

PYRETHRUM

INTRODUCTION:

Pyrethrum (*Tanacetum Coccineum*) is one of the most important cash crops of Kenya, Africa. It belongs to the botanical family *compositae*, and is generally known as *chrysanthemum*. It grows well in areas with fairly high rainfall, warm temperatures moderated by altitude, in high altitudes. It requires well-drained, rich volcanic for ideal growing conditions. Harvesting is done by hand.

The pyrethrum seeds are first cultivated in nurseries then transplanted to plots of land, where they must be kept weed-free. The maturity of the plant is approximately one year, therefore picking is done sporadically and may go on for years. Flowers are picked and dried under the sun or in oven burners. The flowers are bagged and transported to factories for processing. In the factory, the pyrethrum is crushed into powder and subsequently into active liquid form, and packaged for distribution.



KNOCKDOWN EFFECTS:

Because of its safety, pyrethrum has long been preferred for household and agricultural applications. Recent research is revealing new power and new uses for this old and trusted insecticide. Combined with a synergist, natural pyrethrums are one of the fastest acting insecticides known. Even before it kills, it knocks down and paralyzes insects almost immediately. When it encounters pyrethrum, the insect is thrown into a state of nervous disorder. It runs from its hiding place and scuttles around erratically, or adopts a confused flight pattern. Both responses show that the insect has lost all control of its central nervous system. This contact effect is called activation. Pyrethrum activates hidden insects, driving them from cover and into contact with the main insecticide. This "flushing" action has been most successful in the control of such hard to hit pests as the cotton bollworm and the gypsy moth.

JAMMING:

Recently, researchers have identified a subtle effect that occurs even before activation takes place, jamming. The jamming phenomenon suggests new uses for pyrethrum in the battle against mosquitoes. To show how jamming works, you need only a cage full of voracious female mosquitoes and some extremely brave volunteers. Those who put their bare arms in the cage can expect to get some 20 to 50 bites per minute. But, if the cage is exposed to trace amounts of pyrethrum for only five minutes and the arm is then reinserted, no bites are recorded, even though the insects otherwise seem completely normal. Apparently small amounts of pyrethrum can jam the "black box" of the insect's food searching mechanism. The insects forget to eat, as it were. Because of this effect, low-level pyrethrum applications have been shown to reduce the risk of disease carried by mosquitoes.

RESISTANCE:

There's more to pyrethrum's bag of tricks. The reason is not fully understood, but insects do not become resistant to natural pyrethrum. After decades of use, no insect population has ever developed significant pyrethrum resistance. Intense study of the pyrethrum molecule has produced the related synthetic materials, pyrethroids. But so far, science has not devised a synthetic that combines the speed, effectiveness, activation effects and biodegradability of natural pyrethrum.

