

VECTORVision

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Pacific Northwest Districts Prepare for Spread of West Nile Virus

Emphasis Placed On Public Education, Surveillance and Larviciding

Since its inception on the Eastern seaboard in 1999, West Nile virus has spread rapidly throughout the United States. Although the Pacific Northwest states of Washington, Oregon and Idaho have not had a confirmed human case yet, districts in this area have been preparing their operations and the public for its arrival.

"It is no longer a question of 'if' but rather 'when' the West Nile virus is confirmed in our area," said Greg Barron, manager of the North Morrow Vector Control District in Boardman, Oregon.

The West Nile virus was confirmed in Washington and Idaho in 2002, and Oregon is the only state in the continental U.S. that has not yet had signs of the virus. Barron said that his state has stepped in to help districts increase surveillance and public awareness in anticipation of the West Nile virus.

Ron Montgomery, executive director of the Northwest Mosquito and Vector Control Association, said that mosquito abatement professionals in the area have been sharing information with each other and the community.

"We are really lucky to have had five years to learn about the virus and witness what other states have done," said Montgomery, who also serves as manager of the West Umatilla Vector Control District. "There are areas in Oregon that don't have vector control, and many communities are pushing for an increase in mosquito control."

Montgomery said his district has used public education and larviciding as the first line of defense. He said the Umatilla River is one of his most prolific *Culex* mosquito breeding grounds, and he has used VectoLex® in sensitive salmon habitats near the river.

"When we have permanent water and *Culex* mosquito breeding, we lean towards VectoLex," Montgomery said. "Even where they are considering setting up a new district, people tend to look favorably upon VectoBac® and VectoLex because the products don't harm beneficial organisms."

Although West Nile virus keeps getting closer to the Pacific Northwest each year, Barron said his district's budget hasn't grown with the threat. He

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CONTROLLING CULEX IN CANADA

Country's Experts Discuss the Need for VectoLex® Registration in Canada to Fight the West Nile Virus

For Canadians, the first sign of the West Nile virus came in August of 2001, when the virus was found in dead birds and mosquito pools in Southern Ontario. This was just two years after the virus had reared its head in the United States.

The first human cases would appear in the country in 2002, when roughly 120 humans tested positive for the disease in Quebec and Ontario. The majority of those were in Ontario, with only 16 reported in Quebec. Twenty-one deaths resulted from these cases. The virus was also found in birds, horses and mosquitoes in Nova Scotia, Quebec, Ontario, Manitoba and Saskatchewan. Two people from Alberta became infected as well, but those cases were thought to be travel-related.

This year, the virus extended to the prairies, and human cases were particularly numerous in Saskatchewan, according to Christian Back, director of research and development at GDG Environnement. (GDG is a company based in Quebec that has been performing biological control of biting flies for more than 20 years.) There have been more than 1,000 human cases in Canada.

"The increase in the number of human cases this year is partly explained by better surveillance systems, but it is significant," Back said. "Everybody feared the arrival of

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Aerial Applications of VectoLex® Prove Successful for Environmentally Sensitive Habitats

From Florida to California, Districts Are Making Large-Scale Aerial Applications

Water Marshes Treated in Utah

Public concern about the West Nile virus and pesticides used to treat mosquitoes carrying the virus has increased throughout the nation. In Utah, vector control professionals are using VectoLex® to treat environmentally sensitive land near the Great Salt Lake. Sam Dickson, director of the Salt Lake City mosquito abatement district, said that these large water marshes provide the perfect breeding ground for mosquitoes, and a great site for aerial applications of VectoLex.

“For the price and ease of use, we have found VectoLex to be the best product,” said Sam Dickson of the Salt Lake City mosquito abatement district. “It is the only product we have found that provides residual control of mosquitoes but still leaves beneficials to hatch off.”

Dickson has the challenge of controlling mosquito breeding in thousands of flooded acres near the Great Salt Lake. This land

“It is the only product we have found that provides residual control of mosquitoes but still leaves beneficials to hatch off.”

—Sam Dickson, director of Salt Lake City Mosquito Abatement District

borders the city and has the potential of causing problems for residents and visitors to the area. The district uses 1 pound of VectoLex WDG with 1 gallon of water per acre in these habitats.

At this rate, Dickson said they receive more than 21 days of control.

VectoLex WDG Successful in Florida

Mark Latham, director of the Manatee County (Fla.) Mosquito Control District, said his district has opted for aerial applications of VectoLex WDG because of the safety the product provides for organisms around the treated site. “Residents are becoming more environmentally concerned, and VectoLex is a big advantage from a PR standpoint,” Latham said.

Latham has completed two successful aerial applications of the liquid formulation of VectoLex this year. The first was on 40 acres of land with a moderate canopy where he received 100 percent control of larvae for five weeks. The second application was on 200 acres of deserted farmland that had recently been purchased by the city and



county for preservation. Testing at both of these sites showed high pools of *Culex* mosquitoes, vectors that often carry the West Nile virus.

“These areas had a lot of standing water and inspectors were getting high dip counts of *Culex* mosquito larvae,” Latham said. “Three days after the aerial application, we returned and found that the product had given us 100 percent control of mosquito larvae in the area.”

Latham used a low label rate of 0.5 pounds VectoLex WDG to 0.5 gallons water in these areas. This rate allowed his district to save on operational costs with only one trip to treat the site and fewer follow-up applications.

The second aerial application took place in early September, and the county had no sign of larvae in the area until the first of October. Latham said he thinks the shorter residual was due to the area completely drying out the last week of September.

California District Treats Flooded Land

In California, the San Joaquin Mosquito and Vector Control District has a similar problem. Assistant manager Ed Lucchesi said lands flooded for agriculture or duck clubs are a prolific breeding site for *Culex* mosquitoes. Lucchesi said his district also uses an aerial application of 1/2 to 3/4 pound VectoLex with 3 gallons water per acre.

“We are able to penetrate tree and weed canopies at this rate, and have seen 28 days of control with VectoLex,” Lucchesi said.

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Pacific Northwest Districts... (continued from page 1)

said the public is pushing for new mosquito control districts, and many districts are asking their residents for added funding. Districts have also received funding from the Centers for Disease Control and Prevention (CDC) to buy surveillance equipment, but Barron said they are trying not to rely on that money to cover operational costs.

Vector ecologist Kevin Shoemaker of the Benton County (Wash.) Mosquito Control District said surveillance has also been increased in Washington. Although there has been no significant change in their program, they are doing more mosquito pooling and sentinel chicken testing. He said the state has also started public education

campaigns and West Nile virus surveillance.

"Larviciding is a major part of our integrated mosquito management program," Shoemaker said. "We try to get as much control as possible from larvicides before fogging."

Barron agreed that larviciding was the most important tool for his program.

"We rely heavily on larviciding in our district," Barron said. "I just feel like you need to get at the source of the problem first. Plus, it is a cost and efficiency factor for us because we can get a good four weeks control with VectoLex."

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Controlling *Culex* in Canada (continued from page 1)

West Nile virus in the prairies because *Culex tarsalis*, a mosquito species very efficient in transmitting viruses, breeds in both urban and rural settings."

Back has been witness to recent trials of VectoLex®. He said registration of this product is needed in Canada because the current biological larvicides, based on the active ingredient *Bacillus thuringiensis israelensis* (*Bti*), are less effective than *Bacillus sphaericus* products in providing sustained control of mosquitoes in waters laden with organic content. VectoLex has the potential to provide residual con-

Stephen Nicholson, Valent BioSciences sales manager for forestry and public health products in Canada, said the company is anticipating registration of VectoLex next year.

"Many municipalities are awaiting its registration and availability," Nicholson said, noting that, in order for the product to receive registration in Canada, trials of it must cover all possible ecological zones in the country.

Peter DeChant, senior field development scientist for Valent BioSciences, has been conducting these trials with both VectoLex WSP and CG formulations. DeChant cited two trials done in the Richmond area of British Columbia (one in catch basins, the other in ditches)—both of which are comprehensive trials involving multiple replicates and controlled duration.

"We had a very high level of control," DeChant said. Applications were made July 8, and by seven days post-treatment, there was almost 100 percent control of late in-star pupae, he said. This control lasted up to 28 days.

Additionally, trials were conducted in Manitoba to test the kind of control VectoLex could provide in prairie areas. DeChant said the results from tests in highly polluted pools also were very good.

DeChant concluded that the registration of VectoLex in Canada will be a very positive step in controlling the West Nile virus throughout the entire country. "VectoLex is highly effective in extending residual control in catch basins and smaller breeding sites," he said.

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"This health threat must be managed on the long term, and VectoLex will be one of the main tools of future strategies."

—Christian Back, director of research and development at GDG Environnement

trol of 28 days against *Culex* mosquitoes. This will find immediate application in West Nile virus prevention programs.

"VectoLex is a good complement to what is being used in terms of *Bti* products in other types of habitats," Back added. "Surveillance data of the last four years shows that once the West Nile virus has invaded an area, it remains active and may cause epidemics from then on. This health threat must be managed on the long term, and VectoLex will be one of the main tools of future strategies."

MAKE PLANS TO ATTEND AMCA SHOW



As you head down to Savannah for the 70th annual AMCA meeting February 21–26, 2004, don't forget to stop by Valent BioSciences Corporation's booth. Here, you can talk to dedicated sales representatives and larvicide experts about how to control mosquitoes in your wetlands before they become biting, disease-carrying adults. Visit us at booth #13. (You might want to wear your waders. It could get a little swampy.)

Valent BioSciences' Stephanie Whitman Elected to Society of Vector Ecology Board

Senior vector sales representative Stephanie Whitman of Valent BioSciences Corporation has been elected to the board of directors of the Society of Vector Ecology. Whitman will fill the Northwest Region Director's position vacated by Sam Dickson.

"I consider it an honor and look forward to working on the board," said Whitman, who has been with Valent BioSciences for five years.

The Society for Vector Ecology is a professional organization formed in 1968 by a group of individuals involved in vector biology and control programs in California. The Society is committed to solving many complex problems encountered in the field of vector biology and control.

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Penetration Studies Show Extra Value for Granule Products

Aerially Applied Granules Penetrate Virtually All Habitats—Even Dense Vegetation

The results of a recent penetration study conducted by REMSpC Spray Consulting and Pasco County (Fla.) Mosquito Control District show that granular formulations have a much higher penetration rate than their liquid counterparts. This two-year study involved the liquid formulation, VectoBac® 12AS, and the granular formulations, VectoBac G and CG.

The experiments were conducted in Pasco County, located on the west side of the Florida Peninsula near Tampa Bay. An area with diverse habitats and canopies, Pasco served as an ideal testing ground to measure the differences in penetration between the two formulations. The liquid product was tested in 2002, and the experiments were repeated in the same habitats in 2003 using the granular formulations.



were very impressive, though, with up to 80 percent of the product reaching ground level.”

REMSpC Spray Consulting president Bob Mickle said that the increase in penetration of granular products makes it a more efficient choice for habitats with denser canopies. Otherwise, liquid applications are a smarter choice.

“Granules are more costly than liquid products, but if you look at the

three- to four-fold increase in the amount of product that reaches the ground, the extra cost is outweighed by the operational savings you receive from the increased larval control,” Mickle said.

Robinson agreed that granules were less expensive than liquid formulations when the potential for retreatment of habitats within the district was considered.

“It is a whole lot cheaper to do it right the first time than to continue making applications because of poor penetration,” he said.

The researchers set up collection devices above the canopy in each habitat, as well as at ground level. By collecting the material above the canopy and the product that went through to the ground, they were able to determine what percentage of the product penetrated the canopy. In most trials, only a few percent of the liquid formulation was collected at ground level beneath very dense knot grass.

“The corncob-based product (VectoBac CG) was head and shoulders above the liquid,” Robinson said.

The distribution pattern of VectoBac G and VectoBac CG was also tested in the experiments this year. VectoBac CG uses a 10/14-mesh corncob carrier, while the VectoBac G uses a 5/8-mesh corncob carrier. Mickle said the smaller granules tend to spread out more evenly and resulted in a more optimal distribution pattern in the tests.

“We were very impressed with the distribution and penetration of the granules,” Robinson said. “We have even changed our practices in several habitats because of the results of these tests.”

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“The granular formulation results were very impressive, though, with up to 80 percent of the product reaching ground level. We have even changed our practices in several habitats because of the results of these tests.”

—Jim Robinson, director of the Pasco County Mosquito Control District

The tests showed that substantially more granular product reaches ground level than the liquid formulation. While penetration of liquid larvicides is related to drop size, Jim Robinson, director of the Pasco County Mosquito Control District, said the real advantage of granules is seen when they are applied in habitats with thick vegetation.

“We had a habitat with very dense knot grass, and only three to four percent of the liquid formulation made it through the heavy mat created by the grass,” Robinson said. “The granular formulation results

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