Feral Hog Stewardship Training

ADDRESSING A GROWING PROBLEM…

KAPUT® FERAL HOG BAIT IS A STATE RESTRICTED USE PRODUCT (SRU) IN OK

- Kaput Feral Hog Bait is to be used to eliminate feral hogs in Oklahoma. To purchase this product through a distributor, please read entire label and you must complete a product specific training administered by Scimetrics/Kaput

What do you need to purchase the Feral Hog Bait?

- Distributor or Dealer – Must have a OK Restricted Use Pesticide Dealer License
- End Users MUST have a Commercial or Non-Commercial Applicators License with Category 1a (Agriculture Plant) or 11a (Bird & Vertebrate Animal)
- Private Applicators License
- *The OK Pesticide Law requires that a person may not use a restricted-use or state-limited-use pesticides or regulated herbicides unless licensed or certified by the Oklahoma Department of Agriculture. Additionally, applicators are to keep records of pesticide applications for two years.*
- *Commercial applicators are required to have insurance. All applicators may obtain continuing education units (CEUs) to renew their license.*
- *All Applicators MUST have a copy of the Kaput Feral Hog Supplemental Label in their possession when baiting.*

Feral Hog Distribution Requirements

Distributor

- OK Restricted Use Pesticide Dealer License
- Kaput LMS Training Certification Number (by location)
- Can distributor ship to other locations? Yes, they must have the Dealer License & Training Certification number
- Must keep copies of ODAFF Licenses, Training Certifications, Sales & Transfers

Feral Hog Distribution Requirements

- **Dealers**
- OK Restricted Use Pesticide Dealer License
- Kaput LMS Training Certification Number
- Must keep copies of OK Applicator Licenses, Training Certifications with required records
- **End User**
- MUST have a Commercial or Non-Commercial Applicators License with Category 1a (Agriculture Plant) or 11a (Bird & Vertebrate Animal)
- Private Applicator License
- Kaput LMS Training Certification Number
- MUST have a copy of Kaput Feral Hog Supplemental Label in their possession when baiting

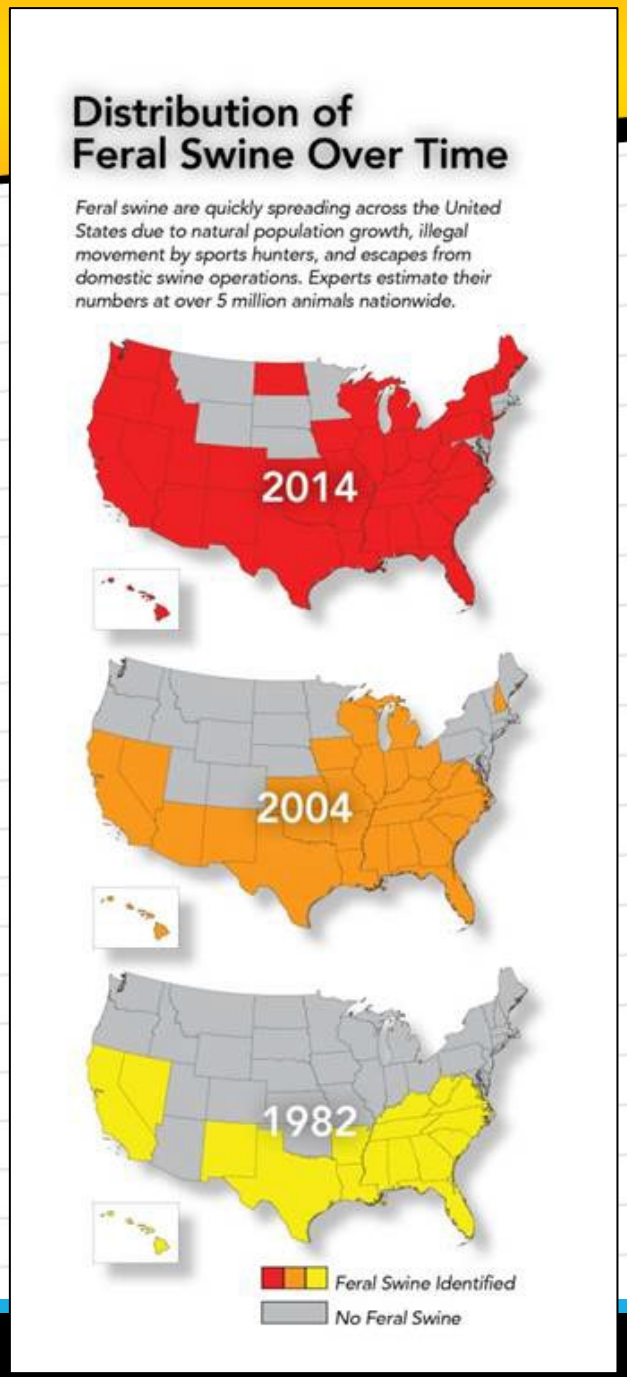
Overview

- Purpose of Training
- A Growing Problem
- Timeline of Feral Hog Bait Development
- Why Warfarin?
- Primary and Secondary Toxicity
- Endangered Species Act (ESA)
- Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)
- Pesticide Misuse is Illegal
- Kaput Feral Hog Bait Label Information
- User Responsibilities
- Key Changes to the Label in 2018
- Use Restrictions
- 7 Steps to Successful Feral Hog Baiting

Purpose of Training is to….

- Provide an overview of the problems associated with feral hogs and the processes involved in developing a solution
- Address measures required by the label to avoid or minimize non-target impact
- Review Kaput Feral Hog Bait label requirements and importance of complying with the label. Non-compliance is a violation of federal and state law!
- Ensure effective use, safety, and efficacy of Kaput Feral Hog Bait

A Growing Problem…



Year	Estimated Number of States
1982	17
2004	27
2010	36
Currently	38-44

- $2 billion in damage annually nationwide
- Water quality loss due to erosion along river banks
- Groundwater contamination with E Coli from feral hog fecal material
- Landscape destruction and modification
- Spread of diseases to humans and domestic livestock
- Predation – 2 billion animals killed annually
- Reptiles, amphibians, rodents, ground nesting birds
- The young of sheep, goats, cattle, deer

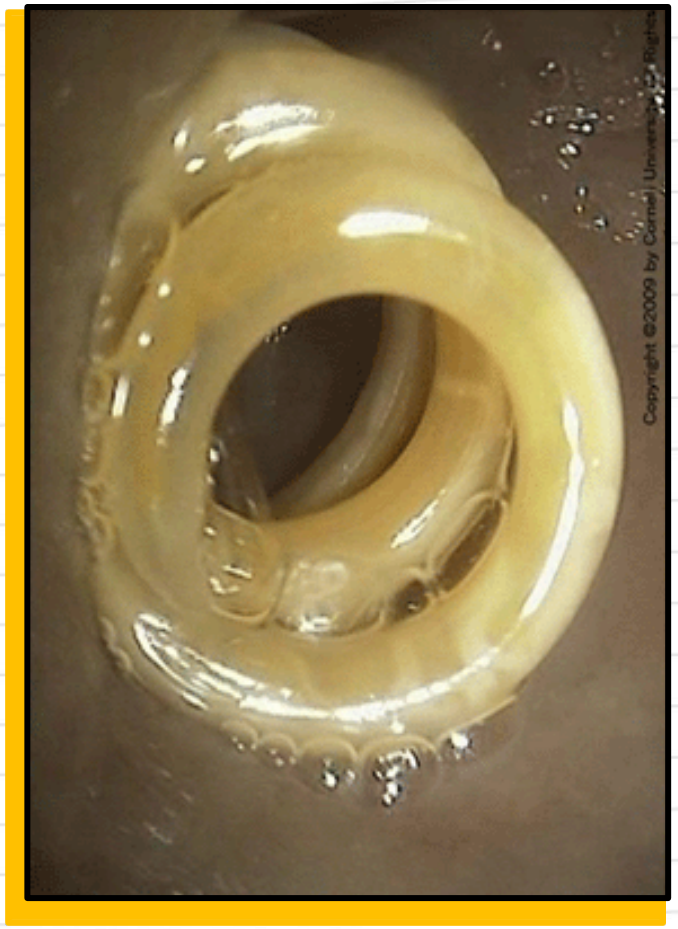
Domestic and Foreign Animal Diseases (FADs) of Feral Swine

- Classical & African swine fever
- Foot and mouth disease
- PRRS
- Porcine circovirus
- Swine influenza virus
- Toxoplasmosis
- Streptococcus suis
- Pseudorabies virus
- Swine brucellosis
- Tuberculosis
- Bubonic plague
- Tularemia
- Hog cholera
- Anthrax

Internal and Ectoparasites of Feral Hogs

Internal

- Kidney worms
- Stomach worms
- Round worms
- Whipworms
- Liver flukes
- Trichinosis



External

- Ticks
- Fleas
- Hog lice

Feral Hog Bait Development Timeline

2000	• Hawai'i Community Foundation Grant to work on a feral hog toxicant
2008	• Grant awarded and pen studies conducted with USDA and TAMU in Kingsville, TX
2009	• Meeting with TX Dept of Ag to discuss possible SLN label for feral hog control
2008 -2016	• Meetings with the EPA to review plans for developing a hog bait
2013	• Applied for an Experimental Use Permit with the U.S. EPA
2014 -2015	• Permits issued by EPA and State of Texas to conduct field testing of baits
2015 -2017	• Grants provided by Texas Dept of Ag for research
2017	• EPA approvals federal registration of Kaput Feral Hog Bait
2023	• Texas A&M University – Agrilife Extension Confirm Efficacy and Non-Target Safety

Pen Studies: 2008

Trapping study hogs

Field Studies:
2015, 2016, 2017, 2022, 2023

Trail Cameras

Radio-Telemetry

GPS Tracking

Why a Warfarin Bait?

- Low toxicity = decreased risk to non-targets
- Readily available antidote = Vitamin K-1
- Effective on hogs in low concentrations
- Half-life is 42 hours, so it is quickly metabolized

Dose Makes the Poison

- Australia study contained 0.09% warfarin, 18 times more than Kaput Feral Hog Bait
- Warfarin Rat & Mouse Baits contain 0.025% warfarin in the US
- Kaput Feral Hog Bait contains 0.005% warfarin, 1/5th the concentration of US rat bait products
- All chemicals are inherently toxic
- Goal has been to arrive at a reduced risk level and ensure efficacy while reducing danger to wildlife and other non-target animals

Feral Hog Efficacy with 0.005% Warfarin Bait

Mortality Data Based On:	% Reduction:
Radio-telemetry	100%
Trail Cameras at Feeder Station (Pre vs Post Treatment)	98.7%
Lure Consumption Pre vs Post Baiting	97.8%
Texas A&M University	100%

Warfarin Residues in Liver: Mean 3.7 mg/kg
(Human daily dose for Coumadin: 1-10 mg/day)

Pesticide Signal Words as Defined by the US EPA

	Toxicity	Category	LD_{50}
Danger-Poison	Highly toxic	I	< 50 mg/kg
Warning	Moderate Toxicity	II	> 50-500 mg/kg
Caution	Low Toxicity	III	> 500-5000 mg/kg
(None Required)	Very Low Toxicity	IV	> 5000 mg/kg*

*Kaput Feral Hog Bait

- Aspirin 300 mg/kg
- Caffeine 192 mg/kg
- Nicotine 50 mg/kg
- Vitamin D3, 37 mg/kg
- Kaput Feral Hog Bait > 60,000 mg/kg

1 kg = 2.2 lbs
1 kg = 1000 grams
1 kg = 1,000,000 mg

Key Changes to the Kaput® Feral Hog Bait Label

- Now correctly categorized as a “Category IV” pesticide by the U.S. Environmental Protection Agency. Previously mistakenly listed as “Category III” which required additional and unnecessary cautionary wording
  - “CAUTION” signal word is no longer required, but we have included it out of an abundance of caution
  - First Aid section is no longer required, but we have included a shortened version out of an abundance of caution
  - There are no longer any specific glove requirements, however any person who handles the bait and retrieves carcasses should wear protective gloves. This will help protect against stains from the blue color and from the diseases feral hogs may spread to humans, domestic animals, and other wildlife
- The extended removal of livestock from the baiting area has been changed to removal only during the baiting program
- Feeder lid weight has been increased to a minimum of 17 lbs, as further protection against nontarget species accessing the bait
- The conditioning period has been reduced to 1-3 weeks (previously 3-6)
- Cracked or whole corn is now listed as a non-toxic conditioning option
- The posting of CAUTION signs is no longer required
- The 18” deep burial requirement has been removed, however burial is still recommended to minimize feral hog disease transmission

This U.S. Environmental Protection Agency approved marketing statement will also appear on our product labeling:

Primary and Secondary Toxicity…

- Primary Toxicity:
  - Direct consumption of bait
  - Example: Feral Hog bait was spilled on the ground and not cleaned up. A raccoon (non-target animal) eats the spilled bait and gets sick or dies

- Secondary Toxicity:
  - Consumption of poisoned carcass by predators or scavengers
  - Example: Coyote eats dead or dying hog with enough poison residue in tissue to sicken or kill the coyote

Primary Toxicity Data on Warfarin (0.025%) to wildlife

- Mallard (5x) 14 days. No effects
- Bobwhite quail (5x) 14 days. No effects
- LD-50 bobwhite >10,000 mg/kg
- LD-50 mallard ducks >10,000 mg/kg

(5x) = 5x the 0.005% warfarin concentration

Secondary Toxicity Data Submitted to EPA

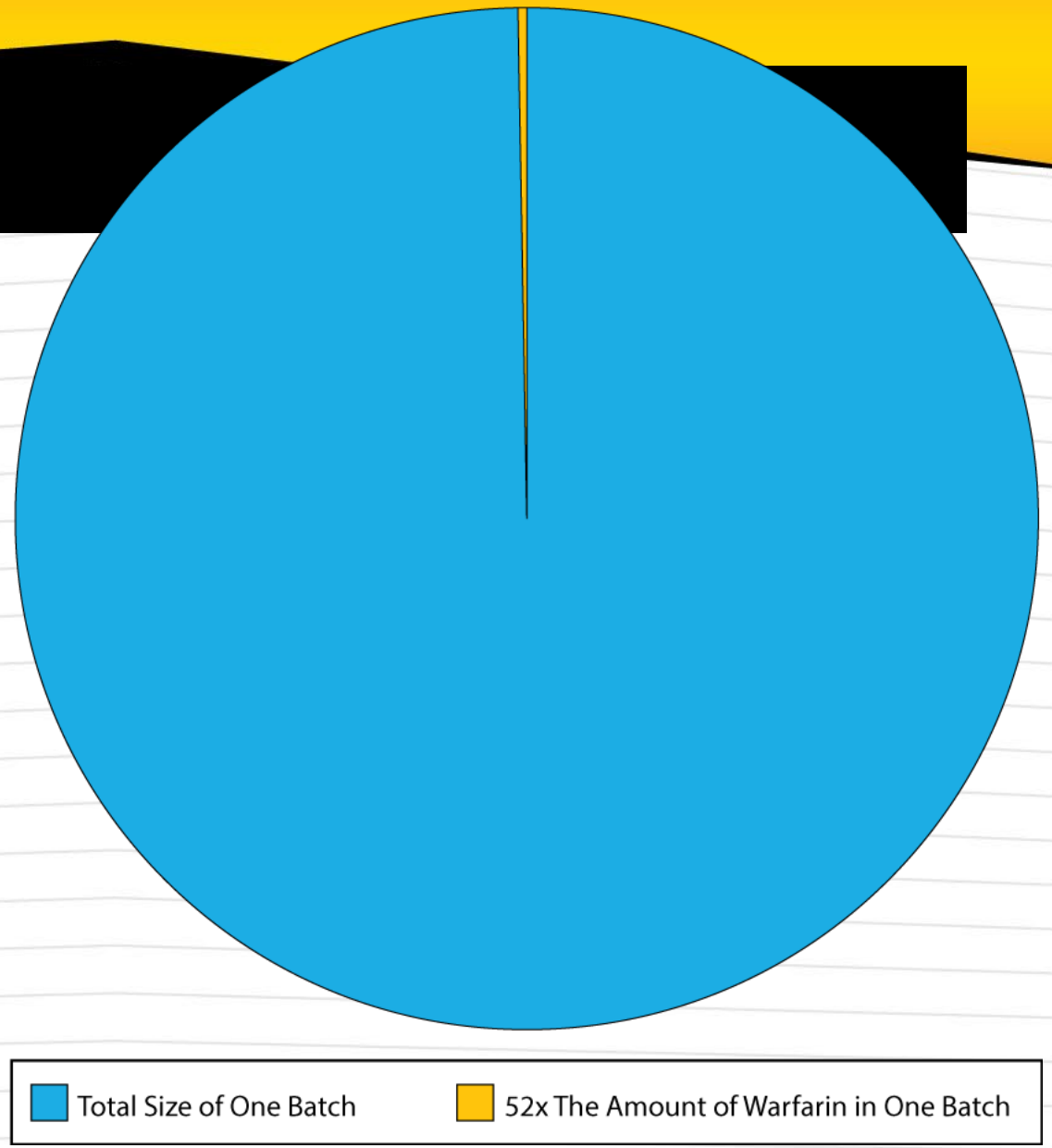
- Warfarin (10x)-killed rats fed to magpies. No effects.
- Warfarin (10x)-killed prairie dogs fed to European ferrets. No effects.
- Warfarin (5x)-killed rats fed to alligators. No effects.
- Warfarin (10x) fed to mallards, 14 days. No effects.
- Warfarin (10x) fed to bobwhite quail, 14-days. No effects.

(10x) = bait containing 0.05% warfarin concentration
(5x) = bait containing 0.025% warfarin concentration

Feral Hog Batch Size

Warfarin comprises less than 1/3 of a pound out of a 6,300 pound total batch.

- 6,300 lb Total Batch Weight
- Flour and grains 6,299.666 lbs
- Warfarin 0.3333 lbs



Toxicity of Hog Bait to Wildlife

(A.P. Meehan 1984)

- Hogs (88 lb) - Single Feeding: 5.3 lbs bait
  - Chronic: ¾ lb/day for 5 – 7 days
- Dog (44 lb) – Single Feeding: 88 lbs bait
  - Chronic: 13.2 lb/day for 5 days
- Cattle (880 lb) – Chronic: 3520 lbs/day for 5 days
- Turkey: (15 lb) – Chronic: 29.3 lbs/day for 19 days
- Bobwhite quail- Chronic: 27.6 lbs (EPA-practically non-toxic)

  - *Follow label directions to minimize non-target exposure*

Endangered Species Act (ESA)…

- Federal law
- The purpose of this act is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved (ESA, Section 2b)
- Administered by USFWS and NOAA
- Website: www.fws.gov and www.noaa.gov

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)…

- Federal law
- FIFRA:
  - regulates manufacturing, distribution, sale and use of pesticides
  - ensures that using the pesticide according to the product label will not cause unreasonable adverse effects to humans, non-target species and/or the environment
  - dictates that the product label, including all materials referenced on it is the LAW
- Administered by U.S. EPA (Website: www.epa.gov)

Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)…

- EPA is required to abide by ESA regulations
  - The ESA directs all Federal agencies to work to conserve endangered and threatened species
  - Section 7(a)(2) of ESA requires federal agencies (“action agencies”) in consultation with the Services to ensure that any action they authorize, fund or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of habitat designated by the Services as critical
- Under FIFRA, the “action” subject to the consultation provisions of the ESA is the federal registration of a pesticide

Pesticide Misuse is illegal…

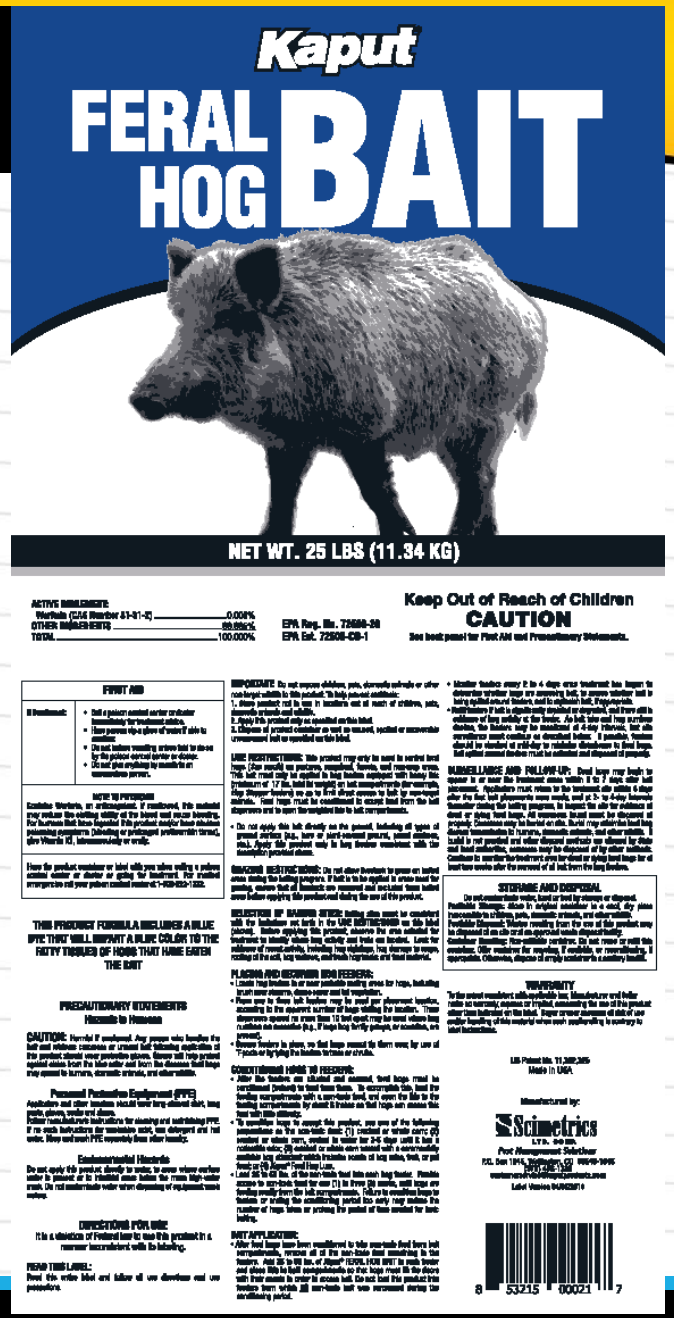
- It is a violation of federal law to use a pesticide product in a manner inconsistent with its labeling

- If label directions are followed and there is “take” (i.e. an animal is injured or killed) of a listed species
  - NO violation of FIFRA
  - NO violation of ESA

- If label directions are NOT followed and there is “take” of a listed species
  - VIOLATION of FIFRA
  - VIOLATION of ESA
  - Civil Penalties may apply

Kaput Feral Hog Bait Label Information…

- For use only to control feral hogs (*Sus scrofa*)
- EPA Registration Number 72500-26
- Wax Wafer, blue color
- Active Ingredient: 0.005% Warfarin
- Anticoagulant Bait



User Responsibilities…

- READ THE LABEL!!!
- The label is the law
- It is the responsibility of the applicator to read and follow ALL label directions

FAILURE TO DO SO IS A VIOLATION OF FEDERAL LAW

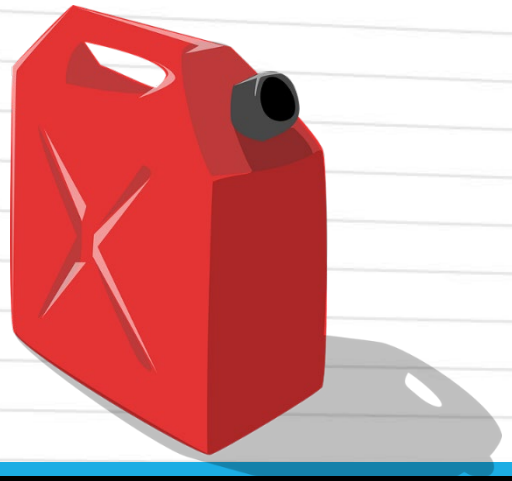
A Clear Sign of Consumption

- A fat soluble dye in this product will impart a blue color to the internal fatty tissues of hogs that have eaten the bait
- If a hunter kills a feral hog, this shows it has consumed Kaput Feral Hog Bait
- Indicator dye begins to appear in fatty tissues approximately 3 hours after bait consumption

Invisible Dangers

Environmental Hazards eaten by hogs that contain NO indicator dye:

- Crops that were recently treated with pesticides
- Secondary toxicity from eating poisoned rodents, etc
- Poisons being illegally used to bait hogs
  - Strychnine
  - Insecticide concentrates
  - Gasoline on corn, etc



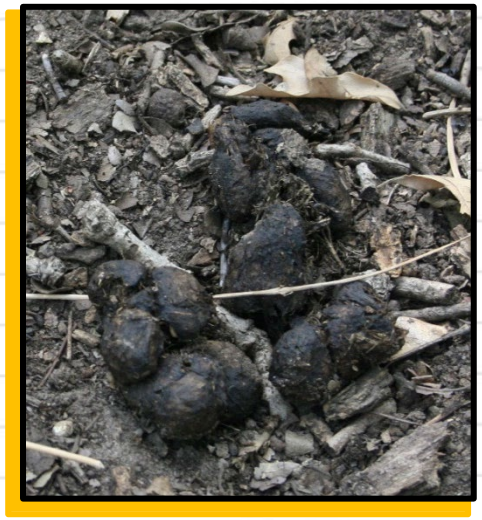
Use Restrictions for Kaput Feral Hog Bait…

- For use only to control feral hogs
- For use only in states where bait is registered
- Do not allow livestock to graze in area during baiting program
- Do not apply bait directly on the ground
- Do not apply bait without first conditioning hogs to eat from feeders
- For use only in hog feeders that meet the label requirements
  - Weighted lid (minimum of 17 lbs lid weight)
  - Staked securely to ground and/or tied to trees
  - 1 – 3 feeders spaced no more than 10 ft apart

7 STEPS TO SUCCESSFUL FERAL HOG BAITING

1: OBSERVE

The areas selected for treatment to identify where hog activity and trails are located



- Hog Sightings
- Damage to Crops
- Rooting of Soil
- Hog Wallows
- Fresh tracks
- Fecal Material

2: REMOVE

Livestock during the baiting program

3: POSITION

Hog Feeders in or near probable resting areas

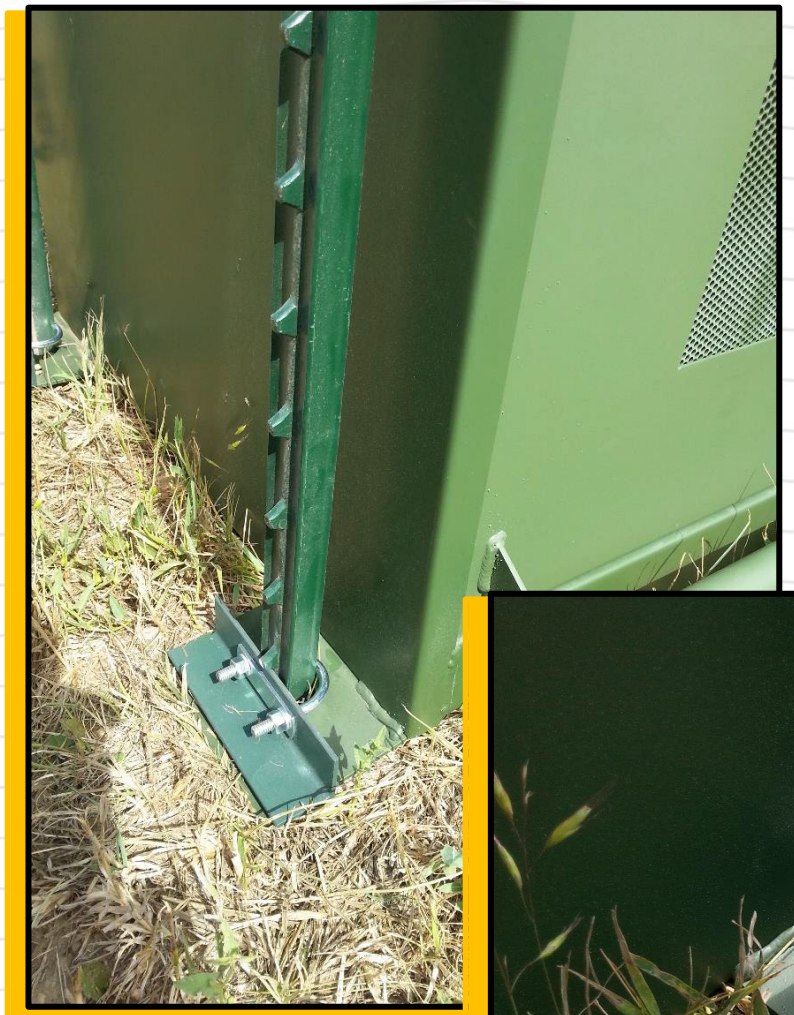
THIS INCLUDES:

- Brush along streams
- Dense cover
- Tall vegetation

Feeders MUST be equipped with heavy lids on bait compartments (minimum of 17 lbs lid weight required)

To further increase protection to non-target species, a **vertical** or **angled** lid weighing 17 or more lbs is recommended

Feeders must also be secured with T-posts or by tying to trees/shrubs to prevent hogs tipping them over



Use from 1 – 3 feeders per placement location, based on number of hogs in area

3 feeders spaced no more than 10 ft apart can be used where hog numbers are excessive

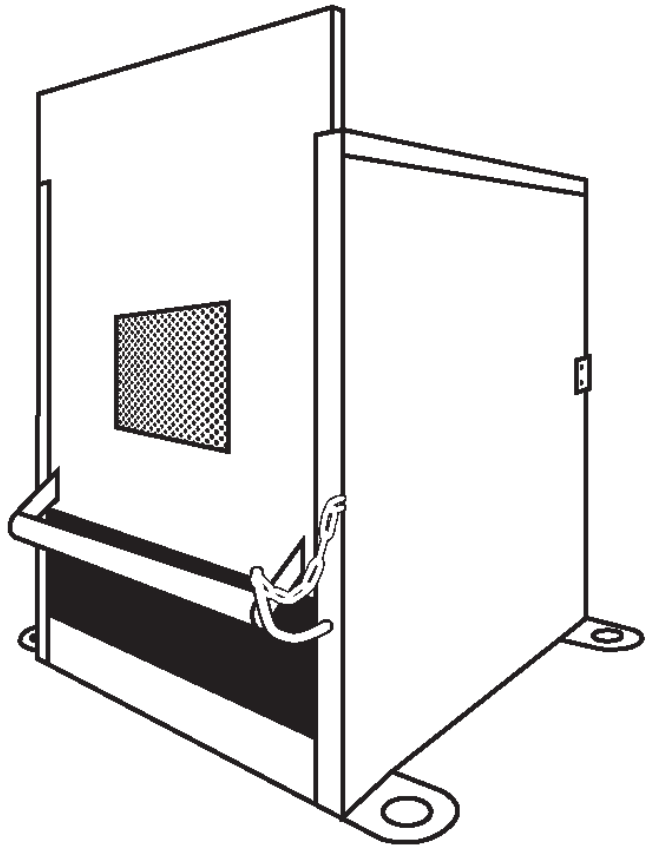
4: CONDITION

Hogs to eat from feeders for 1 – 3 weeks

USE ONE OF THESE NON-TOXIC FEEDS:

- Cracked or whole corn, soaked in water for 3-5 days until it has a noticeable odor
- Cracked or whole corn
- *Kaput®* Feral Hog Lure

- Place 25 – 50 lbs of corn in each feeder
- Open feeder door 4 - 6” so hogs will find feed
- Refill as needed, for a minimum of 1-3 weeks – until hogs are eating readily from bait compartments
- If corn is not being eaten, relocate feeders and start over



FAILURE TO TRAIN HOGS TO EAT FROM FEEDERS WILL LEAD TO POOR BAITING RESULTS!!!

If a commercial feeder is used, there must be a method of holding the feeder lid open during conditioning.

For Example:

- Chain with a hook
- Duct tape
- Installing a latch
- Rope, chain, etc wrapped around feeder and lid

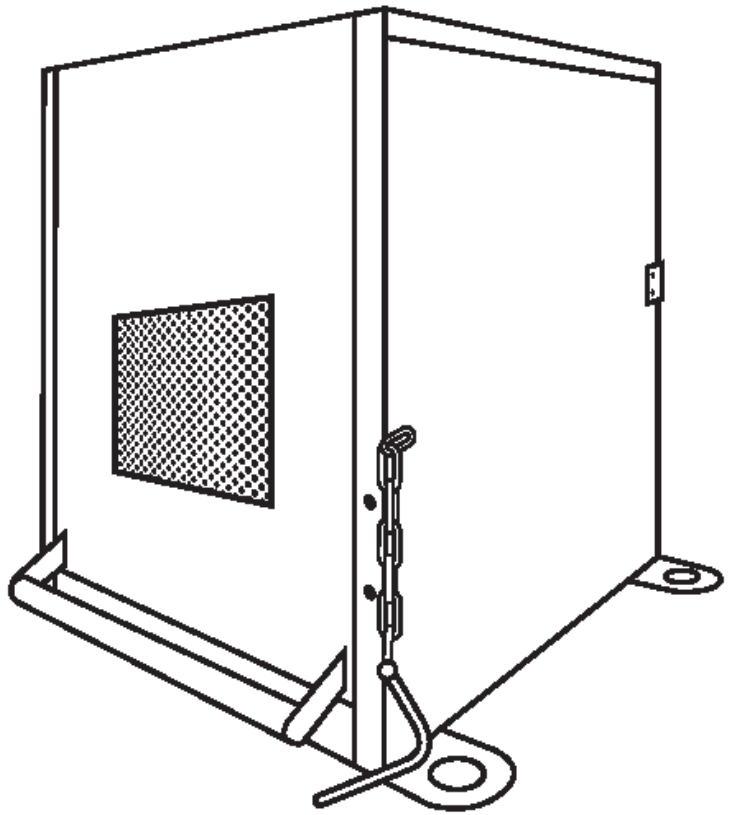
5: BAITING

Can begin only after hogs have been successfully conditioned

- Remove non-toxic feed from feeder
- Add 25-50 lbs of Kaput Feral Hog Bait to each feeder
- Do not bait feeders from which no corn was eaten during conditioning

CLOSE LIDS TO BAIT COMPARTMENTS

So that hogs must lift the doors with their snout to access bait



6: MONITOR

Feeders every 2-4 days

- Assess if bait is being eaten
- Clean up and dispose of any spilled bait
- Replenish if needed

CHECKING FEEDERS AT MID-DAY WILL MINIMIZE DISTURBANCE TO HOGS

7: RETURN

To the treatment site

- within 4 days after initial bait placement, and then at 2-4 day intervals, to inspect for evidence of dead or dying hogs
- Continue to monitor for at least 2 weeks after bait removal
- All carcasses must be disposed of properly
  - May be buried on site
    - BURIAL MAY MINIMIZE FERAL HOG DISEASE TRANSMISSION TO HUMANS, DOMESTIC ANIMALS, AND OTHER WILDLIFE
  - Other disposal methods as allowed by State and local authorities

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