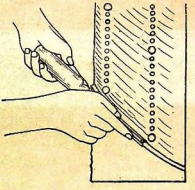
TAPPING OF RUBBER

Tapping

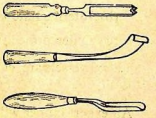
Latex is obtained from the bark of the rubber tree by tapping. *Tapping is described as "controlled wounding."* This is done by removing thin shavings of bark at known regular intervals.



Tapping

Tapping Knives

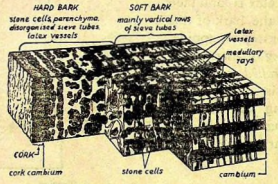
The 'Michie Golledge' knife used in our country is well adapted for a high standard of tapping with a minimum consumption of bark. The draw knife or the 'Jebong knife' commonly used in Malaysia is well adapted for high tapping and bigger task.



1 Michie Golledge knife
2 Jebong knife
3 Gouge knife

A third type called "Gouge" is also used Malaysia.

Bark



The term bark includes here all the tissues that lie outside the cambium.

Three main layers are noticed in a cross-section.

(a) Inner layer or soft bast.

(b) Intermediate layer or hard bast.

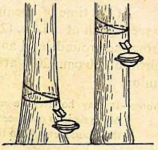
(c) Outer protective layer of cork cells.

Latex vessels are concentrated in the layer of the soft bast.

An expert tapper will tap to an even depth without injuring the cambium. Damage to cambium causes the formation of swellings in the regenerating bark. *Tapping, no doubt, requires skill.*

Stem of Seedling and Budded Tree

The stem of a budded tree is almost cylindrical throughout, but in the case of a seedling tree it tapers to the level of the first branches. The difference in girth immediately above the union in the case of a budgraft and that about 125 cm. (50") above union will not be more than 10% whereas in the case of seedlings this may be as high as 50%. Therefore in seedling trees when the cut comes lower and lower the yield also is proportionately increased owing to the increase in length of the cut. In budded trees on the other hand the yield decreases as the cut comes down, especially when it is near the union.

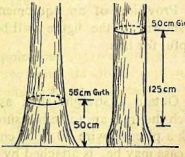


Seedling tree Budded tree

Correct opening cut

Height of Tapping Cut for Opening

The standard height for opening the tapping cut in a seedling tree is 50 cm. (20") from ground level. The most convenient height at which to open a budded tree is 125 cm. (50") above the union. This height allows ample



time for the tapped bark to grow again while the second panel is being tapped and before the first panel is tapped for the second time.

At the time of opening, the seedling trees should have a girth of 55 cm. (22") at a height of 50 cm. (20") from the ground level and budded trees should have a girth of 50 cm. (20") at 125 cm. (50") from the bud union.

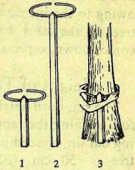
Note:—It may however be mentioned that the recent trend in Malaysia is to open seedling trees at a height of 75 cm. from the ground level when they attain 50 cm. girth at that level.

Measuring the Girth

When the trees are ready for tapping the first thing to do is to see how many of the trees have attained the required size, for it is not worthwhile to open a holding unless at least 50% of the trees have attained the minimum girth.

Provision of an equipment as shown in the figure will be helpful for this.

Wires for measuring girth



1 2 3

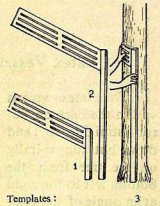
1. For seedlings
2. For buddings
3. Measuring girth

Obtain a straight stick as long as the height at which the trees are to be measured. To the end of the stick a piece of wire 50 or 55 cm. (20" or 22") long, as the case may be, is attached by a staple in the middle.

Hold the stick against the tree with one end on the ground and put the wire round the tree. If the ends of the wire do not meet, the girth of the tree is more than what is required and the tree may be tapped.

Template

A template may be used to mark out the tapping cuts. A strip of metal 10—15 cm. (4½"—6") width for seedlings and 15 to 20 cm. (6"—9") width for buddings, is fixed to the top of a stick at the angle at which the tapping cut is to be made (25° for seedlings and 30° for buddings). The free end of the metal must be on the left hand side of the stick and the stick should be as long as the height at which the cut is to be opened.



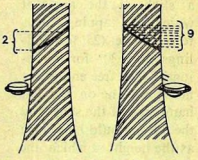
Templates :
1 For seedling
2 For budding
3 Template used on a budded tree

For making the tapping cut on a seedling, the stick is held against the tree with the lower end on the ground (level with the point of union in case of budgrafts). The metal is then wrapped round the tree to the left and a mark made along its top edge. The tapping cut is to be opened along this mark.

The tapping cut should extend round half the circumference of the tree and a piece of string may be used to decide where the cut should begin. The string is put around the tree and the length required to reach round the tree is halved by doubling the string. The doubled string is then held horizontal against the tree with one end at the lowest point of the mark made to guide the cut. The other end of the string is then exactly halfway round the tree and it is from above it that the tapping cut should start.

Latex Vessels within the Bark

The latex vessels within the bark do not run straight up and down but run spirally up the tree from the bottom left to top right at an angle of approximately 5° to the vertical. Therefore the greater number of latex vessels are cut when the tapping cuts are made *high left to low right.*



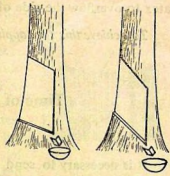
Incorrect tapping—few vessels cut

Correct tapping—many vessels cut

More the number of latex vessels cut, more the latex.

Slope

The slope of the cut should not be too steep or flat. A very steep cut leads to wastage of bark when tapping reaches the base of the tree. Too flat a cut on the other hand leads to overflowing of latex at the sides of the cut.



Correct cut Steep cut

Because of the differences in the thickness of the bark, the slope is different for buddings and seedlings. *Owing to the thin nature of the bark the angle advised for budgrafted trees is about 30° to the horizontal.* Seedlings have a fairly thick bark and so the tapping cuts can provide a broader channel, down which the latex can flow. *The angle, therefore, advised for seedling trees is about 25° to the horizontal.*

Opened for Tapping

The first cut should take off only a thin layer of bark and not draw any latex. When this cut is made, a vertical channel about 20 cm. (7—8 inches) long should also be cut and the spout and the cup fixed in position.

Correctly opened for tapping

The first shallow cut is deepened by tapping two or three times before much latex may be expected. The cut should then be of regular slope along

all its length with no unevenness which may cause the latex to overflow the side of the cut.

To achieve this the tapping knife should be very sharp.

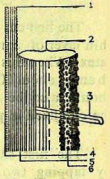
Time of Tapping

It is necessary to send tappers out early in the morning as late tapping will lessen the exudation of latex. As turgor pressure is at its highest in the early morning, it is the best time for tapping.

Flow of latex

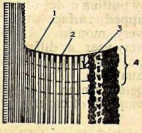
Tapping Depth

The best yields are obtained by tapping very close to the cambium, since active latex vessels are concentrated close to it. Good tappers do this without injuring the cambium, *but absence of injuries is not always a sign of good tapping because shallow tapping with poor yield can be easily done without injuring.*



Correct depth of tapping. (1 mm-bark and cambium left uncut)
1. Not cut 2. Tapping cut 3. Spout
4. Cambium 5. Latex vessels 6. Dead outer bark

Bark Consumption



1. Latex vessels
2. Plug of rubber
3. Next tapping cut over 1 mm.
4. Over 3 mm.

The rate of bark consumption will depend much on the skill of the tapper. After each tapping the latex flows for a while and then the flow ceases as the latex along the cut coagulates. The flow of latex stops because of the formation of minute plugs of coagulated latex at the top of each of the latex vessels. These plugs are very small and all that is necessary to allow latex to flow at the next tapping is to cut away a very thin shaving of bark with which the plugs are removed.

Bark regeneration is brought about by the activity of the cambium. The rate and extent of renewal are determined by a number of factors, the most important being the inherent genetical character of the planting material, others being the fertility of the soil, climate, tapping intensity, planting distance, tapping system, diseases etc.

Cutting away a shaving thicker than is necessary, cannot increase the latex yield in any way but only wastes bark.

Checking Bark Consumption

Bark consumption is checked by putting a dot of paint on the tapped surface at the end of every month. At the end of every year a different coloured spot may be put instead of the usual one. This method helps to determine the yearly consumption of bark.

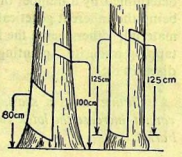
Paint dots to check bark consumption

It is a good idea to put a mark at each end of the cut so that the slope can be seen and kept even.

"A golden rule of tapping is that the rate of bark consumption should not exceed the rate of bark renewal."

Opening new Panel

When the tapping cut reaches a height of 6-7 cm. (2½" to 3") from the ground, at its lowest point, tapping should be stopped and a new half circumference panel opened on the opposite side of the tree. This avoids dirty latex so often obtained when the tapping cup is rested on the ground.



Seedling Budding

NEW PANELS OPENED ON THE OPPOSITE SIDES

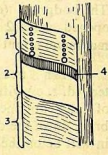
The second panel on a seedling tree should be opened at 100 cm. (40") above the ground and when this panel has been tapped out a third panel should be opened on the same side as the first at a height of 100 cm. (40"). In each case tapping should be on a half circumference spiral cut, sloping from top left to bottom right.

The fourth and subsequent panels on seedling trees may all be opened at 100 cm. (40").

On budgrafted trees second and subsequent panels can be opened at the same height as the original panel—that is 125 cm. (50") above the union—as opening at this height gives sufficient time for the bark on each panel to renew before it is due to be tapped again.

Virgin Bark Island

When a new cut, opened above the old one, approaches the junction of virgin and renewed bark there may be a decrease in yield. If the bark renewal is poor the drop in yield is more pronounced than in the case of trees having good bark renewal.

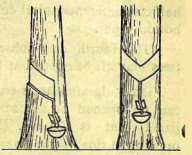


1. Fresh renewed bark
2. Virgin bark island
3. Old renewed bark
4. Yield stimulant applied

Application of an yield stimulant on the low yielding bark island when tapping reaches that area may help to overcome this depression in yield.

Tapping System

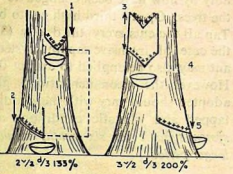
The tapping system selected should depend on the long term view. The future health and yielding capacity should be taken into account, but if large and quick returns are looked for, the consequences may be disastrous. No system can be laid down to suit all conditions but it is usual to open up seedlings on S/2 d/3 67% as on higher intensity the seedlings are prone to brown bast incidence. The budgrafts (except certain clones like Gl 1) can be opened as S/2 d/2 100%. Rubber yields at its maximum about the 14th year onwards.



½ Spiral cut V cut

When a tree is newly tapped the dry rubber content (d. r. c.) will be very high and the total quantity of latex obtained low, but subsequent tapping will bring down the d.r.c. and the quantity of latex brought in will be on the increase.

Intensive Tapping



INTENSIVE TAPPINGS
1. Upper cut 2. Lower cut
3. Tapped upward 4. Tapped downward
5. Tapped downward

Intensive tappings are practical on old rubber trees intended for felling after some period. The practice to be adopted depends on the condition of the trees and particularly on the previous tapping system, reserves of bark and the length of time before felling. The methods which can be employed include increased frequency of tapping, extension of tapping cut and treatment of bark with yield stimulant containing hormones in vegetable oils.

1. Four to five years before replanting :—

A high cut and a low cut may be made on opposite sides about 90 cm. (about 3 feet) apart. These may first be tapped on every third day. (2 v/2 d/3 133%)

2. Two to three years before replanting :—

The same two high and low tapping cuts may continue but with alternate daily tapping. (2 v/2 d/2 200%)

3. One year before replanting .—

9. During wintering period it is necessary to start collecting earlier as there is a tendency for latex to coagulate too quickly.

10. The tappers should not overtap at the sides and special checks should be made at the sides of the channels to see that too much bark is not left out.

11. Resort to shallow tapping during drought.

12. The spouts are to be lowered when they are about 3" from the tapping cut.

C. M. S. Press, Kottayam.