

# Beetle Pheromone Lures Both Sexes

BELTSVILLE, Md. — Agricultural Research Service scientists have discovered a pheromone produced by male Colorado potato beetles — but attractive to both sexes — that may lead to new environmentally sound pest management methods to protect potatoes.

The Colorado potato beetle is the potato crop's most destructive pest, costing growers millions of dollars annually in crop losses and expenditures for synthetic pesticides.

The ARS scientists, led by entomologist Joseph C. Dickens with the Chemicals Affecting Insect Behavior Laboratory in Belt-

sville, Md., reported their discovery in the July issue of the Journal of Experimental Biology.

The Colorado potato beetle rapidly develops resistance to synthetic pesticides, many of which are now being reevaluated by regulators. The pheromone, however, is a natural byproduct of the beetle's metabolism, so the evolution of resistance to it is unlikely. Using the pheromone as a natural chemical for luring and killing the beetles may one day lessen the amount of synthetic insecticides required for pest control.

For 75 years, scientists in the United States, Canada and Eu-

rope have searched for scents that attract the Colorado potato beetle. The generally accepted view had been that a pheromone attractant would be found in females. Thus, the discovery of the attractant in males provides a new model for this beetle's chemical communication.

Since 2000, Dickens has identified several scents based on chemicals in potato plants themselves. Those scents were made into the first experimental plant lures to prove effective in field tests.

Under a cooperative research and development agreement with ARS, Trece, Inc., of Salinas, Calif., hopes to create products based on the newly discovered attractants that will exploit the insects' own communication system. New products based on the technology could include attracticides, or bait lures, formulated with small amounts of killing agents.

The scientists now will conduct more tests to determine when and how products using the pheromone-based attractant will transfer successfully from lab to field.

## 2003 PENNSYLVANIA HOLSTEIN ASSOCIATION CALENDAR OF EVENTS

JANUARY 11	11 00A M DAUPHIN COUNTY ANNUAL MEETING GEO'S FAMILY RESTAURANT HARRISBURG PA
JANUARY 25	11 30A M BRADFORD COUNTY ANNUAL MEETING TROY FIRE HALL, TROY PA
JANUARY 25	11 45A M BUTLER COUNTY ANNUAL MEETING OLD COUNTRY BUFFET BUTLER PA
JANUARY 25	7 00P M HUNTINGDON COUNTY ANNUAL MEETING BETHEL CHURCH PETERSBURG PA
JANUARY 25	7 30P M CLARION/VENANGO ANNUAL MEETING WOLF'S DEN RESTAURANT KNOX PA
FEBRUARY 7-9	PENNSYLVANIA JUNIOR HOLSTEIN CONVENTION HOLIDAY INN, BETHLEHEM PA
FEBRUARY 19-21	PENNSYLVANIA HOLSTEIN CONVENTION HOLIDAY INN, BETHLEHEM PA
FEBRUARY 20	90 <sup>TH</sup> ANNUAL MEETING PA HOLSTEIN ASSOCIATION HOLIDAY INN, BETHLEHEM PA
FEBRUARY 20	7 00P M PA HOLSTEIN CONVENTION SALE HOLIDAY INN, BETHLEHEM PA
MARCH 7	7 00P M SOMERSET COUNTY ANNUAL MEETING BERLIN FIRE HALL BERLIN PA
MARCH 17	7 15P M BLAIR COUNTY ANNUAL MEETING WILLIAMSBURG FARM SHOW GROUNDS, WILLIAMSBURG, PA
MARCH 28	9 30A M PA HOLSTEIN SPRING SHOW FARM SHOW BUILDING, HARRISBURG, PA
APRIL 11	7 00PM M WESTERN PA SPRING SPECTACULAR SALE MERCER COUNTY 4-H PARK, MERCER, PA
APRIL 25	11 00A M PA HOLSTEIN HEIFER SALE PA HOLSTEIN FARM, MIDDLETOWN, PA
JULY 26	10 00A M SOUTHWEST CHAMPIONSHIP SHOW FAIRGROUNDS, UNIONTOWN, PA
AUGUST 9	9 30A M SOUTH-CENTRAL CHAMPIONSHIP SHOW FAIRGROUNDS, SHIPPENSBURG, PA
AUGUST 16	11 00A M WARREN COUNTY HOLSTEIN SALE FAIRGROUNDS, PITTSFIELD, PA
SEPTEMBER 23	9 00A M PA FALL CHAMPIONSHIP SHOW FARM SHOW BUILDING, HARRISBURG PA
SEPTEMBER 24	7 00P M EASTERN ELITE SALE FARM SHOW BUILDING, HARRISBURG PA

<b>10:00 - 10:45</b>	<b>Hooper Inc.</b> Lift and Turn Angle Hitch with 20' Great Plains Grain Drill and 8-Row Case IH Corn Planter	<b>Hooper Inc.</b> Lift and Turn Angle Hitch with 20' Great Plains Grain Drill and 8-Row Case IH Corn Planter
<b>11:00 - 11:45</b>	<b>Binkley &amp; Hurst Bros.</b> Gehl 730 Telehandle with Bale "Push-Off" Gehl Tracked Mini Loader with Material Bucket Gehl 7800 Skid Steer Loader with Attached Silage Mill	<b>Binkley &amp; Hurst Bros.</b> Gehl 730 Telehandle with Bale "Push-Off" Gehl Tracked Mini Loader with Material Bucket Gehl 7800 Skid Steer Loader with Attached Silage Mill
<b>12:00 - 12:45</b>	<b>Case IH</b> New Case IH 1200 12-Row Pivoting Planter	<b>Case IH</b> New Case IH 1200 12-Row Pivoting Planter
<b>1:00 - 1:45</b>	<b>AgCo</b> Fendt Tractors	<b>AgCo</b> Fendt Tractors
<b>2:00 - 2:45</b>	<b>John Deere</b> John Deere's NEW Infinitely Variable Speed Transmission	<b>John Deere</b> John Deere's NEW Infinitely Variable Speed Transmission

<b>10:00 - 10:45</b>	<b>New Holland</b> High Moisture Balage - How To Make Properly, Storage, Use, Benefits to Operation	<b>New Holland</b> High Moisture Balage - How To Make Properly, Storage, Use, Benefits to Operation	<b>New Holland</b> High Moisture Balage - How To Make Properly, Storage, Use, Benefits to Operation
<b>11:00 - 11:45</b>	<b>AgCo</b> Fendt Tractors	<b>AgCo</b> Fendt Tractors	<b>AgCo</b> Fendt Tractors
<b>1:00 - 1:45</b>	<b>John Deere</b> Tomorrow's Technology Has Arrived Today - Hear about the technology that is available to help your productivity and profitability. New IVT Transmissions, GPS applications Catch a glimpse of the Operatorless Tractor!	<b>John Deere</b> Tomorrow's Technology Has Arrived Today - Hear about the technology that is available to help your productivity and profitability. New IVT Transmissions, GPS applications Catch a glimpse of the Operatorless Tractor!	<b>John Deere</b> Tomorrow's Technology Has Arrived Today - Hear about the technology that is available to help your productivity and profitability. New IVT Transmissions, GPS applications Catch a glimpse of the Operatorless Tractor!
<b>2:00 - 2:45</b>	<b>Hooper Inc.</b> New Case IH AFX - Axial Flow Combines for 2003/2004	<b>Hooper Inc.</b> New Case IH AFX - Axial Flow Combines for 2003/2004	<b>Hooper Inc.</b> New Case IH AFX - Axial Flow Combines for 2003/2004

<b>SMALL ROOM</b>	<b>Blue Seal Feeds</b> Rabbit - Dairy Goat - Sheep Nutrition	<b>Blue Seal Feeds</b> Rabbit - Dairy Goat - Sheep Nutrition	<b>Blue Seal Feeds</b> Rabbit - Dairy Goat - Sheep Nutrition
<b>10:00 - 10:45</b>	<b>Sollenberger Silo</b> New innovations in Feed Storage & Handling Tower silo with elevated floors so feed mixer can drive through & be quickly loaded	<b>Sollenberger Silo</b> New innovations in Feed Storage & Handling Tower silo with elevated floors so feed mixer can drive through & be quickly loaded	<b>Sollenberger Silo</b> New innovations in Feed Storage & Handling Tower silo with elevated floors so feed mixer can drive through & be quickly loaded
<b>11:00 - 11:45</b>	<b>NSIA, Inc.</b> Using computers on your farm for field mapping, record keeping, financial management and communication	<b>NSIA, Inc.</b> Using computers on your farm for field mapping, record keeping, financial management and communication	<b>NSIA, Inc.</b> Using computers on your farm for field mapping, record keeping, financial management and communication
<b>1:00 - 1:45</b>	<b>Iron Solutions</b> Determining used farm equipment values by using industry official guides, using the internet to gather trade-in pricing and locate equipment at local and North American dealerships	<b>Iron Solutions</b> Determining used farm equipment values by using industry official guides, using the internet to gather trade-in pricing and locate equipment at local and North American dealerships	<b>Iron Solutions</b> Determining used farm equipment values by using industry official guides, using the internet to gather trade-in pricing and locate equipment at local and North American dealerships
<b>2:00 - 2:45</b>			



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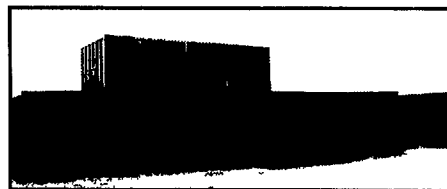
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