

# Colorado Coalition for School IPM Newsletter

August 2017

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## CCSIPM Spotlight: EPA's School IPM Program

### Endorsing a Path to Healthier Schools

By Jim Jones, EPA Assistant Administrator for the Office of Chemical Safety and Pollution Prevention



One of the most rewarding parts of my job as Assistant Administrator (for the Office of Pesticide Programs at the U.S. EPA) is visiting schools that have transformed themselves by reducing the unnecessary exposure of students, teachers, and staff to pests, allergens, and pesticides. Safer, healthier and well-maintained school environments can improve attendance rates, student learning and even school pride. Reduced pesticide use can also save money.

How have these particular schools done it? It all starts with a champion – someone to introduce and advocate for his or her school to change its approach to pest management. This person can be a school superintendent, nurse, plant manager, teacher, or even a parent. Second, the changes can be simple. Very often it's about tackling the source of the pest problem which can remove or reduce the need for pesticide treatments in the future. This approach is

called Integrated Pest Management, or IPM.

With so many success stories popping up, the question was: how can EPA reach the thousands of school administrators, nurses, plant managers, teachers and PTAs across the country to give them information they can use to transform their schools?

Recently we took a huge first step towards meeting this challenge! Twenty national organizations came to Washington, DC to stand with EPA and sign on to help the agency in the effort to reduce the unnecessary exposure of students, teachers, and staff to pests and pesticides.

The goal is to “make IPM practices the standard in all schools over the next three years.” And these partnering organizations agreed to use their vast membership and communication channels to help get sustainable pest management practices adopted in schools across the United States. Here's the impressive list of organizations:

- Allergy and Asthma Network
- Agency for Toxic Substances and Disease Registry
- American Academy of Allergy, Asthma and Immunology
- American Academy of Pediatrics
- American Academy of Sanitarians
- American Association of School Administrators
- Asthma and Allergy Foundation of America
- Centers for Disease Control and Prevention, National Center for Environmental Health
- Children's Environmental Health Network
- Healthy Schools Network
- IPM Institute of North America
- National Association of City and County Health Officials
- National Association of School Nurses

- National Association of State School Nurse Consultants
- National Education Association
- National Environmental Health Association
- National Pest Management Association
- National School Boards Association
- National School Plant Management Association
- Public Health Foundation
- U.S. Environmental Protection Agency

Simple preventive measures like sealing cracks and openings, installing door sweeps, fixing water leaks, and refining sanitation practices can make a school unappealing to pests. Conducting regular inspections, monitoring for pests and pest-conducive conditions, implementing an IPM policy or plan, and providing IPM education for the school community can institutionalize this smart, sensible, and sustainable approach to pest control.

Where preventive measures are not sufficient to eliminate pests, the judicious and careful use of pesticides can complete your school's pest control strategy.

For more information on EPA's School IPM program, visit: <https://www.epa.gov/managing-pests-schools>.

Source: Jones, J. (2016, Jul. 8). "Endorsing a Path to Healthier Schools." [Blog post]. Retrieved from <https://blog.epa.gov/blog/2016/07/endorsing-a-path-to-healthier-schools>.

## Colorado Coalition for School IPM Agency Partner Spotlight: Texas A&M AgriLife Extension Service

### Understanding Your Pest Control Contract and IPM Program Needs

By Janet A. Hurley, MPA  
Extension Program Specialist III - School IPM, Texas A&M AgriLife Extension Service

Do you find your IPM program lacking? Frustrated that you are not getting the services you think you are paying for? Then it's time to look at your pest control bid specifications and make some adjustments. When it comes to pest control program there are three basic goals. First, the program needs to be as safe as

possible, assuring that the program reduces the risk from both pesticides and pests. Second, the program should be effective in eliminating pests as a potential health threat. And finally, the program should be affordable.

The program should be simple and as easy to implement as possible. It shouldn't also rely only on spraying insecticides, the company you hire should be able to determine where the pests are coming from so they can be eliminated, not tolerated.

In Texas, schools have had to abide by state guidelines that require adoption and implementation of IPM practices. Unfortunately, not every school district and pest control contractor understands these concepts. In my experience, too often schools use a standard contract developed by the purchasing department and don't require additional reporting and monitoring by the pest control contractor without giving consideration to price and time. Many of the state mandated IPM programs require the contractor to excessively monitor, seek permission prior to making pesticide applications, and require excessive and elaborate systems for evaluating all the pest management systems. As a result, this often frustrates the customer and pest management professional. Therefore, one of the most important factors in having a successful IPM Program in schools is defining the role of the pest management professional in your IPM program.

The biggest mistake I have observed in working with the different school districts has been the bid process. School districts have not updated bid specifications ten and sometimes, 20 years. Schools are still requesting that their contractor make routine pesticide applications in their kitchens and other sensitive areas. Whether your pest management professional is applying a residual insecticide or uses baits and gels, if they are making applications every time they visit your campuses, the contractor is not practicing integrated pest management.

To keep reading the rest of the story follow the link to <http://schoolipm.tamu.edu/2017/06/05/spn-understanding-the-pest-control-contract/>

EPA Resources; School IPM Program Bid and Contract Guidance (<https://www.epa.gov/managing-pests-schools/integrated-pest-management-tools-resources-support-ipm-implementation#guidance>)

## Featured Pests of the Month: Cockroaches

### Cockroaches in schools and homes

Assefa Gebre-Amlak  
Pest management Specialist  
Colorado State University Extension

Cockroaches are among the most undesirable insect intruders in homes, schools, restaurants, hotels etc. wherever they find food, water and shelter.

In schools, they are commonly found in student cafeteria, kitchen, boiler room, science laboratory, staff lounge, food science laboratory, administration office etc.

They are associated with filth and unsanitary conditions, although they occasionally invade the best-kept homes. Though known to carry various disease organisms, cockroaches have not been associated with any major disease outbreaks in this country. The insects also produce a secretion that has a repulsive odor and can affect the flavor of food. Cockroaches can cause allergic reactions when sensitive people come into contact with contaminated food or house dust.

### Biology of cockroaches

Three cockroach life forms can be found in an infested area. The egg case is the size and shape of a bean and contains 10 to 20 cockroach eggs. The female may carry the eggs around until just before they hatch or, in some species, she may hide them in some protected area. As the eggs hatch, young cockroaches, or nymphs, emerge. Similar in shape and color to the adults, they are smaller and wingless. Their habitats and food preferences are the same as those of adults.

Cockroaches are active at night, so daytime observation is a good sign of a heavy infestation. They prefer protected areas, such as cracks and crevices, to rest and hide. Although cockroaches prefer starchy foods and meats, they will eat anything of plant or animal origin.

### Common species of cockroaches

There are more than 50 species of cockroaches in the United States. However, only five are likely to be found in Colorado.

The **German cockroach** is the most troublesome of all cockroaches. One of the smaller species, 1/2 inch when full grown, it is light brown with a pair of parallel brown bars between the head and the front of the wings (Figure 1). This species usually is associated with buildings where food is prepared or stored. It commonly migrates from infested areas into nearby dwellings or may be carried in on food containers. Favorite home habitats are warm, moist areas, such as kitchen sinks and appliances, bathroom sinks, and furnaces.



**Figure 1:** German cockroach. (Photo from the K. Gray Image Collection, Oregon State University.)



**Figure 2:** American cockroach. (Photo from the K. Gray Image Collection, Oregon State University.)



**Figure 3:** Brown-banded cockroach. (Photo from the K. Gray Image Collection, Oregon State University.)



**Figure 4:** Oriental cockroach. (Photo from the K. Gray Image Collection, Oregon State University.)

The **American cockroach** is the largest pest species found in Colorado — up to 2 inches long. It is mahogany-colored with a yellow margin around the head and around the shield behind the head (Figure 2). Although occasionally found in homes, the American cockroach more commonly is found in warm, moist areas of industrial or commercial buildings. Furnace or boiler rooms, sewers and heat tunnels are favored environments.

The **brown banded cockroach** is similar in size and color to the German cockroach. It can be distinguished by the lack of brown bars on the shield in front of the wings and by the presence of two light bands across the wings and abdomen (Figure 3). It prefers a warmer, drier environment than the German cockroach and often is found in ceilings, light fixtures, furniture and appliances, especially televisions.

The **oriental cockroach** is intermediate in size between the German and the American cockroach and much darker. The adults have wings that do not reach the end of the abdomen (Figure 4). Many consider it the most repulsive common cockroach, primarily due to its strong odor. This species prefers cool, damp, dark areas. For this reason, it often is called a “water bug.” Common habitats include sewer drains, damp crawl spaces, basements and cellars. Infestations are most common in the spring and fall.

The **wood cockroach** prefers the outdoors and usually is found in wood piles, in dead trees and under bark. Attracted to lights, it occasionally enters homes and causes great alarm because it is so easily confused with pest cockroaches. The wood cockroach has a white band that runs around the head and the shield behind the head. Usually it does not survive or multiply indoors.

## Integrated Cockroach Management

The three keys to effective cockroach management are prevention and sanitation, detection and chemical control. Satisfactory cockroach control will not be achieved unless each of these steps is followed.

Cockroaches need food, water and shelter. Water is particularly important, which is why infestations are most common in kitchens and bathrooms. Make any plumbing repairs and modifications needed to eliminate as much standing water as possible.

Do not allow food particles to accumulate in areas accessible to cockroaches. Common feeding areas include unwashed dishes, pet dishes, uncovered pet food containers, litter boxes, waste containers, and areas under refrigerators, stoves, sinks and furniture. Repair faulty plumbing and eliminate unnecessary sources of water. Reduce shelter for cockroaches; do not store unnecessary newspapers, boxes, rags and similar items that provide hiding places.

## Monitoring and detection

Detection is an important element of cockroach control. Cockroaches tend to concentrate in certain areas. Controls are more effective if they are targeted at these spots. Cockroach traps, small, open-ended boxes, contain an attractant and sticky substance that retains the insects once they enter. Use them to locate infestations and to determine when populations require additional treatment. Traps can be effective in catching the occasional invader, but they will not eliminate established colonies. Traps are most effective when placed against walls under sinks, in cabinets and in basement corners. If two nights pass without a capture, move the trap to another likely area.

## Prevention and Sanitation

If cockroaches are migrating into a building or from another part of a building, install weather stripping and caulking where plumbing passes from infested areas into uninfested areas. Eliminate hiding places. For example, caulk cracks and crevices in dark, moist areas to discourage cockroaches. Inspect items brought into a building, especially food containers, furniture, appliances and clothing. The adults and young are easy to recognize. Because some cockroaches glue their egg cases to various surfaces, take particular care to look for the eggs.

## Biological Control

Biological control uses one organism to control another. Where insecticides are undesirable or it is not necessary to eliminate cockroaches completely, consider a biological control program. Such programs have not been popular in the past because many find the biological control agent to be as distasteful as the cockroaches. Additionally, insecticide use would have to be minimized or eliminated, because the beneficial organism often is even more susceptible to insecticides than cockroaches.

Many kinds of organisms attack cockroaches: toads, bacteria, protozoa, beetles, mites and wasps. Parasitic wasps have had the most success. These are tiny insects, harmless to humans that lay their eggs in the cockroach case. The eggs hatch into immature wasps that feed on the cockroach eggs. Wasps can reduce cockroach numbers dramatically and keep them at low levels, but they cannot completely eliminate the problem. Parasitic wasps have been used successfully in nonresidential office buildings and warehouses, but not in residential buildings where there is much less tolerance of cockroaches and other insects.

## Chemical Control

Use of insecticides is recommended as a part of other management practices including detection, sanitation and exclusion. Chemical control always requires consultation and use of professional chemical control services and/or certified pest control professionals once you have detected the presence of active infestation and need for use chemical based on monitoring.

Cockroach insecticides include residual sprays, nonresidual sprays, dusts and baits. Use a combination for effective chemical cockroach control once you have detected the presence of active infestation of cockroaches.

All cockroach insecticide labels contain important instructions and precautions to ensure effectiveness and to protect the safety of humans and pets. Read, understand and follow all label instructions when applying any residual spray, nonresidual spray, dust or bait.

*Source: Whitney Cranshaw: Cockroaches (Colorado State University fact sheet # 5.553).*

## Current Pests: What Are You Seeing?

### Statewide

#### Arapahoe, Douglas, & Elbert Counties

#### Early August

- Honeylocust spider mite: Populations increase rapidly and cause leaf bronzing.
- Peach tree borer: Second treatment may be of benefit if heavy flights persist. Monitor with pheromone traps.
- Spottedwing drosophila: Adult activity high and ripening berries at high risk
- Aster yellows: Peak period of transmission by infective leafhoppers.
- Tobacco (geranium) budworm: Damage to geraniums and petunias accelerates in August.
- Whiteflies: High populations may be present if infested transplants were used in the garden.
- Grasshoppers: Increased number of adults present; migrations to gardens accelerate.
- Cane borers in raspberries: Wilting symptoms are not most evident at this time of year due to cane boring insects.
- Yellowjackets: Nest size and nuisance problems greatly increase over the next month

#### Late August

- Cluster flies: Flies begin to move to buildings seeking overwintering shelter. Seal buildings to avoid later problems.
- Yellowjackets: Nest size and nuisance problems accelerate.
- Elm leaf beetle: Feeding injury by the second generation becomes visible.
- Honeylocust spider mite: Populations normally begin to decline.
- Walnut twig beetle: Adult may begin to move to trunk and excavate overwintering chambers. Trunk treatments may be initiated now.
- Potato/tomato psyllid: High populations often occur on tomato in late summer.
- Spottedwing drosophila: Adult activity high and ripening berries at high risk

- Twospotted spider mite: Expect highest populations and greatest injury at this time.
- Grasshoppers: Migrations to gardens accelerate and may peak.

### Denver Metro Area

#### Early August

- Honeylocust spider mite: Populations increase rapidly and cause leaf bronzing.
- Peach tree borer: Second treatment may be of benefit if heavy flights persist. Monitor with pheromone traps.
- Ips beetles: Reproduction and adult flight may reoccur throughout the season. Reapplication of preventive insecticides may be necessary in high risk sites.
- Aster yellows: Peak period of transmission by infective leafhoppers.
- Tobacco budworm: Damage to geraniums and petunias accelerates in August.
- Whiteflies: High populations may be present if infested transplants were used in the garden.
- Cane borers in raspberries: Wilting symptoms are most evident at this time of year due to cane boring insects.
- Spottedwing drosophila: Adult numbers high and ripening berry crops are at high risk.
- Yellowjackets: Nest size and nuisance problems greatly increase over the next month.

#### Late August

- Cluster flies: Flies begin to move to buildings seeking overwintering shelter. Seal buildings to avoid later problems.
- Yellowjackets: Nest size and nuisance problems accelerate.
- Elm leaf beetle: Feeding injury by the second generation becomes visible.
- Honeylocust spider mite: Populations normally decline.
- Dagger moth: Larvae feed on maple leaves and clip petioles.
- Zimmerman pine moth: Adult emergence, egg laying and egg hatch are expected to occur. First treatment opportunity.

- Kermes scale on oak: Insects are developing rapidly and flagging of infested twigs begins to be visible.
- European elm scale: Yellowed foliage (scale flagging) symptoms begin to occur on heavily infested branches.
- Walnut twig beetle: Adults begin to move into trunks and excavate overwintering chambers.
- Corn rootworms: Adults concentrate on late planted sweet corn and clip silks.
- Potato/tomato psyllid: High populations often occur on tomato in late summer.
- Twospotted spider mite: Expect highest populations and greatest injury at this time.
- Tobacco budworm: Peak injury to flowers
- Spottedwing drosophila: Adult numbers high and ripening berry crops are at high risk.
- Japanese beetle: Larvae develop quickly and feed on roots of turfgrass; adult numbers in decline

### Eastern Plains Counties

#### Early August

- Honeylocust spider mite: Populations increase rapidly and cause leaf bronzing.
- Peach tree borer: Second treatment may be of benefit if heavy flights persist. Monitor with pheromone traps.
- Fall webworm: Peak feeding often occurs at this time.
- White grubs: Egg hatch and initiation of injury by annual white grubs. Optimal treatment timing for these species.
- Aster yellows: Peak period of transmission by infective leafhoppers.
- Whiteflies: High populations may be present if infested transplants were used in the garden.
- Cane borers in raspberries: Wilting symptoms are not most evident at this time of year due to cane boring insects.
- Grasshoppers: As grasshoppers mature and vegetation dries out migration into yards intensifies greatly.
- Squash bugs: Peak injury occurs at this time.
- Yellowjackets: Nest size and nuisance problems

greatly increase over the next month.

#### Late August

- Cluster flies: Flies begin to move to buildings seeking overwintering shelter. Seal buildings to avoid later problems.
- Yellowjackets: Nest size and nuisance problems accelerate.
- Elm leaf beetle: Feeding injury by the second generation becomes visible.
- Honeylocust spider mite: Populations normally decline.
- European elm scale: Yellowed foliage (scale flagging) symptoms begin to occur on heavily infested branches.
- White grubs: Damage by annual white grubs accelerates.
- Corn rootworms: Adults concentrate on late planted sweet corn and clip silks.
- Potato/tomato psyllid: High populations often occur on tomato in late summer.
- Twospotted spider mite: Expect highest populations and greatest injury at this time.
- Squash bug: Second generation populations cause serious damage to winter squash and pumpkin

#### El Paso & Teller Counties

##### Early August

- Honeylocust spider mite: Populations increase rapidly and cause leaf bronzing.
- Peach tree borer: Second treatment may be of benefit if heavy flights persist. Monitor with pheromone traps.
- Aster yellows: Peak period of transmission by infective leafhoppers.
- Tobacco (geranium) budworm: Damage to geraniums and petunias accelerates in August.
- Whiteflies: High populations may be present if infested transplants were used in the garden.
- Grasshoppers: Increased number of adults present; migrations to gardens accelerate.
- Cane borers in raspberries: Wilting symptoms are not most evident at this time of year due to cane boring insects.

- Yellowjackets: Nest size and nuisance problems greatly increase over the next month.

#### Late August

- Cluster flies: Flies begin to move to buildings seeking overwintering shelter. Seal buildings to avoid later problems.
- Yellowjackets: Nest size and nuisance problems accelerate.
- Elm leaf beetle: Feeding injury by the second generation becomes visible.
- Honeylocust spider mite: Populations normally begin to decline.
- Walnut twig beetle: Adults begin to move to trunk and excavate overwintering chambers. Trunk treatments may be useful at this time.
- Potato/tomato psyllid: High populations often occur on tomato in late summer.
- Twospotted spider mite: Expect highest populations and greatest injury at this time.
- Grasshoppers: Migrations to gardens accelerate and may peak.

#### High Country Areas

##### Early August

- Earwigs: Nuisance problems peak.
- Duff millipedes: Frequent peak of household invasions.
- Honeylocust spider mite: Populations increase rapidly and cause leaf bronzing.
- Peach tree borer: Second treatment may be of benefit if heavy flights persist. Monitor with pheromone traps.
- Aster yellows: Peak period of transmission by infective leafhoppers.
- Whiteflies: High populations may be present if infested transplants were used in the garden.
- Cane borers in raspberries: Wilting symptoms are most evident at this time of year due to cane boring insects.
- Yellowjackets: Nest size and nuisance problems greatly increase over the next month.

#### Late August

- Cluster flies: Flies begin to move to buildings

seeking overwintering shelter. Seal buildings to avoid later problems.

- Yellowjackets: Nest size and nuisance problems accelerate.
- Elm leaf beetle: Feeding injury by the second generation becomes visible.
- Honeylocust spider mite: Populations normally begin to decline.
- Pine butterfly: Adult butterflies may be observed to swarm around ponderosa pine following outbreaks.
- Dagger moth: Larvae feed on maple leaves and clip petioles.
- Twospotted spider mite: Expect highest populations and greatest injury at this time.

### Northern Front Range

#### Early August

- Honeylocust spider mite: Populations increase rapidly and cause leaf bronzing.
- Peach tree borer: Second treatment may be of benefit if heavy flights persist. Monitor with pheromone traps.
- White grubs: Injury by larvae of May/June beetles intensifies. Egg laying and egg hatch by annual white grubs. Optimal treatment time for the latter.
- Aster yellows: Peak period of transmission by infective leafhoppers.
- Whiteflies: High populations may be present if infested transplants were used in the garden.
- Cane borers in raspberries: Wilting symptoms are not most evident at this time of year due to cane boring insects.
- Grasshoppers: As grasshoppers mature and vegetation dries out migration into yards intensifies greatly.
- Yellowjackets: Nest size and nuisance problems greatly increase over the next month.

#### Late August

- Cluster flies: Flies begin to move to buildings seeking overwintering shelter. Seal buildings to avoid later problems.
- Yellowjackets: Nest size and nuisance problems accelerate.

- Elm leaf beetle: Feeding injury by the second generation becomes visible.
- Honeylocust spider mite: Populations normally decline.
- Io moth: Late instar larvae are present. These brightly colored caterpillars possess stinging hairs.
- European elm scale: Yellowed foliage (scale flagging) symptoms begin to occur on heavily infested branches.
- Corn rootworms: Adults concentrate on late planted sweet corn and clip silks.
- Potato/tomato psyllid: High populations often occur on tomato in late summer.
- Twospotted spider mite: Expect highest populations and greatest injury at this time.
- Spottedwing drosophilid: Damage to raspberries and strawberries begins to be observed.

### Pueblo & Fremont Counties

#### Early August

- Honeylocust spider mite: Populations increase rapidly and cause leaf bronzing.
- Peach tree borer: Second treatment may be of benefit if heavy flights persist. Monitor with pheromone traps.
- Fall webworm: Peak feeding often occurs at this time.
- Cicadas: Adult singing often peaks.
- White grubs: Egg hatch and initiation of injury by annual white grubs. Optimal treatment time for the latter.
- Aster yellows: Peak period of transmission by infective leafhoppers.
- Whiteflies: High populations may be present if infested transplants were used in the garden.
- Cane borers in raspberries: Wilting symptoms are not most evident at this time of year due to cane boring insects.
- Grasshoppers: As grasshoppers mature and vegetation dries out migration into yards intensifies greatly.
- Squash bugs: Peak injury occurs at this time.
- Yellowjackets: Nest size and nuisance problems

greatly increase over the next month.

#### Late August

- Cluster flies: Flies begin to move to buildings seeking overwintering shelter. Seal buildings to avoid later problems.
- Yellowjackets: Nest size and nuisance problems accelerate.
- Elm leaf beetle: Feeding injury by the second generation becomes visible.
- Honeylocust spider mite: Populations normally decline.
- European elm scale: Yellowed foliage (scale flagging) symptoms begin to occur on heavily infested branches.
- Dog day cicadas: Cicada “singing” continues, begins to decline.
- White grubs: Damage by annual white grubs accelerates.
- Corn rootworms: Adults concentrate on late planted sweet corn and clip silks.
- Potato/tomato psyllid: High populations often occur on tomato in late summer.
- Twospotted spider mite: Expect highest populations and greatest injury at this time.
- Squash bug: Second generation populations cause serious damage to winter squash and pumpkin
- Tarantulas: Mature male tarantulas wander in search of mates.

#### Southwestern Counties

##### Early August

- Earwigs: Nuisance problems peak.
- Duff millipedes: Frequent peak of household invasions.
- Honeylocust spider mite: Populations increase rapidly and cause leaf bronzing.
- Peach tree borer: Second treatment may be of benefit if heavy flights persist. Monitor with pheromone traps.
- Ips beetles: Reapplications of preventive insecticides may be needed on pines in high risk sites
- Whiteflies: High populations may be present if

infested transplants were used in the garden.

- Caneborers in raspberries: Wilting symptoms are most evident at this time of year due to cane boring insects.
- Yellowjackets: Nest size and nuisance problems greatly increase over the next month.

#### Late August

- Cluster flies: Flies begin to move to buildings seeking overwintering shelter. Seal buildings to avoid later problems.
- Yellowjackets: Nest size and nuisance problems accelerate.
- Honeylocust spider mite: Populations normally begin to decline.
- Pine butterfly: Adult butterflies may be observed to swarm around ponderosa pine following outbreaks.
- Potato/tomato psyllid: High populations often occur on tomato in late summer.
- Twospotted spider mite: Expect highest populations and greatest injury at this time.

#### Tri-River Counties

##### Early August

- Honeylocust spider mite: Populations increase rapidly and cause leaf bronzing.
- Peach tree borer: Second treatment may be of benefit if heavy flights persist. Monitor with pheromone traps.
- Fall webworm: Peak feeding often occurs at this time.
- Cicadas: Adult singing often peaks.
- White grubs: Egg hatch and initiation of injury by annual white grubs. Optimal treatment time for the latter.
- Whiteflies: High populations may be present if infested transplants were used in the garden.
- Cane borers in raspberries: Wilting symptoms are not most evident at this time of year due to cane boring insects.
- Grape leafhoppers/Zic-zac leafhoppers: Damage accelerates on grape and Virginia creeper.
- Grasshoppers: As grasshoppers mature and vegetation dries out migration into yards

intensifies greatly.

- Squash bugs: Peak injury occurs at this time.
- Tobacco (geranium) budworm: Peak injury to susceptible flowers (e.g., geranium, petunia) tends to occur at this time.
- Yellowjackets: Nest size and nuisance problems greatly increase over the next month.

#### Late August

- Cluster flies: Flies begin to move to buildings seeking overwintering shelter. Seal buildings to avoid later problems.
- Yellowjackets: Nest size and nuisance problems accelerate.
- Elm leaf beetle: Feeding injury by the second generation becomes visible.
- Honeylocust spider mite: Populations normally decline.
- White grubs: Damage by annual white grubs accelerates.
- Corn earworm: High levels of injury to corn ears and susceptible fruiting vegetables at this time.
- Whitelined sphinx: In some years large numbers of larvae may be observed migrating across rangeland areas.

Source: <http://bspm.agsci.colostate.edu/outreach-button/insect-information/> (Yard/Garden Insect Calendars)

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