

## THE USE OF REPELLENTS FOR AREA EXCLUSION OF PEST ANTS

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The use of pesticides is coming under increasing scrutiny and there is pressure to minimize their use. Several excellent fire ant repellents have been discovered, e.g. 2-nonanol, 2-methyl hexanoic acid, and 1-decanol. These compounds have relatively simple structures and are inexpensive. Several of the repellents, such as 2-octanol, and octanoic acid have been reported as components of ant alarm pheromones. This relationship will be explored. While these compounds do not eliminate fire ant colonies, they can be used to exclude ants from areas where they are unwanted. Thus, they may have a wide variety of applications. Plant nurseries are prime habitats for fire ants, a major ant pest in the south and southeastern United States. Non-infested States enforce strict quarantine measures, which requires fire ant free certification of transported nursery stock. Repellents by themselves or in combination with insecticide treatments may help to decrease our dependence on insecticide treatments. Pots treated with octanoic acid effectively prevented fire ant colonies from moving into the pots for more than 28 days after treatment. In addition, potting soil treated with octanoic acid prevented newly mated fire ant queens from selecting the treated soil to found their colonies at concentrations as low as 100 ppm. In another type of application, biological control agents, such as parasitic wasps, are often predated on by ants, especially fire ants, thus decreasing or completely nullifying the parasites' controlling effects. When parasite release capsules are treated with a repellent, the wasp pupae have time to develop into adults, exit from the capsules and parasitize their host. Cooperative projects have demonstrated that the repellent is effective against other ant pest species too, including leaf-cutting ants. Other areas of potential use consist of protection of electrical circuitry and switches (fire ants are attracted to electrical fields), hospitals where non-insecticide ant control is desirable, and tree wraps to protect damage susceptible trees. Thus, repellents will find uses wherever it is desirable to exclude ants from limited areas or situations. Current research involves the investigation of controlled release formulations to extend the effective lifetime of these compounds.