

## ROLE OF INFO-CHEMICALS IN SUSTAINABLE PEST MANAGEMENT : A REVIEW

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**ABSTRACT :** Chemicals involved in conveying information in intra- and inter-specific interactions between organisms are termed 'infochemicals'. Chemical information is regarded as a key factor mediating behavioural and ecological interactions between insects and plants. The study of chemicals mediating interactions between organisms, either within the same species (pheromones) or from different species (allelochemicals), forms the research field of chemical ecology. Infochemical can be used on crops to attract insects to a trap. Insects are drawn to the infochemical solution, which contains a trace amount of pesticide to effectively eradicate the pest. Because the amount is so small and the solution is used on just a tiny fraction of the crop, we drastically reduce the amount of pesticide needed compared to the conventional "spray everything" method. Female sex pheromones are a type of info chemical that affects mating behavior. In pest management, pheromones are instrumental in reducing insect populations by preventing them from procreating. When a pheromone solution is used on crops, male insects become confused and unable to find a female to mate with. This proactive approach reduces pest populations without killing insects and without using a single drop of pesticide. In nature, insects are attracted to healthy trees and plants and repelled by unhealthy or dying ones. When allelochemical repellents, Attractant are placed on healthy plants, they trick insects into believing it is decayed, signaling that the plant would not make a viable host. Info chemical are only needed in low amounts and their non-toxic nature make them better for the planet. Info chemical is effective Because they are a natural part of an insect's makeup, infochemical are highly effective at controlling pest behavior. Insects do not develop resistance to infochemical as they do with conventional pesticides. Info-chemical contain no poisonous substances and pose no threat to humans, non-target pests, or wildlife.

**Key words :** Infochemical, sustainable, insect pest, management.

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### INTRODUCTION

All organisms utilize information they perceive from their environment to maximise fitness, e.g. by improving food location, reproduction and predator avoidance. Information on environmental conditions is often available through chemical cues (Bell and Carde, 1984; Carde and Bell, 1995; Dicke, 1999a). Chemicals involved in conveying information in intra- and inter-specific interactions between organisms are termed 'infochemicals' and constitute a subcategory of semiochemicals (Dicke and Sabelis, 1988). Chemical information is regarded as a key factor mediating behavioural and ecological interactions between insects and plants. The study of chemicals mediating interactions

between organisms, either within the same species (pheromones) or from different species (allelochemicals), forms the research field of chemical ecology (Metcalf and Metcalf, 1992; Roitberg and Isman, 1992). Animal behavior is elicited in response to visual, auditory, tactile, olfactory and gustatory- sensory information from the surrounding world. However, chemical communications appear to be the primary mode of information transfer in most groups of animals. A finely tuned olfactory system enables perception of even very weak signals from potential mates, and discrimination between acceptance and non-acceptance of host for feeding, mating and oviposition. Chemical messages that trigger various behavioral responses in the organisms are called **Control**

**of stem borers in maize and sorghum :** Maize (*Zea mays*) and sorghum (*Sorghum bicolor*) are principal crops for millions of the poorest people and lepidopterous stem borers, e.g., *Chiloptartellus*, *Eldana saccharina*, *Busseola fusca* and *Sesamia calamistis*, cause yield losses of 10% to 50%. Agricultural advisory services in the region recommend the use of chemical pesticides, but this is uneconomical and impractical for poor, small-scale farmers. Stem borers are repelled from the crops by repellent nonhost intercrops, particularly molasses grass (*M. minutiflora*), silver leaf desmodium (*D. uncinatum*), or green leaf desmodium (*D. intortum*) (push) and are concentrated on attractive trap plants, primarily Napier grass (*Pennisetum purpureum*) or Sudan grass (*Sorghum vulgaresudanense*) (pull). Molasses grass, when intercropped with maize, not only reduced stem borer infestation, but also increased parasitism by *Cotesia sesamiae*. A trap crop of Sudan grass also increased the efficiency of stem borer natural enemies. Although, stem borers oviposit heavily on Napier grass, it produces a gummy substance that restricts larval development, causing few to survive. Six host volatiles were attractive to gravid stem borers: octanal, nonanal, naphthalene, 4-allylanisole, eugenol and (*R,S*)-linalool.

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