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Service

Program Aid  
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# Beekeepers 2006: Don't Transport Imported Fire Ants



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CAUTION: : Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or other wildlife—if they are not handled or applied properly. Use all pesticides selectively and carefully. Follow recommended practices for the disposal of surplus pesticides and pesticide containers.

Issued February 2006

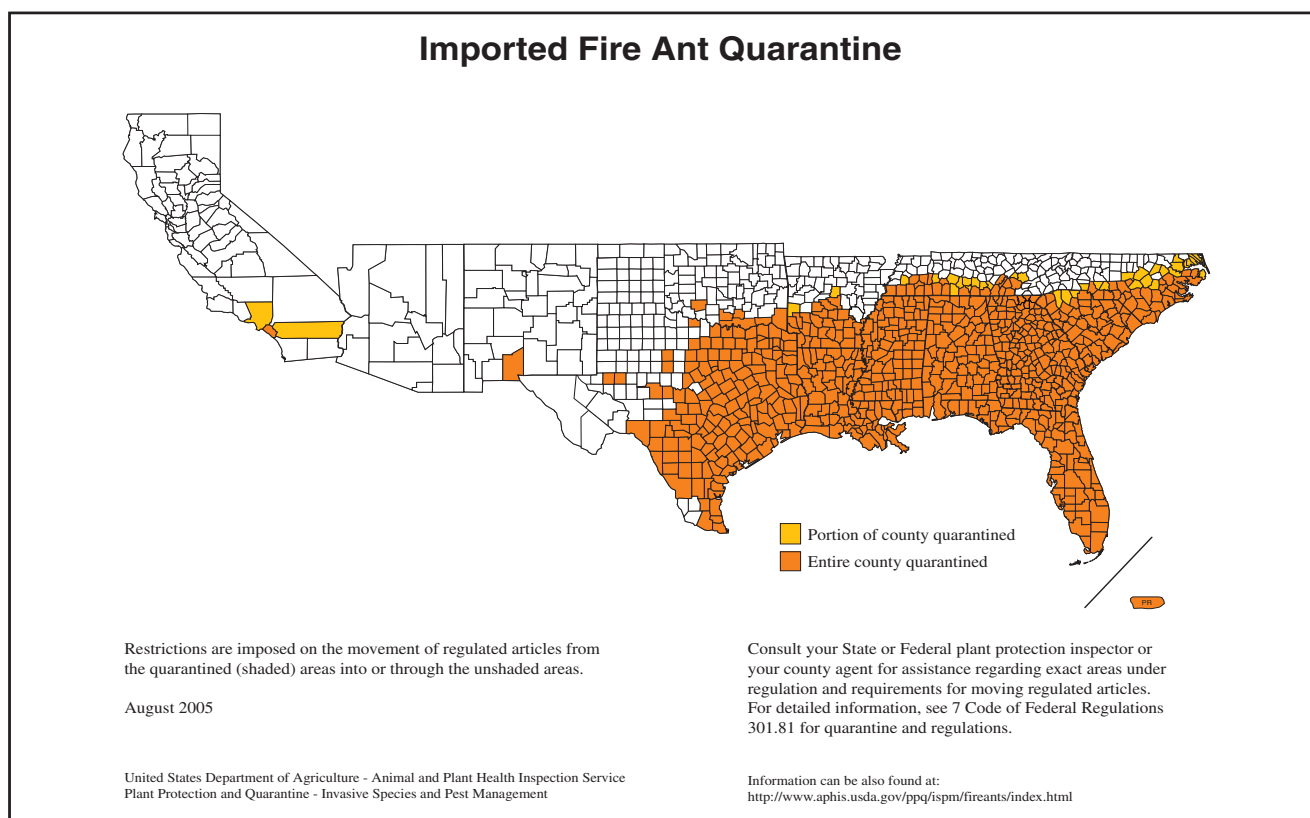
*Illustration credits:* Retired APHIS entomologist Homer Collins wrote Program Aid 1670, the first APHIS brochure published on beekeeping and fire ants. For the 2006 version of that publication, he took the cover shot and the images in figures 4 and 5. Milton Henderson, a retired employee of the Mississippi Department of Agriculture and Commerce, shot the photos used in figures 2 and 3. The remaining images are APHIS file photos. This publication—written by entomologist Dr. Ron Weeks of APHIS, Plant Protection and Quarantine's Center for Plant Health Science and Technology in Gulfport, MS—updates the 1999 brochure.

*Content support:* The Texas Imported Fire Ant Research and Management Plan and the California Department of Food and Agriculture provided information for this publication.

Imported fire ants (*Solenopsis invicta* Buren, *S. richteri* Forel, and their hybrid) have become established across the South and in parts of California and other Western States. Provisions of the Federal Imported Fire Ant (IFA) Quarantine<sup>1</sup> were invoked on May 6, 1958, in an effort to slow or prevent the artificial spread of this foreign pest. Figure 1 depicts the parts of the United States infested with and regulated for IFA as of 2005. The most recent quarantine map is located at <<http://www.aphis.usda.gov/ppq/maps/fireant.pdf>>.

IFAs pose serious threats to people, small animals, crops, and agricultural equipment. In the State of Texas alone, it is estimated that imported fire ants cause about \$300 million worth of damage every year. Furthermore, IFAs can be moved to new, noninfested areas by hitchhiking on interstate commodities. For example, a recent infestation in California's Central Valley was traced to shipments of beehives transported to almond groves.

To prevent such artificial movement, the U.S. Department of Agriculture (USDA) regulates the movement of articles that present a risk of spreading the IFA to areas not currently infested. Regulated articles include soil, baled hay and baled straw stored in



**Figure 1**—Imported Fire Ant Map, 2005.

<sup>1</sup>Quarantine 81, as amended (Title 7, Code of Federal Regulations [CFR], subpart 301.81.)

direct contact with the ground, plants and sod with roots and soil attached that are stored outdoors and are for sale, used soil-moving equipment, and any other article or means of conveyance determined to pose a risk. Beehives fall into the latter category.

Worker ants from IFA colonies can invade beehives and feed on developing bee larvae and pupae, occasionally destroying weakened colonies. Fire ants often nest adjacent to hives or in wooden pallets on which hives are stored (figs. 2 and 3). When IFA colonies or food sources are threatened, fire ants will also sting people and animals repeatedly. Beekeepers can be attacked during hive maintenance operations.



**Figures 2 and 3**—Fire ants frequently nest against hives or in wooden pallets on which hives are placed.

## Avoid Transporting Ants

Keep your colonies healthy and vigorous, and avoid transporting imported fire ants by adopting the following techniques:

- Monitor areas where beehives are to be located and continue monitoring throughout the period that hives remain onsite.
- Correctly identify ants that are present. If you need assistance identifying ants, contact your State apiary inspector (listed on page 12).
- Foraging worker ants are attracted to dead brood and other material near beehives. Discard these materials away from hives.
- To discourage ant colonies from moving into beehives, elevate the hives (or pallets) several inches on bricks or stones.
- Help prevent the spread of IFAs by inspecting hives and eliminating fire ants *before* moving bees to new locations.
- Use high-pressure hoses to wash away fire ant nests from bottom boards, wooden pallets, and similar shipping materials. Do this prior to loading the beehives onto trucks for transport to noninfested areas.

## Insecticides

### General Sanitation

Because bees can be poisoned, insecticides used close to beehives must be applied with care. Many beekeepers use a two-step treatment regimen to deal with fire ants. First, they treat heavily infested areas around hives using IFA bait registered for the site where hives are located. The chemical controls used in step 1 are conventional bait formulas containing hydramethylnon, fenoxycarb, pyriproxifen, or s-methoprene as the active ingredient.

This material should be broadcast-applied according to the label instructions once or twice a year over an area of about 1/2 to 1 acre around hives (fig. 4). Step 1 controls fire ants in the general vicinity of hives. Step 2 involves the application of contact insecticides to individual mounds 3–7 days after bait treatments, to quickly eliminate specific IFA colonies that pose an immediate hazard. The contact insecticides are formulated as granules, liquids, or dusts. Active ingredients include chlorpyrifos, diazinon, permethrin, or other similar agents (fig. 5).



**Figure 4**—Fire ant bait can be broadcast in and around bee yards to reduce the fire ant population.



**Figure 5**—Spot treatment of individual fire ant mounds can be made with liquid drenches, dry granules, or powdered insecticides. Follow the insecticide label carefully.

### **Barrier Treatments in Holding Areas Prior to Shipment**

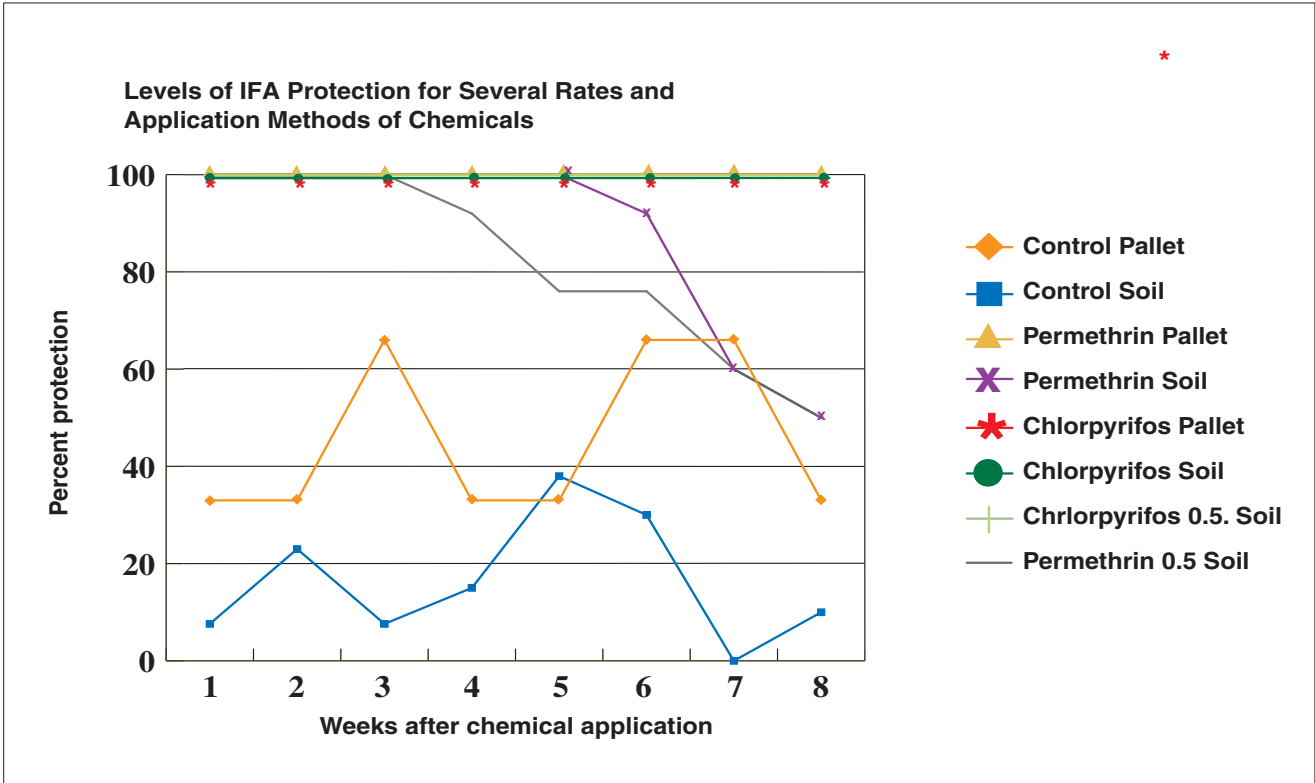
Contact insecticide applied to support pallets or the soil area under beehives may be effective as a barrier treatment. The efficacy of barrier treatments may be enhanced when used in conjunction with broadcast-bait treatments as described earlier. To avoid direct exposure of bees to chemicals, barrier treatments should be applied before bee colonies are placed onto treated surfaces (figs. 6 and 7), and an untreated support pallet should always be used.

A waiting period of 24 to 48 hours after contact insecticide application is recommended. Research has shown that, when applied at full labeled rates for IFA soil treatments, both chlorpyrifos and permethrin liquid treatments are effective at deterring fire-ant foraging and colony establishment on bee equipment for 5 to 8 weeks (fig. 8).

Because both these chemicals are toxic to bees when applied directly, take care when making applications. Despite the risk of exposure, indirect application of chlorpyrifos or permethrin around hives can be useful to beekeepers for a variety of reasons. For example, beekeepers commonly use permethrin on the soil area under beehives to prevent infestations of the small hive beetle. Permethrin and chlorpyrifos can also be used as mound drenches to kill individual IFA colonies.



**Figures 6 and 7**—Application of a barrier insecticide on support pallets or the soil area under bee equipment can provide limited protection against IFA infestation. A treated bottom support pallet can be seen in the background of figure 7.



**Figure 8**—Graph of chlorpyrifos and permethrin efficacy as barrier treatments against IFA infestation. Protection is reported as the percentage of treatment areas that were not subsequently infested with IFA foragers or colonies. Soil and pallet applications of both chemicals were compared in addition to full and one-half labeled rates of application on soil area applications. Results are presented for 2002, 2003, and 2004 data combined.



## State Inspections

In noninfested States, State or county inspectors typically check bee shipments, prior to or during offloading, at State borders and/or the shipments' final destination. California officials are particularly concerned about IFA infestations because the ants arrived only recently and pose a very serious threat to that State's biggest industry, agriculture.

Drivers of bee shipments should be prepared to provide California State border inspectors the exact location where bees will be delivered or placed, the number of colonies, and the State of most recent origin. California's regulations regarding beehives and IFAs can be found at <<http://www.cdfa.ca.gov/phpps/pe/bees.htm>>.

In September 2005, California introduced a new voluntary apiary-certification program for IFA. Beekeepers should work through their State apiary inspectors and/or State regulatory officials to participate and comply with certification through this program. Protocols for shipping bees under this program can be found at the CDFA bee- and beehive-regulation Web site. For beekeepers not participating in this voluntary program, the current policy is as follows:

1. Every bee shipment (100 percent) originating in an IFA-infested State is inspected at the California border. If no IFAs or other pests of significance are found, the shipment is placed under a quarantine hold notice and allowed to proceed to its destination. If pests are found, the shipment is rejected.
2. Bee shipments originating in States not known to be infested with the IFA are inspected at a rate deemed necessary. The inspection rate may be determined by factors such as the origin of the shipment and prior history and experiences with the beekeeper and bee broker.
3. At destinations in California, county inspectors must be contacted and beehives may not be unloaded until permission is received from the county inspector. Inspection procedures may include these steps:
  - The top and all four vertical exterior sides of each hive body are visually scanned for ants.
  - Special attention is paid to dirt clods and debris associated with the shipment. Dirt clods are broken open to reveal any ants within.

- If the bee colonies are transported on pallets, the interior space between the pallet slats is examined for dirt clods and debris.
  - Bee colonies on individual bottom boards are carefully examined for rotted portions that might harbor ants.
  - Attention is paid to bee colonies that appear weak or dead.
4. Shipments infested with live IFA workers are rejected, and the shipment or infested beehives are treated onsite, destroyed, or returned to their origin. All infested bee shipments are reported to the appropriate California Department of Food and Agriculture Pest Exclusion District Office as soon as possible.

## Additional Information

For more information on IFAs and Federal restrictions imposed on the movement of regulated articles, contact one of the following:

- Your county agricultural extension agent, listed in the county government section of your telephone directory under Cooperative Extension Service.
- Your State regulatory officials, usually listed under department of agriculture, plant protection, or regulatory division in the State government section of your telephone directory (and on page 13).
- Your apicultural extension specialist or State apiary inspector (and on page 12).
- A Federal regulatory official, listed in the Federal Government section of your telephone directory under U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine (and on page 16).



## State Apiary Inspectors

Alabama .....	(334) 240-7225
Alaska .....	(907) 761-3861
Arizona .....	(602) 542-4373
Arkansas .....	(501) 225-1598
California .....	(916) 654-1017
Colorado .....	(303) 239-4140
Connecticut .....	(203) 974-8485
Delaware .....	(302) 739-4811
Florida .....	(352) 372-3505, ext. 108
Georgia .....	(404) 651-9486 or 656-4958
Hawaii .....	(808) 832-0566
Idaho .....	(208) 332-8620
Illinois .....	(847) 294-4343
Indiana .....	(317) 232-4120
Iowa .....	(515) 725-1465
Kansas .....	(785) 862-2180
Kentucky .....	(859) 257-5838
Louisiana .....	(225) 952-8100
Maine .....	(207) 287-3891
Maryland .....	(410) 841-5920
Massachusetts .....	(617) 626-1802
Michigan .....	(517) 337-5091
Minnesota .....	(651) 296-1277
Mississippi .....	(662) 325-7765
Missouri .....	(573) 751-5505
Montana .....	(406) 444-9066
Nebraska .....	(402) 471-2394
Nevada .....	(775) 688-1182, ext. 239
New Hampshire .....	(603) 271-2561
New Jersey .....	(609) 292-5441
New Mexico .....	(505) 646-3207
New York .....	(518) 457-2087
North Carolina .....	(919) 733-3930
North Dakota .....	(701) 328-4765
Ohio .....	(614) 728-6200
Oklahoma .....	(405) 522-5949
Oregon .....	(503) 986-4663
Pennsylvania .....	(717) 787-4843
Rhode Island .....	(401) 222-2781, ext. 4509
South Carolina .....	(864) 646-2141
South Dakota .....	(605) 773-3724
Tennessee .....	(865) 837-5338
Texas .....	(512) 463-6332
Utah .....	(801) 538-7184
Vermont .....	(802) 828-2435
Virginia .....	(804) 786-3515
Washington .....	(360) 902-1989
West Virginia .....	(304) 558-2212
Wisconsin .....	(608) 224-4571
Wyoming .....	(307) 777-6590

## **State Regulatory Officials**

### **Alabama**

Alabama Dept. of Agriculture and Industries  
Plant Industry Section  
P.O. Box 3336  
Montgomery, AL 36109-0336  
(334) 240-7225

### **Arizona**

Arizona Dept. of Agriculture  
Plant Services Division  
1688 W. Adams  
Phoenix, AZ 85007  
(602) 542-0996

### **Arkansas**

Div. of Plant Industry  
State Plant Board  
P.O. Box 1069  
Little Rock, AR 72203  
(501) 225-1598

### **California**

Plant Health and Pest Prevention Service  
California Dept. of Food and Agriculture  
1220 N Street, Rm. A-316  
Sacramento, CA 95814  
(916) 654-0317

### **Florida**

Florida Dept. of Agriculture and Consumer Services  
Division of Plant Industry  
P.O. Box 147100  
Gainesville, FL 32614-7100  
(352) 372-3505

**Georgia**

Georgia Dept. of Agriculture  
Plant Protection Division  
19 Martin Luther King Jr. Dr., Rm. 243  
Atlanta, GA 30334-4201  
(404) 651-9486

**Louisiana**

Louisiana Dept. of Agriculture and Forestry  
P.O. Box 3596  
Baton Rouge, LA 70821-3596  
(225) 952-8100

**Mississippi**

Mississippi Dept. of Agriculture and Commerce  
Bureau of Plant Industry  
P.O. Box 5207  
Mississippi State, MS 39762  
(662) 325-3390

**New Mexico**

New Mexico Dept. of Agriculture  
Bureau of Entomology and Nursery Industries  
P.O. Box 30005, MSC3BA  
Las Cruces, NM 88003-0005  
(505) 646-3207

**North Carolina**

North Carolina Dept. of Agriculture and Consumer Services  
Plant Industry Division  
1060 Mail Service Center  
Raleigh, NC 27699-1060  
(919) 733-3933

**Oklahoma**

Oklahoma Dept. of Agriculture, Food and Forestry  
Plant Industry and Consumer Services  
P.O. Box 528804  
Oklahoma City, OK 73152-8804  
(405) 522-5879

**Puerto Rico**

Puerto Rico Dept. of Agriculture  
Plant Quarantine Program  
P.O. Box 10163  
Santurce, PR 00908-1163  
(787) 724-4627

**South Carolina**

Dept. of Plant Industry  
511 Westinghouse Road  
Pendleton, SC 29670  
(864) 646-2135

**Tennessee**

Tennessee Dept. of Agriculture  
Division of Regulatory Services  
P.O. Box 40627  
Melrose Station  
Nashville, TN 37204  
(615) 837-5338

**Texas**

Texas Dept. of Agriculture  
P.O. Box 12847  
Austin, TX 78711  
(512) 463-1145

## **USDA–APHIS, State Plant Health Directors**

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USDA, APHIS, PPQ  
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Prattville, AL 36066  
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### **Arizona**

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3658 E. Chipman Rd.  
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(602) 431–8930

### **Arkansas**

USDA, APHIS, PPQ  
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Suite 100  
Little Rock, AR 72211–3861  
(501) 324–5258

### **California**

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Sacramento, CA 95814  
(916) 930–5500

### **Florida**

USDA, APHIS, PPQ  
7022 NW. 10<sup>th</sup> Place  
Gainesville, FL 32605–3147  
(352) 331–3990

### **Georgia**

USDA, APHIS, PPQ  
1498 Klondike Rd., Ste 200  
Conyers, GA 30094  
(770) 922–9894



**Louisiana**

USDA, APHIS, PPQ  
4354 S. Sherwood Forest Blvd.  
Suite 150  
Baton Rouge, LA 70816  
(225) 298-5410

**Mississippi**

USDA, APHIS, PPQ  
Stone Blvd.  
Mississippi State, MS 39762  
(662) 325-3140

**New Mexico**

USDA, APHIS, PPQ  
6200 Jefferson St. NE., Ste. 130  
Albuquerque, NM 87109-3434  
(505) 761-3189

**North Carolina**

USDA, APHIS, PPQ  
930 Main Campus Drive, Suite 200  
Raleigh, NC 27606-5202  
(919) 855-7606

**Puerto Rico**

USDA, APHIS, PPQ  
654 Munoz Rivera Avenue  
Suite 700, IBM Building  
Hato Rey, PR 00918  
(787) 771-3611

**South Carolina**

USDA, APHIS, PPQ  
9600 Two Notch Rd., Ste. 10  
Columbia, SC 29223  
(803) 788-0506

**Tennessee**

USDA, APHIS, PPQ  
Harvey P. Gasaway Building  
322 Knapp Boulevard, Suite 101  
Nashville, TN 37217  
(615) 781-5477

**Texas**

USDA, APHIS, PPQ  
903 San Jacinto Blvd., Rm. A-151  
Austin, TX 78701-2450  
(512) 916-5241