STUMP TREATMENT WITH DAZOMET FOR CONTROLLING *Ganoderma* DISEASE IN OIL PALM

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The *Ganoderma*, the cause of basal stem rot (BSR) disease, is facultative basidiomycete fungus and a major pathogen of oil palm in Malaysia (Idris *et al.*, 2011). One strategy to manage BSR is by reducing inoculum of *Ganoderma* in existing stands and at replanting through application of a fungicidal chemical to infected stumps. Fumigation is one means of reducing inoculum of some root rotting fungi. Soil fumigants such as methylisothiocyanate (MITC), methyl bromide, vorlex, chloropicrin, carbon disulphide and vapam have been shown effective in eradicating basidiomycetous root pathogens of tree crops (Filip and Roth, 1977; Thies and Nelson, 1982). On the stumps of conifers infected with *Phellinus weirii* and ponderosa pine infected with *Armillaria mellea*, treatment with soil fumigants to the stump could successfully eradicate the pathogen. In the quest to find a control of BSR disease, the effect of dazomet (MITC) on *Ganoderma* inoculums in the oil palm stumps were investigated. Dazomet consists of white micro-granules which release the fumigant MITC on contact with water. Ariffin and Idris (1991; 1993) reported that MITC released by dazomet (basamid®) could inhibit growth of *Ganoderma in vitro* and in infected palms.

FIELD EVALUATION OF STUMP TREATED WITH DAZOMET

The study was conducted on 19-year old first generation palms planted in peat soil in Teluk Intan, Perak. One hundred and eighty infected oil palm stumps comprising of six treatments with 30 infected stumps for each treatment. The six treatments in this study is presented in *Table 1*. Dazomet was applied along the trenches made on the top of each infected stump using a chainsaw (*Figure 1A*) followed with water. Each infected stump treated with dazomet was covered with a large polyethene sheet. Application of dazomet to the infected stumps was carried out once a year. Tissues samples from each infected stump were collected to determine the survival (growth) of *Ganoderma* by plating onto the *Ganoderma* Selective Medium (GSM) (Ariffin and Idris, 1992). At three years after treatment, *Ganoderma* inoculum survived (100%) in the untreated (control) infected stumps (*Table 1).* Only 40.0%, 16.6% and 10.0% of

TABLE 1. EFFECTS OF DAZOMET ON *Ganoderma* INOCULUM IN INFECTED STUMPS AT THREE YEARS AFTER TREATMENT

Treatments of *Ganoderma*-infected stumps	Survival of *Ganoderma* inoculum on *Ganoderma* Selective Medium (%) (n=30)
Untreated (control)	100 a
Dazomet at 250 g/stump or 242.5 g active ingredient	40.0 b
Dazomet at 500 g/stump or 485.0 g active ingredient	16.6 c
Dazomet at 750 g/stump or 727.5 g active ingredient	16.6 c
Dazomet at 1000 g/stump or 970.0 g active ingredient	10.0 c
Dazomet at 1250 g/stump or 1212.5 g active ingredient	10.0 c

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

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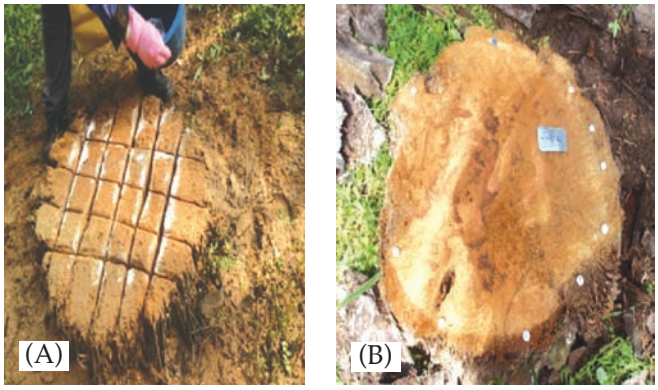

Figure 1. A Ganoderma *infected stump. Infected stump treated with dazomet to eradicate* Ganoderma *inoculum (A), and untreated infected stump as control (B).*

infected stumps that received 250 g, 500 g, 750 g, 1000 g and 1250 g dazomet respectively yielded *Ganoderma* growth on GSM. This indicated that dazomet moved into the infected stump and caused death to the *Ganoderma* fungus.

SERVICE OFFERED

MPOB offers the service in controlling *Ganoderma* disease in oil palm plantation using dazomet as a preventive treatment. Once the service is completed, a full report will be submitted to the relevant person/company.

BENEFITS AND COST

Field study indicated dazomet has the potential to eradicate *Ganoderma* inoculum within the infected stump, therefore reducing the spread of *Ganoderma* disease in oil palm. Dazomet application improves oil palm productivity by reducing the incidence of BSR disease within the field. The cost will vary depending on the hectarage and severity of BSR disease in oil palm plantation.

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