**Kansas State University Extension Entomology Newsletter**

For Agribusinesses, Applicators, Consultants, Extension Personnel & Homeowners

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**News Corner**



# NEWS CORNER

## Alpha-gal syndrome is on the rise, what should you know?

Alpha-gal syndrome (also known as alpha-gal allergy or red meat allergy) is a food allergy to the carbohydrate galactose-alpha-1,3-galactose, or alpha-gal for short. All placental mammals apart from humans and the Great Apes naturally produce alpha-gal and consumption of their meat and byproducts can cause an allergic reaction in alpha-gal sensitive individuals. Carbohydrates rarely cause allergies, despite this, incidents of alpha-gal syndrome have been increasing dramatically due to tick bites. Alpha-gal is also present in the saliva of some tick species, in the United States, most notably the Lone star tick (*Amblyomma americanum*) (Figure 1 and Figure 2).

Figure 1. Female Lone star tick on the hunt for a meal.

When bitten by the tick, the immune response recognizes the tick derived alpha-gal as a potential antigen and mounts an immune response to it. This immune response culminates in what we see as allergy symptoms when re-exposed to dietary alpha-gal. Symptoms may range in their presence and severity but may include hives or skin rash, nausea, stomach cramps, indigestion, or vomiting, headaches, swelling of the lips, face, tongue, or throat, difficulty breathing and even anaphylaxis (a severe, potentially life-threatening allergic reaction). Due to the time digestion takes, the symptoms often occur a few hours after eating mammal meat such as beef, pork or lamb.  Fatty meats such as pork often induce a stronger response.

If you notice symptoms of allergy after consuming meat, speak to your primary care provider to test your blood for the presence of anti-alpha gal antibodies in your blood. In addition to the risk of allergy from meat consumption, many medical products including vaccines and drug treatments are made in animals or contain animal derivatives. Removing exposure to dietary alpha-gal and reducing tick bites can reduce severity of the allergy over time. Prevention of tick bites is key, when in long grass or shrubbed areas wear long pants and sleeves and apply tick repellants. After outdoor activities check for ticks, especially around skin folds and hidden areas. Remove ticks immediately by grabbing the tick between thumb and forefinger as close to the skin as possible. Using constant pressure, pull the tick away from the body.

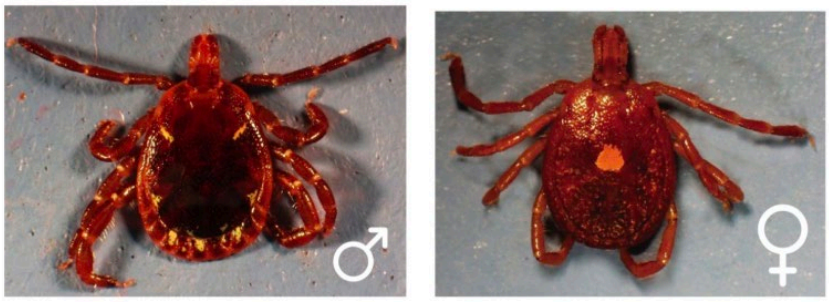


Figure 2. Note that male Lone star ticks do not have the characteristic white spot.

Cassandra Olds – Veterinary and Medical Entomology

HOME

## How Weather Affects Insect Pests

Weather can influence the abundance and population trends of insect pests associated with horticultural crops, such as, ornamentals and vegetables. The two main factors related to weather that promote insect pest population growth or cause insect pest populations to decline are temperature and moisture. This article discusses how temperature and moisture influence insect pest populations.

Temperature affects insect pest development (e.g. life cycle), population growth, and behavior (e.g. feeding and movement). Insect pests are cold blooded or poikilothermic, which means they cannot regulate their body temperature and their internal temperature can vary with the ambient air temperature. Insect pests, as well as other poikilothermic organisms, have optimum temperatures for development. Development rates and the duration of development are shorter at high temperatures (>75°F

Figure 1. Many aphid species prefer temperatures between 55 and 60 degrees Fahrenheit for development (Raymond Cloyd).

or 23.6°C) whereas at low temperatures (<40°F or 4.4°C) development rates and the duration of development increase. The optimum developmental temperature for many aphid species (Figure 1) is between 55 and 60°F (12.6 and 15.4°C). Insect pests, such as, leafminers, whiteflies (Figure 2), and certain caterpillars (e.g. beet armyworm and cabbage looper) develop faster when temperatures are between 85 and 90°F (29.1 and 31.9°C). These same insect pests develop slower when temperatures are less than 40°F (4.4°C). Behavioral activities influenced by temperature during the growing season include: movement (e.g. walking and flying), reproduction, and feeding. When temperatures are greater than 120°F (48.4°C) or less than 32°F (0°C) growth, development, and behavior of insect pests are reduced or suppressed.

Figure 2. Whiteflies develop faster at temperatures between 85 and 90 degrees Fahrenheit (Raymond Cloyd).

Moisture can affect insect pest development and survival. Heavy rainfall can increase the mortality of thrips and aphid populations on horticultural crops by dislodging them from plants and increasing the chances of drowning. Many insect pests do not need to obtain free moisture or water from external sources to survive. Instead, insect pests can obtain water from the plants they feed on. For example, leafminer larvae reside inside plant leaves and when feeding can extract water and nutrients from plant tissue. Relative humidity can affect growth, development, and behavior of insect pests by influencing the ability of insect pests to regulate water loss from their body. A relative humidity below 30% can extend the development time of insect pests.

In general, cool, moist (wet) weather can be harmful to insect pests because cool, moist conditions promote disease (e.g. fungi, bacteria, and viruses) that can increase mortality of insect pests, reduce insect pest growth and development, and inhibit insect pest feeding behavior. However, some insect pests, such as, the seedcorn maggot, *Delia platura*, prefer cool, moist conditions. Although cool, moist conditions can influence winter survival of many insect pests, the moisture can promote the growth of weeds, which serve as a food source for insect pests, including: aphids, leafhoppers, thrips, and whiteflies.

Weather can substantially affect the survival, growth, development, and reproduction of insect pest populations, either directly or by influencing their food source. Many studies have evaluated the interaction between weather and insect pests. It is important to understand how weather can influence insect pest populations, which may effect implementation and effectiveness of plant protection/pest management strategies.

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