



## GANODERMA CONTROL FOR SMALLHOLDER OIL PALM GROWERS

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### WHAT IS GANODERMA?

*Ganoderma* is the name given to a group of non-poisonous bracket fungi. These fungi live and grow on dead wood in the natural environment.

*Ganoderma boninense* is the scientific name given to the particular species or type of *Ganoderma* that grows and causes disease in oil palm (Figure 1). This type of *Ganoderma* also grows on felled coconut logs and stumps.

Another type of *Ganoderma* also grows on dead coconut wood. This species is known as *Ganoderma tornatum* (Figure 2). This type is not usually harmful to oil palm. However, if it is seen it should be removed or burnt. For further information see PNGOPRA's OPRAtive Word Technical Note 8.



Figure 1. Brackets or fruiting bodies of *Ganoderma boninense* growing on the base of an oil palm

Figure 2. Brackets of *Ganoderma tornatum*



### WHAT IS BASAL STEM ROT?

**Basal stem rot (BSR)** is the name given to the most common disease of oil palm caused by *Ganoderma* in PNG. Infection by *Ganoderma* causes a decay in the base of the palm. The fungus takes several years to grow inside the base of the palm. After 4 to 8 years, the palm may die or collapse and the rot can be clearly seen (Figure 3).

**Upper stem rot (USR)** is the name given to *Ganoderma* infection in the upper parts of the oil palm trunk. Sometimes brackets of the fungus will be seen. Usually the palm breaks where the infection is or where the brackets appear.



Figure 3. Basal stem rot

Figure 4. Upper stem rot



### SYMPTOMS OF THE DISEASE CAUSED BY GANODERMA

The *Ganoderma* fungus rots the wood tissue in the palm trunk. This results in the palms showing signs of water stress and slow death of fronds.

Figure 5. Yellowing of younger fronds



The first signs of infection are yellowing of the young fronds. This may or may not be accompanied by unopened spears. Palms may already have stopped bearing fruit or the bunches may be smaller than other palms. Later, when the disease has spread to most of the stem tissue, the fronds will collapse (Figure 6) and yield will cease.

The palm will usually collapse a few months after these symptoms are seen.

In most case brackets are seen at the base of the palms. Sometimes, no brackets are produced on the stem.

Figure 6. Frond collapse



## CONTROL OF DISEASE CAUSED BY *GANODERMA*

After surveys are carried out, all palms identified as *Ganoderma* either by symptoms or brackets must be removed. Removal can be done using an axe, however a more efficient method is to chisel out the base of the palm until the palm falls into



Figure 7

the windrow "Poliamba method" (Figure 7). Following this, all diseased tissue must be taken off the palm trunk using a chisel or axe and taken away from the plantation. Next, all wood tissue left in the ground must be removed to a depth of 10cm. The hole must then be completely covered with soil (Figure 8).

Diseased tissue can be buried in a deep hole (2m or more deep) or burnt or left in the sun to dry. Any other small pieces of wood or roots can be scattered over the cleared area. It is essential that these pieces are less than 1cm in thickness so that re-growth of *Ganoderma* is prevented.

Remember, always remove palms as soon as possible after disease symptoms are detected.



Figure 8. Cleaned site of infected palm

## WAYS TO PREVENT OR MINIMISE INFECTION BY *GANODERMA*

Always ensure that your palms are healthy by maintaining fertilizer treatment and good drainage.

Keep your blocks clean and tidy by removing grass and other undergrowth close to the palms that will compete for nutrients within the soil. Carry out regular surveys and remove diseased palms quickly from within your blocks. For further information see PNGOPRA's OPRAtive Word TN#4 and TN# 10.

## WHAT TO DO WHEN PLANTING AFTER COCONUT

If your oil palm block is planted in an old coconut plantation you must maintain good sanitation throughout the life of the block. This is because *Ganoderma* also grows on dead coconut wood and it will eventually transfer to oil palm.

Before you plant your seedlings you must notify OPIC. Staff from OPIC will supervise the clearing of your block. The only recommended method for planting after coconut is **clean clearing**. All coconuts must be felled using an axe or chainsaw. The stump must be dug up from the ground and any hole covered with soil. All logs and stumps must be removed from the block. Any other tree stumps must be treated in the same way as the coconut stumps.

Always plant your oil palm in-between the old coconut rows and away from the old stump.



Figure 9. *Ganoderma* brackets growing on old coconut

## TAKING CARE AT PLANTING

When planting your seedlings, make sure that the roots and basal area are not damaged during transplant. Transplant seedlings with the soil intact and add some composted litter to the planting hole if available. Fertilise the seedlings when transplanting. Always water the seedlings before and after transplanting from polybags if you have water available. Do not plant seedlings which look unhealthy.

Avoid pruning the young palms until they start to bear fruit.



## CHECKING FOR DISEASE

After 6 years of age, you should check your palms regularly for signs of *Ganoderma* disease. Palms should be checked every 6 months or whenever they are harvested. Records should be kept for all your surveys and copies given to the OPIC office in your area for monitoring purposes by PNGOPRA. Your records should include the following: 1. Palm location 2. Palm symptoms 3. *Ganoderma* brackets present or not 4. Date of disease detection 5. Date of sanitation or removal of palms.

For further information see PNGOPRA's OPRA-Tive Word Technical Note # 4



## PNGOPRA SUPPORT

PNGOPRA provides technical advice to all oil palm growers and works closely with OPIC to ensure that smallholder farmers are given accurate and timely information concerning their crop.

Technical advice can be given on fertilizer rates and application. In addition, information on identification and control of pests and diseases is available to all smallholders oil palm growers.

PNGOPRA staff and OPIC extension officers work very closely together. If you have any pest or disease problems, please contact your local OPIC extension officers or contact one of PNGOPRA's research centres in West New Britain, Oro, New Ireland or Milne Bay Provinces:

PNG Oil Palm Research Association  
Dami Research Station  
P.O. Box 97  
Kimbe, West New Britain Province  
Tel. 9854009 or 9854015

Milne Bay Research Centre  
C/- Milne Bay Estates Ltd.  
P. O. Box 36,  
Alotau, Milne Bay Province  
Tel. 6411242

Higaturu Research Centre  
P.O. Box 28  
Popondetta, Oro Province  
Tel. 3297466

PNGOPRA Sub-Station  
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