PLANT INDUSTRY NEWS

VOL. 12, NO. 4 - JUNE 2013

MS DEPT. OF AGRICULTURE AND COMMERCE - CINDY HYDE-SMITH, COMMISSIONER - JOHN G. CAMPBELL, DIRECTOR

National Survey Focuses on Honey Bee Health

By Kenneth Calcote

The Mississippi Department of Agriculture and Commerce, Bureau of Plant Industry (BPI) will be participating in the 2013 National Honey Bee Survey funded by the United States Department of Agriculture, Animal Plant Health Inspection Service. The survey will test honey bee colonies for a host of bee diseases, parasites, and pests, including exotic pests such as Slow Paralysis Virus, the Asian Honey Bee (*Apis cerana*), and parasitic mites in the genus *Tropilaelaps*. In addition, the survey may provide information on potential causes of Colony Collapse Disorder (CCD), a disorder in which adult bees leave the hive and never return, abandoning the queen and eggs.

Current theories on the cause(s) of CCD and increased mortality generally include Varroa mite parasitism, new or emerging diseases, newly evolved and more virulent strains of Varroa mite vectored bee viruses, sub-lethel pesticide exposures, and poor nutrition. These factors,

Honey Bee Survey, *continued on page 2*

Khapra Beetle: A Threat to Stored Products, Seeds

By Jenny Bibb

The Khapra Beetle, *Trogoderma granarium*, L., is one of the most destructive pests of stored grains and seeds in the world. A native insect of India, it can also be found in countries in the Mediterranean, Middle East, Asia, and Africa. It was discovered in 1953 in the United States in California, New Mexico, Arizona, and Texas and was eradicated from these areas in 1996. It is a small brown beetle (Fig. 1 & 2) about 2-3 millimeters long in size and can sometimes be confused with other stored grain pests. Their life cycle from egg to adult can take anywhere from 26 days to 220 days depending on the temperature and humidity. Adults have a very

Khapra Beetle, *continued on page 3*

Figure 1: Adult Khapra Beetle, *Trogoderma granarium*, L.
Photo from the Pest and Diseases Image Library, Bugwood.org

INSIDE

PLANT INDUSTRY NEWS

The *Plant Industry News* is published quarterly (March, June, September, and December) by the Bureau of Plant Industry, a division of the Mississippi Department of Agriculture and Commerce. Subscriptions are free. For new subscriptions or changes of address, contact Stacey Swain either by E-mail at Stacey@*mdac.ms.gov* with "Newsletter Subscription" in the E-mail subject line, or by telephone at (662) 325-3393. You can also access *Plant Industry News* on the Internet at *http://www.mdac.ms.gov*. Click on the **Publications** link.

BUREAU OF PLANT INDUSTRY

P.O. Box 5207
Mississippi State, MS 39762
Phone: (662) 325-3390
Fax: (662) 325-8397

ADMINISTRATION

Cindy Hyde-Smith
Commissioner

John G. Campbell
Director

Laura Vollor
Deputy Director

Fabian Watts
Seed Division Director

Honey Bee Survey, *continued from front page*

alone or in combination, are thought to suppress the immune system of the bees, making them susceptible to pathogens.

BPI will collect two 1/4 cup composite samples of adult bees and a pollen sample from 24 apiaries that have at least 10 or more colonies. The USDA Agricultural Research Service and the University of Maryland will analyze the bees for pests and diseases and the pollen for pesticide contamination.

The 2013 National Honey Bee Survey will benefit the apiculture industry by guiding the direction of research conducted on honey bee parasites, diseases, pests, and mitigation recommendations.

Contact Kenneth Calcote at (662) 325-8488 for additional information regarding the 2013 National Honey Bee Survey and BPI's Apiary Program.

Kenneth Calcote is Director, Plant Pest Division.
E-mail: Kenneth@*mdac.ms.gov*

A Guide to Termite Treatments for New Construction

By Dr. Blake Layton, Extension Entomology Specialist, Mississippi State University

---

Controlling and repairing termite damage can costs billions of dollars each year in the United States, making adequate termite prevention one of the most important decisions a homeowner can make. It is recommended that all new construction receive a quality termite pretreatment as the first step toward protecting your home from the serious and costly damage of a termite infestation.

The termite pretreatment is a set of insecticide treatments that are applied by a professional pest control company at specific points in the construction process to help prevent termites. Currently, there are two primary methods of pretreating a building for termites:

1) Preconstruction horizontal soil treatment followed by post-construction perimeter treatment, or

2) Borate treatment followed by post-construction perimeter treatment.

Both pretreatment methods involve two separate treatments.

The first treatment is applied early in the building process, either before the foundation is poured or before insulation and inner wall coverings (sheet rock, paneling, etc.) are installed, while the second part of the treatment is applied shortly after the building is completed. It is important to be sure that both treatments are applied at the appropriate stage in the building process.

Preconstruction horizontal soil treatment followed by post-construction perimeter treatment: The first step in this method of termite pretreatment involves treating the soil underneath the building site with an approved termiticide to establish a horizontal barrier of insecticide treated soil immediately underneath the building. This treatment is applied after form boards, rebar, and sub-foundation plumbing are installed and just before concrete is poured for the slab/foundation.

The second part of this pretreatment method is applied after the building is completed and after final grading and landscaping has been completed around the immediate perimeter of the building. Mississippi regulations require that this perimeter treatment be applied within one year of the date that the preconstruction horizontal soil treatment was applied. This perimeter insecticide treatment is the most important component of the termite pretreatment process, and it is important to be sure this treatment is not forgotten.

Typically, perimeter treatments are applied by trenching around the outside of the foundation.

Termite Treatments, *continued on page 5*

Khapra Beetle, *continued from front page*

short lifespan: males live from 7-12 days, and females that have not mated can live from 20-30 days, while females that have mated live for about 4-7 days. A female can produce around 66 eggs from one single mating, but can then produce around 500 eggs if mated for a second time. The eggs start out milky-white, later turning a pale-yellowish color. They are usually cylindrical with one rounded end and one pointed end that bears spine-like projections. Larvae are yellowish-white in color, covered with brown hairs, and can range from 1.6 to 6 millimeters depending on larval stage (Fig. 3). Young larva can only feed on damaged grain, while older larva can feed on whole undamaged grains.

Adults have wings but have not been observed to fly. The most common way of infestations spreading is by movement of infested products (Fig. 4). Khapra beetles are resistant to most insecticides and fumigants; however, methyl bromide treatment at ports still offers control.

The most common way to find an infestation is by finding/observing cast skins within a commodity, such as oats (Fig. 5). The commodities at risk include, but are not limited to, wheat, barley, oats, rye, maize, rice, flour, malt, noodles, and other stored agricultural products including spices, grains, and packaged foods.

Both the adult and larva can go for long periods of time with no food. They can survive in any storage facility as long as protected from the cold. They thrive in average temperatures from 77°F to 95°F and have been known to enter diapause when temperatures drop below 77°F.

Because of its ability to survive without food for long periods, requiring little moisture, hiding in tiny cracks and crevices, and its resistance to many insecticides and fumigants, established infestations are difficult to control. The Mississippi Department of Agriculture and Commerce, Bureau of Plant Industry will be conducting surveys at high risk sites beginning in July to make sure Mississippi is kept free of this pest.

Contact Jenny Bibb at (662) 325-7763 for additional information regarding the Khapra Beetle.
Article Sources: EPPO Quarantine Pest Data Sheets & Hungry Pests Khapra Beetle Quick Facts

---

Jenny Bibb is Branch Director,
Bureau of Plant Industry.
E-mail: JennyB@*mdac.ms.gov*

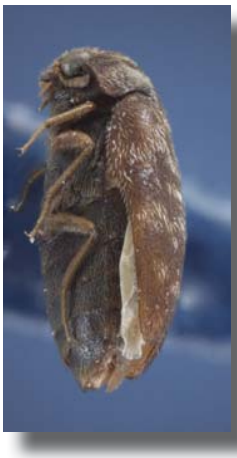

Figure 2 (left): Adult Khapra Beetle & Figure 3 (right): Khapra Beetle Larva
Photo (left) from the Pest and Diseases Image Library, Bugwood.org & Photo (right) by James D. Young, USDA-APHIS-PPQ, Bugwood.org

Figure 4: Cast Skin in Bag of Rice
Photo from the Ministry of Agriculture and Regional Development Archive, Ministry of Agriculture and Regional Development, Bugwood.org

Figure 5: Larvae, Cast Skins, and Adults in Stored Grain
Photo from the Ministry of Agriculture and Regional Development Archive, Ministry of Agriculture and Regional Development, Bugwood.org

WMAAA Accepting Entries for Annual Scholarship Essay Contest

From the Women of the Mississippi Agricultural Aviation Association

---

The Women of the Mississippi Agricultural Aviation Association (WMAAA) invite any Mississippi Agricultural Aviation Association (MAAA) member to sponsor an application for the 2013 WMAAA Annual Scholarship Essay Contest. This year, the essay topic is "The Role Agricultural Aviation has Played in Shaping My Life."

The applicant who can best convey this message will receive a $1,000.00 scholarship toward his or her educational pursuits beyond high school. Active MAAA members may sponsor applicants of any age who have graduated high school prior to the deadline for entry and are enrolled in continuing education during the year of entry. In an effort to attract more applicants, the scholarship is open to any student that would like to apply and is no longer restricted to close relatives of MAAA operators, pilot members, or retired operators or pilots who maintain active MAAA memberships. The scholarship is not restricted to students pursuing a "flying career"

either. Any educational pursuit beyond high school is eligible. Previous winners are not eligible.

The deadline for entry is July 1, 2013. Essays must be 1,500 words or less, typed, and double spaced. Topic deviation and/or modification will not be accepted. Papers submitted will be judged on content, theme development, clarity, originality, and proper grammar. All sources used must be cited, and plagiarism will result in immediate disqualification. The author's name, sponsoring company, and company location should not be included in the essay. A separate title page including the author's name, address, e-mail address, telephone number, and sponsor's name, company name, address, and telephone number is required. A photograph of the applicant and short biography should also be attached. Please send a copy of the essay by mail, postmarked by July 1, 2013, to Regina Russell at 273 DP & L Road, Greenville, Mississippi 38703.

The winner will be recognized at the WMAAA 2013 Fall Meeting and 2014 MAAA Convention. In order for the essay to be considered for the Women of the National Agricultural Aviation Association Scholarship Contest, eligible for a $2,000.00 award, applicants must be close relatives of National Agricultural Aviation Association (NAAA) operators, pilot members, or retired operators or pilots who maintain an active membership with the NAAA.

In the event the entries received lack outstanding merit, the WMAAA reserves the right to not award the scholarship.

Contact Regina Russell at (662) 820-9998 for additional information regarding the 2013 WMAAA Scholarship Essay Contest.

Termite Treatments, *continued from page 2*

In cases where concrete porches, walkways, patios, and carports prevent trenching immediately adjacent to the building, holes must be drilled through the concrete at specific intervals so termiticide can be injected into the area where the trench would have occurred. These holes are patched or plugged after the treatment is complete. Treatment of additional areas of the building may be required for buildings with crawl spaces, basements, or hollow masonry foundations. Once this termiticide barrier is established, it is important to assure that it is not disturbed.

Borate treatment followed by post-construction perimeter treatment: Currently, Bora-Care (disodium octaborate tetrahydrate) is the only product approved for this use. The borate treatment is not applied until the building is in the "dried in" stage of construction when the roof, studs, exterior wall sheathing, and other framing elements are in place, but before insulation and interior wall coverings (sheet rock, paneling, etc.) are installed. It only takes a few gallons of finished spray to apply a borate pretreatment, and such treatments are usually applied with small hand pumps or backpack sprayers.

The ultimate goal of a borate treatment is to create a two foot wide zone above the slab, or soil surface, in which all wood surfaces that are exposed at this point in the construction process, as well as all exposed masonry and metal surfaces, have been treated with the borate solution. Termites will not survive in wood that has been treated with disodium octaborate tetrahydrate, nor will they build their mud tunnels over surfaces that have been treated with this product. All of these treated surfaces will eventually be covered once inner walls and flooring is installed.

The second step of this pretreatment process is to apply a post-construction perimeter termiticide treatment as previously described. As with the preconstruction horizontal treatment, this treatment must be applied within one year of the date of the borate treatment.

Other treatment methods are also available:

1) Use of treated wood: According to Mississippi regulations, wood treatment alone may not be used as the only method of termite protection/pretreatment. This does not mean treated wood cannot be used, but only that use of treated wood alone does not constitute an adequate termite pretreatment. Treated wood should be used where appropriate in the construction to provide additional protection against termites and wood decay organisms.

2) Termite baiting systems: Termite baiting systems are sometimes used to treat or protect existing buildings from termites, but baiting systems are not recommended as a standalone termite pretreatment for new construction. However, Mississippi regulations do contain provisions for requesting an exception. Home builders who wish to use baiting systems as the sole method of termite pretreatment must provide the pest control operator with a written request before any other type of pretreatment is applied, and the pest control operator must keep a copy of this request on file.

3) Physical barriers: Physical barriers are not recommended as stand-alone termite pretreatments either. However, physical barriers such as termite shields, termite-proofing collars, and other barriers such as stainless steel mesh foundation barriers can be used to enhance overall protection.

By taking necessary precautions such as these, homeowners can take a proactive approach to termite control and prevention. For more details about any of the treatment methods discussed, contact the Bureau of Plant Industry's Pesticide Division at (662) 325-3390.

WPS Provides Protection for Pesticide Handlers

By James Dale

Pesticides have been the subject of much controversy in the United States over the past few decades, and have become a very hot topic in recent years. However, pesticides are an integral part of production agriculture today. Pesticides make it possible for producers to yield the safest and most plentiful food supply in human history, but the use of pesticides does come with risks. Farm worker exposure is a risk that is at the forefront of many environmental issues today. It is very important for agricultural producers to understand what steps they need to take to protect their employees from exposure. By doing this, they are also protecting themselves and their businesses from future incidents. It is also extremely important for the employees to understand and be trained in dealing with pesticides and any issues that may arise from the use of pesticides.

The Environmental Protection Agency has regulations governing the protection of employees on farms, forests, nurseries, and greenhouses to minimize risk from exposure to agricultural pesticides. The Worker Protection Standard (WPS) covers both workers in areas treated with pesticides and employees who handle (mix, load, and/or apply) pesticides in areas for agricultural and horticultural production.

WPS offers the opportunity for growers, workers, and handlers to protect themselves from pesticide exposure. It also requires that

WPS, *continued on page 6*

PERSONNEL NEWS

Nick Brower joined the Bureau of Plant Industry on March 7, 2013, as an inspector, serving Coahoma, DeSoto, Panola, Quitman, Tate, and Tunica Counties. A native of Batesville, he attended Northwest Community College and Mississippi State University majoring in forestry and agricultural pest management. Brower has also worked as a farmer and employee of Panola County Co-op.

WPS, *continued from page 5*

employers train their employees on pesticide safety to prevent injury from pesticide exposure while on the job.

Training is to be conducted in a way that employees can understand with EPA approved materials, including:

1) Format and meaning of information on the pesticide labels, including safety information such as precautionary statements about human health hazards,

2) Toxicity of pesticides and the resulting hazards of exposure, including acute, chronic and delayed effects, as well as heightened sensitization,

3) Routes through which pesticides may enter the body, signs and symptoms of pesticide poisoning, emergency first-aid for pesticide poisoning, and where to obtain sufficient medical care,

4) Routine and emergency protocols for decontamination to include eye flushing, the use and need for personal protective equipment, and recognition and first-aid for heat related illness, and

5) Safety requirements for handling, transporting, and disposing of pesticides, including general procedures for spill clean-up, warnings about taking pesticides or containers home, and an explanation that WPS is designed to protect handlers and workers.

This information is not only vital to protect workers and handlers from pesticide exposure, but it is also important in instructing employees, as well as employers, of what to do if an incident does occur. Because as previously mentioned, the WPS protects everyone involved from incidents that may happen in the future, whether they are growers, workers, or handlers.

Contact James Dale at (662) 325-7773 or visit *http://epa.gov/agriculture/twor.html* for additional information regarding WPS and compliance.

James Dale is Branch Director,
Bureau of Plant Industry.
E-mail: JamesD@*mdac.ms.gov*

Zinnia Zowie, Magellan Bring Summer-long Blooms

By Gary R. Bachman, Extension Horticulturist,
Mississippi State University

When you think of summer blooms in the home landscape, it's hard not to think about zinnias.

A lot of attention has been given to the Profusion and Zahara series of zinnia in summer and fall landscapes. Profusion is a Mississippi Medallion winner and both are All-America Selections. They provide fantastic summer color, but the old-fashioned zinnia elegans with the big, pompom flowers on long stems can be perfect for cutting and bringing inside.

Consider the 2006 All-America Selection Zowie Yellow Flame. The flowers are a fiery bi-color that change color as the flower opens. Multiple layers of yellow-edged petals open to reveal a scarlet-rose center tipped with yellow stamens. Zowie Yellow Flame reaches about 29 inches tall with a spread of up to 24 inches.

Another great choice for the home garden and landscape is the Magellan zinnia series. In 2005, Magellan Coral was an All-America Selection, but the entire series is worthy of this distinction.

Magellan zinnias are shorter and stockier than some of the other Zinnia elegans and have a mature height of about 18 inches. Because of the shorter, thicker stems, the plant does not require staking even though the flowers are enormous. The flowers resemble dahlia-like pompoms and are available in single and mixed colors.

Zinnia Magellan (left) and Zowie Yellow Flame (right)
Photos by Gary R. Bachman

These zinnias actually require very little maintenance during the season. Proper fertilization is critical to maintaining the gorgeous flowers. Apply a slow-release fertilizer monthly to keep nutrition levels constant and deadhead fading flowers to keep the plants tidy and producing new blooms.

These zinnia selections have great vase life and can still look good seven days after you cut them. Follow a few tips when collecting these flowers for the vase.

Always cut early in the morning and select flowers that are not quite fully open. Zinnias will continue to open after they are cut and in water. Carry a small bucket of water with you when collecting these flowers. As soon as you cut a stem with sharp scissors or a knife, place it in the water. Add a floral-life product to the collection bucket to keep the flowers fresh.

Zowie Yellow Flame and Magellan zinnia bloom all summer and fall until frost ends the colorful garden show. Find a place in your garden for these beauties today.

The Vital Role of Agricultural Consultants

By Denise Clanton

Given the diversity of pest and disease pressures in Mississippi, having competent agricultural consultants with proven knowledge and qualifications is invaluable to growers. Consultants often serve as the eyes and ears of growers, helping them overcome obstacles to produce high yields at a minimal expense.

Consultants are trained to recognize and distinguish the signs of insect, weed, and plant disease infestations in a variety of crops, while staying abreast to the latest innovations in herbicides, insecticides, seed varieties, and more. They use this knowledge to advise and make recommendations to growers like establishing application thresholds, recommending pesticide tolerant seed varieties, or finding new insect control for fruits and vegetables. This type of assistance is beneficial not only in maintaining a quality crop, but also in helping to ensure growers take advantage of the most cost productive measures available.

The Mississippi Department of Agriculture and Commerce licenses agricultural consultants working in the State of Mississippi through the Bureau of Plant Industry (BPI). There are 15 total consultant categories under three main focus areas: Entomology, Plant Pathology, and Weed Control. To become a consultant in any, or all, of these areas, an applicant must first qualify to take the examination(s) in his field(s) of interest based on educational and work experience. An applicant must show he has completed college courses in the field(s) in which he plans to work by supplying a copy of college transcripts for approval. According to Mississippi regulations, anyone applying to take an exam(s) must have either a Masters degree or Ph.D. in the field(s) the license will cover. However, an applicant may also qualify with a Bachelors degree if he has completed a minimum of 15 semester hours and worked for a minimum of one year in the field(s) the license will cover.

Once licensed, consultants must attend a minimum of one meeting each year that is approved by BPI and provides continuing education in the appropriate license category or categories in order to renew the license for the following year. A license will not be renewed if it has been expired for longer than three years. In this case, the individual must re-test to begin consulting again.

Contact Denise Clanton at (662) 325-8147 for additional information regarding agricultural consultants or for help with licensing.

Denise Clanton is Branch Director,
Bureau of Plant Industry.
E-mail: DeniseC@*mdac.ms.gov*

Applicator Certifications, License Renewals, and Agricultural Events

Agricultural Meetings, Field Days, and Events

June 25: North Mississippi Dairy Field Day, North Mississippi Research and Extension Center, Verona, (662) 325-2852

June 26: South Mississippi Dairy Field Day, Southwest Events Center, Tylertown, (662) 325-2852

July 11: Research and Demonstration Tour, Pontotoc Ridge Flat Woods Branch Experiment Station, Pontotoc, (662) 489-4621

July 13: Warm Season Forage Tour, South Farm Forage Unit, Mississippi State University, Starkville, (662) 325-7718

July 18: Corn and Soybean Field Day, Capps Center, Delta Research and Extension Center, Stoneville, (662) 686-3232

July 23-27: Mississippi Agricultural Industry Council Annual Convention, Perdido Beach Resort, Orange Beach, Alabama, (662) 325-1269 or (662) 325-3992

July 25-27: Platinum Productions $12,500 Added 4-D Barrel Run, Kirk Fordice Equine Center, Mississippi State Fairgrounds, Jackson, (228) 860-8104

July 30: Rice Field Day, Delta Research and Extension Center, Stoneville, (662) 686-3278

August 2-4: 2013 Wildlife Extravaganza, Trade Mart, Mississippi State Fairgrounds, Jackson, (601) 605-1790

August 22: Sweet Potato Field Day, Pontotoc Ridge Flat Woods Branch Experiment Station, Pontotoc, (662) 489-4621

September 28: North Mississippi Research and Extension Center Fall Garden Tour, North Mississippi Research and Extension Center, Verona, (662) 456-4269 or (662) 328-2111

October 10: Ornamental Horticulture Field Day, South Mississippi Branch Station, Poplarville, (601) 403-8774

October 18-19: Fall Flower and Garden Fest, Truck Crops Branch Experiment Station, Crystal Springs, (601) 892-3731

Commercial Applicator Renewals All Categories - Excluding Aerial

July 9: Central Mississippi Research and Extension Center, Raymond, (601) 857-2284

July 11: Panola County Extension Office, Batesville, (662) 563-6260

July 17: Forrest County Extension Office, Hattiesburg, (601) 545-6083

August 13: North Mississippi Research and Extension Center, Verona, (662) 566-2201

August 15: Delta Research and Extension Center, Stoneville, (662) 686-3205

October 1: Central Mississippi Research and Extension Center, Raymond, (601) 857-2284

October 3: Panola County Extension Office, Batesville, (662) 563-6260

October 9: Coastal Research and Extension Center, Biloxi, (228) 546-1001

November 12: North Mississippi Research and Extension Center, Verona, (662) 566-2201

November 14: Delta Research and Extension Center, Stoneville, (662) 686-3205

PLANT INDUSTRY NEWS

P.O. Box 5207
Mississippi State, MS 39762