Several branches of Rutgers Cooperative Extension have joined forces in investigating a newly emerging economic pest - the **True Armyworm**.

Some of the first steps in an Integrated Pest Management (IPM) plan include proper identification of the larval instars and adults as well as their approximate population densities. While most field and forage crops are out of danger at this time from true armyworm, grass hays, pastures and fall planted grains may still be at risk.

IPM hay and grain producers should first visually monitor the number of larvae found in several square foot or linear samples to determine if a potential threat exists before a decision to spray is made. For economics and environmental stewardship, it is important that this pest must be present in potentially damaging numbers before spraying. The most likely locations to scout are under debris on the ground, alongside fences and edges of fields, especially areas that border grassy strips. Armyworm caterpillars are most active in the evening and attempt to hide during the daylight hours. Early in the morning or late in the evening are the preferred times to scout. Look for little larvae or frass/droppings or evidence of feeding damage. Here in New Jersey, we have limited economic damage threshold information for true armyworm. Our best guess at this time is that an average of 4 per square foot or 2 per linear foot can cause economic damage and treatment may be necessary. If you do not detect any, don't spray preventatively for this pest. That way, you're all winners - your pocketbook or that of your client, the naturally occurring bio-control agents and our environment in general.

Let us know what you're observing and recording in your scouting program. This survey information will help us build an economic threshold for True Armyworm. Please e-mail reports/observations to Donna Foulk at foulk@aesop.rutgers.edu.

As a result of this armyworm outbreak, our extension offices have turned to the IPM Blacklight System to detect these nocturnal pests.
adult moths flying in affected areas statewide. The RCE-IPM field scouting teams of Kris Holmstrom in North Jersey, Frank Spiecker in Central Jersey and Sally Walker in South Jersey provided the blacklight trap specimens for assessing adult moth populations. The combined data from these 25 sites was mapped using Global Positioning System (GPS) and Geographic Information System (GIS) technology and graphically presented by Marilyn Hughes of the Center for Remote Sensing. As seen in this graphic, we can use this new technology to locate, analyze and visualize the spatial distribution of the pest on a weekly basis. Hopefully these trap catches will eventually serve as an additional tool for predicting the probability of pest damage later this season, and in future years throughout various parts of our state. At this time, we have no historical baseline of information to compare current trap catches to because this pest has never been reported in such massive numbers for at least 30 years.

This adult survey is a “work in progress” - an initial “recon” expedition against an unexpected “enemy” for the field crop grower. Efforts are being made to expand the monitoring of armyworm adults for next year using this statewide blacklight network of the Vegetable IPM Program and applying results to field crops.

From the maps for the last 2 weeks in July, we see the initial central Jersey surge for the July 16-23 time frame which may reflect the “next generation” of adults with some average nightly trap counts of almost 40 moths per trap, especially Monmouth and Mercer Counties. The next week ending July 30, reveals a shift northward of higher armyworm adult populations to Warren, Hunterdon and Sussex Counties; perhaps related to slightly cooler weather conditions. Assuming most mating occurs at these trap peaks leads to a tentative population prediction of egg laying the first week in August followed by early in-star larvae in the second and third weeks. Look carefully for them now. This pest often occurs in

**See Next Generation on page 3**
IPM Report
Donna Foulk, Warren County Program Associate, IPM

- Continue to scout alfalfa fields for potato leafhoppers. Although leafhoppers tend to decline by mid to late August, the present heat wave may keep some fields at threshold.
- Horse owners should be on the lookout for pastures with high concentrations of white clover. According to Virginia State University forage specialists, horse pastures should not contain more than 25% clover. Clover can harbor a fungus that causes horses to salivate, and excess clover consumption can lead to laminitis and colic.
- Timothy: Cereal rust mites were above economic thresholds in many timothy fields in Maryland and Delaware. Concentrations were also heavy in areas of Pennsylvania and New Jersey. Cereal mites cause timothy to be stunted. Leaves are yellow and tightly rolled. Cereal mites are difficult to dislodge, a hand lens aids in determining their presence. A 24C label for Sevin XLR Plus is available in Maryland, Pennsylvania and Delaware. They are most active in cool weather and will most likely continue to be a problem in first cuttings next spring.
- Corn: Flies and wasps parasitized many armyworms recently collected in Warren County. According to Penn State entomologist, Dennis Calvin, armyworm populations throughout Pennsylvania are collapsing from disease and parasites. He predicts the second generation will be lower than originally anticipated. The armyworms also have a greater variety of plants to choose from this time of year, and populations will be more spread out. Late planted cornfields, however, should be carefully checked for armyworms.
- New Pastures and Grass Hayfields: Scout spring seeded grass hayfields and pastures for stand viability. Many grass hayfields and pastures that were seeded this spring have been poorly established. The prolonged hot, dry period experienced in May prevented many seeds from germinating, and delayed growth of grass seedlings. Many fields have been taken over by broadleaf weeds and foxtail. In many instances, new grass seedlings are not well enough established to use an herbicide.
- Soybeans: Many local soybean fields show symptoms of leaf cupping. Leaf cupping seems to be increasing, and is becoming an annual event in many fields. If cupping is not uniform throughout the fields and is present in a "drift" pattern, it is most likely caused by drift of growth-regulating herbicides such as 2,4-D, Banvel, Distinct, and Clarity that were used on nearby cornfields. If the leaf cupping is uniform, it can be caused by a number of factors, including: the actual post-emergent herbicide itself, spray additives, inert ingredients in the herbicide, weather patterns causing rapid growth, leafhoppers, thrips, or the genetics of the variety. Frequent mowings at a height just above the grasses will reduce weed completion and reduce weed seed formation. Several soybean fields in Warren County show signs of uneven distribution of inoculant. From a distance, these fields exhibit contrasting yellow/green and dark green strips. Plants taken from the dark green areas show good nodulation. Nodules are sparse on plants in the yellow/green areas.

Although there have been no reports to date of two-spotted spider mites being at economic thresholds, hot dry weather can quickly cause infestations. Since mites migrate from nearby areas, the edges of soybean fields should be scouted by tapping plants over white paper. Dislodged mites will look like moving pieces of pepper grains. Infested plants will be stunted, and a stippled, yellow color, and will show rust spots and webbing on the underside of the leaves.

---

Next Generation from page 2

very erratic numbers on a site to site basis. Your specific site reconnaissance is our first line of defense in forecasting future armyworm outbreaks. For general control recommendations, please refer to the 2001 Field Crop Pest Control Recommendations.

A final note: Since Central Jersey was one of the first areas inundated with client calls to extension offices concerning this emergency, a special pheromone-based system at 22 sites was also implemented to selectively monitor male adult moth emergence. Surprisingly few adult moths were captured in the pheromone trap compared to the blacklight trap numbers. Further investigation reveals approximately a 50 to 1 sex ratio in favor of the females (who comprise 98% of the current adult population that are light-trapped - a lot of egg layers and a lot of work for the males if this initial finding from sexing almost 2000 adults holds up in future assessments). For more information, check the RCE website - www.rce.rutgers.edu - under Crop Master or directly through www.cropmaster-icm.com.
**Grass Variety Selection for High Quality Hay Production**

Jeremy W. Singer, Extension Specialist, Field and Forage Crops

Producing a high quality hay package can be a challenge. Weather conditions must be perfect for field curing, and grass maturity should be limited to boot or pre-flower, depending on species, to ensure that the hay has a relatively low fiber content for higher animal digestibility. Most cool-season grasses only produce reproductive tillers in the spring, while the remainder of the growing season they produce mainly vegetative tillers. When grasses develop reproductive tillers, fiber content increases and digestibility decreases. Because weather conditions are out of our control, using variety selection to assist in producing high quality hay can significantly help in spreading out the optimal first harvest window and subsequent harvests.

We established a grass hay research study at the Rutgers Snyder Research and Extension Farm in the fall of 2000 to evaluate the effectiveness of variety selection to extend the harvest window for first cut grass hay. We established an early, medium, and late maturity orchardgrass, smooth bromegrass, and timothy. We did not expect to see a large separation in heading dates this spring because less separation exists the first spring after establishment. We harvested all of the orchardgrass varieties on the same date. There were differences in heading percent, but we did not harvest earlier because of the dry conditions that prevailed during late April until the third week of May. As soon as the rain stopped, we made our first cut on May 29th. We expect to see quality differences, but the samples have not yet been sent out for analysis.

We also cut all three smooth bromegrass varieties on the same date, June 8th, and expect to see quality differences among the different varieties, because of differences in heading percent at first cut. We did cut the early timothy variety before the medium and late maturity orchardgrass, smooth bromegrass, and timothy. We did not expect to see a large separation in heading dates this spring because less separation exists the first spring after establishment. We harvested all of the orchardgrass varieties on the same date. There were differences in heading percent, but we did not harvest earlier because of the dry conditions that prevailed during late April until the third week of May. As soon as the rain stopped, we made our first cut on May 29th. We expect to see quality differences, but the samples have not yet been sent out for analysis.

We also cut all three smooth bromegrass varieties on the same date, June 8th, and expect to see quality differences among the different varieties, because of differences in percent heading at first cut. We did cut the early timothy variety before the medium and late maturity varieties. Richmond timothy was harvested on June 8th, while the other two varieties were harvested on June 18th. The year after establishment, using three species and three varieties within species, we were able to spread out the first cut harvest interval to 20 days. Next year I expect this will be more like 40 to 50 days. Consequently, using this type of management system can markedly improve your chances of producing a high quality hay package for consumption on-farm or for the horse market.

---

**Soil Sampling for Nutrient Deficiencies Detection**


When there is a problem with crop growth in certain areas of a field, some soil tests may be necessary to find the cause. George Rehm, soil scientist with the University of Minnesota Extension Service, suggests collecting three soil samples: one from an area where the crop is growing well; the second from an area where the stunting or abnormal growth is most severe; and the third sample should come from an area where symptoms are just starting to appear. Dr. Rehm says an evaluation of combined results of the analysis of each sample can often identify the cause of a problem, if a nutrient deficiency is the cause.

The soil sampling depth should be the same as for fertilizer recommendations: 0 - 8 inches for immobile nutrients, 0 - 6, 6 - 12, 12 - 24, and 24 - 26 inches deep for mobile nutrients such as nitrogen.

Dr. Rehm adds that this process will provide much more information than analysis of a single sample that is supposed to represent the whole field.

Submitted by Joseph Heckman, Extension Specialist, Soil Fertility.

---

**New Web Site for Farmers and Crop Consultants in NE NJ**

Donna L. Foulk, Warren County Program Associate, IPM

**Location:** www.cropmaster-icm.com

Developed by Rutgers and Penn State Extension Agents in the Penn Jersey Extension Partnership

**Features:**
- Crop scouting schedules for alfalfa, soybeans, corn, and small grains
- Rapid links to crop management information
- Weekly crop reports and emergency pest alerts
- Links to current pesticide tables and charts
- Easily obtainable information about specific crop pests

This site is a very valuable and "user-friendly" source of information.

We would like to include your scouting information on the weekly grain and forage crop alert section of the site, and feature your farm or business as the source of the information. Please contact us by telephone at Rutgers Cooperative Extension of Warren County at 908-475-6503, or e-mail us at fields@cropmaster-icm.com.
Field Crop Alert: Rootworm Beetles

Rootworm beetles can be a serious problem in continuous cornfields. Larvae hatch in June, and feed on corn roots. Damage to roots can cause gooseneck lodging, a disruption of food and water transport in the roots, and an increase in the incidence of root rot diseases.

Scouting
Scout fields for adult Northern and Western Rootworm Beetles several times between late July and mid-August. Sample 40 sets of two plants using an “M” pattern. Carefully count beetles in silks, and then count beetles on leaves from the bottom upwards. In hot weather, be sure to count beetles in the sheath collar at the base of each leaf.

Threshold

<table>
<thead>
<tr>
<th>Species</th>
<th>Rootworm beetles per plant</th>
<th>First-year corn fields</th>
<th>Continuous corn fields*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern</td>
<td>2.0</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Western</td>
<td>1.0</td>
<td>1.5</td>
<td></td>
</tr>
</tbody>
</table>

*Fields in which corn is planted for two or more consecutive years.

Soil Insecticides | Rate/acre |
------------------|-----------|
Lorsban 15G       | 6.7 lb.   |
Fortress 5G        | 2.5 lb.   |
Counter 15G        | 6.7 lb.   |
Mocap 10G          | 8.5 lb.   |
Force 3G           | 3.3-4.1 oz.|
Furadan 4F         | 2 pt.     |

If beetles are above threshold, consider rotating to another crop. This will cause the larvae to starve. A soil insecticide can be used at planting. Insecticides applied at planting (in May), will be in the soil 5-6 weeks before rootworms hatch in June. Insecticides will not eliminate rootworm larvae, but should protect the roots sufficiently to produce a reasonable corn yield. Before using any pesticide, always read the label. Use pesticides only at the recommended time and rates. For a complete list of pesticides, check the current Agronomy Guide.

Control options for fields above threshold:

1. **Crop rotation** - most larvae die from starvation in one year.
2. **At planting insecticide application** - remember the soil insecticide kills the larvae, not eggs, so the insecticide must remain in the soil from the time it is applied until the larvae hatch in June. For registered insecticides, six weeks is near the limit of effectiveness.
3. **At cultivation insecticide application** - this method has the advantage of applying the insecticide closer to the time the larvae will emerge.

Suggested insecticide rates for corn rootworm larvae:

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Furadan 4F</td>
<td>2.5 oz. per 1,000 ft. of row</td>
</tr>
<tr>
<td>Lorsban 15G</td>
<td>8 oz. per 1,000 ft. of row</td>
</tr>
<tr>
<td>Fortress 5G</td>
<td>3.5 oz. per 1,000 ft. of row</td>
</tr>
<tr>
<td>Mocap 10G</td>
<td>6 oz. per 1,000 ft. of row</td>
</tr>
<tr>
<td>Thimet 15G</td>
<td>8 oz. per 1,000 ft. of row</td>
</tr>
<tr>
<td>Force 3G</td>
<td>4-5 oz. per 1,000 ft. of row</td>
</tr>
<tr>
<td>Counter 15G</td>
<td>8 oz. per 1,000 ft. of row</td>
</tr>
</tbody>
</table>

Submitted by Donna Foulk, Warren County Program Associate, IPM.
In the late 1980s, Brown helped to create the Agriculture Economic Reinvestment and Development Initiative (AERDI), which made nearly $20 million in matching grants available to thousands of farmers statewide, providing a critically needed source of capital funds at a crucial time for the industry. An important companion program to AERDI was the $3 million Business Energy Improvement Farm Grants which NJDA helped the Board of Public Utilities to fund in 1998.

In 1999, with New Jersey in the grip of the third worst drought of the century, Brown worked with state legislative leaders and the Governor to develop a $20 million disaster relief package to support those farmers whose crops were decimated by weather.

Brown strongly advocated measures to help the fledgling aquaculture industry, resulting in the passage of the New Jersey Aquaculture Development Act in 1997. The legislation gave NJDA the lead in promoting and developing a state aquaculture industry not only to supplement other agricultural crops produced in New Jersey, but also to help fill the growing gap between seafood demand and wild harvest.

Brown has also developed innovative state/federal partnerships to strengthen agricultural soil and water conservation programs, including cost-sharing programs to help agricultural producers meet a variety of natural resource and environmental challenges.

Brown took the lead in the creation and development of the Horse Park of New Jersey at Stone Tavern in Monmouth County, a unique equine exhibition and competition venue. Under its public/private management partnership, the facility has become one of the finest on the East Coast, drawing competitors from around the nation and the world.

Under Brown’s direction, NJDA’s Beneficial Insect Lab in Ewing, Mercer County, opened in 1985, and has been recognized as a national leader in the biological control of a number of plant and forest pests and diseases. He also authorized the switch from the chemical Sevin for the state’s gypsy moth control program to the biological pesticide, B.t., an equally effective, environmentally friendlier control.

He has also supported efforts to promote the state’s $86 million dairy and livestock industries and protect the state’s livestock from a variety of foreign and domestic animal diseases, including avian influenza, Johne’s disease, Eastern equine encephalitis, and, more recently, West Nile virus, foot-and-mouth disease and “mad cow” disease.

Among the other accomplishments realized during Brown’s tenure were the strengthening of the state Right to Farm Act, the law that protects responsible farmers from unnecessary government restrictions and nuisance legal actions, and to the Farmland
Assessment Act, which provides for taxation based on the agricultural use of the land.

In addition, he worked with the agriculture community to establish the continuing New Jersey Agricultural Leadership Development Program, the Farmers Against Hunger food recovery initiative and the greenhouse film recycling effort.

Born in Fulton, New York and raised on a Massachusetts dairy farm, Brown worked in the agriculture industry, and for 11 years as the Atlantic County agriculture agent, attaining professorship at Cook College before being named Secretary of Agriculture.

With a Bachelor of Science degree in animal science from the University of Massachusetts in hand, Brown earned a master's degree in horticulture from Cook College in 1977.

The State Board of Agriculture, an eight-member body created by statute which serves as the policy-making and general head of NDJA, is responsible for appointing the Secretary of Agriculture, with the approval of the Governor. The search for Brown's replacement will begin shortly. ❐

---

**Weekly Weather Summary**

**Keith Arnesen, Ph.D., Agricultural Meteorologist**

Temperatures averaged much above normal. Extremes were 104 degrees at Hammonton and Canoe Brook on the 10th and 64 degrees at Charlotteburg on the 9th. Weekly rainfall averaged 1.14 inches north, 1.53 inches central, and 1.53 inches south. The heaviest 24 hour total reported was 2.04 inches at Trenton on the 11th to 12th. Estimated soil moisture, in percent of field capacity, this past week averaged 69 percent north, 63 percent central and 47 percent south. Four inch soil temperatures averaged 78 degrees north, 80 degrees central and 80 degrees south.

**Weather Summary for the Week Ending 8 am Monday 8/13/01**

<table>
<thead>
<tr>
<th>WEATHER STATION</th>
<th>RAINFALL WEEK</th>
<th>TOTAL DEP</th>
<th>TEMPERATURE MX</th>
<th>MN</th>
<th>AVG</th>
<th>DEP</th>
<th>GDD</th>
<th>BASE50</th>
<th>MO %FC</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELVIDERE BRIDGE</td>
<td>1.03</td>
<td>21.48</td>
<td>- .12</td>
<td>99</td>
<td>67</td>
<td>80</td>
<td>9</td>
<td>2029</td>
<td>184</td>
</tr>
<tr>
<td>CANOE BROOK</td>
<td>1.20</td>
<td>22.27</td>
<td>- .44</td>
<td>104</td>
<td>69</td>
<td>82</td>
<td>10</td>
<td>2166</td>
<td>318</td>
</tr>
<tr>
<td>CHARLOTTEBURG</td>
<td>.55</td>
<td>19.25</td>
<td>-3.66</td>
<td>98</td>
<td>64</td>
<td>77</td>
<td>8</td>
<td>1777</td>
<td>318</td>
</tr>
<tr>
<td>FLEMINGTON</td>
<td>1.62</td>
<td>28.35</td>
<td>6.41</td>
<td>97</td>
<td>67</td>
<td>78</td>
<td>6</td>
<td>1967</td>
<td>71</td>
</tr>
<tr>
<td>LONG VALLEY</td>
<td>1.87</td>
<td>21.35</td>
<td>-2.26</td>
<td>92</td>
<td>66</td>
<td>76</td>
<td>6</td>
<td>1679</td>
<td>39</td>
</tr>
<tr>
<td>NEWTON</td>
<td>.55</td>
<td>18.82</td>
<td>-2.27</td>
<td>100</td>
<td>67</td>
<td>79</td>
<td>9</td>
<td>1946</td>
<td>263</td>
</tr>
<tr>
<td>FREEHOLN</td>
<td>1.00</td>
<td>21.38</td>
<td>.05</td>
<td>101</td>
<td>71</td>
<td>83</td>
<td>10</td>
<td>2314</td>
<td>290</td>
</tr>
<tr>
<td>LONG BRANCH</td>
<td>.78</td>
<td>21.65</td>
<td>.25</td>
<td>101</td>
<td>70</td>
<td>82</td>
<td>9</td>
<td>2103</td>
<td>158</td>
</tr>
<tr>
<td>NEW BRUNSWICK</td>
<td>2.14</td>
<td>24.64</td>
<td>3.23</td>
<td>101</td>
<td>69</td>
<td>81</td>
<td>8</td>
<td>2173</td>
<td>65</td>
</tr>
<tr>
<td>PEMBERTO N</td>
<td>.70</td>
<td>18.11</td>
<td>-3.52</td>
<td>102</td>
<td>65</td>
<td>81</td>
<td>7</td>
<td>2212</td>
<td>145</td>
</tr>
<tr>
<td>TOMS RIVER</td>
<td>.77</td>
<td>18.99</td>
<td>-3.00</td>
<td>102</td>
<td>68</td>
<td>81</td>
<td>9</td>
<td>2181</td>
<td>245</td>
</tr>
<tr>
<td>TRENTON</td>
<td>3.81</td>
<td>24.65</td>
<td>4.23</td>
<td>99</td>
<td>69</td>
<td>81</td>
<td>6</td>
<td>2287</td>
<td>83</td>
</tr>
<tr>
<td>CAPE MAY COURT HOUSE</td>
<td>1.42</td>
<td>17.87</td>
<td>-1.09</td>
<td>98</td>
<td>70</td>
<td>83</td>
<td>8</td>
<td>2319</td>
<td>241</td>
</tr>
<tr>
<td>DOWNTOWN</td>
<td>1.71</td>
<td>17.08</td>
<td>-2.97</td>
<td>100</td>
<td>68</td>
<td>82</td>
<td>7</td>
<td>2246</td>
<td>31</td>
</tr>
<tr>
<td>GLASSBO RO</td>
<td>1.56</td>
<td>20.65</td>
<td>- .37</td>
<td>100</td>
<td>73</td>
<td>83</td>
<td>8</td>
<td>2470</td>
<td>282</td>
</tr>
<tr>
<td>HAMMONTON</td>
<td>1.70</td>
<td>16.32</td>
<td>-4.74</td>
<td>104</td>
<td>70</td>
<td>83</td>
<td>8</td>
<td>2330</td>
<td>140</td>
</tr>
<tr>
<td>POMONA</td>
<td>.84</td>
<td>15.28</td>
<td>-3.94</td>
<td>103</td>
<td>70</td>
<td>84</td>
<td>11</td>
<td>2248</td>
<td>205</td>
</tr>
<tr>
<td>SEABROOK</td>
<td>1.41</td>
<td>22.89</td>
<td>3.60</td>
<td>97</td>
<td>72</td>
<td>83</td>
<td>8</td>
<td>2429</td>
<td>206</td>
</tr>
<tr>
<td>ATLANTIC CITY MARINA</td>
<td>2.05</td>
<td>15.15</td>
<td>-3.26</td>
<td>95</td>
<td>72</td>
<td>81</td>
<td>7</td>
<td>2285</td>
<td>324</td>
</tr>
<tr>
<td>SOUTH HARRISON</td>
<td>1.55</td>
<td>20.96</td>
<td>-0.05</td>
<td>98</td>
<td>72</td>
<td>83</td>
<td>NA</td>
<td>2359</td>
<td>NA</td>
</tr>
</tbody>
</table>

*Some values for Flemington were estimated for the period April-May

WES KLINE — GDD BASE 40 PINEY HOLLOW

Last Week  233  (Ending 8/6/01)
This Week  296  (Ending 8/13/01)