

STARVATION OF WHITEFLIES

Jerry Kitten

Slaton, TX

Whitefly-Pruf™ is a special formulated fertilizer that is registered as an insecticide with an EPA label. This product was developed on the basis of Aphid-Pruf® that has been experimentally used for 10 years with exceptionally positive results. Whitefly-Pruf™ is a new fertilizer to control whiteflies by making a sudden change of sugar levels in the plants' leaves. The plant juices in the leaves and tender portions of host plants are the whiteflies one and only food source. By employing discreet combinations of ions known to speed the movement of sugars in plants, whiteflies become disturbed, pull out their sucking mouthparts and fall off the leaves.

By exact changes in the formulations, the period of reduced sugar content in leaves and tender parts of host plants may be prolonged or shortened in order to best meet a given situation whether light, medium or heavy. Such changes may be produced to offset weather conditions as well.

Whiteflies are peculiar creatures. They do lay eggs. Their sole food source is plant juices or liquids, which are mostly triose, pentose and hexose sugars, which are the earliest products of photosynthetic process.

It is precisely on these physiological characteristics that this new approach to control is based. At the onset of this investigation some 10 years ago, it was reasoned that if we could suddenly alter the one and only food source, we might be able to create havoc in the whiteflies' world.

Because whiteflies are slow moving and most nymphs don't move at all, they cannot leave an unfavorable situation rapidly, as some other insects that can either crawl away rapidly or fly away. Being small and soft-bodied, when they fall to the ground, they cannot get back up on the plant in order to try to resume feeding. In hot weather, they usually die on the hot soil beneath the plant in a few minutes.

Sudden reductions in whiteflies numbers give the lacewings a better chance to gain control and stay in control. Lacewings are not killed or even affected in any way by this treatment. In fact, nothing is killed; not even whiteflies.

Since this method depends heavily on the photosynthetic process, such things as temperature, length of daylight and cloud cover, affect its efficiency.

This process was granted a patent number and an EPA pesticide registration in 2001.

Whiteflies if not controlled can and do wreck economic havoc. Not only do they rob a growing, producing plant of vital nutrients thereby stunting its growth, the honeydew they produce can fall on an open cotton bolls producing "sticky cotton" which is refused by spinning mills.

Whiteflies can reproduce very rapidly. Populations can increase up to 10 times in 2 weeks. Because of this rapid reproduction rate, they are able to breed up resistance to any chemical thrown at them in a short time. Control then becomes a matter of using stronger and more toxic chemicals in order to affect anything like acceptable control on insects. With respect to toxicity to humans, animals, bees, fish, birds as well as whiteflies, we have about reached the limit. When whiteflies become resistant to the most toxic material there is, what then? What will we use?

This very fact was a prime mover in my attempt to find another method of control; one I hope whiteflies cannot develop a resistance toward.

Introduction

The registration of Aphid-Pruf® in 2000 marked the beginning of a revolution in agriculture pest management. In 2001, we also tested Aphid-Pruf® (Whitefly-Pruf™) for control of whiteflies. I was able to keep out whiteflies for 11 days with one spraying.

Materials and Methods

Test for Whitefly-Pruf™ were done on small plots using a hand sprayer with replication and controls. I normally test for one day; however, this test showed such good results I kept checking until %Brix was the same as the control, which was 13 days later at 13% Brix.

Reference

Kitten, Jerry. Kitten Fertilizer & Supply, Inc., Rt. 2 Box 6, Slaton, TX 79364.

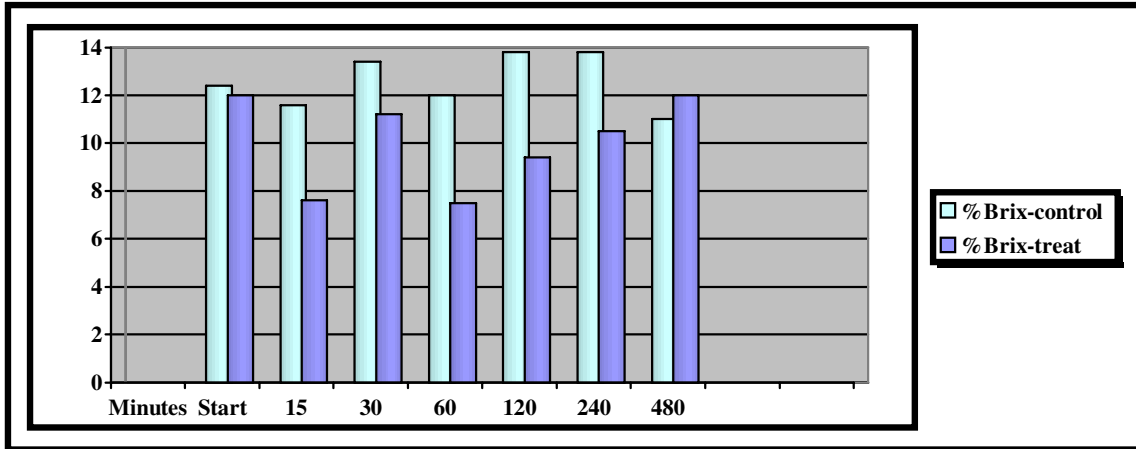


Figure 1. Estimated time to decrease sugar levels in leaves of the treated plants on August 15, 2001.

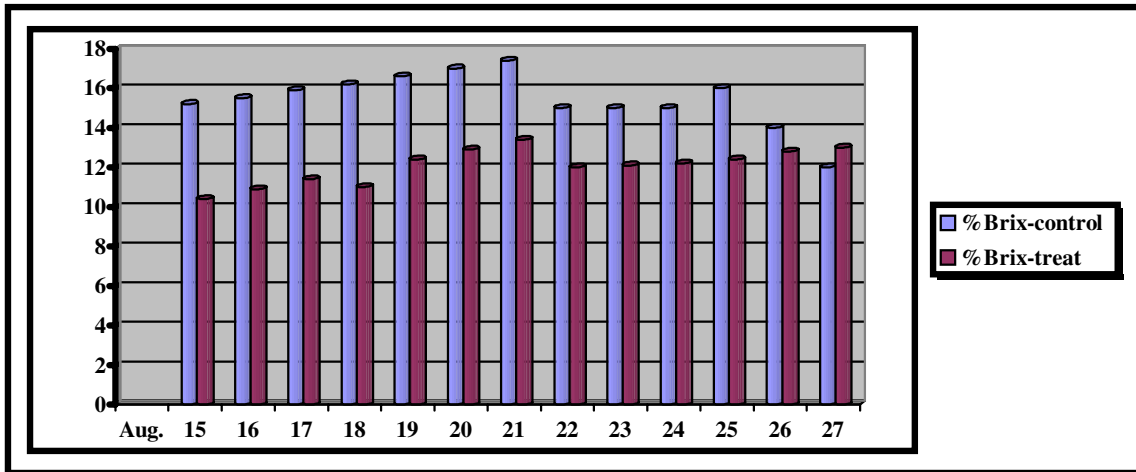


Figure 2. Estimated percent of sugar levels from August 15-27, 2001.