

# 2008 COTTON BOLL WEEVIL TRAPPING GUIDELINES

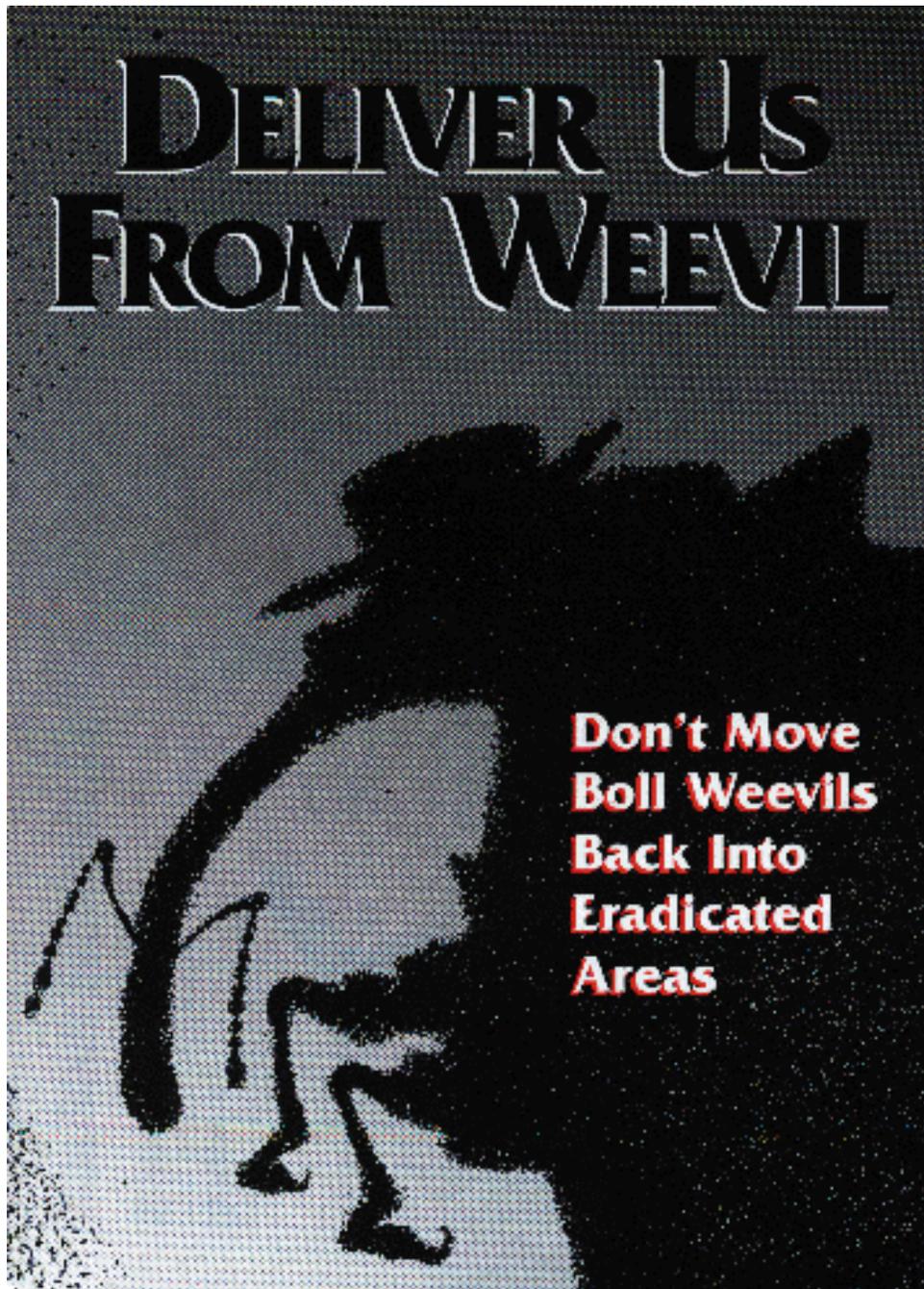


*VIRGINIA DEPARTMENT  
OF AGRICULTURE AND  
CONSUMER SERVICES*

Office of Plant & Pest Services  
1100 Armory Drive, Apt. 120  
Franklin, Virginia 23851  
(757) 562-6637

VDACS-CONSUMER PROTECTION-PLANT & PEST SERVICES  
USDA-APHIS-PLANT PROTECTION & QUARANTINE  
SOUTHEASTERN BOLL WEEVIL ERADICATION FOUNDATION  
VIRGINIA BOLL WEEVIL ERADICATION FOUNDATION

*Working Together*  
*To Protect Virginia's Cotton Industry From Boll Weevil Infestation*



These Guidelines are to assist the trapper in the placement and monitoring of cotton boll weevil traps. Keep these Guidelines with you and refer to them during your trapping activities. If there is a question of interpretation of any portion of these guidelines, the VDACS Cotton Trapping Field Coordinator will make the final determination.

**COUNTY ASSIGNMENTS:**

Each CBW trapper is assigned a trapping area as listed below. The trapper is to install and service all traps in the assigned trapping unit on a regular basis as instructed. Traps must be checked carefully and on a regular schedule. The 2008 assigned trapping localities are as follows:

Brunswick County.....	VDACS
Charles City County.....	Carson
Dinwiddie County.....	Carson
Greensville County .....	Carson
Isle of Wight County .....	Taylor
King & Queen County.....	VDACS
King William County .....	VDACS
Northampton County .....	VDACS
New Kent.....	VDACS
Prince George County .....	Carson
Southampton County.....	Burton
Suffolk City .....	Taylor
Surry County.....	Carson
Sussex County .....	Carson
Virginia Beach .....	VDACS

**DEFINITIONS:**

**CYCLE:** Period in which the trapping assignment is to be completed. Traps are to be installed in Cycle 1, serviced in Cycles 2 – 4, and removed in Cycle 5. Traps must be serviced once every three (3) weeks except during Cycle 2. Cycle 2 servicing of traps should occur in the same order as the initial placement of traps during Cycle 1. Cycle 2 servicing begins September 7, 2008 and must be completed by September 27, 2008. Beginning with Cycle 3, the trapping schedule should be maintained such that servicing will occur 20 to 22 days from the previous servicing date; for example: If a trap was serviced in Cycle 2 on September 11, the Cycle 3 service date shall occur on October 1, 2, or 3. See 2008 Trapping Schedule, page 9.

**PHEROMONE DISPENSER/LURE/BAIT:** Each piece of lure gives off a scent, called a pheromone, which draws weevils to the trap. The scent of the lure and the color of the trap are both important in attracting boll weevils. Each lure lasts approximately three (3) weeks, and then a new one must be added to the trap. A lure is removed once it has been in the trap for two cycles (this will be six weeks except for the lure that is removed in Cycle 2).

**TRAP:** The standard survey tool used to detect and delimit cotton boll weevil infestations. The green-yellow color acts as a visual attractant and the pheromone lure, found within the trap, acts as a chemical attractant to boll weevils. The trap is placed approximately three (3) feet above the ground on top of a 4-5 foot fiberglass rod. Clean, bright traps with fresh lure are the most effective for attracting and catching boll weevils. See Trap Components, page 12.

**VAPONA DISPENSER/KILL STRIP:** A pesticide impregnated strip that is used to kill weevils that enter the trap. After a weevil enters the trap, it will crawl around the inside of the trap cylinder trying to escape. To keep the weevils from escaping, a vapon dispenser is placed in the cylinder of each trap. As the captured weevil crawls around the cap, it is exposed to the insecticide and killed. A fresh dispenser/strip must be added in Cycle 3 of the trapping season. When traps are removed at the end of the season, remember to dispose of the used dispensers properly by wrapping them in paper and discarding in the trash. **Always wear gloves and follow label instructions when handling strips. Material Safety Data Sheets for the strips can be found in these instructions.**

## TRAP PLACEMENT:

### Site Selection:

- Trap site selection should be based on **safety** and accessibility. Place traps along roads for easy access.

**Safety is of utmost importance and should be taken into consideration when determining trap location. Traps must be placed at a location where you can pull off to the side of the road in a manner that is safe for both you and other vehicles on the road. If traps cannot be placed and serviced safely find another location for the trap.**

- Traps should be placed along sunny borders of fields and placed to permit the highest degree of exposure to all portions of the field. Traps must not be placed at the corners of fields. Traps must be placed near the cotton field edge - not farther than 10 feet from the cotton is preferred; however, after the site is selected, the trap shall be set where least likely to be disturbed by farm or road equipment. Leave room for tractors to turn at the end of the rows. Trap location along with trap number shall be noted on all fields plotted on maps. This must be done during initial trap installation.
- Traps must not be placed on shaded, wooded sides of fields if sufficient coverage can be obtained along open sides of fields. Place traps along roadways and farm paths if available, where traffic is most likely to occur, in order to catch weevils hitchhiking on vehicles and farm equipment from other areas. Fields that are not adjacent to roadways will usually have a farm path that will provide accessibility.
- Traps must be placed where they are visible to boll weevils. They must not be placed next to telephone poles or trees where they face **away** from the cotton field to be trapped. If you need assistance in getting the grower to mow the edge of the field, contact your VDACS representative.
- Accessibility of Cotton Fields: Cotton producers will be informed that fields must be made accessible for cotton boll weevil trapping. If access to a cotton field is blocked because of a locked gate or cable, **the trapper should contact the Cotton Trapping Field Coordinator and report the inability to gain access to a field.** Do not use farm paths that are gated and open at the time of trap placement as these gates may be locked at subsequent servicing visits.

**Trapping Density:**

- Traps must be placed at a rate of one trap per one-quarter square mile (0.5 mile x 0.5 mile). One-quarter square mile grid lines are drawn on maps and are to be used to determine location of trap placement. Once the trap has been placed, mark the location on your map with an "X" along with the four digit trap number.

**Installation Date:**

- Setting of traps shall begin July 30, 2008. Traps must be in place by September 6, 2008.

**Scanner Bar Codes:**

- Scanner bar codes must be placed on inside of trap cup. Bar codes will be supplied by VDACS.

**Fiberglass Rods:**

- Traps are to be placed on the top of fiberglass rods. Sink rod into ground at least six inches. Use both hands on the rod bottom. (You cannot do this while leaning outside of a vehicle). Use a rod driver when the ground is dry and hard. Always make sure the rod is upright and not leaning.
- Unless otherwise instructed, use only fiberglass rods supplied by VDACS for trap placement. **DO NOT** put traps on fence posts, because the post will keep weevils from climbing up the inside of the cup.

**Trap Maintenance:**

- Be sure every trap you put out has a fresh lure in it and all trap components fit together tightly.
- Be sure the entry hole in the screen cone is open and the cylinder is locked into place.
- Keep vines and weeds away from traps to ensure effectiveness.
- Do not drop old lures and kill strips on the ground. Carry old lures and kill strips with you and dispose of properly.

**MAPS**

The maps used in this project are highway maps with the cotton fields colored in red. The grid lines on each map are one-quarter square mile (.5 mile x .5 mile). One trap is to be placed at a cotton field in each quarter-mile grid.

Each map has a green outline around the edge of the map. All fields that are outside of this green line will be found on the adjacent map. The map numbers (A1, B2, etc.) of the adjacent maps can be found on the edge of the map. Use these adjacent map numbers to go from one map to the next. Refer to your county map for the individual map numbers. County boundaries are designated by bold black lines.

Plan your trapping so that you can be as efficient as possible. Place traps along county roads

whenever it is safe to do so. In some cases, you may be required to drive along a farm road in order to access the cotton fields.

When one field is located in two different grids (the grid line goes across the field) do not place two traps in order to meet the one trap per quarter square mile trapping density. When encountering these situations, only place one trap.

### **INTERSTATE HIGHWAYS AND RAILROADS**

The highest risk areas for infestation from the boll weevil are along major highways and railroads. Whenever cotton fields are adjacent to Interstate 95, Interstate 85, or railroads, place a trap between these cotton fields and the interstate/railroad for extra protection. In many cases, this will require driving along a farm path to get to the edge of these fields.

### **TRAPPER IDENTIFICATION:**

- **Identification Sign:** So that trappers are easily identified, each trapper must display a Virginia Boll Weevil Eradication Foundation sign on their vehicle whenever placing, servicing or removing traps. This magnetic sign must be on the driver's side of their vehicle at all times during the course of each day's work. Upon exiting the last field of the day, the trapper must remove this sign from their vehicle.
- **Flashing Light:** Trappers must display a flashing yellow light on the roof of their vehicle whenever they are placing, servicing or removing traps. This light must be on and properly functioning any time the trapper is in a field. Upon exiting the last field of the day, the trapper must remove the flashing yellow light and store it inside their vehicle.

### **TRAP MARKING:**

Each trap must be marked with the date trap was set and each servicing date. These dates must be placed on the outside of the cup with a grease pencil or waterproof marker. This helps trappers, supervisors, and growers identify each field and know you are checking the traps on schedule. See Trap Components, page 12.

### **SERVICING TRAPS:**

- Traps must be serviced every three (3) weeks except during Cycle 2. Cycle 2 servicing of traps should occur in the same order as trap placement in Cycle 1. Cycle 2 servicing must begin on September 7, 2008 and must be completed by September 27, 2008. Beginning with Cycle 3, the trapping schedule must be maintained such that servicing shall occur 20 to 22 days from the previous servicing date. See page 7 for complete schedule.
- At each servicing, a fresh pheromone dispenser (lure) shall be placed in the trap. Dispensers must be left in the trap for six (6) weeks. On the third and subsequent servicing rounds, the older dispenser must be removed from the trap. Dispensers must be marked with the current cycle number (1, 2, 3, 4, or 5) for easy identification. Starting with Cycle 2, there will always be two lures in the trap.
- Dispensers that are six (6) weeks old (two cycles) must be taken from the field for disposal. (Initial lure will be in trap longer than six weeks). **Do not throw the dispensers on the ground.**

- Insecticide strips are to be placed in trap at trap placement and again during Cycle 3. The old insecticide strip can remain in the trap until trap removal in Cycle 5.
- Each trap must be dated when serviced with an acceptable indelible marker. Write the date on the outside of the trap as record of your visit.
- During each trap service visit, you must check carefully for boll weevils. If weevil(s) are present, put them in an empty, clean glass vial with a collection label like the one shown below. Dump all other bugs out of the cylinder at the top of the trap and keep it clean. Note: Check the trap by removing the cap. DO NOT attempt to remove the cylinder from the screen as it will eventually cause the component to break. If you catch boll weevils in a field, write the number on your Trapping Report and fill out a label like the one below. Put the tag on the container with the weevils, and give them to your Field Unit Supervisor.

Name: \_\_\_\_\_  
 County: \_\_\_\_\_  
 Map No. \_\_\_\_\_  
 Trap No: \_\_\_\_\_  
 Date: \_\_\_\_\_

**Functional Traps:**

1. Non-functional, inoperable, or missing trap components shall be replaced immediately. A functional trap shall meet the following requirements:
2. All components are present and correctly assembled.
3. There is no distortion in the screen permitting any space between the screen and the cylinder.
4. The entry hole at the top of the screen is open and without distortion.
5. Both a current pest strip and lure are in place on the inside of the trap cylinder.
6. The screen and cylinder are clean and free of mud or other foreign matter.
7. Properly mounted on a stake.
8. Make a continual effort to keep weeds and vines away from traps to ensure visibility and effectiveness.

Properly dispose of all used traps (including lures and kill strips) in a local trash receptacle or a sanitary landfill. Return all **unused trapping supplies** (trap components, lures, kill strips, fiberglass rods, etc.) to the Trapping Field Coordinator at the end of the trapping season.

## **BIOSECURITY**

VDACS has implemented the BioSecurity Plan to prevent the spread of Foot and Mouth Disease and Avian Influenza. All VDACS employees, including wage and contract personnel, must strictly adhere to this plan when activities require travel into or from areas where contamination may occur. For more information refer to Attachment VII, page 11, BioSecurity Practices. In order to minimize this risk, trappers should avoid livestock and poultry farms when possible.

### **CONTACT TELEPHONE NUMBERS:**

The primary contact phone number for the Cotton Boll Weevil Trapping and Eradication Program is **757/562-6637**. Use this number to contact the Cotton Trapping Field Coordinator (Charles Hood) or the Southeast Regional Supervisor (Gina Goodwyn) to report trapped boll weevils or for any other pressing needs.

#### **CBW Program contacts:**

Frank Fulgham, Program Manager – Office of Plant & Pest Services  
Phone: 804/786-3515 (Office)

Gina Goodwyn, Regional Supervisor – Office of Plant & Pest Services  
Phone: 757/562-6637 (Office)  
Phone: 757/334-0042 (Cell)

Charles Hood, Cotton Boll Weevil Trapping Field Coordinator  
Phone: 757/562-6637 (Office)  
Phone: 757/334-3327 (Cell – Work)  
Phone: 757/647-9776 (Cell – Personal)

Larry Nichols, Cotton Boll Weevil Trapping Coordinator  
Phone: 804/786-3515 (Office)  
Phone: 804/221-0961 (Cell)

## **TRAPPING SCHEDULE**

Cycle 1 ..... Trap Installation..... July 30 – September 6

Cycle 2..... Trap Service..... September 7 – September 27

Cycle 3..... Trap Service/Change Kill Strip ..... September 28 – October 12

Cycle 4..... Trap Service..... October 13 – November 1

Cycle 5 ..... Trap Removal..... November 2 – November 22

## **SUMMARY**

To keep the traps working well they need to be clean, bright, and easy to see from all directions. Dirty cylinders should be cleaned or replaced. In the summer, weeds will grow around the trap very quickly, and you must clear them away every time you check the trap. Position your traps in safe but visible places where they will not be destroyed by farm and highway equipment. And by all means, be courteous to the growers you are servicing.

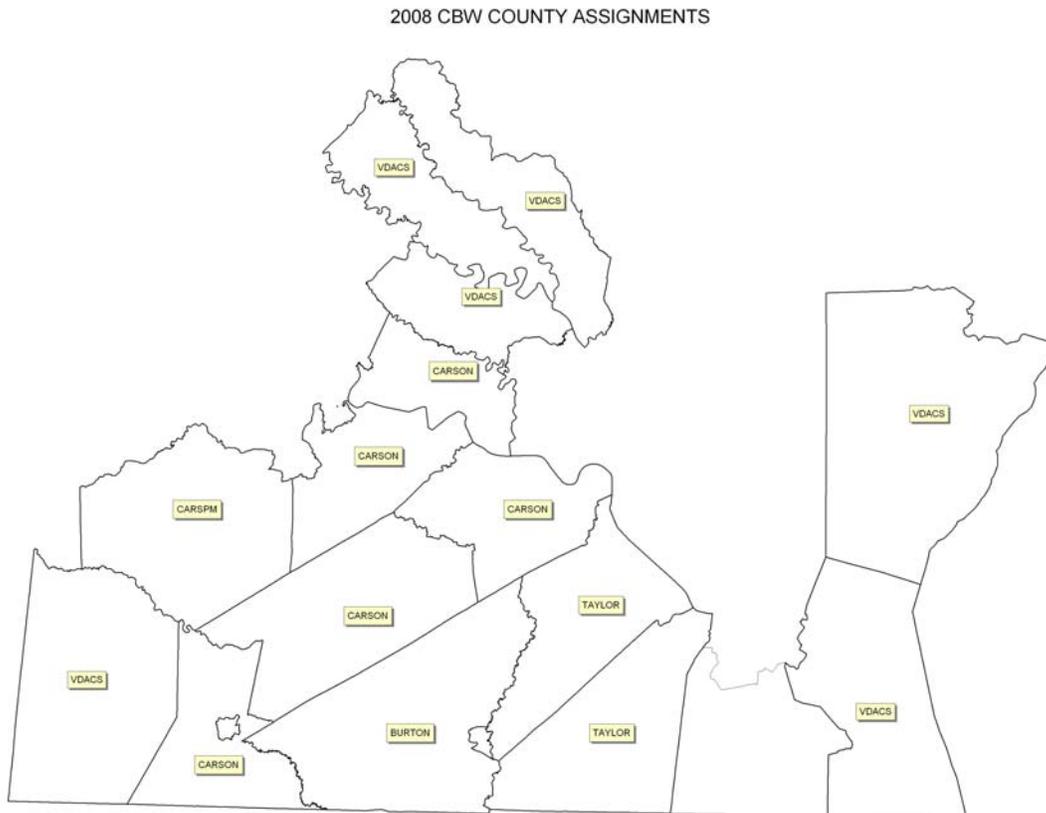
If weevils are allowed to reproduce without being detected, much of what you have done will be wasted. See pages 13-17, for information on the biology and control of the boll weevil. Check every trap on schedule, and report every boll weevil on the Trapping Report. Do the best you can, and take pride in the quality of the trapping you do in your work unit.

### **Tips For Having A Successful Trapping Season:**

- ***Run your traps on schedule.***
- ***Report all suspect weevils to your supervisor immediately.***
- ***Be courteous to growers. Let them know what you are finding.***
- ***Be sure flashing yellow light is operating properly and sign is placed on driver's side of vehicle whenever placing, inspecting, or removing traps.***
- ***Write the dates on the outside of every trap.***
- ***Keep traps clean and bright, and visible from all sides.***
- ***Change lure on schedule.***
- ***Replace down traps when found. Also straighten leaning rods.***
- ***Trap all fields, as instructed, and put traps in "safe" locations.***

- ***Make certain all traps and fiberglass rods are removed from all cotton fields at the end of the trapping season.***

## COUNTY ASSIGNMENTS



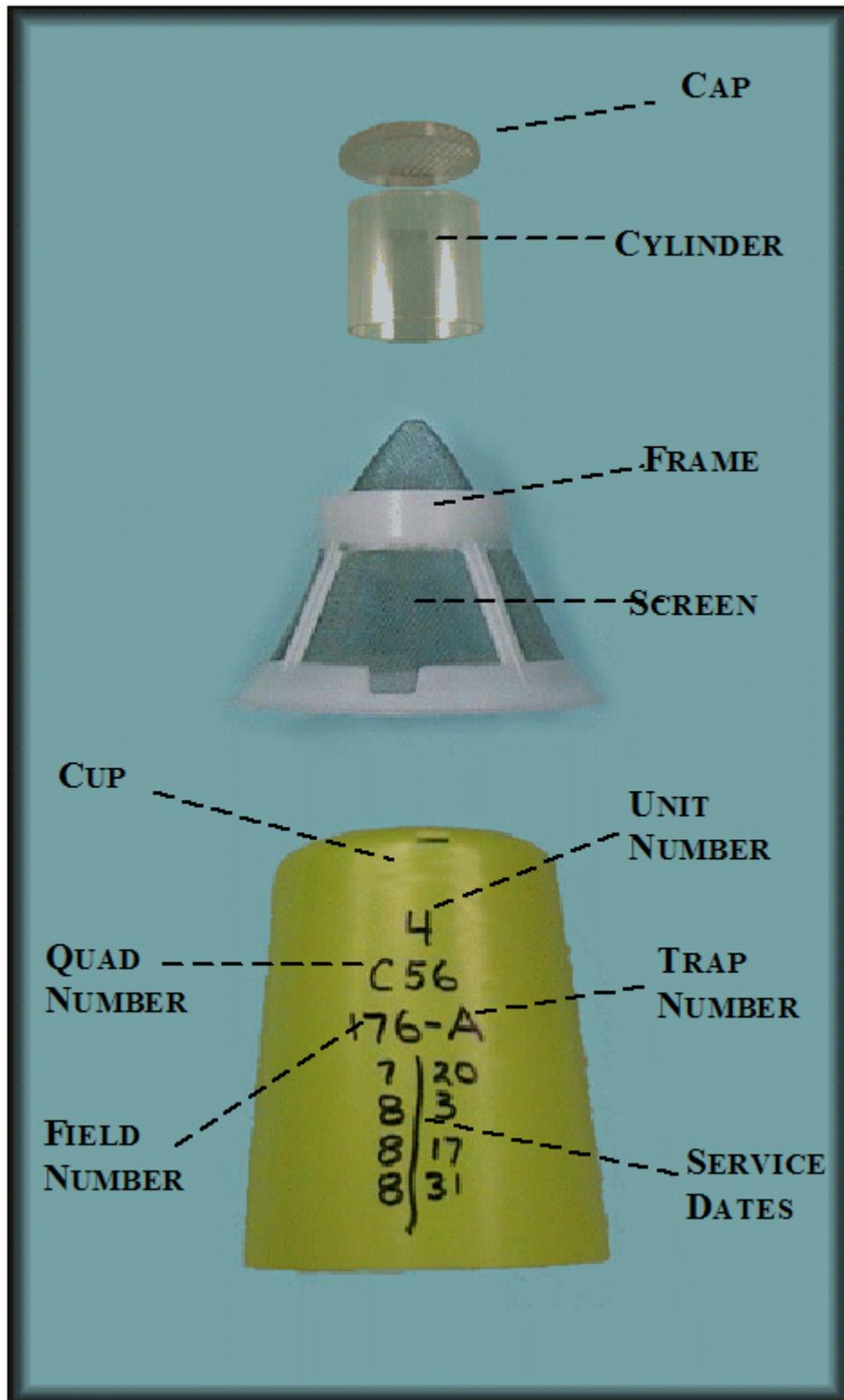
**VIRGINIA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES**

## Employee Livestock Biosecurity Practices When Visiting Farms, Livestock Markets or Other Places of Animal Assemblage

- Wear clean coveralls or outer garments.
- Change and clean coveralls or outer garments as needed when contact is made with animal secretions or excretions.
- Wear footwear suitable for scrubbing.
- Scrub footwear with a brush and a sanitizing solution.
  - Vircon-S is the sanitizing agent of choice. Follow manufacturer's recommendations for dilution and shelf life.
- An alternative to scrubbing footwear is to use disposable shoe and boot covers and dispose of the covers after each visit.
- If necessary, and when recontamination can be avoided, wash and sanitize vehicle tires using a brush and the same sanitizer as used on footwear. If recontamination cannot be avoided when exiting a farm, look for opportunities to wash and sanitize the vehicle before entering the next farm.
- If a producer, livestock market, etc. has more stringent biosecurity requirements than those listed, then VDACS employees should follow those specific requirements.

**NOTE:** If you have traveled to any foreign country, contact the Division of Animal Industry Services, State Veterinarian's Office for specific guidance before resuming your work in visiting farms, etc.

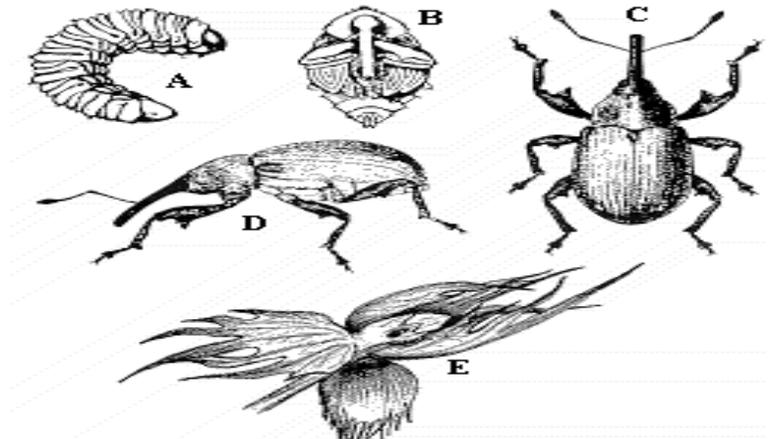
Cotton Boll Weevil  
Trap Components



# Boll Weevil

*Anthonomus grandis grandis*

Boheman, Curculionidae,  
COLEOPTERA



**Boll weevil. A, Larva. B, Pupa. C-D, Adults. E, Damage.**

## DESCRIPTION

**Adult** - The adult weevil measures from 3 to 8.5 mm (1/8 - 3/8 inch -average 1/4 inch) from the tip of the snout to the tip of the abdomen. It is usually reddish or grayish-brown though its color may vary (yellowish-brown to dark brown or nearly black) according to its age and size. The conspicuous snout is about half as long as the body. It has close-fitting smooth wing covers with fine parallel lines and are covered with short gray down or fuzz. The most distinctive characteristic is the double-toothed spur on the inner surface near the end of each front femur, the inner one being much longer than the other. A single tooth is also found on the middle femur.

**Egg** - The pearly white egg is elliptical and approximately 0.85 mm (less than .04 inch) long. The soft shell permits the egg to fit into almost any cavity.

**Larva** - The newly hatched larva is inconspicuous, being only slightly larger than the egg. The mature larva is white, legless, and about 13 mm (½ inch) long. Its head and mouthparts are brown; its body is curved and wrinkled.

**Pupa** - White at first, the pupa becomes brown as it develops.

## BIOLOGY

**Distribution** - At some time prior to 1894, the boll weevil spread into the United States from Mexico. It now occurs throughout the cotton belt east of the high plains of Texas and may now be found in some areas of Arizona.

**Host plants** - In North Carolina and Virginia, cotton is practically the only host plant of the boll weevil.

**Damage** - Injury is caused by both adults and larvae. Although adult females prefer squares, they oviposit into both squares and young bolls and seal the holes with excrement. Egg punctures become small, nipple-like protuberances. Larvae (developing within the cavities) then feed within the squares, causing the bracts to open or "flare," the color to fade to a yellowish-green, and the plant to shed the infested squares. Limited feeding on the squares and bolls by adults usually does not result in shedding, but cotton fiber is sometimes ruined. Boll-rotting fungi may enter through egg and feeding punctures.

**Life history** - Boll weevils overwinter as diapausing adults sheltered under leaf litter, in woods, in weeds and along fence rows and ditch banks surrounding cotton fields. These adults begin to emerge as early as February in southerly areas and continue through early July, with peak emergence during late May and early June. In early spring the weevils feed primarily on terminals of cotton seedlings, but egg-laying does not occur until squares are present. Adult females make a small cavity in each square into which they deposit a single egg. First generation females lay an average of 200 eggs, while late summer generations may average only 5 eggs per female. Eggs usually hatch in 2 to 4 days depending upon the temperature.

After the larvae begin to feed, the infested squares yellow, flare, and drop from the plant in about 3 days. Depending upon the temperature and nutritional value of their food, larvae complete their development in 7 to 12 days and then transform into pupae within the squares. This stage lasts from 3-1/2 to 8-1/2 days. Newly formed adults remain in squares 1-1/2 to 2-1/2 days before chewing their way out. Because of the prolonged emergence of overwintering adults, distinct generations are difficult to recognize; however, in North Carolina and Virginia there are usually four generations per year.

## **CONTROL**

Satisfactory control depends upon a combination of cultural and chemical methods. Recommended cultural practices include (1) early planting, (2) stimulating rapid growth by thorough preparation of the seed bed, by adequate fertilization and by recommended weed control practices, and (3) selection of early maturing varieties specifically adapted to local areas. The main objective of these practices is to hasten the development of cotton plants and set a crop before weevils become abundant. The application of a chemical defoliant toward the end of the season speeds up harvesting and allows crop residue to be destroyed as early as possible. As a result, potentially diapausing weevils are left without a food source.

Insecticidal controls include in-season and diapause applications. Regular in-season applications are used to control weevils during the major period of fruit set and boll maturity; these applications should be based on weekly weevil counts and damage. Initial insecticide applications are made when 10 percent of the squares are punctured. Insecticide applications are frequently used to reduce the diapausing (overwintering) weevil population. This practice delays the need for in-season insecticides the following year. When warranted, treatments should start at the onset of diapause and continue until fields no longer afford the boll weevil food and breeding sites.

## **FACTS ABOUT THE BOLL WEEVIL**

1. Moisture is the main factor that influences boll weevil emergence in the spring. High temperature without moisture will not bring any weevils out of hibernation.
2. The main factor influencing boll weevil migration is their available food supply. Weevils emerging from hibernation prefer squaring cotton.
3. An overwintered boll weevil will live an average of 5.7 days if it emerges before the cotton is up.

4. An overwintered female boll weevil will live an average of 31 days in young cotton before it begins to square. An overwintered male boll weevil will live an average of 36 days in young cotton before it begins to square.
5. Male boll weevils will live about 20 days in cotton that is fruiting and females will live about 16 days.
6. Approximately 40% of overwintered boll weevils emerge into cotton fields after June 15<sup>th</sup>.
7. An overwintered female boll weevil can lay an average of 160 eggs.
8. A female boll weevil will lay an average of 7 eggs per day with a maximum of 33 possible.
9. It takes an average of 18 days for a boll weevil to develop inside a cotton square. As Eggs: 3 days; as Larvae: 7 to 14 days; and as Pupae: 3 to 5 days.
10. A square must be about 5 days old before it is attacked by boll weevils.
11. A square that is 7 days old to 3 days before blooming is preferred by boll weevils.
12. A boll must be about 12 to 20 days old before it is safe from weevil attack.
13. A square will remain on the plant about 7 days after being punctured.
14. A female boll weevil must be about 5 days old before she can lay eggs.
15. After mating, the eggs will develop in the female boll weevil only after she has fed on squaring cotton.
16. The proportion of male to female boll weevils is 60% males and 40% females.
17. A feeding puncture made by a male boll weevil will cause a square to shed.

### **RESUME OF ANTHONOMUS GRANDIS a.k.a. COTTON BOLL WEEVIL**

**OBJECTIVE:** To become dictator of cotton production practices across the Southeast. To use my position as primary insect enemy of cotton and to intimidate growers into using ever more costly insecticides or to get out of production altogether.

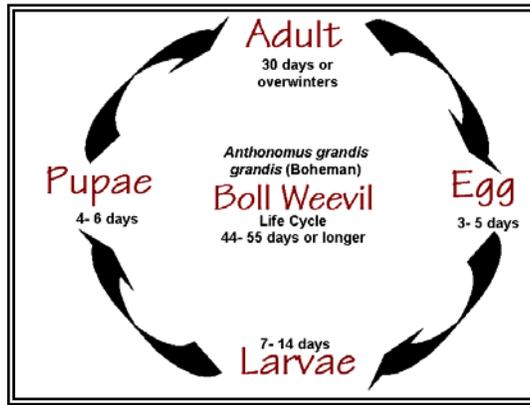
**QUALIFICATIONS:** Can complete entire life cycle--egg, larvae, pupa, adult--in 3 weeks or less. Can produce 8 plus generations a year of hungry weevils. Can lay 200 eggs per female. Can lay each egg in a separate cotton square or boll, ensuring destruction of all. By laying eggs inside the cotton plant, protect all offspring from chemical treatments until they emerge as adults. Can spread rapidly, advancing 40-160 miles per year. Can dictate the entire pest control strategy of a grower. Through tyrannical demands for frequent control, will destroy beneficial insects and upgrade formerly minor pests to major threats, requiring costly control measures.

**PREVIOUS EXPERIENCE:** Southern United States: 1892-Present. The bane of cotton growers in the South for almost a century. Since entering fields in the United States from Mexico, caused \$100 million of damage annually, totaling a \$12 billion drain to the economy. Ability to travel over long distances and infest cotton fields often confounding efforts by growers, trappers, and regulators to keep me out of their states. As I always say, "You can't keep a good weevil down!"

**PERSONAL DATA:** As adult, tan to dark brown or dark gray. One-quarter to one-half inch long. Characteristic snout accounting for about one-fourth of total length. Hard, humpback-shaped shell. Progeny up to 200.

**REFERENCES:** USDA calls me the "number one agricultural pest in America". National Cotton Council recognizes me as "number one enemy of efficient production." Producers all have choice words for referring to me. Provided upon request, and usually with little prompting.

**If you need to contact me, just fail to check your traps on schedule and I'll be there before you know it.**



Puncture Wound on Cotton



Adult Boll Weevil



Boll Weevil Egg



Boll Weevil Larva



Boll Weevil Pupa



Adult Boll Weevil