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## MECHANICAL HARVESTING OF WINE GRAPES

### 7. CONVERSION OF EXISTING VINEYARDS FOR MECHANICAL HARVESTING

If there are older, vigorous vineyards which have an expected lifetime of at least another ten years, conversion of the trellis system to a system which allows for mechanical harvesting and even pruning, can be considered.

#### 7.1 Prerequisites for conversion

- The scion cultivar must still be in demand.
- The grapevines must be visually free of virus diseases.
- There must be no symptoms of wood rot fungi above or below ground.
- The cultivar and rootstock combination must still have strong vigour.
- The vineyard layout must be suitable for mechanical harvesting. See fact sheet number six for specifications.

#### 7.2 Bush vine conversion

Vigorous bush vines can, over a period of three years, be quite easily converted to a trellised system which can be harvested mechanically.

##### **First year:**

- During the winter the trellising poles are planted (6 m apart) and a cordon wire is fixed at least 900 mm above the ground. Anchors and anchor poles must be firmly planted.
- The most vertical winter cane is selected. Cut through this cane's first node above the wire and tie firmly to the cordon wire. It is important that this cane has a diameter of at least a pencil (7 mm) where it is cut. The lower the origin of this cane from the bush vine, the better. Strongly growing canes from the crown are preferred.
- Try to avoid angled or excessively crooked stems – the more crooked the stem is, the more damage and losses there will be.
- The rest of the bush vine is retained for another season to yield a harvest.
- After budding, two shoots which have budded from the cane tied to the cordon wire can be developed as cordons on the cordon wire.
- These shoots can be topped during the season only once the adjacent grapevines' shoots have grown about 300 mm past one another. After this topping action, side shoots will start to develop which can be pruned to establish bearers.
- The side shoots closest to the stem shoot (old wood) will grow the strongest and must be tipped when they are at about 300 mm length so that the rest of the branch shoots have time to catch up. At this stage the branch shoots that emerge underneath the cordon shoots are removed.

**Second year:**

- During pruning all remaining arms of the bush vine are removed.
- The latter action must not take place during rain.
- Cover all wounds with a suitable wound sealant to prevent dieback.
- The new cordon shoots are effectively long bearers. Their side shoots are cut back to single bud bearers if chemical dormancy breakers are not used, or smoothly cut away if dormancy breakers are to be applied. The single bud bearers are removed as soon as the axillary bud has budded.
- Extend the cordon shoots according to the "short bearer-leader-death" method where there are gaps on the cordon wire.
- All buds on the old bush vines must be carefully suckered away.
- Also space the bearer positions appropriately on the cordon arms where necessary.
- The grapevines will not be in full production during this season, but will still yield a harvest.

**Third year:**

- Prune the vines to two bud bearers. If the vines have not reached pencil thickness, they must be cut to one bud bearers.
- During this season the vines should be in full production and the harvest ought to be greater than what was yielded by the bush vines.

### 7.3 Conversion from gable and slanting trellis

Along the Olifants River as well as the Orange River, there are gabled and slanting trellised vineyards that have been converted to allow for mechanical harvesting. The trellises and canopy wires are removed and the original cordons are retained where single cordons had been used. Often the cordons have to be replaced and/or renewed with corrective pruning, especially where double cordons were used. In most cases the vineyards are then cultivated to the free shoot system.

**Effect on harvest yield:**

- No significant decrease in yield; can even increase.
- Usually associated with mechanical pruning.
- Removal of arms or candles is compensated for by leaving all possible bearers, including long bearers.

**Take note of the following when conversion is considered:**

- The maximum allowed height of the converted system should be about 2 m, otherwise it cannot be mechanically harvested.
- In the first year that the converted vineyard is mechanically harvested, it can yield a large amount of material other than grapes.