

Effect of Moist Hot Air Treatment (MHAT) on Sugar cane White Leaf Disease (SCWL)

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Sugarcane white leaf disease (SCWL) caused by a phytoplasma, is one of the most destructive diseases of sugarcane in Sri Lanka. As the disease is a sett-born, use of healthy seed cane for raising seed cane nurseries for new plantations is vital to reduce the losses due to the disease.

As thermohearphy is the most effective and reliable method of elimination the pathogen from the seed cane, field experiments were conducted to study the effect of moist hot air treatment (MHAT) at 54 °C for 2 h at > 90% Relative humidity on the causal phytoplasmas. Initially the diseased seed cane were selected and separated into 3 budded setts and were treated giving the above conditions leaving enough seed cane untreated to be used in control experiments. Investigation was done according to a Complete Randomized design (CRD). The trials were sprayed fortnightly with a systemic insecticide and maintained giving standard practices. Germination counts and the cumulative disease counts were taken fortnightly, two months after planting and the yield parameters, cane quality studies were done after harvesting the crop at 12 months.

It was found that there was no significant effect of the MHAT on the germination of seed cane. However, non-emergence of the seedlings with SCWL symptoms from the heat-treated plots showed the significant effect of the heat on the elimination of the disease. The number of internodes, field brix, girth of cane stalks and the length of stalks of the diseased and healthy plants were also showed significant ($p < 0.05$) differences. Laboratory analysis of cane showed that the Purity %, and sucrose % were significantly Higher ($p < 0.05$) in moist hot air treated crop than in control. Fiber %, and reducing sugars % were significantly lower ($p < 0.05$) in the treated crop. Further, the cane yield and the pure obtainable sucrose were significantly ($p < 0.05$) higher in the MHAT treated healthy plants than the diseased, inferring the effect of the heat treatment on the control of the disease and its effect on the cane quality and the sugar yield. Therefore, it was concluded that the MHAT could be used as a control method of SCWL in Sri Lanka.