

A NOTE ON LIME WASHING

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In the annual report for 1950, page 37, the Plant Physiologist reported favourable results with lime spraying for the control of mosses and lichen on pruned bushes. Emphasis was laid on the necessity for a good grade of lime suitable for spraying. During the past two or three years the practice of lime washing has grown considerably, but most estates find that local lime is not suitable for spraying, and have experienced much difficulty in the application of the wash.

Accordingly, enquiries revealed that Messrs. Imperial Chemical Industries (Export) Ltd., stocked an imported lime called "Limbox" Hydrated Lime. The analysis figures provided an indication of the high quality of this product. A comparable analysis of local lime was then made and fully confirmed the extremely poor quality of the local product.

Analysis :	"Limbox"	Local Lime
Calcium hydroxide	98.84%	41.60%
Calcium carbonate	1.02%	36.69%
Magnesium hydroxide	0.44%	1.87%

The grading of the local lime indicated its total unsuitability for spraying even with coarse lime washing nozzles.

Grading :	"Limbox"	Local Lime
Passing 30 mesh	100%	26%
" 52 "	100%	1% (approximately)
" 100 "	99.05%	
" 150 "	97.02%	
" 200 "	94.02%	

Trials carried out by the Superintendent of St. Coombs Estate, reported in the following article, confirmed the apparent advantages of using high grade lime. It should be stressed that the standard of work with the high grade material was greatly superior to that achieved with the miserably poor material used previously.

Since this trial was carried out, a case of severe damage due to the application of partly slaked lime has occurred. Some of the half-burnt coarse, gritty lumps in the local product slake very slowly, and if applied in a partly slaked condition will damage the bark of tea bushes to which it is applied.

Many estates are now adopting a much lighter type of pruning with little or no cleaning out from the centre of the bush, and in consequence it is becoming difficult to remove the accumulation of moss and lichen, particularly from bushes where the branches are numerous, but small. These increasing difficulties are causing corresponding increases in cost with possibly lower standards of work. Lime-washing has proved to be the easiest method of dealing with the problem.

In the past, on St. Coombs, lime from local sources has been used, but this year it was decided to try an imported product. A field of 17½ acres was divided into two plots of 8½ and 9 acres, to be lime-washed with local lime and imported lime respectively.

The local product was applied first to $8\frac{1}{2}$ acres using normal "Four Oaks" spray equipment fitted with non-clogging lime spraying nozzles, at an application rate of 4 cwt. lime to 100 gallons of water per acre. The knapsacks were charged, using a hand charge pump, to 40 lbs. air pressure with 75 lbs. total pressure, and it was found that it took 15 minutes, approximately, to charge this amount and, using 5 knapsack sprayers, 12 charges per acre were required. Two drums were used for mixing purposes, a small capacity container for mixing into paste and a 25 gallon half oil drum for the final solution, *i.e.*, one cwt. lime per 25 gallons water.

It was apparent that the lime had not been slaked satisfactorily and slaking continued for some time after the mixing was complete. All the lime was passed through a 50 mesh filter to remove insoluble material such as sand and coral.

35 cwts. of lime were used for the $8\frac{1}{2}$ acres, one extra hundred weight having to be applied to obtain satisfactory cover, and from these 35 cwts. an amount in bulk, not by weight, of approximately 13 one hundred weight sacks of waste sand and coral were removed.

The cover obtained with this mixture was adequate, but very uneven, due mainly to continual blockages. Not only were the nozzles blocked but, on several occasions, the whole lance became filled with lime and caused considerable trouble and delay before work could continue.

The weather during application was not ideal, monsoon rain being experienced most of the time and a considerable amount of the lime was washed from the bushes. An adjacent plot of 9 acres was then sprayed with imported lime, using the same equipment, at an application rate of between $1\frac{1}{2}$ and 2 cwts. of lime in 100 gallons of water per acre.

It will be seen from the analysis and grading that this is a good quality lime and, what is more important, very finely graded enabling all the lime to pass through the nozzles without blockages. This lime was mixed in the same way as the local product at first, using 2 drums but later it was found that only 1×25 gallons drum was adequate.

It was naturally not necessary to filter the mixture before use and no wastage occurred. An application rate of $1\frac{1}{2}$ - 2 cwts. per acre was found to be adequate and in fact, it was possible to reduce this to 1 cwt. per acre where the moss was only slight.

The knapsacks were charged to only 30 lbs. air pressure up to 75 lbs. total pressure—a slight reduction in air pressure being more economical. The cover obtained was very even and the lime appeared to have good adhesive properties since even after heavy rain it was still apparent on the bushes.

The following table gives comparative costs for both types of lime:—

Lime from Local Sources

	Total Cost	Cost per acre on $8\frac{1}{2}$ acres
Total lime used on $8\frac{1}{2}$ acres		
35 cwts. at Rs. 7/-	Rs. 245.00	Rs. 28.82
Transport on above	20.01	2.35
	Rs. 265.01	Rs. 31.17
$8\frac{1}{2}$ acres at 7.29 labourers per acre = 62 labourers (cost per labourer = Rs. 2.22 plus 0.25 cents excess rate on spraying	Rs. 153.14	18.01
	Rs. 418.15	49.18

Imported Lime

Total lime used on 9 acres	Total cost	Cost per acre on 9 acres
34 × 56 lbs. at Rs. 7/90*	Rs. 268.60	Rs. 29.84
Transport on above	30.17	3.35
	Rs. 298.77	Rs. 33.19
9 acres at 5.89 labourers per acre = 53 labourers (cost per labourer Rs. 2:22 plus 0.25 cents excess rate on spraying)	130.91	14.55
	Rs. 429.68	47.74

It will be seen from these figures that, despite the higher cost per cwt. of imported lime, the overall cost per acre is less due to a saving of 1.4 labourers per acre, or Rs. 3/46.

To sum up, all the operations involved were easier with imported, good quality lime, the application was better and the cost smaller.

* Price September 1953, now reduced to Rs. 7/50.