

The *Ganoderma* disease, also known as basal stem rot (BSR) is one of the most important diseases of oil palm in Malaysia (Idris *et al.*, 2011). Fungicide hexaconazole has been introduced as a preventive treatment (Idris *et al.*, 2010) and prolonging the productive life of infected palms (Idris *et al.*, 2004). Fumigant chloropicrin was shown to eliminate the pathogen *Armillaria* from woody inoculum (Filip and Roth, 1977). Investigation on the use of fumigant methylisothiocyanate (MITC) released by dazomet on contact with water has shown potential in controlling *Ganoderma* disease *in vitro* and field studies (Ariffin and Idris, 1991). Ariffin and Idris (1993) revealed that MITC could move into both stem and root tissues of healthy and infected oil palm. Similarly, Thies and Nelson (1996) found that MITC injected into the bases of *Phellinus weirii*-infected Douglas-fir tree can diffuse in the root systems, and reduce the amount of inoculum remaining on a site after harvest and prolong the life of the tree. It was reported that fumigation with dazomet (basamid<sup>®</sup>) which release MITC and soil mounding could improve productivity of *Ganoderma*-infected oil palm (Tuck and Khairuddin, 1997). Field study to evaluate the efficacy of dazomet (MITC) to control *Ganoderma*-infected palms is described.

## FIELD EVALUATION OF DAZOMET FOR PROLONGING THE PRODUCTIVE LIFE OF *Ganoderma*-INFECTED OIL PALM

The study was conducted on 20-year old palms planted on coastal soil in Sepang, Selangor. One hundred and twenty infected palms were identified for this study. The palms were selected based on the presence of *Ganoderma* fructification at the base with the palms still producing fruit bunches (Figure 1A). There was no obvious foliar symptoms of BSR disease. The *Ganoderma* selective medium (GSM) was used to confirm the presence of *Ganoderma* fungus in oil palm tissues (Ariffin and Idris, 1991). The palms were marked

and treated with four treatments: untreated (control), soil mounding and two concentrations of dazomet (Table 1), each treatment repeated on 30 palms at nine months interval. Dazomet (Figure 1B) was introduced into the diseased lesion following the method of Ariffin and Idris (1993) with modification. Soil mounding was done using backhoe where the mounding with soil obtained from the interrow measured 1 m in height and 2 m in diameter as described by Tuck and Khairuddin (1997). The effects of dazomet were assessed at six-month intervals by recording the palm dead/unproductive and the presence or absence of fruit bunches. At three years, only 36.6% and 46.6% of palms treated with dazomet at 500 and 250 g/palm died due to *Ganoderma* infection compared with soil mounding (76.6%) and untreated (90.0%) (Table 1). The percentage of palms producing fruit bunches with dazomet treatments were significantly higher (36.6%-53.3%) compared with untreated (3.3%) and soil mounding (10.0%).

### SERVICE OFFERED

MPOB offers the service in controlling *Ganoderma* disease in oil palm using dazomet, as curative treatment or prolonging the life of infected palms.

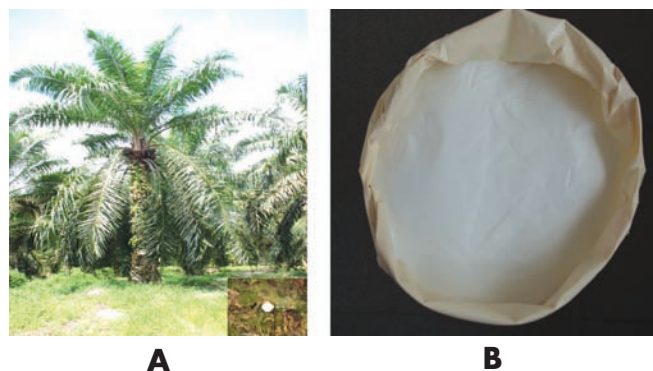


Figure 1. A *Ganoderma*-infected palm with fruiting bodies at the base, no foliar symptoms and still producing fruit bunches (A) was selected in this study; and dazomet powder (B).

**TABLE 1. EFFECTS OF DAZOMET AND SOIL MOUNDING IN CONTROLLING *Ganoderma*-INFECTED OIL PALM AT THREE YEARS AFTER TREATMENT**

Treatment of <i>Ganoderma</i> -infected palms	Dead or unproductive (%) (n=30)	Productive (still producing fruit bunches (%)) (n=30)
Untreated (control)	90.0 a	3.3 b
Soil mounding	76.6 a	10.0 b
Dazomet at 250 g/palm or 242.5 g active ingredient	46.6 b	36.6 a
Dazomet at 500 g/palm or 485.0 g active ingredient	36.6 b	53.3 a

Note: means with different letters within a column are significantly different at  $p < 0.05$  according to Least Significant Difference (LSD).

Once the service is completed, a full report will be submitted to the relevant person/company.

### BENEFITS AND COST

Dazomet has the potential to limit the spread of *Ganoderma* infection within the infected standing palms, therefore prolonging its life. Dazomet applications are also shown to improve oil palm productivity by eradicating the *Ganoderma* inoculum spread within the infected palm. The cost will vary depending on the hectarage and severity of BSR disease in oil palm plantation.

### REFERENCES

ARIFFIN, D and IDRIS, A S (1991). Investigation on the control of *Ganoderma* with dazomet. *Proc. of the 1991 PIPOC International Palm Oil Congress – Agriculture Conference*. MPOB, Bangi. p. 424-429.

ARIFFIN, D and IDRIS, A S (1992). *A Selective Medium for the Isolation of Ganoderma from Diseased Tissues*. 2 pp.

ARIFFIN, D and IDRIS, A S (1993). Methylisothiocyanate (MITC) movement and fungitoxicity in *Ganoderma* infected palm. *Proc. of the 1993 PIPOC International Palm Oil Congress – Agriculture Conference*. MPOB, Bangi. p. 730-734.

FILIP, G M and ROTH, L F (1977). Stump injections with soil fumigants to eradicate *Armillariella mellea* from young growth ponderosa pine killed by root rot. *Can. J. For. Res.*, 7: 226-231.

IDRIS, A S; ISMAIL, S and ARIFFIN, D (2004). Prolonging the productive life of *Ganoderma*-

infected palms with hexaconazole. *MPOB Information Series No. 214*: 4 pp.

IDRIS, A S; ARIFURRAHMAN, R and KUSHAIRI, A (2010). Hexaconazole as a preventive treatment for managing *Ganoderma* in oil palm. *MPOB Information Series No. 533*: 4 pp.

IDRIS, A S; MIOR, M H A Z; MAIZATUL, S M and KUSHAIRI, A (2011). Survey on status of *Ganoderma* disease of oil palm. *Proc. of the PIPOC 2011 International Palm Oil Congress – Agriculture Conference*. MPOB, Bangi. p. 235-238.

THIES, W G and NELSON, E E (1996). Reducing *Phellinus weirii* inoculum by applying fumigants to living Douglas-fir. *Can. J. For. Res.*, 26: 1158-1165.

TUCK, H C and KHAIRUDDIN, H (1997). Usefulness of soil mounding treatments in prolonging productivity of prime-aged *Ganoderma* infected palms. *The Planter*, 73 (854): 239-244.

For more information, kindly contact:

Director-General  
MPOB  
P. O. Box 10620  
50720 Kuala Lumpur, Malaysia.  
Tel: 03-8769 4400  
Fax: 03-8925 9446  
www.mpob.gov.my