

# **USDA Wildlife Services Trials of Flight Control<sup>®</sup> Max Repellent at Cooperating Airports**

**Scott J. Werner**

**United States Department of Agriculture  
Animal Plant and Health Inspection Service**

**Wildlife Services**

**National Wildlife Research Center**

**Bird Strike Committee USA Meeting**

**21 July 2022**

# Anthraquinone-based Repellents

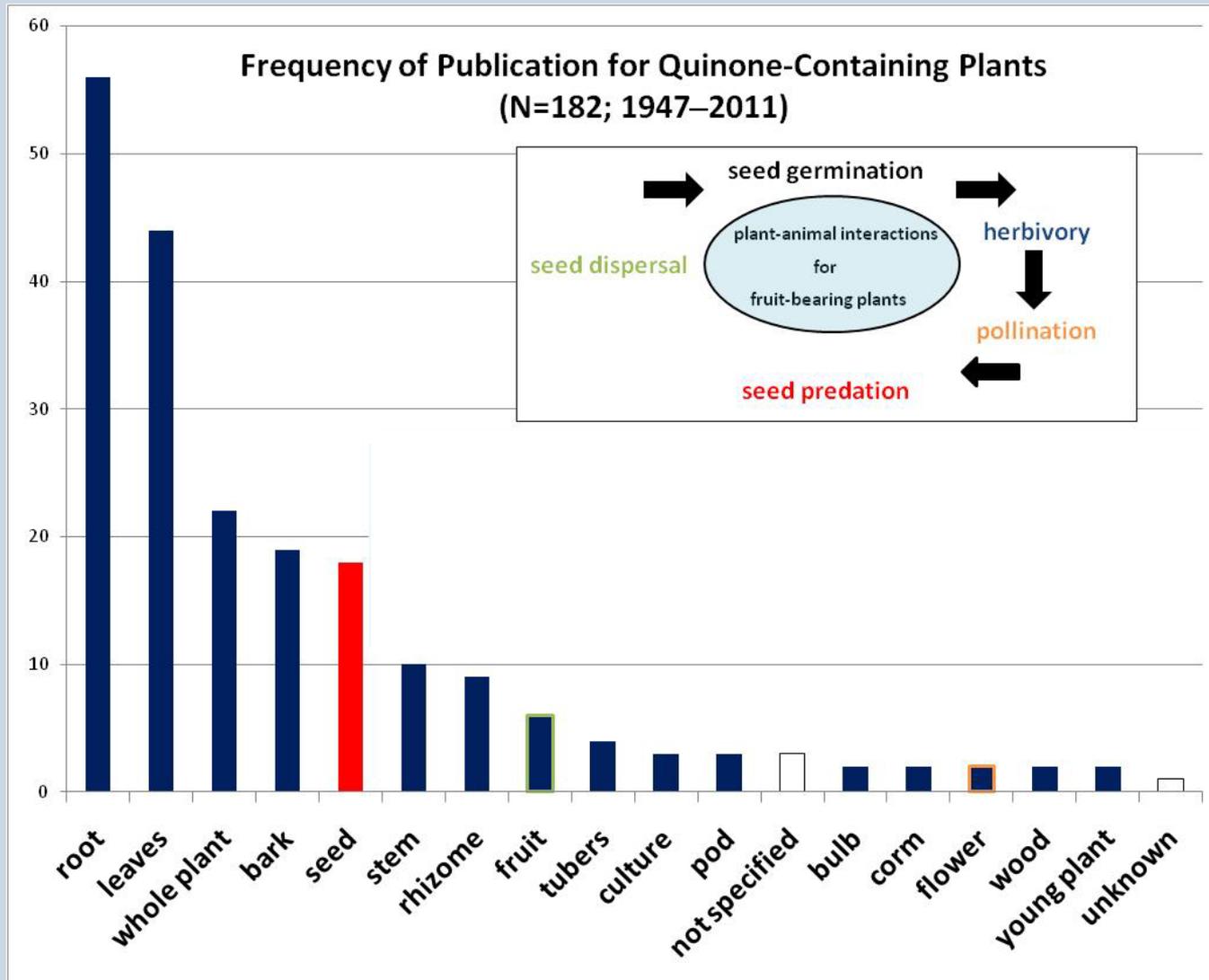
**Naturally-occurring aromatic compound.**

**Found in more than 175 plant species.**

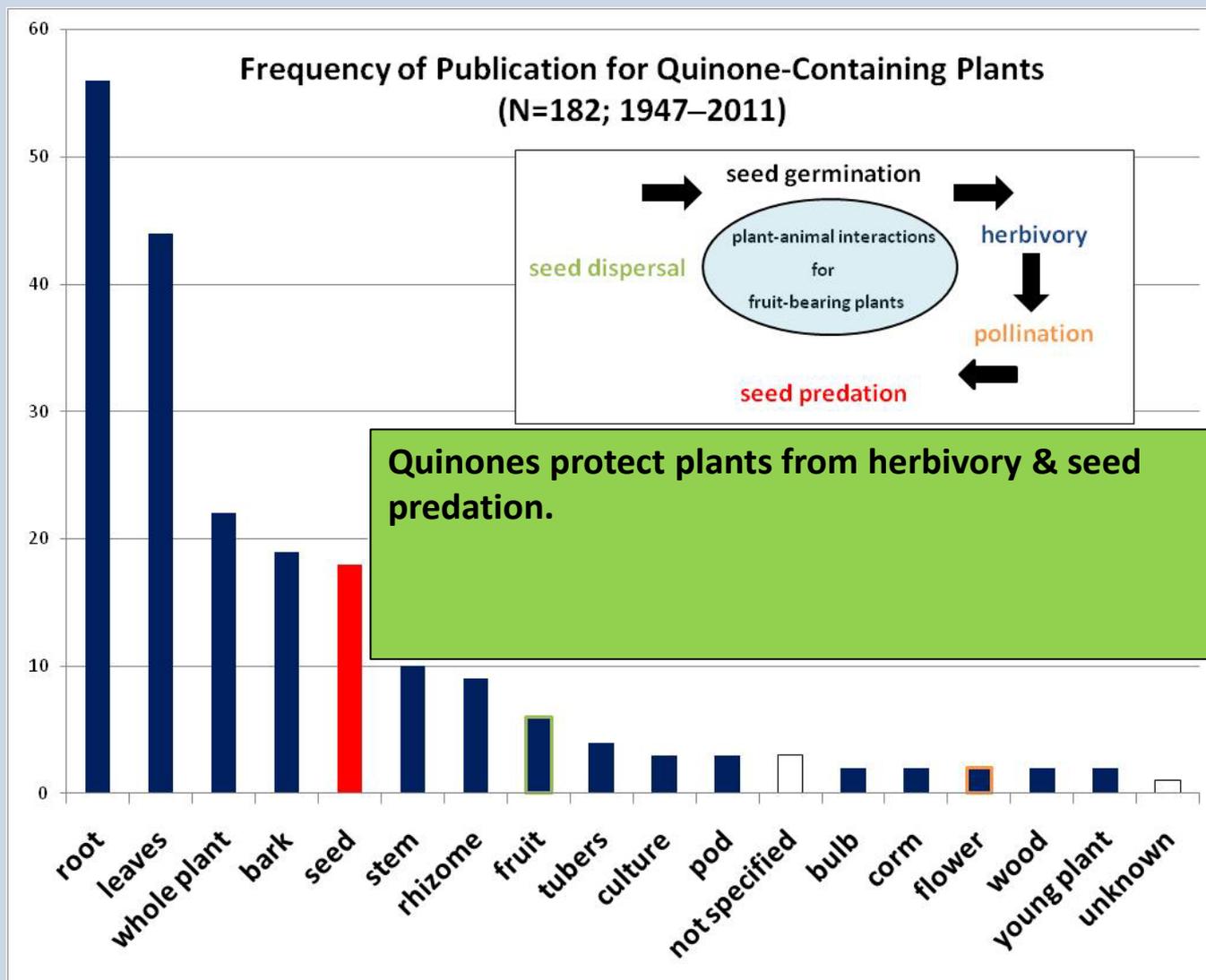
**Tested internationally as bird repellent beginning in 1940s.**

**First patents for bird repellency in 1943 (Germany) and 1944 (USA).**

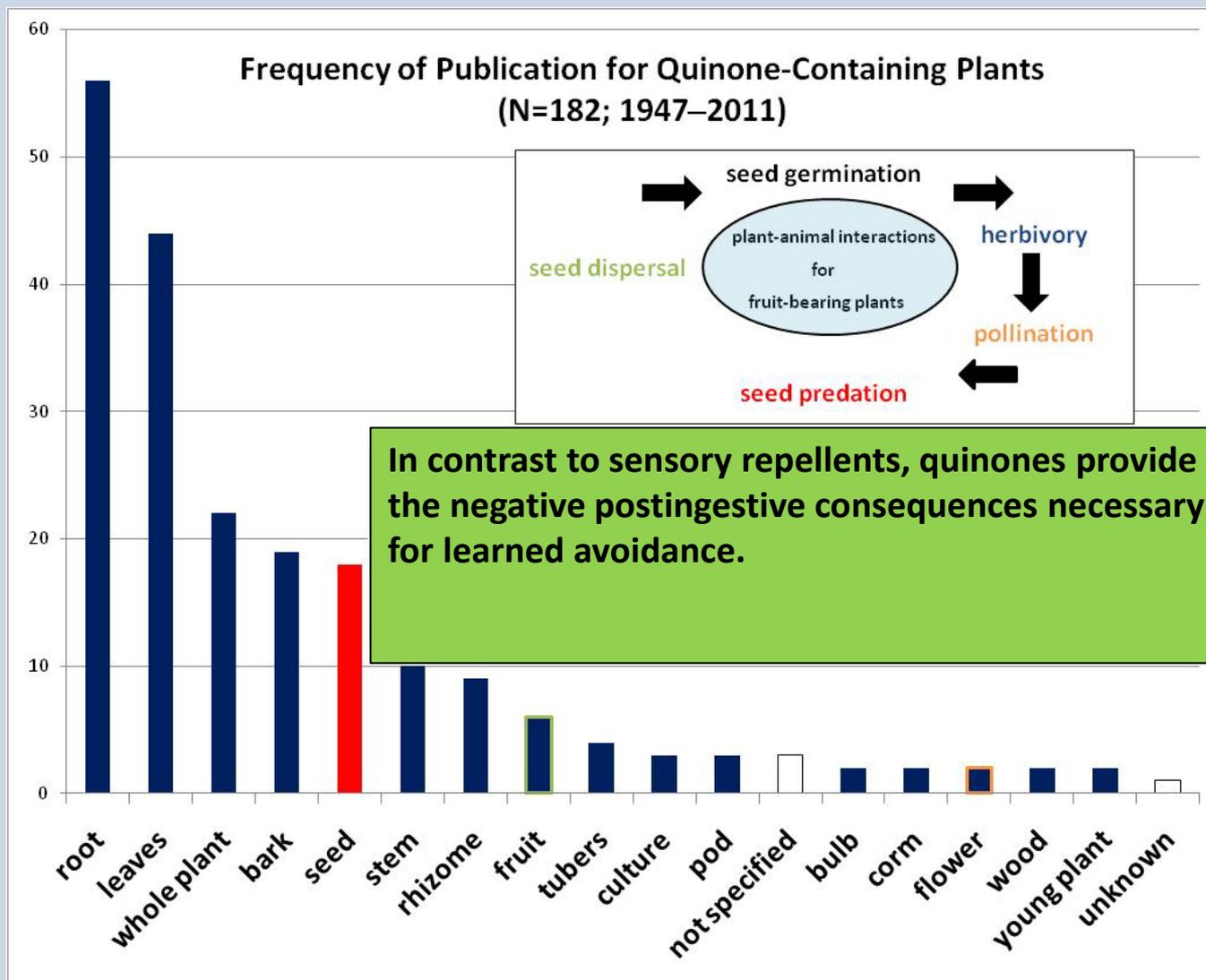
# Naturally-occurring Quinones



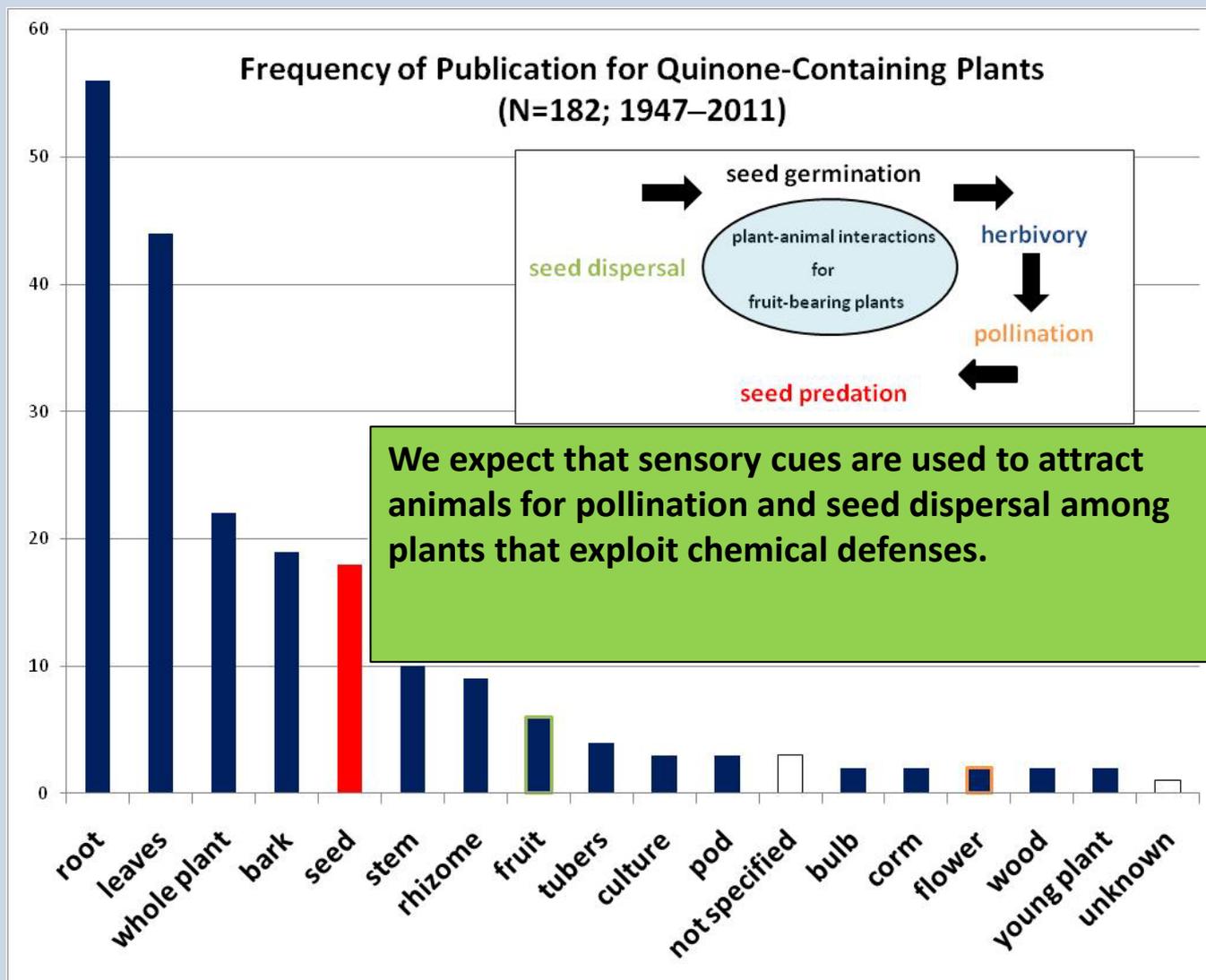
# Naturally-occurring Quinones



# Naturally-occurring Quinones



# Naturally-occurring Quinones



# Flight Control® Repellent (old formulation)

**Flight Control® registered for U.S. airport applications for more than 20 years.**

**Active ingredient: 50% 9,10 anthraquinone.**

**Application rate: 1 gallon per acre.**

# Flight Control® Repellent (old formulation)

Flight Control® registered for U.S. airport applications for more than 20 years.

Active ingredient: 50% 9,10 anthraquinone.

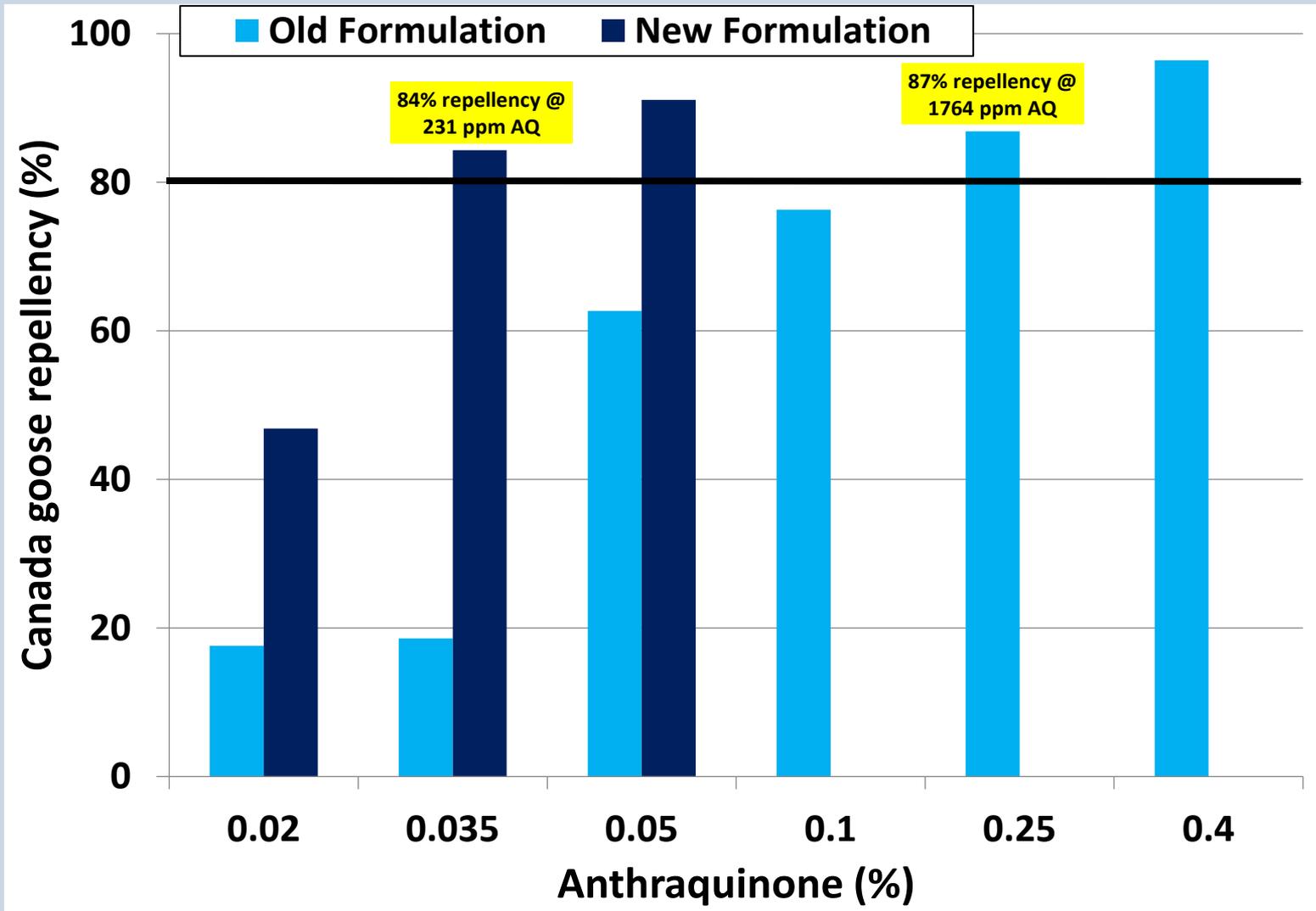
Application rate: 1 gallon per acre.

➤ **Research & Development Objective:**

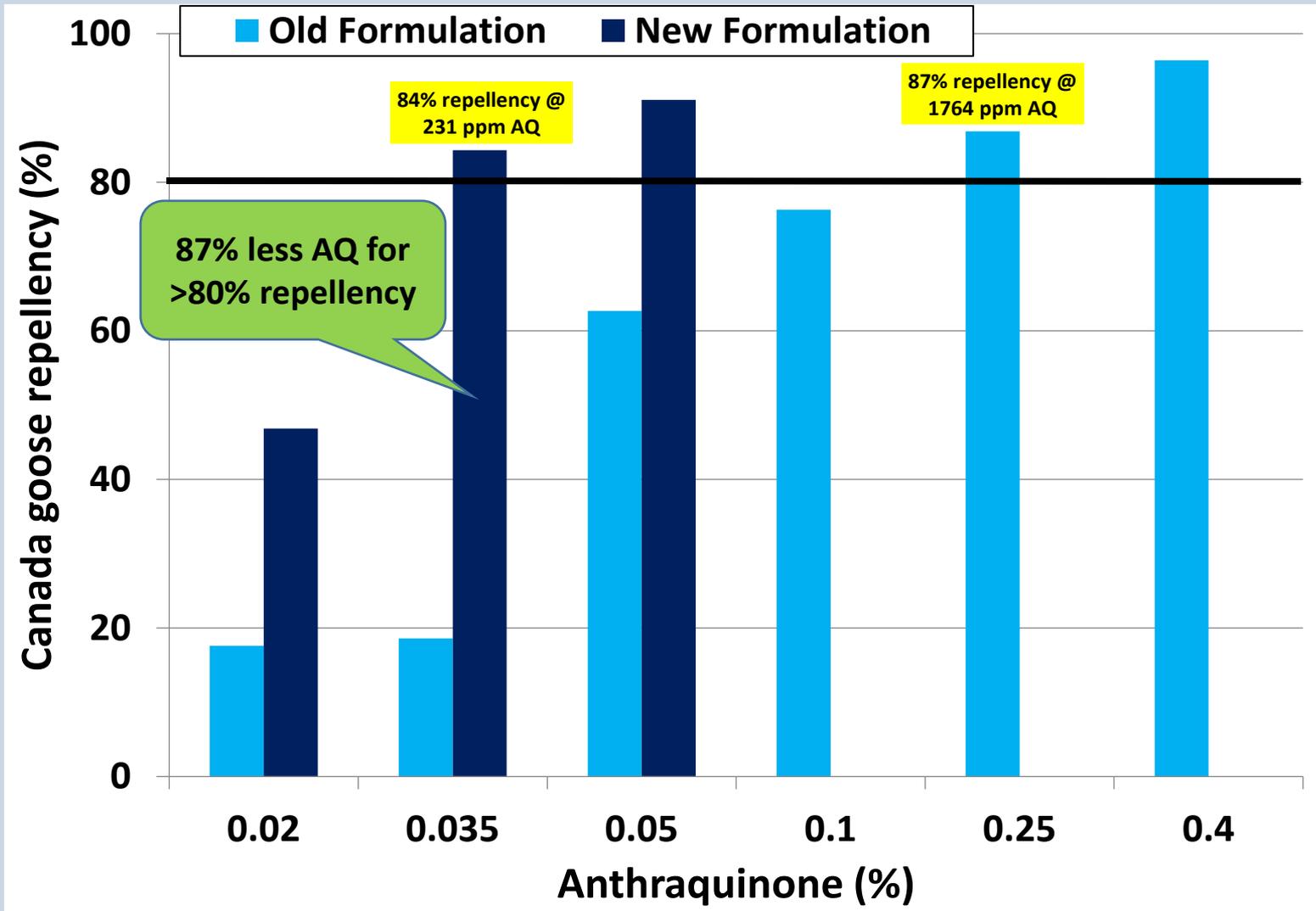
**decrease active ingredient & application rate.**

**(increase cost-effectiveness of repellent applications).**

# USDA/Arkion Life Sciences Repellent Development



# USDA/Arkion Life Sciences Repellent Development



# Flight Control® Max Repellent (new formulation)

Flight Control® Max registered for U.S. airport applications in November 2020.

Active ingredient: 18.6% 9,10 anthraquinone.

Application rate: ½ gallon per acre.

Use sites: areas adjacent to or on airport property.

(also commercial sites, industrial sites, cemeteries,  
and landfills & managed waste dumpsites).



# USDA Wildlife Services Trials of Flight Control® Max

**Trials designed to develop best management practices for repellent applications in airport settings.**

**USDA Wildlife Services airport biologists:**

- **identified and resolved technical issues associated with repellent applications, and**
- **conducted wildlife surveys at repellent-treated and untreated areas on airfield.**

**Collaborating USDA Wildlife Services Programs:**

**WA, SD, OK, WI, MI, VA, NC & SC.**

# Feedback from USDA Wildlife Services Trials

Trial Site	State	Species Repelled	Species Not Repelled	Trial Status
<b>1</b>	<b>WA</b>			<b>Ongoing</b>

# Feedback from USDA Wildlife Services Trials

Trial Site	State	Species Repelled	Species Not Repelled	Trial Status
1	WA			Ongoing
2	SD	Small birds, wading birds		Completed

# Feedback from USDA Wildlife Services Trials

Trial Site	State	Species Repelled	Species Not Repelled	Trial Status
1	WA			Ongoing
2	SD	Small birds, wading birds		Completed
3	OK		<b>Migratory mourning doves</b>	<b>Completed</b>

# Feedback from USDA Wildlife Services Trials

Trial Site	State	Species Repelled	Species Not Repelled	Trial Status
1	WA			Ongoing
2	SD	Small birds, wading birds		Completed
3	OK		Migratory mourning doves	Completed
4	WI	Sandhill cranes		Completed

# Feedback from USDA Wildlife Services Trials

Trial Site	State	Species Repelled	Species Not Repelled	Trial Status
1	WA			Ongoing
2	SD	Small birds, wading birds		Completed
3	OK		Migratory mourning doves	Completed
4	WI	Sandhill cranes		Completed
5	MI	Canada geese		Completed

# Feedback from USDA Wildlife Services Trials

Trial Site	State	Species Repelled	Species Not Repelled	Trial Status
1	WA			Ongoing
2	SD	Small birds, wading birds		Completed
3	OK		Migratory mourning doves	Completed
4	WI	Sandhill cranes		Completed
5	MI	Canada geese		Completed
6	VA			Ongoing

# Feedback from USDA Wildlife Services Trials

Trial Site	State	Species Repelled	Species Not Repelled	Trial Status
1	WA			Ongoing
2	SD	Small birds, wading birds		Completed
3	OK		Migratory mourning doves	Completed
4	WI	Sandhill cranes		Completed
5	MI	Canada geese		Completed
6	VA			Ongoing
7	NC	<b>Canada geese, American crows</b>		<b>Completed</b>

# Feedback from USDA Wildlife Services Trials

Trial Site	State	Species Repelled	Species Not Repelled	Trial Status
1	WA			Ongoing
2	SD	Small birds, wading birds		Completed
3	OK		Migratory mourning doves	Completed
4	WI	Sandhill cranes		Completed
5	MI	Canada geese		Completed
6	VA			Ongoing
7	NC	Canada geese, American crows		Completed
8	SC			<b>Completed</b>

# Feedback from USDA Wildlife Services Trials

Trial Site	State	Species Repelled	Species Not Repelled	Trial Status	Would you use FC Max in the future?
1	WA			<b>Ongoing</b>	
2	SD	Small birds, wading birds		Completed	<b>YES</b>
3	OK		Migratory mourning doves	Completed	<b>NO</b> (not for migratory mourning doves)
4	WI	Sandhill cranes		Completed	<b>YES</b>
5	MI	Canada geese		Completed	<b>YES</b>
6	VA			<b>Ongoing</b>	
7	NC	Canada geese, American crows		Completed	<b>YES</b>
8	SC			Completed	<b>NO</b> (cleanup problematic after first application)

# 2022 Technical Bulletin for Flight Control® Max



## TECHNICAL BULLETIN:

### 1) Flight Control® Max for wildlife repellency (including Canada geese).

#### 2) USE SITES:

- Repels geese from terrestrial areas at or near airports.
- Repels geese from grassy areas at commercial sites, industrial office sites, municipal sites or in developed urban areas.
- Repels geese from golf courses.
- Repels geese in turf areas, including sports fields, park grounds, home lawns and cemeteries.
- Repels geese from landfills and dumpsites.

#### 3) USE RESTRICTIONS:

- This product may be used to repel geese, including Canada geese.
- Do not apply when surface to be treated is wet or when rain is expected.
- Do not apply this product in a way that will contact workers or other persons, either directly or through drift.
- Do not allow people or pets to enter treated area until product has dried.
- Do not apply to sidewalks, parking lots, patios, etc.

#### 4) MIXING DIRECTIONS:

- Thoroughly shake or stir Flight Control Max prior to diluting with water.
- Pour Flight Control® Max directly from container through medium-mesh kitchen strainer (e.g., 12.5" L x 10" W x 4.5" H, four (4) quart; e.g., [https://www.amazon.com/ISVP-Endurance-Inch-Wide-Basket/dp/B00L1OIG8C/ref=sr\\_1\\_2?pid=33GRKOV7KT930&keywords=4%2Bquart%2Bmesh%2Bstrainer&qid=1642715892&sprex=4%2Bquart%2Bmesh%2Bstraine%2Caps%2C6298sr=8-2&th=1](https://www.amazon.com/ISVP-Endurance-Inch-Wide-Basket/dp/B00L1OIG8C/ref=sr_1_2?pid=33GRKOV7KT930&keywords=4%2Bquart%2Bmesh%2Bstrainer&qid=1642715892&sprex=4%2Bquart%2Bmesh%2Bstraine%2Caps%2C6298sr=8-2&th=1))
- If applying Flight Control® Max with an Agricultural Sprayer (induction sprayer), Flight Control® Max should be pre-diluted before pouring into spray tank at a rate of 1 cup of water per 1 gallon of Flight Control® Max. 2.5 cups of water may be poured directly into the 2.5 gallon jug to cut viscosity. Shake well before pouring into spray tank.

#### 5) SPRAYER CALIBRATION:

Calibrate each sprayer used to apply Flight Control® Max to determine your sprayer's Gallons Per Acre. Correct water output is critical for a proper application. Sprayers may be different with how much material they put out, so each sprayer should be calibrated prior to first application. For example:

<https://www.youtube.com/watch?v=8jw9BFcKWPC>

#### 6) APPLICATION DIRECTIONS:

- Follow directions included in Flight Control® Max label.
- Flight Control Max should be applied so that it gets on and into the grass/plants with a fine spray.

- Spray patterns must be touching – this is a function of sword height, height of boom & nozzle spacing.
- If treated surface is mowed, apply Flight Control Max directly after (not prior to) mowing (!?)
- Do not allow tank mixture to settle or remain unagitated for more than 2–3 hours before spraying.
- Make Sure your tank has recirculation.
- 10-12 Gallons of tank mixture per acre for grass less than 6" (optimal).
- 12–15 gallons of tank mixture per acre for grass more than 6" (optimal).
- Do not exceed 20 gallons of tank mixture per acre.
- Recommended Spray Nozzles and PSI depend on the height of the grass and the spray equipment desired spray rate (Gallons Per Acre, GPA)

	1-3" Grass Height	6" Grass Height	12" Grass Height	15" Grass Height
10 GPA	AIXR 11002 40 PSI	TT11025 50 PSI	x	x
12 GPA	AIXR 11002 40 PSI	TT11003 50 PSI	TT11003 50 PSI	TT11003 50 PSI
15 GPA	AIXR 11004 40 PSI	TT11004 50 PSI	TT11003 50 PSI	TT11004 50 PSI

- Maintain a consistent ground speed of 8 mph
- Tank pressure of spray rig: 40 PSI for grass height under 6". Tank Pressure of spray rig: 50 PSI for grass above 6".
- If your PSI is changing during application, check and clean your spray tips if necessary.
- When Refilling Tank during application (if you add water and/or more material to your tank more than once during the same application), check each individual nozzle to check for material build up. If necessary, hand rinse the nozzle (gasket & tip strainer) before continuing your spray.

#### 7) SPRAYER CLEANUP:

- Clean sprayer tips as soon as possible after application, but no more than one (1) hour after application
- Use alkaline Tank Cleaner (e.g. [https://www.tractorsupply.com/tsc/product/rotank-liquid-cleaner-1-qt?cm\\_vc=-10005](https://www.tractorsupply.com/tsc/product/rotank-liquid-cleaner-1-qt?cm_vc=-10005)) to flush/clean sprayer system (e.g. tank, boom, tips) as soon as possible after application, but no more than one (1) hour after application.
- Spray Nozzles should be removed and hand washed after application. This includes the spray gasket and tip strainer.
- Make sure all hoses are drained of liquid once tank clean is complete.

For Any Additional Information or Questions Please Contact:

Billy Hackett  
Arkion® Life Sciences  
Flight Control® Max  
302-504-7415  
info@flightcontrol.com

# 2022–2023 Trials of Flight Control® Max in WI



# Thank you!

- **USDA Wildlife Services Programs:**

**WA, SD, OK, WI, MI, VA, NC & SC.**

- **Air National Guard**

- **Civil Airports**

- **U.S. Air Force**

