

## RECOMMENDATIONS FOR THE CONTROL OF BASAL STEM ROT OF OIL PALM IN NEW OR REPLANTED FIELDS

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### DISEASE INCIDENCE

New data indicates that the *Ganoderma boninense* pathosystem on oil palm behaves as a polycyclic epidemic. With the exception of some fields at Numundo, the Basal Stem Rot (BSR) epidemic has a sigmoid-shaped curve in first generation plantings (Figure 1). The data in Fig. 1 was obtained from disease surveys in several plantations in PNG (PP Section, unpublished).

It is assumed that the BSR epidemic in replanted fields will follow a similar trend to that in the first generation of oil palm. Hence, early interventions must be made to minimize the disease levels after replanting, especially in areas where *Ganoderma* is prevalent. Early control measures should increase the age at which 5% disease incidence is reached (Figure 1).

The following recommendations are made to minimize disease losses in second generation oil palm plantings however, they may also be applied to newly planted areas. It is important to begin sanitation at an early age and implement the control procedures during and immediately prior to the next replant. If early and timely control is not achieved, disease levels may cause economic losses before the next (3rd generation) planting is due.

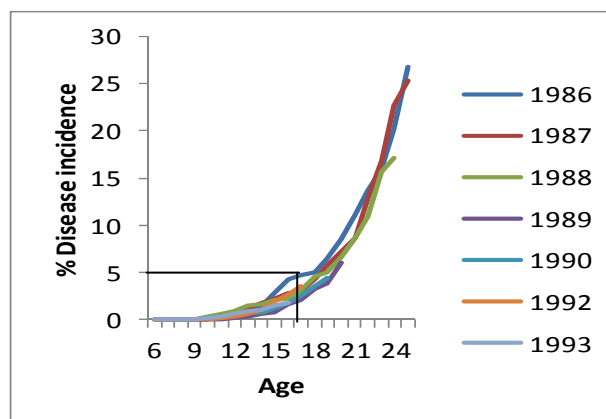


Figure 1. BSR progress in 1st generation OP of different ages in PNG.

### SURVEYS IN REPLANTS AND NEW DEVELOPMENTS

#### Timing

It is recommended that disease surveys start 4 years after replanting.\*

Surveys should be carried out twice a year on a 6-monthly basis. A recommended survey schedule is shown in Table 1. Note that sanitation rounds should be completed prior to the next survey.

#### Survey procedure

Surveys should be carried out using a standardized form (see Appendix). Survey teams should comprise at least 2 trained surveyors and 2 painters. Two surveyors should be capable of identifying *G. boninense* and symptoms of basal stem rot while the 2 painters should follow each surveyor and mark an 'X' on ALL infected palms both suspect palms and those with *Ganoderma* brackets.

The number of teams required will depend on the area being covered but the aim should be to complete a minimum of 12 hectares per manday.

Each pair (surveyor + painter) should start at one end of the block and move from palm to palm across the harvest path.

Each palm should be completely circled to check for symptoms (yellowing), brackets of *Ganoderma* or basal rot. The address or location of the palm (Harvest Road, Row Number, Palm number) should be recorded on the survey sheet as well as its status i.e. basal brackets (BB), upper stem brackets (USB) or suspect (SUS).

\*A new disease note will be prepared to show early disease symptoms

#### CONTINUING THE SURVEYS

Surveys will continue to be carried out until the next replant following the same schedule as in Table 1. All infected palms should continue to be recorded as above. However, after disease levels reached a cumulative 5% of confirmed infected palms, managers may choose to:

1. Mark only unproductive palms with an 'X' for removal,
2. Leave palms in the field and get the *Ganoderma* brackets removed during surveys.

Table 1. Recommended schedule of operations for the control of basal stem rot and *Ganoderma* in oil palm plantations.

January	February	March	April
Start Survey 1	Survey 1 continues. Sanitation Round 1 starts	Survey 1 continues. Sanitation Round 1 continues	Survey 1 ends. Sanitation Round 1 continues.
May	June	July	August
Sanitation Round 1 ends.	Final data entry Round 1.	Start Survey 2	Survey 2 continues. Sanitation Round 2 starts.
September	October	November	December
Survey 2 continues. Sanitation Round 2 continues.	Survey 2 continues. Sanitation Round 2 continues.	Survey 2 ends. Sanitation Round 2 ends.	Final data entry Round 2.

## DATA COLLECTION AND COLLATION

Once surveys have been completed (usually managed by TSD Sections) for each block, survey forms or copies should be delivered to the Estate offices at each site and provided *Ganoderma* Supervisors or Section Leaders. For OPIC, Divisional Managers or P&D supervisors should collate the data received from any surveys. Row numbers should be marked on palms as early as possible after replant to allow surveys to be carried out efficiently.

Sanitation team leaders will be provided a list of blocks each week to complete. Following completion of weekly sanitation rounds, the completed forms are to be delivered to company TSD Sections or OPIC offices for data entry.

Survey data should be entered by TSD personnel and then returned to the *Ganoderma* Supervisors for sanitation rounds to commence.

The recommended process for data collection and collation are shown in Figure 2.

## DISEASE INCIDENCE AND SANITATION

Electronic copies of company survey data should be sent to PNG OPRA for compilation and advice on field status. PNG OPRA Plant Pathology Section will confer with TSD Section Managers or OPIC when disease levels are approaching 5% and advise on the appropriate action.

When disease incidence reaches 5%, census data will be verified by PNG OPRA and removals **MUST** cease on productive palms.

Although surveys may be discontinued after disease incidence exceeds 5%, it is recommended that 6-monthly surveys continue and disease data continue to be recorded and entered electronically. This will provide a basis for management decisions on future replanting in each block.

Palm status should be recorded and any palms which are unproductive are to be marked with an X during each 6-monthly survey. Unproductive palms may be removed if desired but removal is not compulsory at this stage in the disease epidemic.

Should surveys be continued after 5% disease incidence, *Ganoderma* brackets on all palms should be removed at every survey round and their removal recorded on the standard survey form.

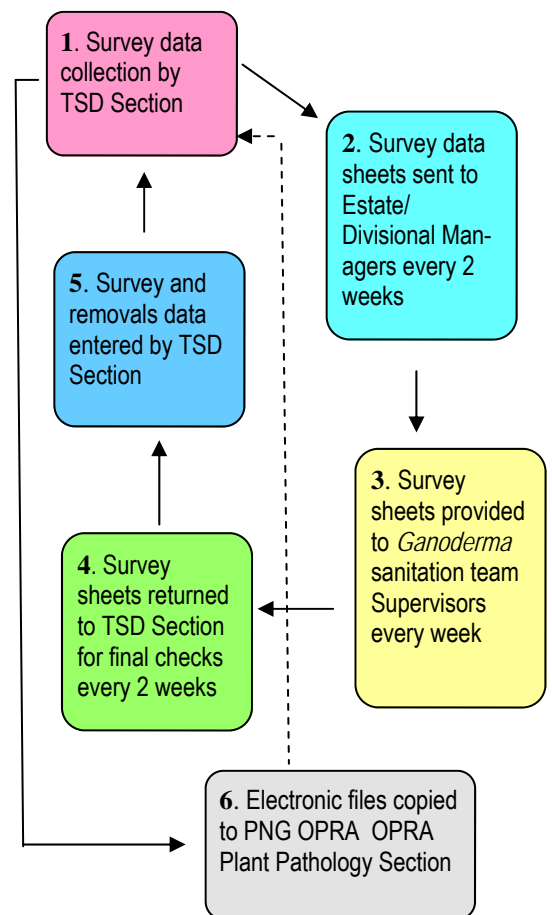


Figure 2 Steps for collection and processing of survey and removals data.

## MORE ON SANITATION

Removal of infected palms should be carried out as soon as possible after detection. Remember that when disease levels are above 5%, only unproductive palms can be removed. Brackets should also be removed from all palms during each survey round.

The technique for removal is left to the discretion of Management. Mechanical (chainsaw, winching) or manual removal are options that can be considered.

If manual removal (Figure 3) is preferred, then the OPRA Technical Note No. 4 (September 2004) should be followed.

Should mechanical methods be deemed suitable, then sanitation standards must still be met. That is, all bole tissue must be removed from the soil and cut into small pieces before scattering on the frond pile. In addition, all infected trunk tissue must be chipped off before discarding to the frond pile.

## SANITATION FOR REPLANT

Two years before scheduled replant, ALL palms recorded as infected in the surveys (BB, USB & SUS) must be removed according to standard procedures until immediately before poisoning or felling.

Note that early replanting ( $\leq 20$  yrs) is also an option to reduce incidence of BSR in subsequent plantings and if economically viable, is recommended.



Figure 3 Manual felling of palms with *Ganoderma* stem rot.

For Further Information Contact:

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DATE: SURVEYOR:

ESTATE: BLOCK NO.:

HARVEST RD.:

DIRECTION:

DATE REMOVED

COMMENTS

ROW NUMBER

PALM  
IBR

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	10/2/2014		
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EXAMPLE ONLY

PALM NUMBER

S=SUSPECT  
D=DEAD

B=BRACKET  
V=VACANT