

## Replanting guidelines to minimize risk from *Ganoderma* for oil palm out-growers

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### INTRODUCTION

Basal stem rot (BSR) caused by *Ganoderma* is a disease is becoming increasingly prevalent in smallholder oil palm blocks. The disease is often missed in first generation plantings as disease surveys are not routinely implemented in out-grower blocks. There is an immediate threat to the viability of smallholder plantings due to little or no disease control in mature blocks. Although the disease incidence may initially be low, it will increase in second generation plantings.

It is to be noted that the recommendations in OPRActive Word Technical Note No22 are still valid and options to minimize disease risk are clearly outlined. However, given the high cost of mechanical removal, alternative recommendations are provided for out-growers where oil palms are to be underplanted. It must be emphasized here that poisoning and underplanting will result in elevated levels of *Ganoderma* infection compared to felling and therefore must be discouraged. The information in this bulletin provides a 'best case scenario' for smallholders where underplanting (Fig. 1) is selected.



Figure 1 Underplanting of oil palm in out-grower blocks.

### PROCEDURE PRIOR TO POISONING

**Surveys** Prior to poisoning, the block must be surveyed and diseased palms identified and marked with an 'X' in easily visible paint. Immediately following the survey, ALL infected and symptomatic palms must be removed. This includes any collapsed palms within the block that show evidence of *Ganoderma* rot or brackets. On completion of removals, block inspection will be carried out by OPR Plant Pathology Section or OPIC staff at each site. If removals meet a satisfactory standard, then permission will be granted for poisoning and planting to commence. If sanitation procedures are deemed unacceptable, further recommendations must be implemented to achieve the required standard before planting (Fig. 2).



Figure 2 A palm marked for removal during surveys prior to poisoning.

### REPLANTING

**Spacing** Lining should be carried out with the objective of placing new planting points at the maximum distance from the previous planting points while conserving the existing harvesting path. As such the new palm is planted in the middle of the frond box (Fig. 3).

This practice is good as the frond piles have decomposed over the years and have improved the soil properties that guarantees a good establishment of the new palms.

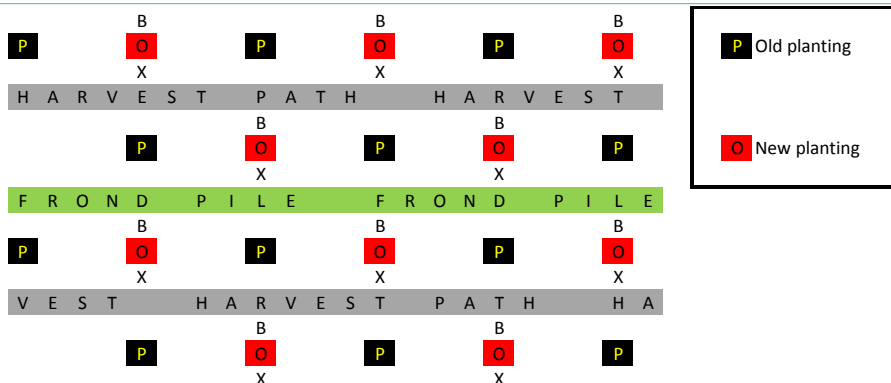


Figure 3. Recommended planting points for replanted palms

## REPLANTING OPTIONS

When replanting oil palm there are two options for the smallholder after *Ganoderma* surveys and removals are completed.

- Fell all remaining palms. Treat any palms that have basal rot. Plant seedlings in the old harvest path at maximum distance from old planting points
- Poison all remaining palms. Plant seedlings in the old harvest path at maximum distance from old planting points. Start surveys on poisoned palms 6-months after planting

Option A is labour intensive but is **recommended** because any undetected infection can be removed from the field. In addition, no further treatments at the site are necessary in the long-term.

Option B is the least labour intensive but will involve further felling of palms after replant. Hence, additional inputs will be required in the long-term.

In both cases regular monitoring of *Ganoderma* bracket development should be encouraged for the farmers to remove brackets from the rotting debris.

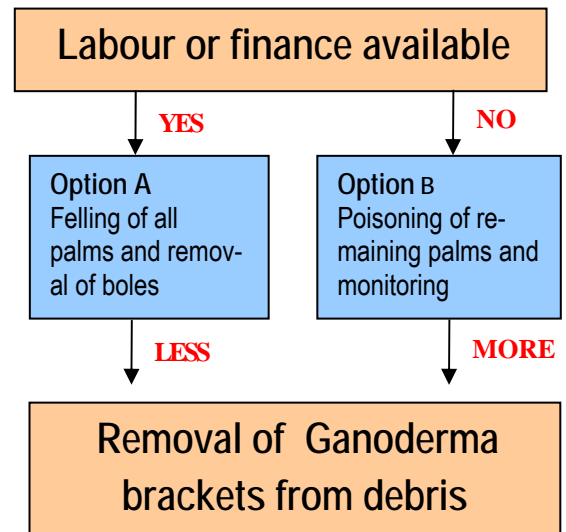


Figure 4 Flowchart showing the options available to the smallholder at replant after oil palm or coconut

## FIRST GENERATION OF OIL PALM

### Planting after secondary forest or grassland

It is important to remove any trees with large roots down to ground level so that decay is rapid. Logs should not be left in the field as *Ganoderma tornatum* will colonise these. Any native palms should be removed from the field as they may become a source of *G. boninense*.

Plant oil palms away from tree stumps. Large roots should be removed from planting holes.

Do not burn grass or stumps before planting.

### Planting after coconut

*G. boninense* readily grows on dead coconut trunks for several years after poisoning. There are several options to reduce the presence of *Ganoderma* in the planted field.

Planting oil palm into fields previously planted with coconut stands requires additional treatments to minimise the risk of *Ganoderma* infection in oil palm.

The recommended method for planting after coconut is clean clearing. All coconuts must be felled preferably using mechanical means or a chainsaw. The stumps must be dug up from the ground and any resulting hole covered with soil. All logs and stumps must be removed from the block.

Underplanting of oil palm after coconut is **recommended with a fallow period of up to 3 years**. This is because *Ganoderma* can continue to colonise the poisoned coconut palms and will present a high risk to infection of the young oil palms.

Option 1- Fell palms, cut trunks into small sections and remove coconut trunks and stumps from the area. This is the best option. Note that the coconut logs can be traded.

Option 2- Poison coconut palms and 'ringbark' to a height of 1 metre. Remove any stumps if coconuts have collapsed and cover the hole with soil. Do not plant oil palm until 2-3 years have passed. Other annual crops may be planted during the fallow period (Figure 5).

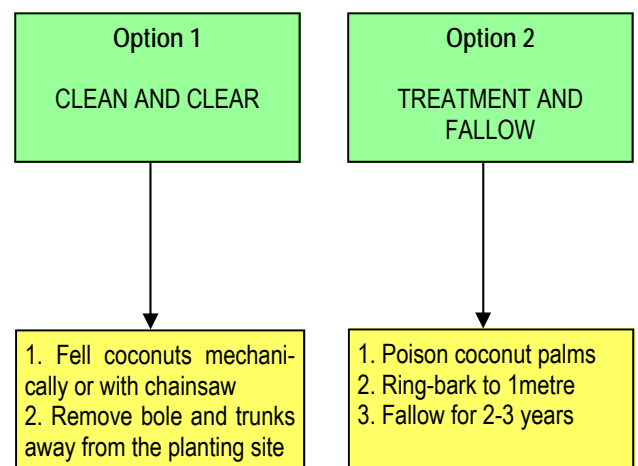


Figure 5 Recommended treatment of coconut before planting oil palm

## SURVEYS AND MONITORING AFTER PLANTING

Every 6 months surveys should be carried out to determine if poisoned palms have brackets of Ganoderma present. If Ganoderma is evident, these palms will need to be felled and treated as for normal (living-palm) infections. When brackets are identified on the dead palms, these must be removed and trunks should be felled and diseased tissue chipped and broken up.

Brackets will continue to be observed several years after poisoning of coconut or oil palms and continuous surveys and monitoring are necessary to reduce infection levels in the current plantings.

Do not prune the young palms until ready for harvest.



Figure 6 Poisoned oil palm with Ganoderma brackets present a year after planting.

Figure 7 A: Ganoderma brackets growing on coconut palms 2 years after poisoning and B: Newly planted block with Ganoderma brackets present on a coconut trunk.



Figure 8. An underplanted coconut block. Many of the standing coconut will have Ganoderma brackets present—a source of infection for young oil palm.

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