

# **"Yellowjackets and IPM"**

**Supplemental Materials  
for  
Integrated Pest Management  
IPM Training Manual**



**MARYLAND DEPARTMENT OF AGRICULTURE  
PESTICIDE REGULATION SECTION  
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ANNAPOLIS, MD 21401**

# ERRATA SHEET AND IMPORTANT NOTICE CONCERNING IPM TRAINING MANUALS AND INFORMATION SHEETS

## BACKGROUND

Legislation was enacted in 1997 mandating that Maryland Public Schools (Grades K-12) develop and implement Integrated Pest Management (IPM) plans for managing pests in public schools. The legislation also mandated schools to develop and implement methods for providing notification to parents and or guardians, as well as, school staff of pesticide use in school buildings. In 1999, this legislation was expanded to require public schools to develop and implement IPM plans and notification of pesticide use on school grounds.

In an effort to assist schools in the initial development and implementation of IPM plans and notification and posting formats, the Maryland Department of Agriculture (MDA) produced several manuals and contracted with the University of Maryland to write four additional manuals. These documents were intended for use by the schools for information and guidance. The documents were never intended to supplant the IPM and notification law and regulations but rather to facilitate implementation of the law. However, there are statements in these documents that incorrectly state the requirements of the law. The Department does not have the funds to republish the manuals and therefore has disseminated this errata sheet to all public school systems in Maryland to ensure that all schools are complying with the law.

**Please note that the IPM in School manuals contain additional statements or information other than the examples listed below that do not uniformly incorporate and provide detail of the statutory mandate of Maryland's IPM and notification of pesticide use in public school buildings or on school grounds law and regulations. Therefore, if you are reading these manuals for training/guidance purposes or when performing pest control services, make sure you adhere to the definition of Integrated Pest Management found in Maryland's Integrated Pest Management and Notification of Pesticide Use in a Public School Building or on School Grounds law and regulations. For more information or questions, please contact the Maryland Department of Agriculture's Pesticide Regulation Section at 410-841-5710**

## ERRATA SHEET

### PLEASE NOTE AND BE AWARE OF THE FOLLOWING:

1. The IPM in Schools manuals produced by MDA and the University of Maryland contain statements that incorrectly state that IPM is an alternative to pesticide application. An example of such a statement can be found in the Preface of the *Integrated Pest Management in Schools: IPM Training Manual*, where it states "Integrated Pest Management (IPM) is an alternative to pesticide use." This statement is incorrect. **IPM is not an alternative** in Maryland's Public Schools (Grades K-12); **it is the required method** of pest control under Maryland's IPM- in-Schools law and regulations."

2. The IPM in Schools manuals produced by MDA and the University of Maryland contain statements that fail to uniformly affirm the statutory mandate that pesticides be used only when “nontoxic options are unreasonable or have been exhausted.” Examples of statements that fail to affirm the statutory mandate can be found 1) on page 6 of the manual entitled *Guidelines for Integrated Pest Management in Schools*, where it states “Pesticides are a component of an IPM program...” 2) on App. A, page 7 on the manual entitled *Contracting Guidelines for IPM Services in Maryland Public Schools* where it states “A broad definition of IPM is a pest control program that... incorporates different methods of pest control such as...and pesticides, when warranted...” and 3) in same manual on p. 17 where it states that “Pesticides play a limited, but important role in and IPM program.” These statements do not reflect the statutory mandate that pesticides may be used only when nontoxic options are unreasonable or have been exhausted. In fact implementing an IPM program with a proper focus on pest prevention may result in a pest management program that does not include the use of any pesticides.
3. The IPM in Schools manuals produced by MDA and the University of Maryland contain some language that fails to provide the correct notice requirements mandated by the IPM-in-Schools law and regulations. An example of such a statement can be found on page 8 of the manuals entitled *Guideline for Integrated Pest Management (IPM) in Schools*, which states “A voluntary registry of individuals with medical problems or conditions who could be adversely affected by exposure to pesticides shall be maintained at the school health or administrative offices, as well as by the contact person.” **Prior notification is not a voluntary option for schools, nor is it limited to individuals with medical problems or conditions.** Both the law and regulations regarding IPM and Notification in public schools buildings and on school grounds **mandate notification** to all parents, guardians and school staff for elementary schools. Middle and High schools may choose to either notify all parents, guardians and staff members or establish a list of parents, guardians and staff members who wish to be notified of pesticide use. The law requires that all parents, guardians and staff be informed of the notification list so they can opt-in.
4. The IPM in Schools manuals produced by MDA and the University of Maryland contain confusing statements regarding a school’s legal obligations. An example of such a statement can be found on page 4 of the manual entitled *Contracting Guidelines for IPM Services in Maryland Public Schools*. The statement reads “In addition, the Governor’s Pesticide Advisory Council has issued the following policy statement regarding IPM in schools...” This statement references a Council that no longer exists and a policy that is not in law or regulation

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# Yellowjackets and IPM



Yellowjackets are social wasps that build enclosed paper nests underground, in trees, and in buildings. The name "yellowjacket" refers to the yellow and black bands of color present on most species. Although their stinging behavior gives them a bad reputation, yellowjackets also play a beneficial role in the environment because they feed their young on enormous quantities of flies, caterpillars, and other insect prey.

Often confused with bees, yellowjackets pose a greater threat to students. Yellowjacket stings are painful and pose health threats to those allergic to their venom. A single yellowjacket can give multiple stings, and if someone disturbs a nest, he or she can be attacked by dozens or even hundreds of aggressive yellowjackets. When one is crushed, it gives off an alarm pheromone that attracts others within a 15-foot radius. A nest can contain hundreds or even thousands of workers, and there can be multiple nests on a school's grounds. Yellowjackets often occur in such numbers that they become a major nuisance, limiting outdoor school activities.



Because of their numbers, the distance they can fly, and how difficult it can be to find their nests, yellowjacket control can be a major challenge. *General insecticide spraying of an area will not*

*control yellowjackets.* Integrated pest management, or IPM, is the only effective way to manage yellowjacket problems and minimize contact between yellowjackets and students. IPM emphasizes nonchemical tactics such as improved sanitation and operational procedures, spring to fall monitoring of yellow-jackets, and, when nontoxic options are unreasonable or have been exhausted, the judicious use of pesticides.

This IPM bulletin provides background information on how to use IPM to manage yellowjacket problems around schools. For more information, refer to the additional resources on yellowjackets referenced on page six. Remember Maryland law and regulations define IPM as a managed pest control program in which methods are integrated and used to keep pests from causing economic, health-related, or aesthetic injury through the utilization of site or pest inspections, pest population monitoring, evaluating the need for control, and the use of one or more pest control methods, including sanitation, structural repair, nonchemical methods, and, when notoxic options are unreasonable or exhausted, pesticides, in order to minimize the use of pesticides; and minimize the risk to human health and the environment associated with pesticide applications.

## Monitoring

The wrong way to deal with yellowjackets is to wait until someone gets stung or until clouds of yellowjackets are buzzing around trash cans and students. IPM needs to be proactive. From spring through the first frost, the IPM technician should be checking school grounds regularly for yellowjacket activity and for conditions attractive to yellowjackets. Yellowjacket activity can be gauged by (1) visually inspecting trash cans, dumpsters, flowering plants, and outdoor food areas and (2) installing a few yellowjacket traps and checking them weekly (see *Trapping*, below). Conditions attractive to yellowjackets include open trash cans, poor trash handling, food spills, flowering plants, soft drinks, recycling bins, and fruit trees.

## *The Importance of Early Season Monitoring and Intervention*

Early intervention can greatly reduce the late season problem with yellowjackets. In late spring and early summer, yellowjacket nests are small with fewer workers. Try to find and eliminate nests before they become large and troublesome.

If yellowjackets are foraging to a specific site, such as a dumpster, you can often track them back to their nest. They tend to leave and enter the nest on the same flight path. They are easiest to see if you stand in the shade and look across an area in full sun. If you see something fly by, continue looking at the same spot. If you see more zip by on the same path, you have probably located the yellowjackets' flight path. Follow them until you find their nest opening. There is often more than one nest, so don't give up when you find the first. Keep checking. Remember that yellowjackets causing a problem on the school grounds could be coming from nests that are not even on school property.

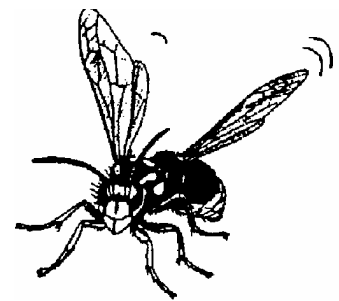
### **Yellowjacket Troubles Peak in September**

Just as students are returning to school in late summer, yellowjackets are at their worst. At this time of year, the yellowjacket colony is at its largest, but its social structure is breaking down. There are no more developing larvae to feed, so workers are foraging randomly for themselves. In the fall, their food interests switch from mainly proteins to mainly sweets. And they become increasingly aggressive in gathering food. They can be a major pest around schools and playgrounds where there are plenty of soft drink cans, drippy ice cream cones, half-eaten bag lunches, and fruit drink boxes.

### **Action Thresholds**

The presence of yellowjackets outdoors is natural. Tolerance to yellowjackets will vary, however, depending on their numbers and the location. One yellowjacket at a trash can requires no action; ten at a picnic table is a different story. IPM programs use the concept of the *action threshold* to trigger a response from the IPM technician. An action threshold is simply the point at which some action must be taken, and it will depend on the site and the pest. For example, you might select a specific garbage can and count the number of yellowjackets foraging there in a given ten minute period. If that number averages around five, and you are getting no complaints about yellowjackets, and no one is getting stung, then no action is necessary. That particular level of yellow jacket activity is acceptable. You might, therefore, set the action threshold at ten. Anytime you counted ten or more

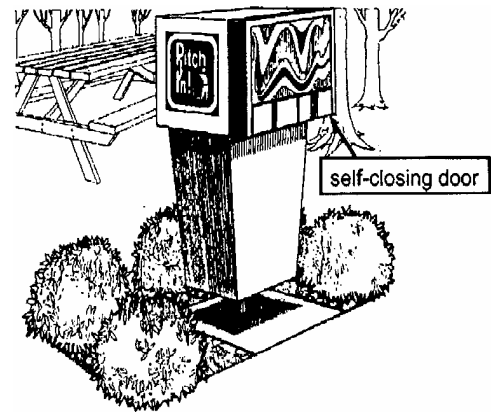
yellowjackets at the trash can in a ten minute period, you would take further action, perhaps increasing trash pickups, power washing trash cans, setting additional yellowjacket traps, or spending an hour or two searching for nests. Hopefully, the activity level at the selected trash can would then drop below the threshold level. Action thresholds require constant fine tuning, and may vary from site to site and month to month.



# Sanitation and Prevention

The best way to reduce the threat from foraging yellowjackets is to minimize or eliminate their access to food in high-risk areas. School maintenance and janitorial staff, kitchen workers, even playground monitors can all help implement the following measures:

- Keep garbage cans and dumpsters well away from doorways and other high traffic areas used by students.
- Make sure dumpsters and garbage cans have wasp-proof, tight-fitting lids to keep yellowjackets out. If necessary, install cans with self-closing lids. Wire mesh and similar trash cans are unacceptable. Use heavier (at least 3-mil) plastic bags inside garbage cans to reduce punctures and leakage.
- Empty schoolyard trash cans frequently, before containers are completely full. They should be emptied at least daily and ideally just after lunch break. The liner bag should be removed and tied off tightly. If necessary, schedule more frequent commercial trash pickup for dumpsters.
- Surfaces where drinks and food are often spilled (picnic tables, benches, playground equipment) should be washed down frequently. A solution of household ammonia diluted with water can be sprayed on surfaces and inside garbage cans to repel yellowjackets. Use ammonia and water only, *never add bleach to this mix or you'll create a toxic gas.*
- Garbage cans and dumpsters should be powerwashed frequently. Consider treating them with a boric acid-based cleaner or the household ammonia dilution described above. Clean the wash-down area or dumpster pad, as well.
- Outside soda machines and the surrounding area should be hosed off regularly. Empty soda cans should be collected regularly.
- Recycling bins require special attention because sugar residues in soft drink cans and bottles are extremely attractive to yellowjackets. Locate the bins away from public areas, empty and wash them frequently. Make sure they have lids.
- Have teachers and food service staff serve sweet drinks in covered cups with drinking straws through the lid. This keeps drinks from spilling and yellowjackets can't get inside the cup and sting students in the mouth. If there are fruit trees or vegetable gardens on the grounds, see that fallen and rotting fruits and vegetables are picked up routinely.
- Fall-blooming bushes and flowers should not be planted in play or activity areas or near doorways.
- A simple way to keep yellowjackets (and other flying insects) away from a limited outdoor site is to use a powerful electric fan. The air turbulence will blow them away from a picnic table or similar-sized site.

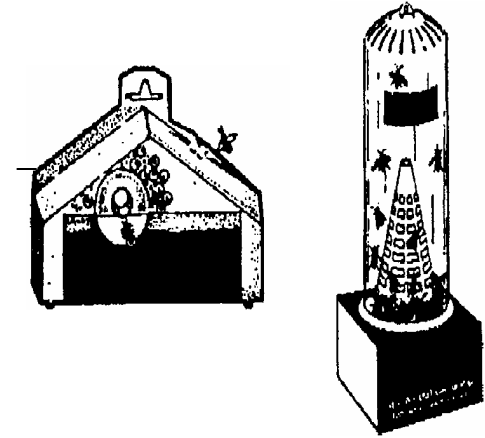


# Trapping

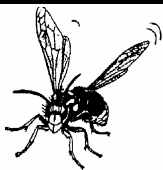
You can't eliminate yellowjackets by trapping, but you can manipulate them by placing traps to draw them *away* from the sites you want to protect.

There are several different types of yellowjacket traps. Some are prebaited, usually with a sweet liquid bait. Some traps drown the yellowjackets; others hold them until they die or you dispose of them. For these traps, adding a sticky board to the bottom will hold the catch. Some traps are disposable, yellowjackets and all. Others are reusable.

Traps placed around the perimeter of picnic areas will draw yellowjackets away from the food and away from the students. Don't be stingy with the traps; you will need lots of traps to get effective population reduction. In general, traps hung low in trees or bushes will be more attractive to yellowjackets than traps in the open. Students should be told to avoid the traps.



## Yellowjacket Highlights



- Yellowjackets build papery, comb nests usually in the ground, also in trees or shrubs, under eaves, or in building voids
- A single queen starts a new nest in early spring.  
*Nests in Maryland are not reused from year to year.*
- As more workers are produced, they enlarge the nest and collect food to feed the young
- A mature nest can contain as many as 5,000 yellowjackets.
- A single yellowjacket can sting repeatedly. Between 1/2 and 1 % of the human population is allergic to yellowjacket venom.
- In fall, worker yellowjackets die and next year's queens look for a place to spend the winter.

Not all yellowjacket species respond equally well to all traps or all baits. Different colonies of the same species will even have preferences. The time of the year also affects bait choice. In the spring and early summer, yellowjackets concentrate on insects and other meat proteins to feed the developing larvae in the nest. At this time, traps can be baited with liverwurst, tuna-flavored cat food, cold cuts, or hamburger. If meat baits are used, they should be changed daily so they don't spoil. Later in the summer, yellowjackets begin switching to sugars and other carbohydrates. In late season, a sweet bait may provide better results. If the trap is not prebaited, try fruit juice, fruit jelly, melted ice cream or grenadine liqueur. Empty traps and change baits frequently, according to the catch and manufacturer's directions.

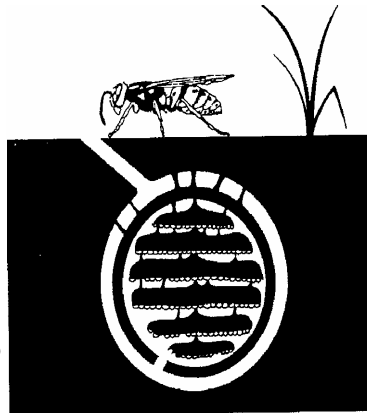
You can even use standard rodent glue boards as yellow jacket traps. Hang them baited with a dab of jelly, near garbage cans or other areas where yellowjackets are a problem but not where students can contact them. (*Note: If a child should get a hand stuck on a glue board, regular cooking oil poured on the glue will dissolve it.*)



## Eliminating the Nest

If you locate a problem yellowjacket nest, you can destroy it in a number of ways. Vacuuming the yellowjackets out of the nest is a non-insecticidal option but should only be done with a special pest control vacuum while wearing full protective clothing and a bee veil. Work quickly, and avoid cutting into the nest as this provides more than one exit for angry wasps. Plug the opening to the bag when removing it in case any yellowjackets are still alive. Put the bag in a deep freeze to kill any living yellowjackets.

Another non-insecticidal option is pouring boiling water into the nest, but this treatment rarely destroys the whole colony.



Nest destruction is usually done with insecticides. There are a wide range of aerosols, liquids, and dusts to treat yellowjacket nests. They are applied directly into the nest opening and so reduce off-target insecticide residues. Make sure the insecticide is specifically labeled for treatment of yellowjacket or wasp nests and follow all directions.



Treatment of the nest should be done in the evening or early morning when all the foraging workers are in the nest. Mark the nest opening so it can be found after dark. Avoid shining a flashlight directly on the nest. Wear a bee suit and veil, if possible, or at the minimum, gloves, long sleeves, and long pants.

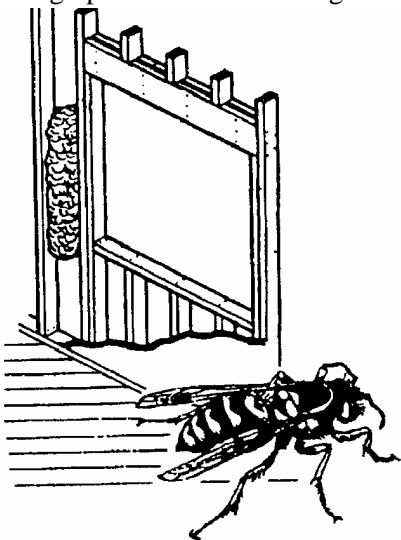
## Indoor Nests...A Special Problem

Yellowjackets (usually the German yellowjacket) can nest in voids inside an interior or outer wall of a building, in ceiling void insulation, even under a floor. Yellowjackets nesting in a building void can chew through plasterboard or emerge through light fixtures inside the building if the nest becomes too large for the

Void, if the nest opening is blocked, or if they are flushed from the nest by an inadequate insecticide treatment.

The yellowjackets entrance hole may be in chinks in brick mortar, around a window frame, vent, or exhaust fan, or where electrical conduits or other utility lines enter the building. But the actual nest site can be located far from the entrance hole, as much as 30 feet away. An insecticide injected into the entrance hole may not reach the nest. You should try to locate the nest in the void by placing a stethoscope, paper towel roll, or just your naked ear against the wall and listening for the buzzing.

If the nest is close to the entrance hole, an aerosol designed for wasp control is one of the quickest and safest methods. The nest opening should be injected when students and other individuals are not in the building. Before injecting any insecticide into the nest opening, make sure



that the insecticide will not blow out of the void into the room on the opposite wall through electrical outlets, vents, or holes.

If the nest is more than a few feet from the entrance hole, or if it can't be located, supplement the aerosol treatment by also injecting an insecticide dust into the nest opening (follow label directions and wear required protective equipment). The dust will move farther back into the void and will also kill yellowjackets as they return to the nest. If the nest has been located far from the opening, a hole can be drilled directly into the nest site and insecticide injected. The entrance hole should be treated, too.

After treatment (wait at least 48 hours), a void nest should be removed if it's possible and not prohibitively expensive. Dead yellowjackets and brood in the nest can cause odor problems and can result in an infestation of scavenger insects that feed on the dead yellowjackets.

## Stings and Allergic Reactions



A normal, nonallergic reaction to a sting is intense, immediate pain at the site of the sting, followed by localized swelling, warmth, and redness. These symptoms usually subside after a few hours but itching at the sting site may continue for days.

Some people have a more intense and dangerous allergic reaction. An allergic reaction can be delayed or immediate. It can include fever, hives, swelling at the site, headache, pain in the joints, and tender lymph glands. Sometimes an allergic reaction starts within minutes of exposure; the skin flushes, hives may appear and the face swells. It becomes hard to breathe, and the victim may feel faint and anxious, with a sense of impending doom. The victim is

## For More Information...

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