

Some growers think late lateral growth should be allowed to run free. Such a course tends to keep the vines active too long. This growth should be checked and the vines encouraged to rest as early as possible. The resting-period is very short in this country under the most favourable conditions.

MANURING ESTABLISHED VINES.

The manurial requirements of grape-vines are practically the same as those of most other fruit-trees, but as the vines are planted closely together, resulting in the soil being heavily taxed, manuring must be on a much more liberal scale than in the case of orchard trees. The principal substances necessary are phosphates, potash, nitrogen, and lime. In the case of grape-vines, where liberal quantities are used, it is necessary to be careful that some of the manures are not used in excess.

Lime is of great importance: instances of bad setting and of stoneless berries have been traced to a deficiency of lime. Potash is also of great importance. The most useful artificial potassic fertilizer for vines is sulphate of potash. Animal manures contain some potash, and wood ashes a considerable amount, which, however, is variable. Common artificial phosphates are boncdust and superphosphate; the former is generally preferred for vines. The principal nitrogenous fertilizers in use in New Zealand are nitrate of soda and sulphate of ammonia, both of which are of quick action, though the influence of the latter is likely to be more extended.

Stable manure is considered a complete fertilizer. Its content of potash is somewhat low, and it may contain only a small amount of nitrogen. It is a mistake to apply heavy quantities to the borders; this results in souring the soil, and cases are known where vines have been killed through heavy quantities being used. Good crops have been grown without the addition of other fertilizer when moderate quantities of stable manure have been applied to soils containing sufficient lime. Better results can usually be secured, however, by supplementing stable manure with artificial manures. Cow-manure has been used with good results where the soil is light and warm. It should be used with caution on borders with heavy soil.

The growth of vines in different soils and circumstances varies greatly in character. Where growth is very strong very little nitrogen, if any, is required in the fertilizer, while if growth is weak, or comparatively so, somewhat heavy dressing of nitrogen, preferably in the form of nitrate of soda, may be advisable. The role of nitrogen is to promote vegetative growth: it does this only when a sufficiency of the other elements is present. Care should be taken to avoid the use of too much nitrogenous manures, which is liable to retard the ripening of the grapes.

Briefly, the manuring procedure suitable for general use is: After the vines have been pruned the border should be cleaned up. If a summer mulch has been applied any residual strawy debris should be removed. If weeds are present they should be cleared away. The surface of the border should not be dug, using the term in its ordinary sense, but it may be lightly pointed over with