

APPLIED BACULOVIRUS AND *ENTOMOPHAGA MAIMAIGA* PROVIDE OUTSTANDING CONTROL OF GYPSY MOTH

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Abstract

Gypchek® (USDA, Forest Service, Washington, DC), a product with the *Lymantria dispar* multi-enveloped nuclear polyhedrosis virus (LdNPV) as the active ingredient, is registered by the USDA Forest Service with the U.S. Environmental Protection Agency as a general use bioinsecticide under the watchful eye of John Podgwaite, USDA Forest Service, Hamden, CT. Strain 203 is an isolate of LdNPV with improved characteristics being developed by James Slavicek, USDA Forest Service, Delaware, OH. In 2003, a considerable area of U.S. government land in Prince Georges County, MD, was infested with gypsy moths and was scheduled to be sprayed with Gypchek. This area included the Beltsville Agricultural Research Center (BARC), represented by Kevin Thorpe, and Greenbelt National Park (GNP), represented by Jil Swearingen. It was decided to use this program to compare Strain 203 against the standard Gypchek. (Strain 203 had been found comparable to Gypchek in lab bioassays and limited ground studies, but the two had not previously been compared by aerial application.) The operational goal of the study was to

compare Gypchek and Strain 203 from the air. The test is considered successful if 203 performs as well as Gypchek. Experimental goals are (1) to compare the second wave levels of LdNPV at sites treated with Gypchek vs those treated with Strain 203; and (2) to delineate the combined impacts of LdNPV and *Entomophaga maimaiga* in the various plots.

The two products were sprayed, each at the rate of 1×10^{12} occlusion bodies per ha, by a rotary-winged aircraft equipped with a Differentially Global Positioning System on 30 April, 2003 under the supervision of Brad Onken, Rod Whiteman, and Karen Felton. The virus preparations were mixed by Podgwaite and his crew. Strain 203 was applied to 153 ha at BARC, while Gypchek was applied to 172 ha at BARC and GNP. The two products gave equivalent levels of control, and a similar "second wave" of virus was observed at evaluation sites in both areas. Late season *E. maimaiga* outbreaks combined with the virus application to cause a combined 99% mortality of collected larvae at Gypchek and 203 sites.