

Kansas Insect Newsletter

For Agribusinesses, Applicators, Consultants and Extension Personnel



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WELCOME TO THE 2011 KANSAS INSECT NEWSLETTER

As we kick off the 2011 Kansas Insect Newsletter series, we introduce the Extension Entomology Team:

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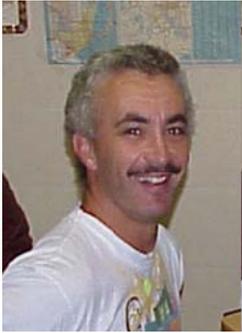
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Spring Has Sprung --- Well, depending on where you are in Kansas

One way of assessing the current weather status/conditions in Kansas is by comparing the accumulated thermal units/Growing Day-degrees in various portions of the state. Growing Degree-Days for a 24 hour period are determined by averaging the daily high and low temperatures, and then subtracting a "threshold temperature". Because the development of most insects and mites is limited below 50°F, 50°F is commonly used as the base temperature for GDD calculations.

Example: the official high and low temperatures for Manhattan, KS, on Monday of this week were 54°F and 34°F, respectively. The daily average temperature was only 44°F ---- below the 50°F base temperature. On Tuesday, the official high and low temperatures were 74°F and 26°F, respectively. The daily average was 50°F. Despite the high daytime temperatures which would have seemingly favored egg development, there were no accumulated GDD's. On Wednesday, the official high and low temperatures were 71°F and 48°F, respectively. The daily average (59.5°F) exceeded the 50°F base temperature and thus 9.5 thermal units were available.

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Accumulated thermal units/Growing Day-degrees as of yesterday, April 7, 2011, for the 4 corners of the state, the center of the state, and Manhattan were:

Baxter Springs (SE) – 190.5

Elkhart (SW) – 162.5

White Cloud (NE) – 99.5

Elwood (NE) – 106

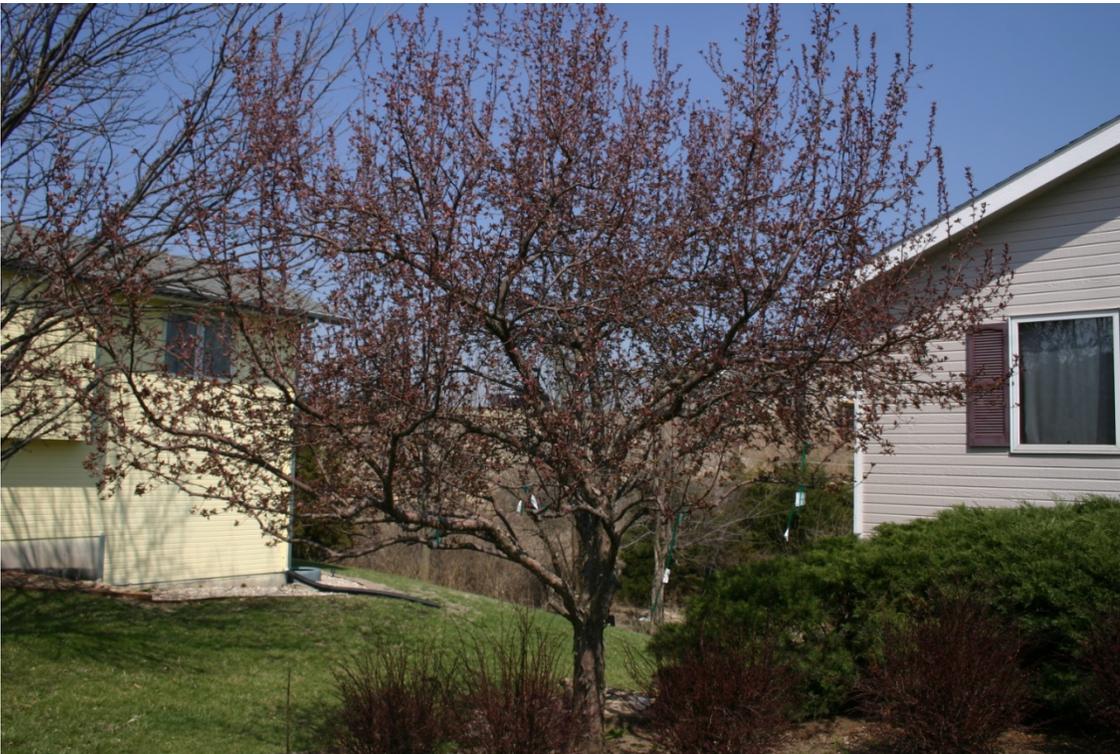
Saint Francis (NW) – 57

Ellsworth (Central) – 125.5

Manhattan – 125

It is evident, then, that when speaking of the initiation of insect activities, one must take into consideration their location within Kansas. While the recent rollercoaster ride of up and down temperatures may have had people asking whether Spring will ever arrive, insects have not asked that question. At least some of the “usual suspects” (Eastern tent caterpillars and European pine sawflies) are right on target.

Eastern tent caterpillar (ETC) activities began in the Manhattan area on Wednesday, March 23.



In comparison to other years, first observed emergence indicated that our Spring is pretty much on time (Table 1).

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March 16	March 20	March 21	March 23	March 23	March 26	March 28	March 29	March 30	March 31
2007	2002	2004	2009	2011	2003	2008	2005	2006	2010

Table 1

Larvae have emerged from 5 of the 6 egg masses under observation (Figures 1-6). Images taken 4/02/11.



Figure 1 – Hatch: 3/23 – 9 days old

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Figure 2 –Hatch: 3/29 – 3 days old



Figure 3 – Hatch: 3/30 – 2 days old

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Figure 4 – Hatch: 3/30 – 2 days old



Figure 5a – Hatch: 4/1 – 1 day old

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Figure 5b

What is interesting to note is that (in the last instance) larvae which usually construct their “first home” in close proximity to their egg mass (Figure 5a), chose to move to a nearby branch “junction”(Figure 5b).

As you know from previous years’ Newsletters, Eastern tent caterpillars leave their web masses/tents to forage on nearby foliage. Some people might wonder if the “wanderers” might lose their way home. Well, unlike Hansel-and-Gretel of Grimms Brothers fame who initially used white pebbles as trail markers, ETCs produce a

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white silken trail to lead them back home (Figures 6a and 6b).



Figure 6a



Figure 6b

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Whether or not a person has concerns about Eastern tent caterpillars, they are, at least, interesting and industrious little creatures. If a person wishes to eliminate them, simply use your fingers to remove the unsightly web mass/tent. Preferably, do this during daylight hours when most caterpillars are congregated in their tents as they rest in preparation for the upcoming evening's foraging activities.

European pine sawfly activities also are underway. They overwinter as eggs inserted into needles that previous fall. During the fall and winter, egg-laden needles can be identified by the rusty discolorations which conceal the eggs which lie within the confines of the needles (Figure 7a and 7b).

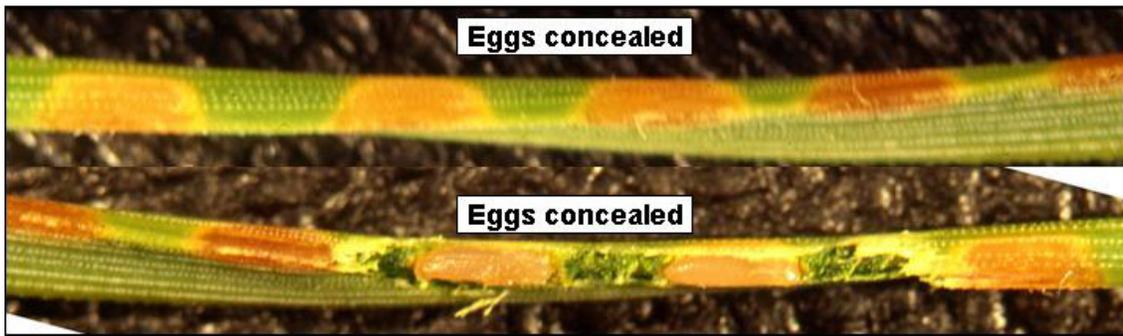


Figure 7

Despite cool late winter and early spring temperatures, embryonic development proceeds as evidenced by swollen eggs (Figure 8a) which eventually become darkened (Figure 8b) just prior to hatching (Figure 8c) and

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freeing the new hatchling (8d).



Figure 8

The first observed 2011 emergence was Sunday, April 3. As with the aforementioned Eastern tent caterpillars, this initial emergence was pretty much on schedule (Table 2).

March 19	March 23	March 26	March 30	April 1	April 2	April 3	April 7	April 16
2009	2007	2004	2005	2003	2006	2011	2010	2008

Table 2

Figures 9a and 9b were taken April 6. However, there are many more eggs that have not yet hatched. So this is just the beginning of their period of mischief.



Figure 9a

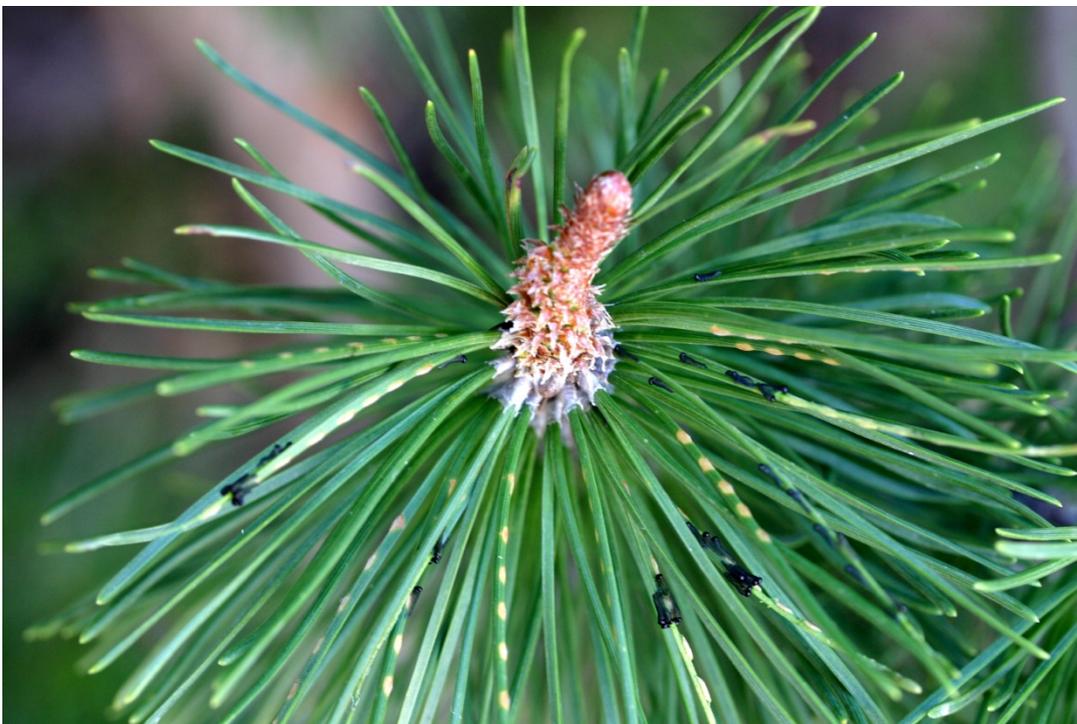


Figure 9b

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Usually European pine sawfly larvae go unnoticed during their early developmental stages. It is not until a couple weeks later and the appearance of “browned terminals” contrasted against normal-appearing foliage (Figures 10) that people may notice something amiss.



Figure 10

The reason for the “browned needles” is desiccation. Small larvae cluster around individual needles. Possessing but small mouthparts, they content themselves with consuming only the tender needle tissue (figure

11a), but ignoring the needle midrib.



Figure 11a

The resultant is that the midribs dry out and become distorted/twisted (Figure 11b).



Figure 11b

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In an additional 2-3 weeks when larvae attain sufficient size and capability, entire needles will begin to disappear as they nub needles down to needle sheaths (Figure 12).



Figure 12

With additional time, larvae consume increasing amounts of food/needles to sate their ravenous appetites as they near the end of their feeding cycle (Figure 13),



Figure 13

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and at the point when they cease feeding, the pine (no species is exempt) has a very sparse appearance (Figure 14).



Figure 14

It goes without saying that people become alarmed at the appearance of denuded branches.

However, damage can easily be prevented by eliminating larvae before they reach their ravenous stage. European pine sawfly larvae are easily eliminated with organically acceptable insecticides (horticultural oil, horticultural soap and spinosad products) and a wide array of products containing synthetic active ingredients. It is incumbent on end-users to read product labels to ensure their proper and safe use.

Bob Bauernfeind

Field Crop Update - 8 April

Alfalfa Weevils

Alfalfa weevil larvae were 1st detected in central KS on March 23rd. However, reports of weevil larvae hatching have been received from southeast KS since March 17th. We sampled several fields in Central KS on April 6th and found that weevil larvae were 95% first instars. Only 1 of the fields sampled was at the treatment threshold, 8 larvae/10 stems, or 80% infested. The rest of the fields were only 10% infested (1larva/10 stems).

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At this time, alfalfa weevil populations in central KS are not at 2010 levels. It is recommended to hold off spraying for another 5-6 days and continue sampling.

Pea Aphids

Pea aphids were noted in all alfalfa fields sampled in central KS on April 6th. However, none of the populations were at the treatment threshold. A few lady beetles were noted.

Winter Grain Mites

Reports of winter grain mite feeding in wheat have been received since mid-March. Significant mite feeding on stressed plants may cause a bronze or silvery coloring to the plants when viewed from a distance but probably have little impact on plants that are not stressed. Warm weather and thunderstorms should stop any winter grain mite activity.

Jeff Whitworth

Holly Davis

Tomato Russet Mite...Oh No!!

We have received at least two samples of greenhouse-grown tomatoes infested with the tomato russet mite (*Aculops lycopersicii*), which is an eriophyid mite. Adults are less than 0.3 mm in length (this is very small) and look-like most eriophyids; they are robust, wedge-shaped, and somewhat tapered, resembling cigars with the head and legs located on one end of the body. They also possess two pairs of legs (four total for those who failed math). Tomato russet mite varies in color from translucent, yellow, brown or tan, to pink. Under a microscope (100X power), heavy infestations of the tomato russet mite may appear as dust or mold. Females lay eggs on leaf undersides, on leaf petioles, or on stems near the lower portions of plants. The nymphs that hatch from eggs, which look similar to adults, tend to congregate on leaf edges. Nymphs eventually transition into adults. The life cycle from egg to adult is usually completed in one week under warm temperatures ($\geq 80^{\circ}\text{F}$ or 26°C). Lower plant portions that are heavily-infested or damaged may cause mites (both adults and nymphs) to migrate to new, young leaves. Tomato russet mite populations may spread from plant-to-plant via wind currents or when plant leaves are touching. This mite prefers warm, dry environmental conditions, and may be most abundant from April through September.

Tomato russet mite mainly feeds on greenhouse and/or outdoor grown vegetables in the Solanaceae family including eggplant, peppers, potatoes, and tomatoes. Both the adults and nymphs possess piercing-sucking mouthparts, and feed primarily on stems and the undersides of lower leaves, which causes leaf bronzing. In addition, leaves may turn yellow, wither or curl upward, dry-up, and fall off plants. The damage caused by tomato russet mite typically starts on the lower leaves, and then progresses upward. The type of damage caused by this mite may resemble a nutritional deficiency, plant disease, or water stress.

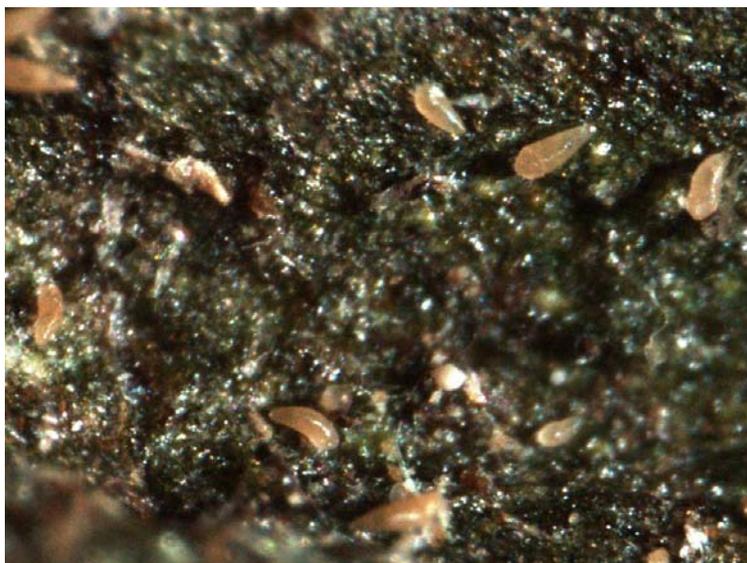
One management strategy that should be implemented in order to reduce potential problems with tomato russet mites is the removal of weeds from the garden, and from within and around the greenhouse exterior. Many weeds are a source of infestation especially those in the night-shade or potato family such as field

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bindweed (*Convolvulus arvensis*) and jimson weed (*Datura stramonium*). Also, be sure to inspect plants routinely, which may prevent outbreaks from occurring. Pesticides or miticides that may have activity on tomato russet mite include sulfur, endosulfan (Thiodan), abamectin (Agri-Mek), and petroleum-based horticultural oils. Be sure to thoroughly spray leaf undersides because this is where most of the life stages (eggs, nymphs, and adults) are located. It is important to read the label (image that) to determine if tomato russet mite populations may actually be “controlled” or suppressed by a particular material. Heavily-infested plants should be discarded immediately.

There are several predatory mites (Type III) that are commercially available, which may feed on populations of tomato russet mite. Be sure to consult with a biological control supplier for more information. So, be on the look-out for this mite in order to ensure that you have a viable crop of “juicy” tomatoes during the season.



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“Whole Lotta Bugging Goin’ On”

-modified song by Jerry Lee Lewis

Raymond Cloyd

Report from the Kansas State University Insect Diagnostic Laboratory:

The following samples were submitted to the Insect Diagnostic Laboratory from April 1st to April 7th.

- April 1 2011 – Riley County – Wolf spider in home
- April 4 2011 – Wyandotte County – Cabinet beetles in home
- April 4 2011 – Wyandotte County – *Lasius* sp. ants in home
- April 4 2011 – Riley County – Grass spider in home
- April 4 2011 – California – Katydid eggs on Japanese maple
- April 6 2011 – Florida – Gaudy sphinx moth around home
- April 6 2011 – Shawnee County – Tomato russet mites on greenhouse tomatoes

If there are any questions regarding these samples or about the identification of any arthropod please contact the Insect Diagnostician at (785) 532-4739 or GotBugs@ksu.edu.

Holly Davis

Sincerely,

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