

Feral Swine

Toxicant Update

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Impact on Agronomics

State	Reference	Year	Estimate (millions)
Alabama	Shi et al. (2010)	2009	\$55
Georgia	Mengak (2012)	2011	\$61
Louisiana	Salassi et al. (2022)	2015	\$92
South Carolina	Wild Hog Task Force	2012	\$45
Tennessee	Poudyal et al. (2016)	2015	\$26
Texas	Texas A&M (2012)	2010	\$52
11-Southern States	Anderson et al. (2016)	2015	\$190



(Rice Damage Acadia Parish, video by Charles Reiners)

Impact on Louisiana Agronomic Crops

1. \$14.8 M loss for Sugar Cane Producers
2. \$13.3 M loss for Rice Producers
3. \$10.1 M loss for Corn Producers
4. \$9.4 M loss for Hay Producers
5. \$9.3 M loss for Soybean Producers
6. \$6.9 M loss in Timber Value
7. \$5.3 M loss in Pasture Value
8. \$1.4 M loss in Cotton
9. \$427 K loss in Pecan
10. \$219 K loss in Wheat



(Salassi et al., 2022)

Feral Pig Preferences



Corn Hybrid Preferences

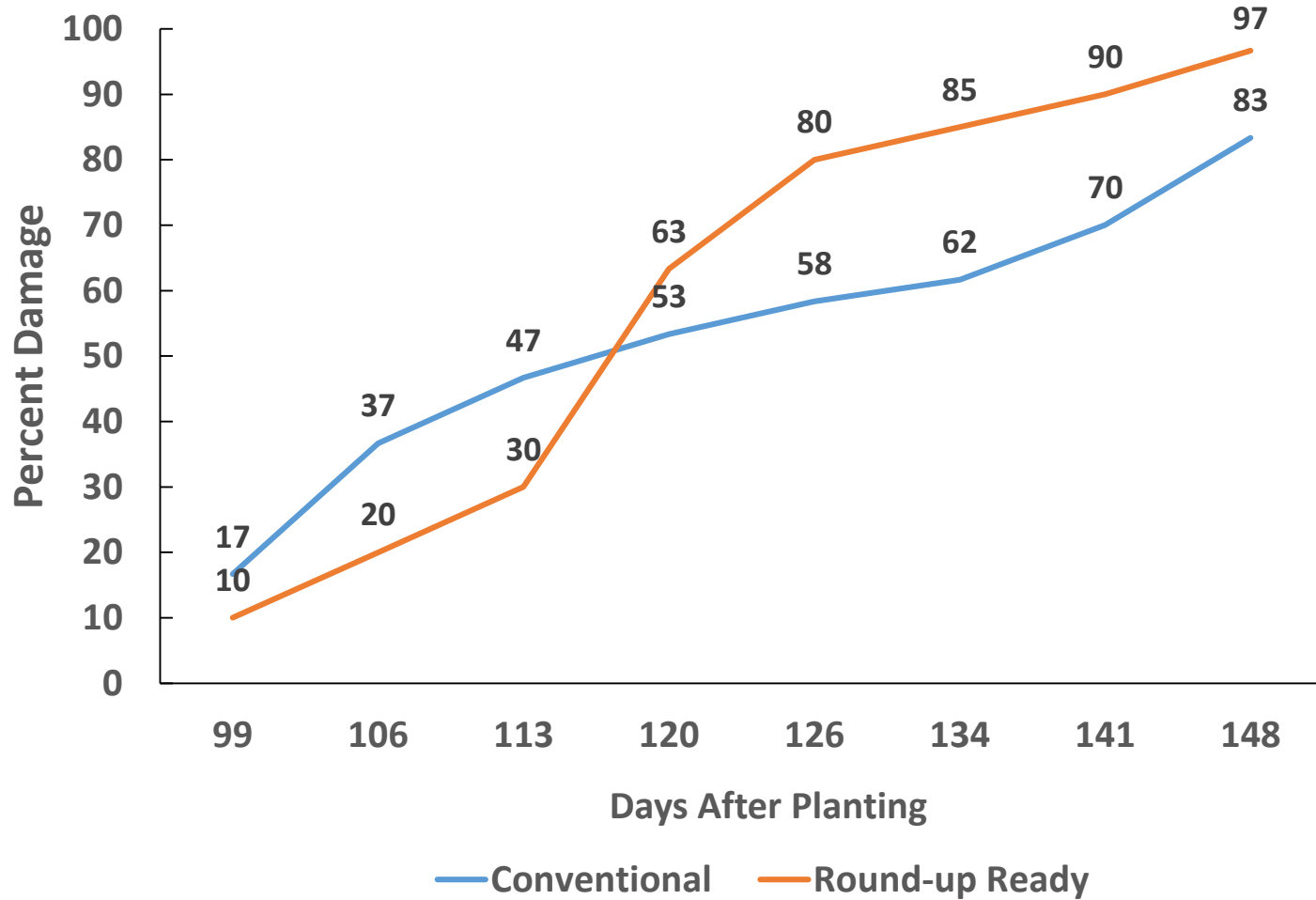
Hybrid	Maturity	Technology
Rev 28R10	118	RR2
Pioneer P1464VYHR	114	AVBL/YGCB/Hx1/LL/RR2
Dyna-Gro D57CC51	117	Conventional
Pioneer P1870YHR	118	AM/LL/RR2
Dyna-Gro D57VC17	117	VTDoublePro



Results on Feral Pig Preferences



Results on Feral Pig Preferences - Soybeans



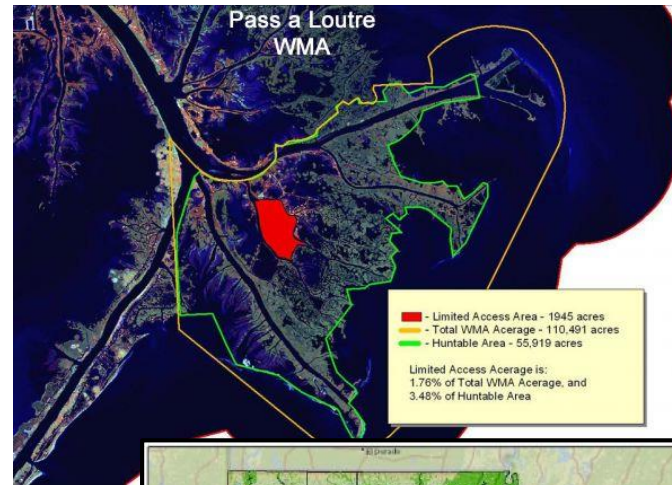
50cal Pig Shooting Rig



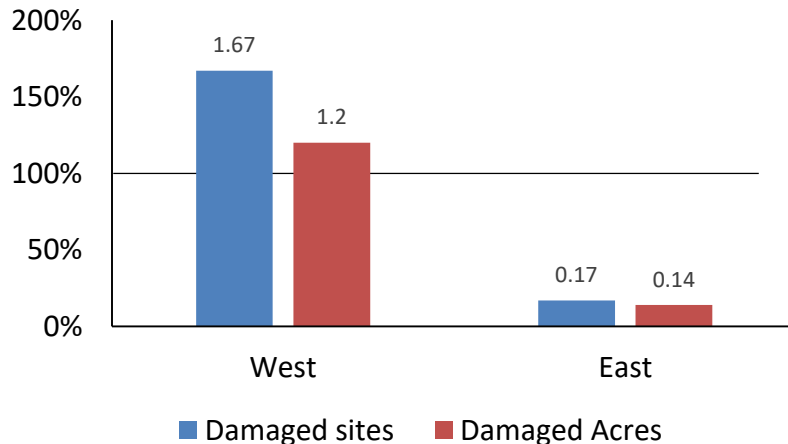
DISCLAIMER: REFERENCE TO THE ABOVE MENTIONED PRODUCT DOES NOT CONSTITUTE ENDORSEMENT, RECOMMENDATION, NOR FAVORING BY THE LSU AGCENTER. THEREFORE, THE LSU AGCENTER SHALL NOT BE LIABLE FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, PUNITIVE, OR INDIRECT DAMAGES ARISING FROM OR RELATING TO THE USE OF THE ABOVEMENTIONED PRODUCT, REGARDLESS OF THE OBVIOUS INEVITABILITY OF THE OCCURANCE OF SUCH DAMAGES.

The “Choot‘em” Mentality Doesn’t Work

- Hunters are allowed to “take” hogs year round
- East of South Pass utilized aerial gunning plus hunting
- West of South Pass was used as control plus hunting



Damage Post-Treatment



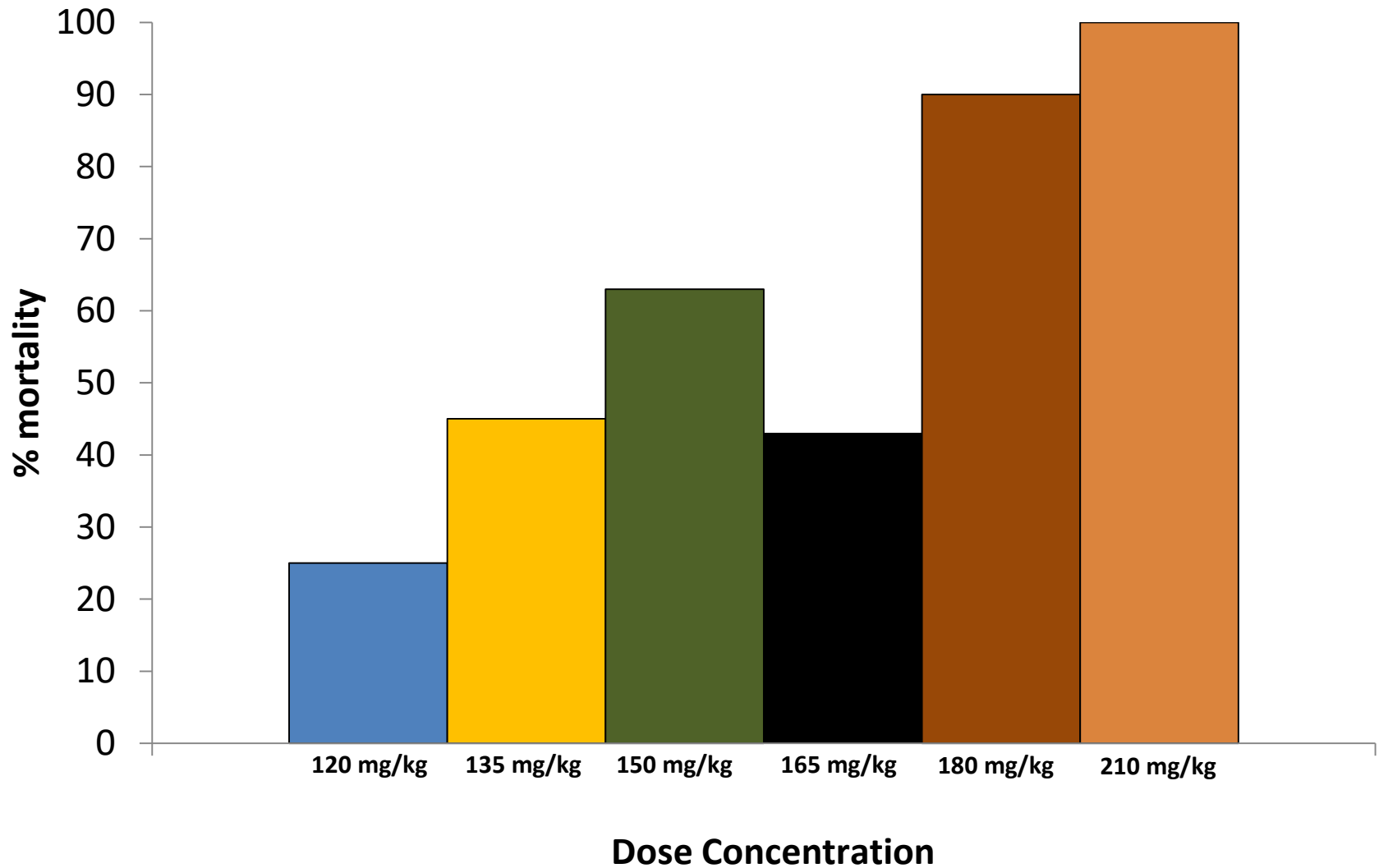
(LDWF, 2014)

Sodium Nitrite

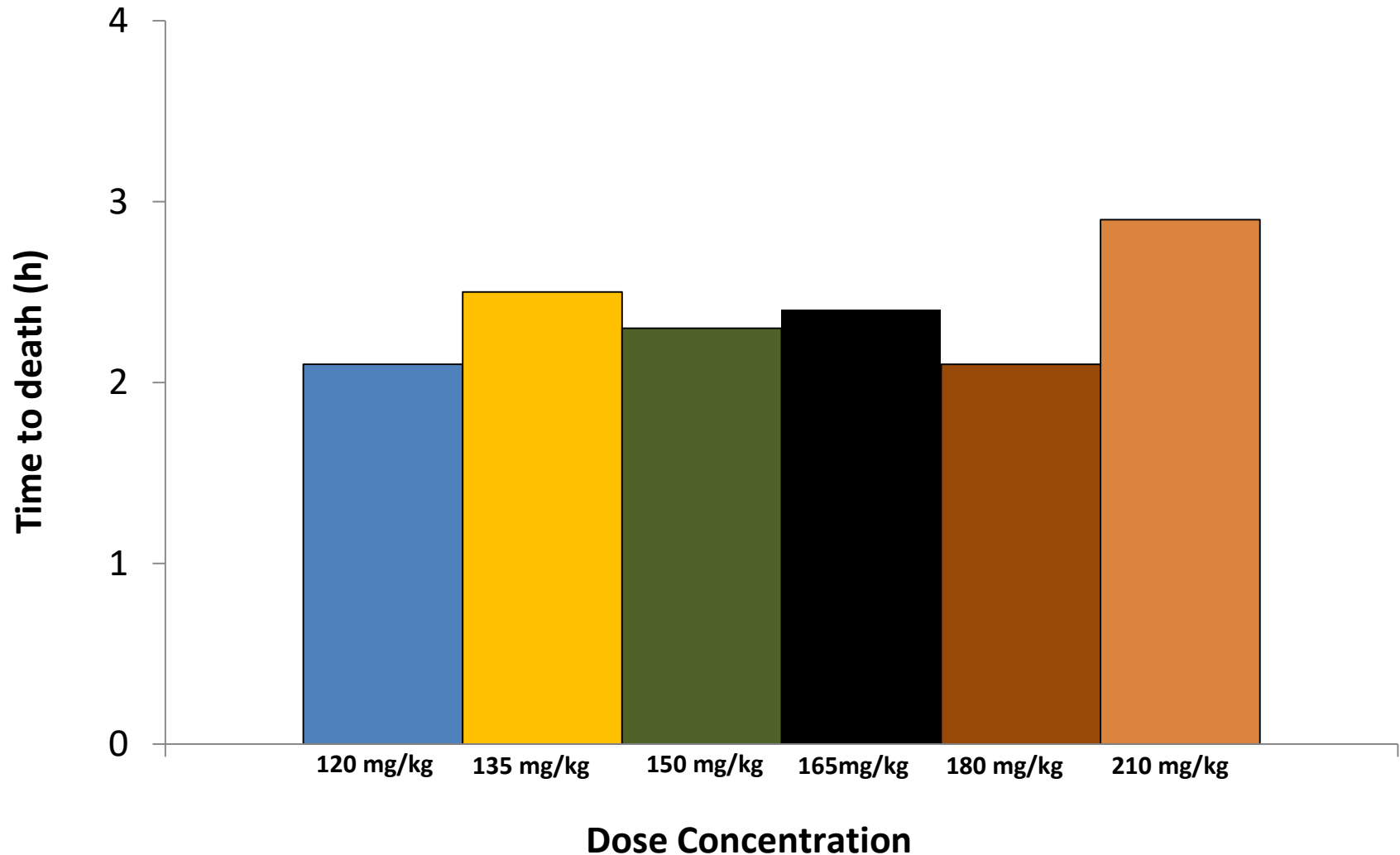
- Used as a food preservative
- Antidote - Cyanide poisoning
- Humans more tolerant than pigs
- Methemoglobin former
- Hygroscopic



Effect of Sodium Nitrite Concentration on Mortality Rate in Feral Pigs



Effect of Sodium Nitrite Concentration on Time to Death in Feral Pigs



LD₉₀ Determination

- Based on probit analysis LD₉₀ is 188 mg/kg
- Currently we are working with a bait containing 8 g of sodium nitrite (can be doubled)
- Would be capable of delivering enough sodium nitrite to kill a 97 lb pig if only one bait is consumed



Preference Trails



Pigs preferred dehydrated bass to WSC ($P < 0.029$)

Encapsulation

- Multiple encapsulation trials resulted in either too much or too little encapsulation
- Collaboration with the LSU Department of Chemistry yielded a non-encapsulated sodium nitrite product
- Currently, no nitrite encapsulation is utilized in bait matrix





US011716993B2

(12) **United States Patent**
Gentry et al.

(10) **Patent No.: US 11,716,993 B2**
(45) **Date of Patent: Aug. 8, 2023**

(54) **FERAL HOG TOXICANT**

FOREIGN PATENT DOCUMENTS

(71) Applicant: **Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, LA (US)**

DE 102006051088 A1 * 6/2008 A23L 1/2753
WO WO-2008104028 A1 * 9/2008 A01N 25/002
WO WO2010151150 A2 12/2010
WO WO-2018039739 A1 * 3/2018 A01M 25/00

(72) Inventors: **Glen Gentry, Clinton, LA (US); John Pojman, Baton Rouge, LA (US); Baylen Thompson, Spanish Fort, AL (US)**

OTHER PUBLICATIONS

(73) Assignee: **Board of Supervisors of Louisiana State University and Agricultural and Mechanical College, Baton Rouge, LA (US)**

Snow et al., "Potential Secondary Poisoning Risks to Non-Targets From a Sodium Nitrite Toxic Bait for Invasive Wild Pigs," *Pest Manag Sci.* DOI 10.1002/ps.4692 (2017).
L. Shapiro et al., "Efficacy of Encapsulated Sodium Nitrite as a New Tool for Feral Pig Management," *Journal of Pest Science.* 89.10. 1007/s10340-015-0706-7 (2015).
B. Thompson and Pojman Research Team, "Encapsulation of Sodium Nitrite," slides of presentation given at LSU Idlewild Research Center (Sep. 15, 2018).
G. Gentry, "Development of Control Options for Feral Swine in Soybean Fields," presentation made to Louisiana Soybean and Grain Research and Promotion Board, Baton Rouge, LA, Nov. 21, 2019.
G. Gentry, "Development of an Encapsulation Protocol for Sodium Nitrite for Control of Feral Swine in Rice," presentation made to Louisiana Rice Research Board, Crowley, LA, Oct. 7, 2019.
G. Gentry, "Management and Control of Feral Hogs," presentation made to Southern Section of Weed Science Society, Biloxi MS, Jan. 27, 2020.
G. Gentry, "Feral Swine Toxicant Update," presentation made to Bob R Jones Wildlife Research Institute Board Meeting, Clinton, LA, Feb. 20, 2020.

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

* cited by examiner

(21) Appl. No.: **17/000,581**

Primary Examiner — Snigdha Maewall
(74) *Attorney, Agent, or Firm* — John H. Rummels

(22) Filed: **Aug. 24, 2020**

(65) **Prior Publication Data**
US 2021/0068398 A1 Mar. 11, 2021

Related U.S. Application Data

(60) Provisional application No. 62/896,779, filed on Sep. 6, 2019.

(51) **Int. Cl.**
A01N 59/00 (2006.01)

(52) **U.S. Cl.**
CPC **A01N 59/00** (2013.01)

(58) **Field of Classification Search**
CPC A01N 59/00
See application file for complete search history.

(57) **ABSTRACT**

A composition and method for killing feral hogs: a bait that is attractive to hogs is mixed with a lethal amount of sodium nitrite, along with sufficient base to inhibit decomposition of the sodium nitrite. At sufficiently high pH, encapsulation of the sodium nitrite is not required to inhibit decomposition. In the absence of substantial decomposition, the sodium nitrite itself is not aversive to the pigs, and may even enhance acceptance of the baits by the pigs. Optionally, an anti-emetic compound is added to the mixture to reduce the likelihood the bait will be vomited. Optionally, an additional toxicant such as luteolin is added to the mixture.

(56) **References Cited**

U.S. PATENT DOCUMENTS

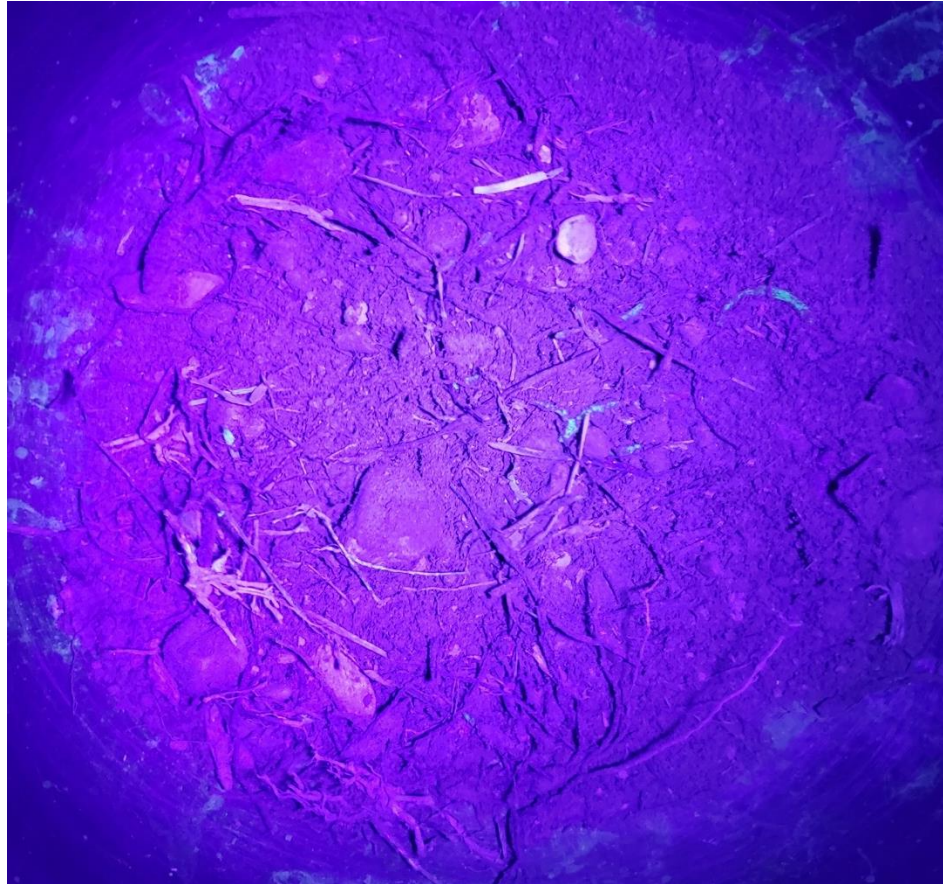
8,795,649 B2 8/2014 Staples 428/84

7 Claims, No Drawings



Current Bait Prototypes

Protecting Non-targets



Delivery Methods



Delivery System Visits

Consumption of Baits with Different Ingredients

- Blank Baits (No SN): 34 Delivered/7 Consumed = 21%
- Dusted Blank Baits: 12 Delivered/12 Consumed = 100%
- SN Replaced Baits: 77 Delivered/56.5 Consumed = 73%

Animals Visiting Bait Site

- Birds = 3
- Crows = 15
- Deer = 35
- Pig = 519
- Raccoon = 113
- Turkey = 51



Buried Bait Visits

Consumption of Baits at Different Depths

- 2" – 16 Delivered/8 Consumed = 50%
- 3" – 8 Delivered/8 Consumed = 100%
- 4" – 8 Delivered/4 Consumed = 50%
- 5" – 16 Delivered/12 Consumed = 75%
- 6" – 4 Delivered/4 Consumed = 100%

Animals Visiting Bait Site

- Armadillo = 4
- Bird = 13
- Bobcat = 5
- Cat = 1
- Coyote = 7
- Crow = 5
- Deer = 110
- Flying Squirrel = 4
- Mouse = 1
- Opossum = 42
- Pig = 205
- Rabbit = 65
- Raccoon = 102
- Squirrel = 27



Sponsors





Collaborators

- Matt Capelle – Bob R Jones Idlewild Research Station
- Dearl Sanders – Bob R Jones Idlewild Research Station
- Jim LaCour – LDWF
- Jonathon Roberts - LDAF
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