Special Technology Development Program
Progress Report

PROJECT NUMBER: R8-2000-03

PROJECT TITLE: Quality Control of Gypsy Moth Mating Disruption Treatments

PROJECT STATUS: Continuing

EXPECTED PROJECT DURATION: 2 years

EXPECTED COMPLETION DATE OF THE PROJECT: 2001

SUBJECT: Insect Management, Gypsy Moth, Electroantennogram (EAG)

STATUS OF SUBJECT SPECIES: Non-native

PROJECT OBJECTIVES: To evaluate the use of the electroantennogram (EAG) as an operationally usable, relatively inexpensive means of determining the quality of gypsy moth mating disruption treatments. The benefits of this technology include more rapid development and implementation of improved mating disruption formulations, more cost-effective application methods for existing formulations, and the ability to assess the quality of mating disruption applications without costly and time consuming biological evaluations.

BRIEF DESCRIPTION OF THE PROJECT:

In 2000, 8 100-ha plots were established on National Forest land in Virginia. Three different treatment formulations and/or rates were applied aerially to these plots and biological evaluations were conducted according to previously established procedures. Pulley systems were erected within two of the plots so that samples of air at the top of the canopy could be collected. Air within plots treated with each treatment was sampled using an EAG (provided by U. Koch) and the concentration of disparlure was quantified. Emphasis was placed on sampling from plots treated with Hercon Disrupt II flakes applied at 75g (the operational standard) and 37.5g (reduced rate) of active ingredient per hectare. While the statistical analysis of the data at the time of this report is still preliminary, measured disparlure concentrations were clearly lower in the 37.5g plots than in the 75g plots. However, the magnitude of the readings and differences in readings taken in the canopy versus at ground level were dependent on weather conditions, especially wind speed within the forest. A calibration device was purchased and used with the EAG. Because of problems with absorption and re-emission of disparlure from the tubing within the calibrator and the need to greatly reduce the temperature of the emission chamber to lower the emission rate to within the range of atmospheric disparlure concentrations that occur in the field, some additional work will be required with the calibrator. Emission rates from the calibrator at different temperatures will need to be quantified using gas chromatographic procedures before the device can be used to calibrate the EAG. This work will be done by ARS this winter.

CHANGES/ADDITIONS TO ORIGINAL PROJECT SCOPE OR OBJECTIVES: No changes or additions are needed at this time.

FHP LEAD CONTACT:

Name	Affiliation (Office or Dept.)	Phone, E-mail, Fax
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PRINCIPAL INVESTIGATOR:

Name	Affiliation (Office or Dept.)	Phone, E-mail, Fax
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	Thorpe@asrr.arsusda.gov	
		301/5048190

COOPERATORS:

Name	Affiliation (Office or Dept.)	Phone
Uwe T. Koch	University of Kaiserlautern	011-49-631-205-2998
Alexei Sharov	Virginia Polytechnic Institute	540/231-7316
Win McLane	USDA-APHIS,PPQ	
Al's Aerial Spraying		517/834-5067
USDA-APHIS,Insect rearing	USDA-APHIS	
STS-state cooperators		
Deerfield Ranger District	USFS	540/885-8028
Warm Springs Ranger District	USFS	540/839-2521

COOPERATOR INVOLVEMENT:

Name	Role	Time Commitment
Uwe T. Koch	Technical Assistance	30 days
Alexei Sharov	Technical Assistance	120 days
Win McLane	Technical Assistance	14 days
Al's Aerial Spraying	Aerial Spray contractor	4 days
USDA-APHIS,Otis	Insect Rearing	
Deerfield Ranger District	Study Plots	
Warm Springs Ranger District	Study Plots	

PRODUCTS AND DUE DATES: The most important product will be a portable EAG and guidelines for its use to measure gypsy moth pheromone concentration in blocks treated with mating disruptants. Guidelines will be developed and published for the use of EAG-measured pheromone concentrations to assess the quality of treatments and to predict mating disruption treatment efficacy. A commercially-supplied calibration source for use with portable EAGs will be tested and made available for future use.

STATUS OF PRODUCTS/PRESENTATIONS: Disparlure-emitting calibration tubes were developed and certified at a constant release rate and a portable calibration device was purchased and tested. Additional analytical work will be required before the device can be used to calibrate EAGs. This work will be done by ARS, Beltsville this winter. Purchase requests for two portable EAGs were initiated (purchases will not be made with STDP funds). Technical cooperator, Uwe Koch, was funded to bring EAG to the Virginia plots, collect samples, measure disparlure concentrations, and work with calibrator. Pheromone readings in treated plots were conducted over a 5-day period and the data are currently being analyzed. Biological efficacy data from the same plots were collected that can be analyzed in conjunction with the EAG data. Data will provide information about variability among readings taken on consecutive days and at ground level versus canopy. This information will form the basis for planning data collection and experimental design in 2001.

ACCOMPLISHMENTS TO DATE:

Products: Purchase and testing of calibration device

Initiation of purchase of two portable EAG devices

Biological efficacy and EAG data collected in plots treated aerially with disparlure flakes

Publications: Technical publications are planned for the data collected in 2000

Technology Transfer: Data will be reported at the Annual Gypsy Moth Review in Norfolk, Virginia, October 2000

FIRST FISCAL YEAR FUNDED:

FUNDS OBLIGATED FROM BEGINNING OF PROJECT THROUGH CURRENT FISCAL YEAR:

	Item	Requested Funding	Expended Funding	Unused Funding
FIRST YEAR				
Administration	Salary	$ 22,000	$ 22,000	0
	Overhead			
	Travel			
Procurements	Contracting			
	Equipment	$ 5,000	$ 5,000	0
	Supplies	$ 2,000	$ 2,000	0
Year Totals		$ 29,000	$ 29,000	0
SECOND YEAR				
Administration	Salary	$ 22,000		
	Overhead			
	Travel			
Procurements	Contracting			
	Equipment			
	Supplies	$ 2,000		
Year Totals		$ 24,000		
CURRENT YEAR		**Requested FHP STDP Funding**	**Other Source Funding**	**Source**
Administration	Salary	$ 22,000	$ 15,000	ARS
	Overhead			
	Travel		$ 12,000	FHTET/ARS
Procurements	Contracting			
	Treatments		$ 20,000	STS
	Equipment	$ 5,000	$ 20,000	STS/ARS
	Supplies	$ 2,000	$ 2,000	ARS
Year Totals		$ 29,000	$ 69,000	
PROJECT TOTALS				

FUNDS NOT USED FROM PREVIOUS FISCAL YEAR: N/A

Fiscal Year	STDP Funding Allocated	Funds Obligated	Funds Unused

EXPECTED BUDGET FOR NEXT FISCAL:

	Item	Requested FHP STDP Funding	Other-Source Funding	Source
Administration	Salary	$22,000	$ 15,000	ARS
	Overhead			
	Travel		$ 4,000	ARS
Procurements	Contracting			
	Equipment			
	Supplies	$ 2,000	$ 2,000	ARS
	Treatments		$ 20,000	STS
Totals		$ 24,000	$ 41,000	

DIFFERENCE BETWEEN ORIGINAL AND AMENDED REQUESTS AND JUSTIFICATION:
None

STDP FUNDING NEEDED:

Total estimated additional future funding needed beyond the current fiscal year:

Estimated STDP funding needed in remaining year(s) of the project by fiscal year. Show separately the funding to be requested/provided from other sources (extend the table as necessary).

Fiscal Year	STDP Funding	Other-Source Funding	Source
2001	**$ 24,000**	**$ 41,000**	**ARS/STS**