NATIONAL CONFERENCE ON GREEN PRACTICES – 2016

"Institutionalizing green practices; green for growth"

14 July 2016

Water's Edge, Battaramulla

comprehensive literature review followed by an expert's interviews were conducted to identify and frame the factors to the local context.

The study concludes that the information system can be used in tracking the date in transportation, energy usage, direct emission of GHGs and other toxic to the environment. However, the major obstacles in tracking such data into an information system comprises with the unavailability of the data, issues with the accuracy of available data, limitations in integrating the existing data base/systems to new systems, and lastly the higher cost in implementing such information systems. It suggested that measuring carbon footprint of products across their full life cycle is a powerful way for companies to reduce their share of GHGs emission. This study tries to bridge the gap in literature by identifying the areas in which information systems can be used for tracking the data across their product lifecycle.

AOP3: Bioactivity and volatile profiling of Azadirachta indica leaves for the suppression of Maize Weevil, Sitphilus zeamais (Motsch.) infestations (FP1017)

A.G.W.U. Perera, M.M.S.C. Karunaratne, S.D.M. Chinthaka

Neem (Azadirachta indica A. juss), is known to possess a wide range of pharmacological properties and is thus commercially exploitable. Apart from its medicinal potential, a considerable progress has been achieved regarding biological potential and composition of volatile fraction of the leaves which is an ever-increasing interest to the scientific community. During this study, biological phenomena and for the first time, volatile composition of A. indica leaves were examined in the management of Sitophilus zeamais on stored maize. Efficacy of neem leaves was tested by admixing leaf powders with maize grains at 5 doses (3.33%, 10%, 16.67%, 23.33%, and 33.33% w/w). Using modified cup-bioassays, repellent effect was assessed after an hour of weevil introduction, while contact and fumigation toxic potential of leaf powders were evaluated at 24 hour intervals up to 10 days of weevil exposure. Volatile profile of A. indica leaves was characterized by employing headspace-solid-phase micro extraction coupled with gas chromatography-mass spectrometry (HS-SPME/GC-MS). Over 60% weevil repellency was recorded at doses above 23.33%, whereas 100% and 67% contact and fumigation mortalities were observed respectively, 9 days after treatment at the dose of 33.33%. Four volatile compounds were identified accounting for 99.98% of the total detected constituents in three distinct chemical classes (Sesquiterpenoid, aldehyde and halogenated aliphatic hydrocarbon). Gamma.-elemene (54.96%) and 2-hexenal (33.33%) were the major constituents of neem leaf volatiles, followed by methylene chloride (6.05%) and caryophyllene (5.65%) which are responsible for varied biological activities observed. Odor impact of the bioassay-guided study clearly implies that A. indica leaves can be harnessed against S. zeamais infestations.