rubber content (d.r.c.) of the latex. The d.r.c. was determined by coagulation and drying 1 kg samples of latex from each plot on numerous occasions. During the period April to October, 1971, average d.r.c. of latex from plot A was 27.3 per cent and from plot B, 34.4 per cent. After reversal of the treatments, there was not a consistent change in d.r.c. as had been anticipated. Over the full period January to April, 1972, the d.r.c. averaged 29.5 per cent for plot A and 30.3 per cent for plot B. However, by the end of April, plot A was showing higher d.r.c. levels than plot B.

In addition to the increase in latex, the quantity of scrap from stimulated trees was about 40 per cent higher than from untreated trees.

Discussion

As may be seen from *Figure 1*, plot A was yielding about 15 per cent less latex than plot B before stimulant application was started. Over the period from the first application of stimulant to plot A in March, 1971 to the time

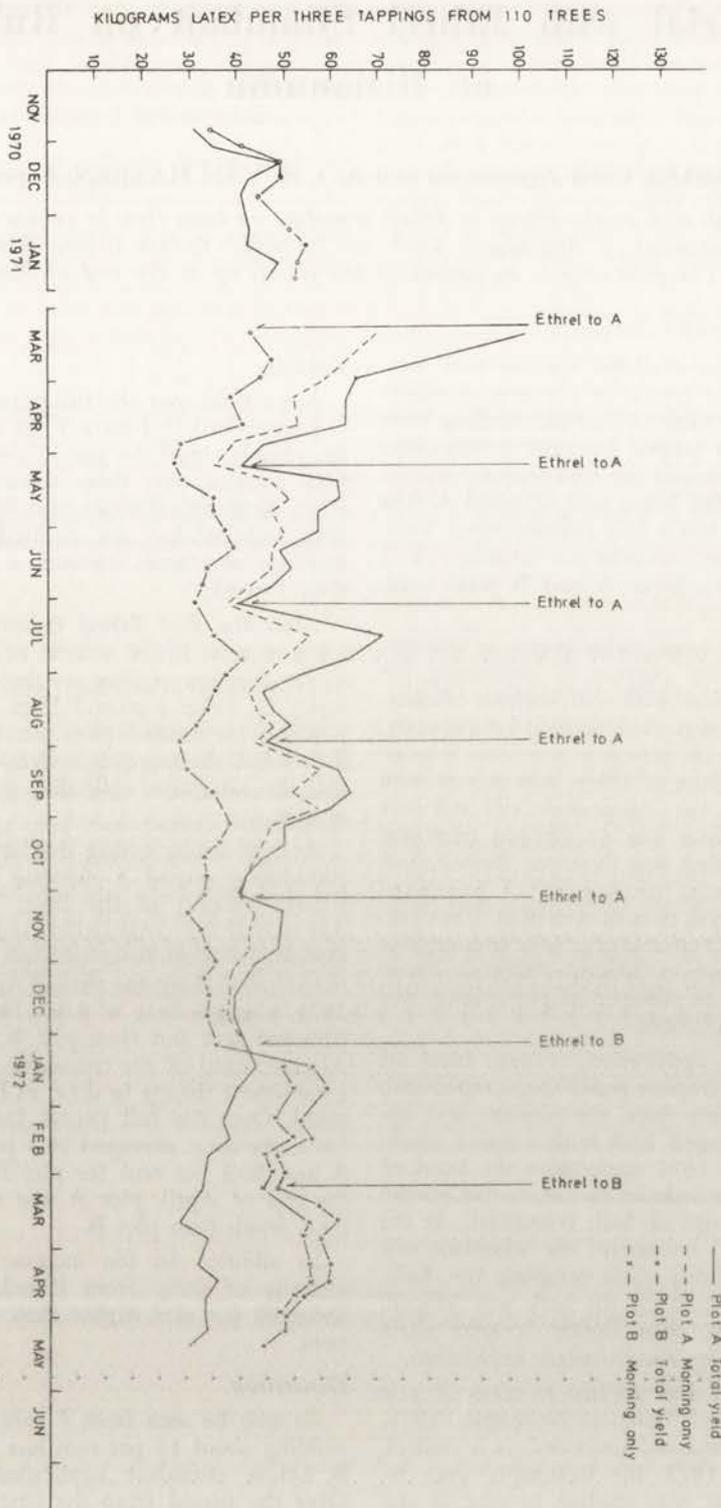


Figure 1.—Graph showing latex yield following stimulation with Ethrel.

when treatments were reversed in January, 1972, plot A yielded 53 per cent more latex than plot B. There were however, signs of a diminished effect of stimulation over the 10-month period. Firstly the increases in yield over the successive 2-month periods were 71, 55, 57, 49 and 32 per cent respectively. Secondly, as may be seen from *Figure 1*, immediately after the application of the stimulant, there was a big difference in the amount of latex collected with one or two collections per day. As time went on, however, there was less and less difference between the yield of "total collection" and the "morning only collection".

Following the reversal of treatments, over the period from application of stimulant to plot B up to the third stimulant application (i.e. over two 2-month periods), plot B yielded 59 per cent more latex than plot A. The increase was 44 per cent in the first 2-months and 73 per cent in the second 2-months. As the previous stimulation of plot A may have still had some effect during January and February, the later figure is probably the more accurate estimate of stimulant effect.

Taking into account the lower yield of plot A before treatments started, the overall result indicates an increase in latex production of the order of 60 per cent. However, this latex was of lower d.r.c. than that from unstimulated trees. Although there was not a clear reduction in d.r.c. after the reversal of treatments, overseas experience confirms that the type of reduction observed over the period March, 1971 to January, 1972 is to be expected. This lower d.r.c. of the extra latex reduces the estimate of increase in dry rubber yield to 27 per cent. This is a somewhat smaller response than has been reported in some overseas trials, the difference possibly being due to the non-typical type of trees being tapped at Bisianumu.

Cost Considerations: Considering the economics of Ethrel stimulation, on current prices the use of seven pints of Ethrel mixture (costing about \$21) produced sufficient latex to yield an extra 170 kg of dry sheet rubber (worth about \$60 on current prices). There was also an increased quantity of scrap. Allow-

ance must be made for the cost of processing and marketing the additional latex. There could also be an increase in cost from the need for a second latex collection in the afternoon. It might be argued that, if Ethrel were used, collection could be deferred till later in the day, but under Bisianumu conditions, this would involve a significant risk of loss of latex due to rain falling before 3 p.m.

These figures indicate that the use of Ethrel would be profitable. Recent results from Malaysian trials indicate that the concentration of Ethrel used at Bisianumu may have been unnecessarily high. If the same result could be achieved with lower concentrations of Ethrel, profit would be increased.

Conclusions and Recommendations

The trial at Bisianumu supports overseas indications that Ethrel is a powerful stimulant of latex flow and showed that profits could be increased by its use. Growers who have trees suitable for stimulation would be well advised at least to experiment with Ethrel. In Malaysia, results have been greatest in older trees (for example, tapping renewed bark on panel C), and in view of lack of knowledge of long-term effects, the Rubber Research Institute of Malaya recommends that initial trials be restricted to old trees due for replacement within a few years.

If you plan to experiment with Ethrel, a simple and reliable trial could be conducted by treating every second tree in a row, leaving alternate trees untreated for comparison. All trees should be tapped consecutively, regardless of treatment, but latex would have to be collected separately from the treated and untreated trees for recording. Yields would have to be recorded for a minimum of 2 months to assess the likely average response to stimulation. It is to be expected that latex from stimulated trees would have lower d.r.c. and it should be noted that the Metrolac is not accurate enough to give a reliable measure of the effect.

The authors would be grateful if growers could send them reports of results of any experiments they carry out with Ethrel.