



The

OPRAActive Word

Technical Note 10

August 2006

RECOMMENDED PLANTING TECHNIQUES TO MINIMISE DISEASE RISK FROM *GANODERMA* IN OIL PALM

Dr. Carmel Pilotti

GANODERMA RISK FACTORS

There are a number of factors that predispose plants to infection by disease-causing organisms. Plants that are in poor health due to inadequate nutrition will be more prone to infection from fungi such as *Ganoderma*. The type of vegetation at the time of planting and the planting technique will also have an influence on the levels of *Ganoderma* in-

It is important to remove (see Options for site preparation below) any trees with large roots down to ground level so that decay is rapid. Logs and stumps should not be left in the field as *Ganoderma tornatum* will colonise these after 2 to 3 years. Although *G. tornatum* is not known to be pathogenic, it is best to discourage its growth. Any native palms should be removed from the field as they

OPTION 1 - Fell all coconut palms and remove all trunks and stumps away from

the field after felling. All bole tissue at ground level must be removed with the stump and any holes filled with soil. Surface roots should preferably be removed after tillage. The coconut wood should be buried at a remote site at a minimum depth of 2-metres or properly stacked burned.

Oil palm seedlings should be planted between the rows of coconut where possible.

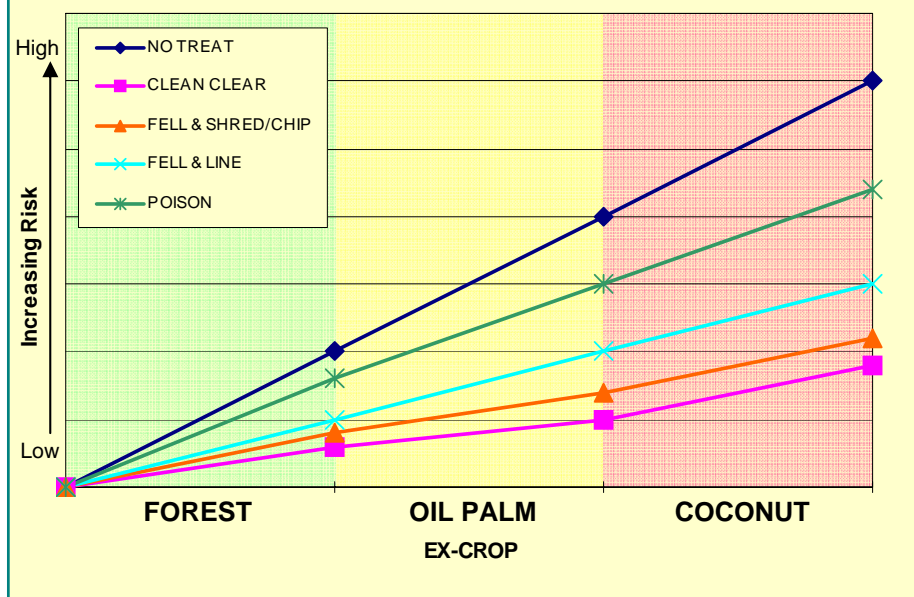
OPTION 2 - Fell coconuts as in **Option 1** and shred or chip all coconut trunks and stumps using a mechanical shredder that is capable of reducing wood tissue to a chip size of 4 x 1cm or less. Shredded material can then be spread over the field in a single layer before planting. Alternatively, the material could be used for composting.

REPLANTING AFTER OIL PALM

When replanting second generation oil palm consideration must be given to the incidence of *Ganoderma* within the field prior to replant. If cumulative levels of *Ganoderma* are above 20% before replant and sanitation has been poor, then **Option A** should be followed. If disease levels are at, or less than, 20% at replant and good sanitation has been practiced throughout the life of the plantation, then **Option B** and **Option C** should be followed.

Option A Two years before the replant is due, fell all the palms mechanically within the fields that have a disease incidence higher than 20%. Remove all diseased tissue including bole tissue left in the soil to a remote site for burial or burning. Allow the area to fallow before replanting at the same time as the other blocks. Alternatively, another crop can be planted during this period.

Figure 1. A comparison of the risks associated with previous crop and different treatments prior to planting



fection in oil palm after planting. It is therefore important that all sources of old inoculum are removed and *Ganoderma* is prevented from establishing in newly planted areas. The procedures below are recommended for sustainable oil palm cultivation.

PLANTING AFTER FOREST

In areas of primary or secondary forest, disease risk will be minimal unless the forest contained a significant proportion of wild palms.

may become a source of *G. boninense*.

Oil palm seedlings should be planted away from tree stumps. Any large roots should be removed from planting holes.

PLANTING AFTER COCONUT

Coconut presents the highest risk factor as *G. boninense* readily colonises dead coconut trunks and stumps 1-2 years after felling. There are several options to reduce the presence of *Ganoderma* in the planted field.

Option B Two years before replant, remove all symptomatic palms on a regular basis (see *OPRATIVE Word Technical Note 4*). At replant, fell all palms mechanically so that any diseased tissue is exposed. Cut off or dig out the diseased tissue present in the trunks and remove this to a remote site for burial or burning. Till the soil to remove any surface roots and cover any holes left after digging. Shred or chip the remaining trunk tissue and spread in a single layer over the field. Replant seedlings between the old planting rows.

Option C Two years before replant, remove all symptomatic palms on a regular basis. At replant, fell all palms and remove any diseased tissue detected after felling to a remote site for burial. Line remaining trunk tissue in a single line i.e. do not stockpile. Till the soil and remove any surface roots. Plant the oil palm seedlings between the old planting rows. Each year after planting, trunks should be checked for brackets of *Ganoderma* spores.

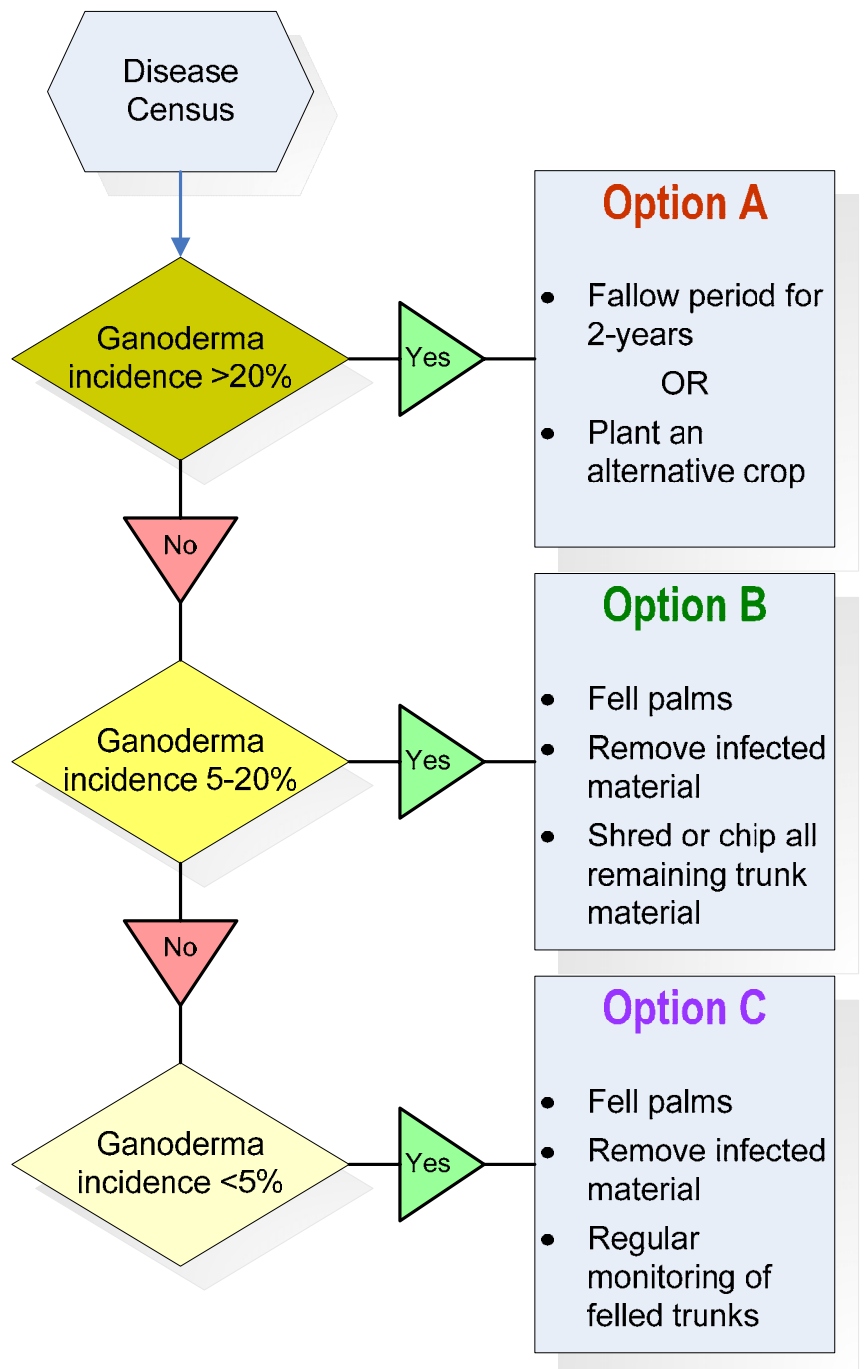
Where the disease levels are high, the **best option** to avoid an increase in *Ganoderma* infection in the next generation of oil palm is **Option A**.

Option B is expensive but is **recommended** because after felling any infected palms will be detected and the infected portions can be removed from the field. Also, large substrate is removed by shredding or chipping and this will prevent colonization and establishment of *Ganoderma*.

Option C is recommended for fields with low incidence (<5%) of *Ganoderma* and requires constant monitoring of felled trunks after replant for the presence of saprophytic *Ganoderma*.

Where *Ganoderma* is known to be prevalent, poisoning of palms without felling is not recommended.

Figure 2. Flowchart showing the recommended options available to oil palm growers at replant



For Further Information Contact:

Senior Plant Pathologist
 Papua New Guinea Oil Palm Research Association Inc.
 P.O. Box 36, Alotau, Milne Bay Province, Papua New Guinea
 Tel: +675 6411242 • Fax: +675 6411242 • Email: info@pngopra.org.pg