

Pheromones, Sex Attractants.

A major drawback with chemical insecticides is their lack of specificity. Non-specificity of insecticides may kill helpful insects, such as honeybees, which aid in pollination. The more specific we make our insect control, the less we will disrupt the environment. Although, in the past, it looked as if specific control was beyond the scope of chemistry, but some developments have shown that it is entirely possible to control populations of certain insects very effectively and specifically using substances known as **pheromones**.

Pheromones provide chemical means of establishing communication. There are sex, trail and defense pheromones to mention a few. One of the most important roles pheromones play is as sex attractants. Sex pheromones tell the honeybee which flower to pollinate. The sex pheromones are remarkably powerful. A few hundred molecules may be all that are necessary to invoke a response. In addition to this fascinating parameter, it has been claimed that the sex attractants in some species can attract males from over two miles away. (The sex attractants are usually emitted by the females, although there are some male insects which also produce them). By baiting a trap with a small amount of sex attractant of an insect pest, one can collect all the males in the vicinity. They may then be disposed of or sterilized. Since mating cannot take place, the reproductive cycle is halted and the pest is controlled. The advantages to this method are immediately obvious. It is very specific since, (except in very rare instances), each insect has its own attractant. There is no spraying, hence no pesticide residues. In addition, the concentration of the attractants is so small that there would be no effect on any other species, even indirectly. For example, the gypsy moth attractants, attracts male moths in the area when a trap is baited with only $1 \times 10^{-9} g$. Gypsy moths are highly voracious eaters and will completely denude trees if they go unchecked.

Names and structures of some pheromones

