

Anthraquinone-based Bird Repellent for Ripening Oilseed Sunflower

**Scott Werner, George Linz, Jeff Homan,
Shelagh Tupper, Susan Pettit & James Carlson**

**NSA Research Forum
Fargo, ND**

January 12, 2011

Anthraquinone for Ripening Sunflower- Fall 2009



United States Department of Agriculture
Animal and Plant Health Inspection Service

Wildlife Services
NWRC
National Wildlife Research Center

Anthraquinone Laboratory Efficacy

Bird	Seed	Threshold
Common	Confection	0.9%

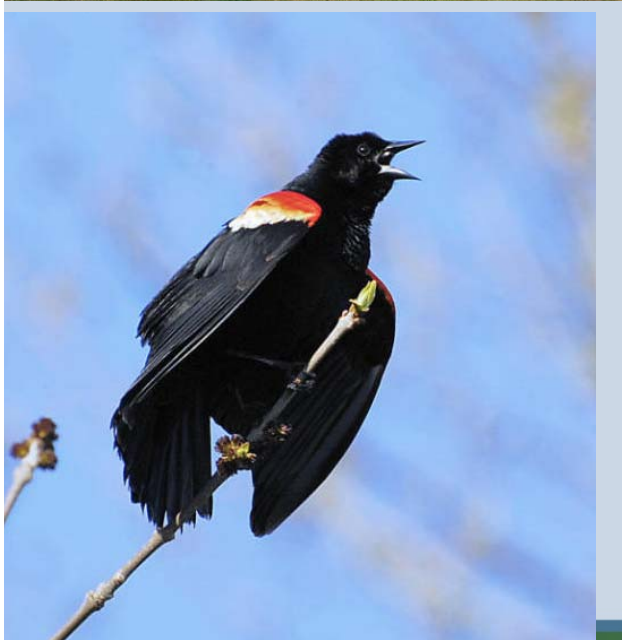


Anthraquinone Laboratory Efficacy

Bird	Seed	Threshold
Common Grackle	Confection	0.9%
Red-winged Blackbird	Oilseed	0.15%



Anthraquinone for Ripening Sunflower- Fall 2010



United States Department of Agriculture
Animal and Plant Health Inspection Service

Wildlife Services
NWRC
National Wildlife Research Center

AQ for Ripening Sunflower- 2010

Oilseed sunflower: Steele, ND

24 bird enclosures (4 m x 4 m) established: **July 20-21**

AQ for Ripening Sunflower- 2010



AQ for Ripening Sunflower- 2010

Oilseed sunflower: Steele, ND

24 bird enclosures (4 m x 4 m) established: July 20-21

Hand-sprayed 8 enclosures (0.5 gal Avipel/ac): **August 24 (R-6)**

Hand-sprayed 8 enclosures (1 gal Avipel/ac): **August 24 (R-6)**

Populated each enclosure with 10 red-winged blackbirds: **August 25**

CO₂ Backpack Sprayer for Ripening Sunflower



AQ for Ripening Sunflower- 2010

Oilseed sunflower: Steele, ND

24 bird enclosures (4 m x 4 m) established: July 20-21

Hand-sprayed 8 enclosures (0.5 gal Avipel/ac): August 24 (R-6)

Hand-sprayed 8 enclosures (1 gal Avipel/ac): August 24 (R-6)

Populated each enclosure with 10 red-winged blackbirds: August 25

Removed all birds (14 days post-applic): **September 8**

Hand harvested all enclosures: **September 9-10**

Field harvested: **October 27**

Results

■ Sunflower Damage:

➤ 2010

- 34% damage @ 0.5 gal Avipel/ac
- 33% damage @ 1 gal Avipel/ac
- 44% damage among untreated enclosures

Results

■ Sunflower Damage:

➤ 2010

- 34% damage @ 0.5 gal Avipel/ac
- 33% damage @ 1 gal Avipel/ac
- 44% damage among untreated enclosures

➤ 2009

- 18% @ 2 gal Avipel/ac
- 64% damage among untreated enclosures

Results

■ Harvested Seed Mass:

➤ 2010

- 2.2 kg/enclosure @ 0.5 gal Avipel/ac
- 2.2 kg/enclosure @ 1 gal Avipel/ac
- 1.9 kg/enclosure among untreated enclosures

Results

■ Harvested Seed Mass:

➤ 2010

- 2.2 kg/enclosure @ 0.5 gal Avipel/ac
- 2.2 kg/enclosure @ 1 gal Avipel/ac
- 1.9 kg/enclosure among untreated enclosures

➤ 2009

- 2.5 kg/enclosure @ 2 gal Avipel/ac
- 1.2 kg/enclosure among untreated enclosures

Anthraquinone Field Residues (2010)

➤ **Birds in (August 25)**

- 481 ppm AQ @ 0.5 gal Avipel/ac
- 978 ppm AQ @ 1 gal Avipel/ac

➤ **Birds out (September 8)**

- 385 ppm AQ @ 0.5 gal Avipel/ac
- 952 ppm AQ @ 1 gal Avipel/ac

➤ **Pre-harvest (Oct 20)**

- 304 ppm AQ @ 0.5 gal Avipel/ac
- 789 ppm AQ @ 1 gal Avipel/ac

Acknowledgments



- **Tim DeKrey**
- **NDSU- Dept. of Biological Sciences**
Dr. Bleier, Megan Klosterman,
James Schanandore, Matthew Strassburg,
Dereck Stonefish
- **Linda Penry & Ben Larson (NWRC)**
- **USDA Wildlife Services- ND**



Internet:

http://www.aphis.usda.gov/wildlife_damage/nwrc/index.shtm

Email: Scott.J.Werner@aphis.usda.gov