



Texas Cooperative

EXTENSION

The Texas A&M University System

CHEMOGRAM

Agricultural & Environmental Safety Unit

<http://www-aes.tamu.edu>

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And We Just Keep Rolling Along

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2002 has been a banner year for manual publication within the AES unit. We started the year off with the publication and release of a new Private Applicator manual. We will end the year with the publication of the Greenhouse, Public Health, and Pest Control category manuals.

Thanks to the efforts of individuals such as Dr. Jim Olson, Mr. Grady Glenn, and Mr. Doug Stevenson for authoring the manuals, our support staff Ms. Denise King, Ms. Margaret Havens, and Ms. Leslie Myers for putting publications together, and members of the Agricultural Communications team Ms. Diane Bowen, Ms. Cornelia Blair and Ms. Judy Winn for editing and facilitating the publication process, we have been able to release some of the highest quality training manuals in the nation.

Please advise your customers that they may purchase any of these publications by contacting our PAT Order Desk at (979) 845-1099 or by downloading the order form from our website at <http://www-aes.tamu.edu>. We plan to kick 2003 off with similar goals. We will release a new Ornamental & Turf manual in early 2003, followed by the new Field Crop, Right of Way, and Fruit, Nut & Vegetable manuals in mid to late 2003.

We will continue to develop electronic and audio/visual training materials for your use in

facilitating certification and recertification activities. It is our goal to provide you with timely, relevant materials, programs and information to aide you in accomplishing our mission of sustaining a strong agricultural industry and protection of the environment and natural resources for all Texans.

West Nile Virus in North America

USDA CSREES/Regional Pest Management Center for IPM Programs

West Nile encephalitis, a mosquito-transmitted disease, was first documented in North America during the summer of 1999, when an outbreak occurred in New York City. Since that time, cases of West Nile virus (WNV) infection have been confirmed in northeastern, north central, and southern regions of the United States (including Texas), and the virus is expected to eventually spread throughout North America.

Of 738 cases of clinical WNV infection reported in horses (from 130 counties in 20 states), 651 cases were verified through diagnostic testing at the National Veterinary Services Laboratories of the U.S. Department of Agriculture-Animal and Plant Health Inspection service, and 156 horses have died or were euthanized. An equine vaccine is available in some states through licensed veterinarians.

The strain of WNV circulating in the United States caused significant mortality in

exotic and native bird species, especially in the American crow (*Corvus brachyrhynchos*). Dead birds serve as an early warning that the virus may be active in your area, and these deaths should be reported to your local health department.

Origin of WNV

WNV was first isolated in 1937 in the West Nile province of Uganda, Africa, and can adversely affect humans, birds, and other animals in Africa, eastern Europe, western Asia, and the Middle East. Epidemics have occurred in Africa, Europe, and the Middle East, most recently in Israel during 2000.

Virus Transmission

WNV is transmitted by infected mosquitoes, primarily *Culex*, *Aedes*, and *Ochlerotatus* spp. *C. pipiens*, the northern house mosquito, is a common household mosquito and the primary vector of WNV. Mosquitoes become infected after biting infected wild birds that serve as the primary host of the virus. The virus undergoes a reproductive cycle inside the mosquito, in which it must pass through the midgut wall, multiply in many tissues, and accumulate in the salivary glands of the mosquito. Mosquitoes salivate every time they bite, and they are capable of transmitting the virus 10 to 14 days after feeding on an infected bird, so bites after that time are infectious.

Mosquito Life Cycle

Mosquitoes are classified into the order Diptera (true flies) and have four distinct life stages (egg, larva, pupa, and adult). Female mosquitoes lay their eggs on water or moist substrates such as soil and the interior walls of treeholes, cans, and old tires that are likely to be flooded by water. Most larvae hatch within 48 hours and the larvae and pupae live in water. The adult mosquito emerges from the pupal case and rests on the water's surface until its body dries and its exoskeleton hardens. Female mosquitoes require a blood meal before they can lay eggs, so only female mosquitoes bite. They bite every few days during their entire adult lives, which may last several weeks.

Mosquito Prevention and Control

Homeowners can most effectively reduce the number of mosquitoes around their homes and neighborhoods by eliminating the standing water in which mosquitoes grow and breed.

- Dispose of any refuse that can hold water, such as tin cans, containers, and in particular, used tires. Tires have become the most important mosquito-breeding sites in the country.
- Drill holes in the bottoms of recycling containers and check uncovered junk piles.
- Clean clogged roof gutters every year, and check storm drains, leaky outdoor faucets, and window wells.
- Empty accumulated water from wheelbarrows, boats, cargo trailers, pet dishes, toys, and ceramic pots. If possible, turn these items over when not in use.
- Do not allow water to stagnate in birdbaths, ornamental pools, water gardens, and swimming pools or their covers. Ornamental pools can be aerated or stocked with fish. Swimming pools should be cleaned and chlorinated when not in use.
- Alter the landscape of your property to eliminate standing water. *Keep in mind that during warm weather, mosquitoes can breed in any puddle of water.*
- Turn off or repair leaky outdoor faucets.
- Larvicides are highly effective in controlling immature mosquitoes and should be considered when standing water cannot be eliminated.

Protect Yourself from Bites

Even though your property may lack mosquito-breeding sites, mosquitoes can travel 2 to 3 miles from their breeding site in search of a blood meal. Therefore, it may be necessary to supplement larval control with other control measures directed at adult mosquitoes. The

following tips can help to reduce your risk of being bitten by a mosquito:

- Make sure window and door screens are “bug tight.”
- Use the proper type of light outside: incandescent lights attract mosquitoes, whereas fluorescent lights neither attract nor repel mosquitoes.
- Stay indoors at dawn, dusk, and in the early evening when mosquitoes are most active. If you must go outdoors, wear a long-sleeved shirt and long pants.
- Insect repellents when applied (sparingly) to exposed skin deter mosquitoes from biting. Spray thin clothing with repellent because mosquitoes can bite through thin clothing. The American Academy of Pediatrics recommends that repellents used on children contain no more than 10 percent DEET, the active ingredient in mosquito repellents. If children’s skin must be sprayed, put a small amount on your hands and apply it to arms, legs and necks. Avoid contact with the face (eyes, nose & mouth). Be sure to follow all directions product labels.

Symptoms of West Nile Encephalitis

Most humans infected with WNV have no symptoms. A small percentage of individuals infected develop mild symptoms that include fever, headaches, body aches, swollen lymph glands, and a body rash. Encephalitis develops in less than 1 percent of infected people, with severe symptoms that include headache, high fever, neck stiffness, disorientation, tremors, convulsions, paralysis, and coma. If you experience these symptoms, contact a physician or hospital immediately. Occasionally, death can occur. The elderly are most at risk of death due to encephalitis.

The U.S. Geological Survey and the Centers for Disease Control and Prevention are tracking the distribution of the virus in birds, mosquitoes, humans, and other animals. State health departments and university extension

personnel may have mosquito control and WNV detection programs for your state.

For more information about WNV, mosquito control recommendations, and state resources visit web sites at:
<http://www.ncpmc.org/NewsAlerts/westnilevirus.html>
<http://www.tdh.state.tx.us/>
<http://www.cdc.gov/default.htm>

Comparative Efficacy of Insect Repellents Against Mosquito Bites

The results are in - A recent study by Dr’s Mark S. Fradin, M.D., and John F. Day, Ph.D. sheds new light on an old discussion.

Introduction

The worldwide threat of arthropod-transmitted diseases, with their associated morbidity and mortality, underscores the need for effective insect repellents. Multiple chemical, botanical, and “alternative” repellent products are marketed to consumers. The researchers sought to determine which products available in the United States provide reliable and prolonged complete protection from mosquito bites.

They conducted studies involving 15 volunteers to test the relative efficacy of seven botanical insect repellents; four products containing N,N-diethyl-m-toluamide, now called N,N-diethyl-3-methylbenzamide (DEET); a repellent containing IR3535 (ethylbutylacetylaminopropionate); three repellent-impregnated wristbands; and a moisturizer that is commonly claimed to have repellent effects. These products were tested in a controlled laboratory environment in which the species of the mosquitos, their age, their degree of hunger, the humidity, the temperature, and the light-dark cycle were all kept constant.

DEET-based products provided complete protection for the longest duration. Higher concentrations of DEET provided longer-lasting protection. A formulation containing 23.8 percent DEET had a mean complete-protection time of 301.5 minutes. A soybean-oil-based repellent protected against mosquito bites for an average of

94.6 minutes. The IR3535-based repellent protected for an average of 22.9 minutes. All other botanical repellents we tested provided protection for a mean duration of less than 20 minutes. Repellent-impregnated wristbands offered no protection.

Conclusions

Currently available non-DEET repellents do not provide protection for durations similar to those of DEET-based repellents and cannot be relied on to provide prolonged protection in environments where mosquito-borne diseases are a substantial threat.

For complete details on the study see the New England Journal of Medicine, Vol. 347, No.1, July 4, 2002, or view their website at www.nejm.org.

With crop harvest in or nearing full swing across Texas, now is a good time to remind your customers about the many laws and regulations which affect their businesses. Dr. Roy D. Parker, Extension Entomologist, would like for us to remind producers about the Worker Protection Standard (WPS). Recently, Dr. Parker made the following observations about WPS.

Reminder to Agricultural Employers about Worker Protection Standard (WPS) for Agricultural Pesticides *adapted from Roy D. Parker*

The WPS for Agricultural Pesticides from the U.S. EPA was designed to reduce risk from pesticide-related illness and injury. Here are some brief reminders concerning WPS. Detailed information can be obtained from 40 CFR Part 170 - Worker Protection Standard or by logging onto EPA's website at <http://www.epa.gov/pesticides/safety/workers/PART170.htm> or by calling the nearest Texas Department of Agriculture regional office, (see list at: <http://www-aes.tamu.edu>.) The WPS covers employees that are "agricultural workers" and "pesticide handlers". These workers and handlers must be trained every 5 years unless they are certified applicators. Workers and handlers must be trained and have new cards issued every 5 years. The cards are a way of

showing proof of training. Many employers spend some time each month on safety training. Safety training can reduce accidents of all kinds and time should be spent each month on safety training. Farms are not paying enough attention to chemical or mechanical safety.

As a reminder, WPS items that employers must provide to "workers" and "handlers" include: (1) posting of information about each pesticide application, (2) posting how to contact the nearest emergency medical facility, (3) display of an EPA WPS safety poster, (4) a decontamination site and supplies, (5) emergency assistance in the form of transportation to an appropriate medical facility if the employee is believed to have been poisoned (a copy of the pesticide label should be taken to the medical facility to provide information such as product name, active ingredient(s), EPA registration number, first aid and medical information, description of how the product is used, and information about the victim's exposure), (6) providing employees with all protective equipment required under WPS and included on the label requirements, and (7) providing information to appropriate medical personnel.

Pesticide safety training should place emphasis on restricted-entry intervals into treated areas, notices about applications, drift prevention, monitoring of employees, training on individual labels, use and cleaning of personal protective equipment, pesticide handling, and application equipment safety and maintenance, and proper storage and disposal of pesticides.

The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by Extension is implied. Educational programs of Extension are open to all citizens without regard to race, color, sex, disability, age or national origin.

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Texas Most Wanted

Saltcedar

Wanted for **murder** (choking out desirable plants), **theft** (stealing up to 200 gallons of water/day/plant), **environmental pollution** (increasing soil/water salinity and damming river and stream flow), **interstate flight** (aggressively invading drainages, creeks, rivers and lakes), and **fraud** (replaces native vegetation with itself).



This plant should be considered extremely dangerous. Do not be tempted by its good looks. Do not purchase at a nursery, plant as an ornamental, share with friends, or allow to spread. Saltcedar now infests most West Texas streams, rivers and lakes. It is rapidly moving across the state, toward the east and south, crowding out native plants. It can be identified by smooth, reddish brown stems on younger plants, that turns gray and crack as the plant ages. Leaves are small, and similar to cedar. The plant flowers in late summer, giving the appearance of pink feathers at the end of the stems. Saltcedar is most often found invading waterways or wetlands.

For more information about controlling this plant, contact:

Your local County Extension Agent or
Natural Resources Conservation Service

Your reward:

Protecting the health of Texas watersheds and the satisfaction of knowing you helped make a difference.

