

Methyl Anthranilate (MA) to Control Sandhill Cranes Damage in Potatoes

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Overview

- Methyl Anthranilate
- Materials & Methods
- Results & Discussion
- Next Steps
- Questions



What is Methyl Anthranilate (MA)?

- A liquid bird repellent
- Generally Regarded as Safe (GRAS) compound under 21 CFR 182-60
- Labeled for many different crops
- Low toxicity and biodegradable
- Used as grape flavoring in food
- 4-hour re-entry interval
- 0-day pre-harvest interval
- Sensitive to pH, tank mixing
- Sold as “Avian Control”



Materials & Methods

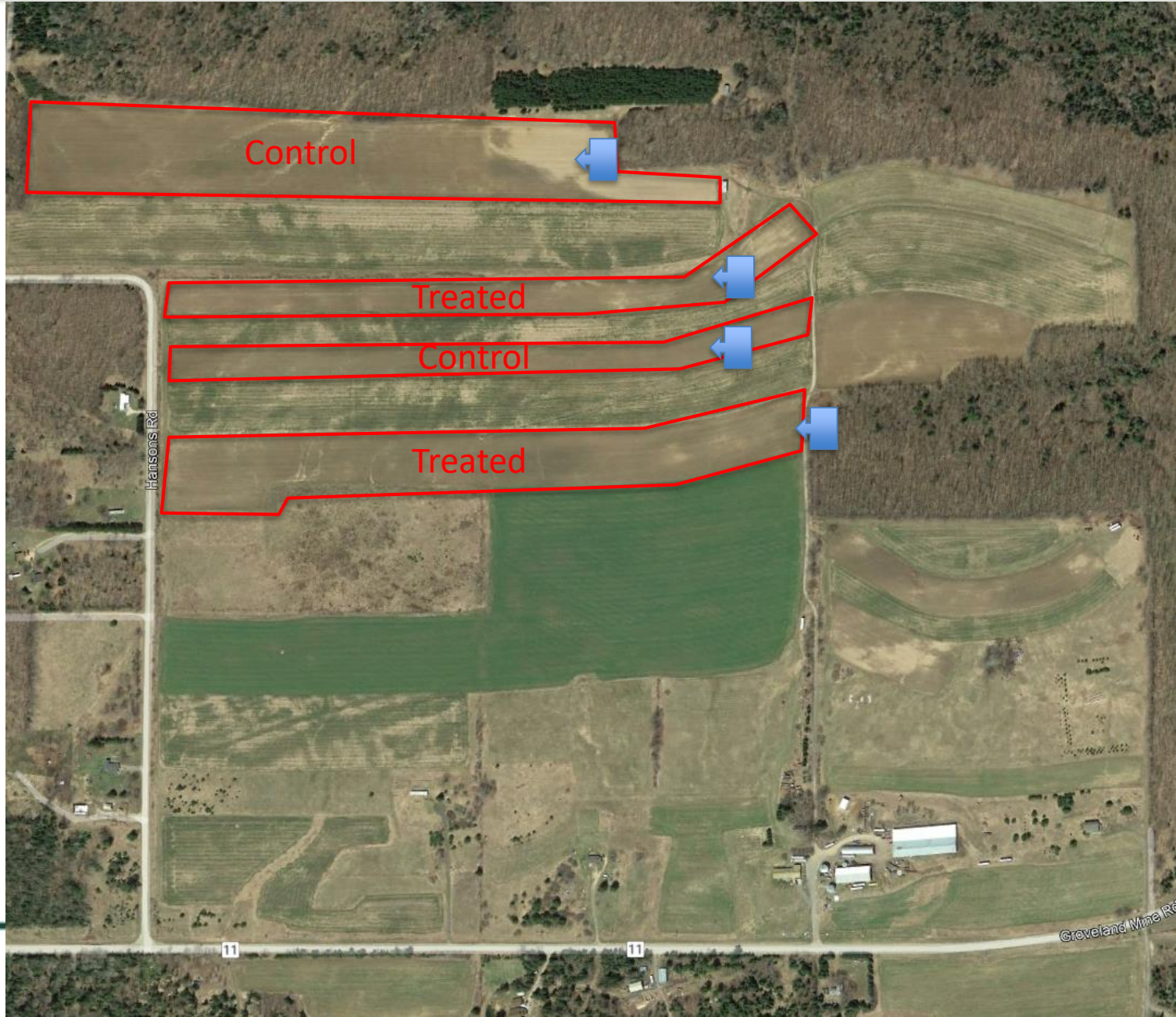
- Camera survey on two UP farms
 - VanDrese Dairy & Potato Farm in Cornell, MI
 - Steinbrecher Potato Farm in Felch, MI
- MA applied 2-3 times prior to vine kill
 - Tank mixed at VanDrese, not at Steinbrecher
- Hourly visual counts of cranes 7am-9pm
 - 36 days at VanDrese
 - 54 days at Steinbrecher
- Analysis of repellent effect on crane numbers
 - No direct measurement of potato damage/loss



Materials & Methods - Steinbrecher

- Four small potato fields on the home farm
 - 9-19 acres in size, separated by strips of oats
 - Planted to Goldrush variety
 - 2 treated, 2 control
- Moderate Sandhill crane pressure
- Two MA applications, no tank mixing
 - 9/7/22 @ 32 oz/a (1 qt)
 - 9/14/22 @ 42 oz/a (1.3 qt)
- Water tested for pH, at or near 7





Materials & Methods - VanDrese

- One large potato field near the home farm
 - 34 acres in size, across the road from barley/alfalfa
 - Planted to Goldrush variety
 - All treated
- Heavy Sandhill crane pressure
- Three MA applications, tank mixed
 - 8/22/22 @ 32 oz/a (1 qt) with Roper DF fungicide
 - 8/29/22 @ 32 oz/a (1 qt) with Roper DF fungicide
 - 9/6/22 @ x oz/a (1 pt) with Roper DF, fungicide, Reglone desiccant & Activator 90
- Water and first tank mix tested for pH, at or above 7







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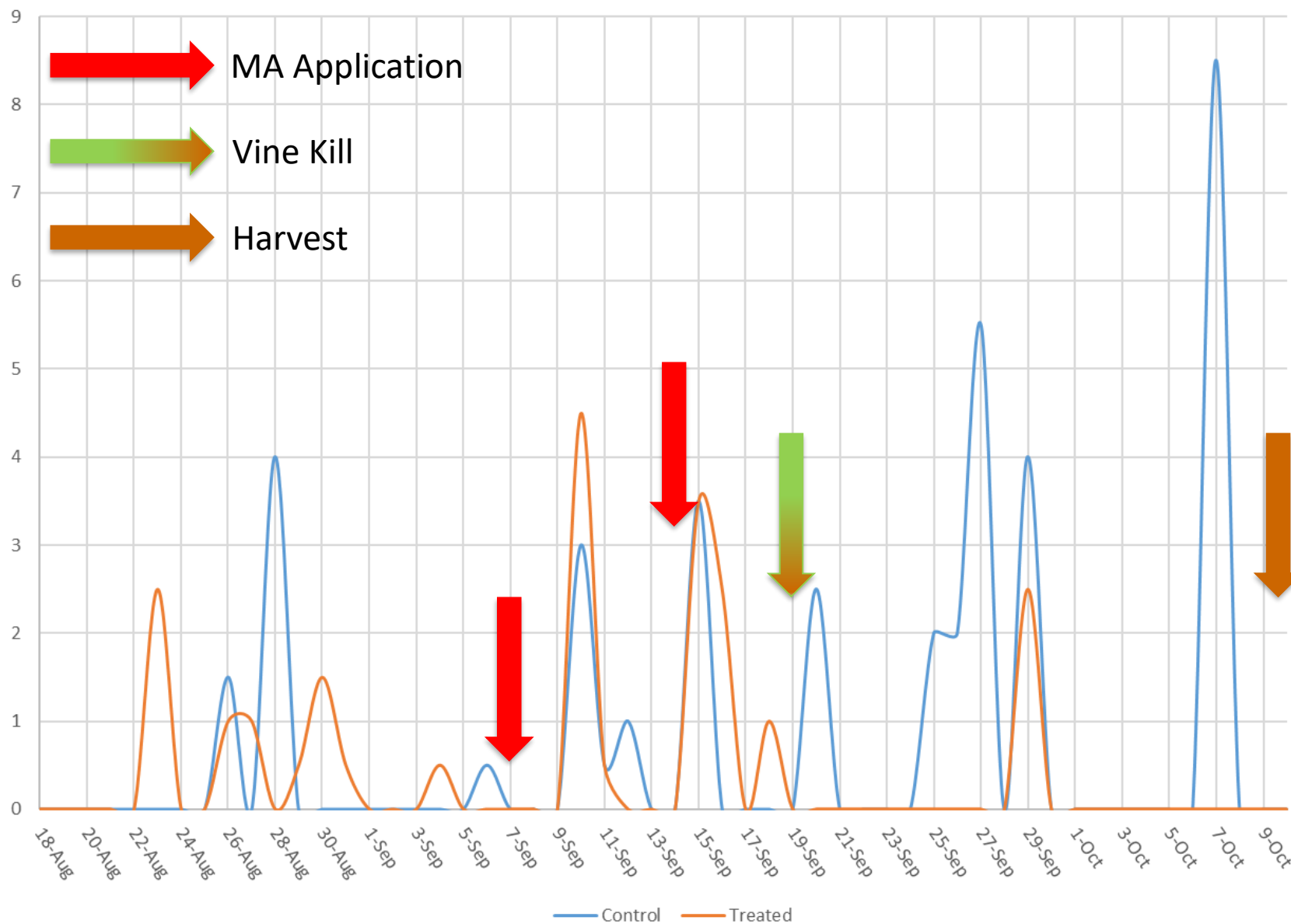




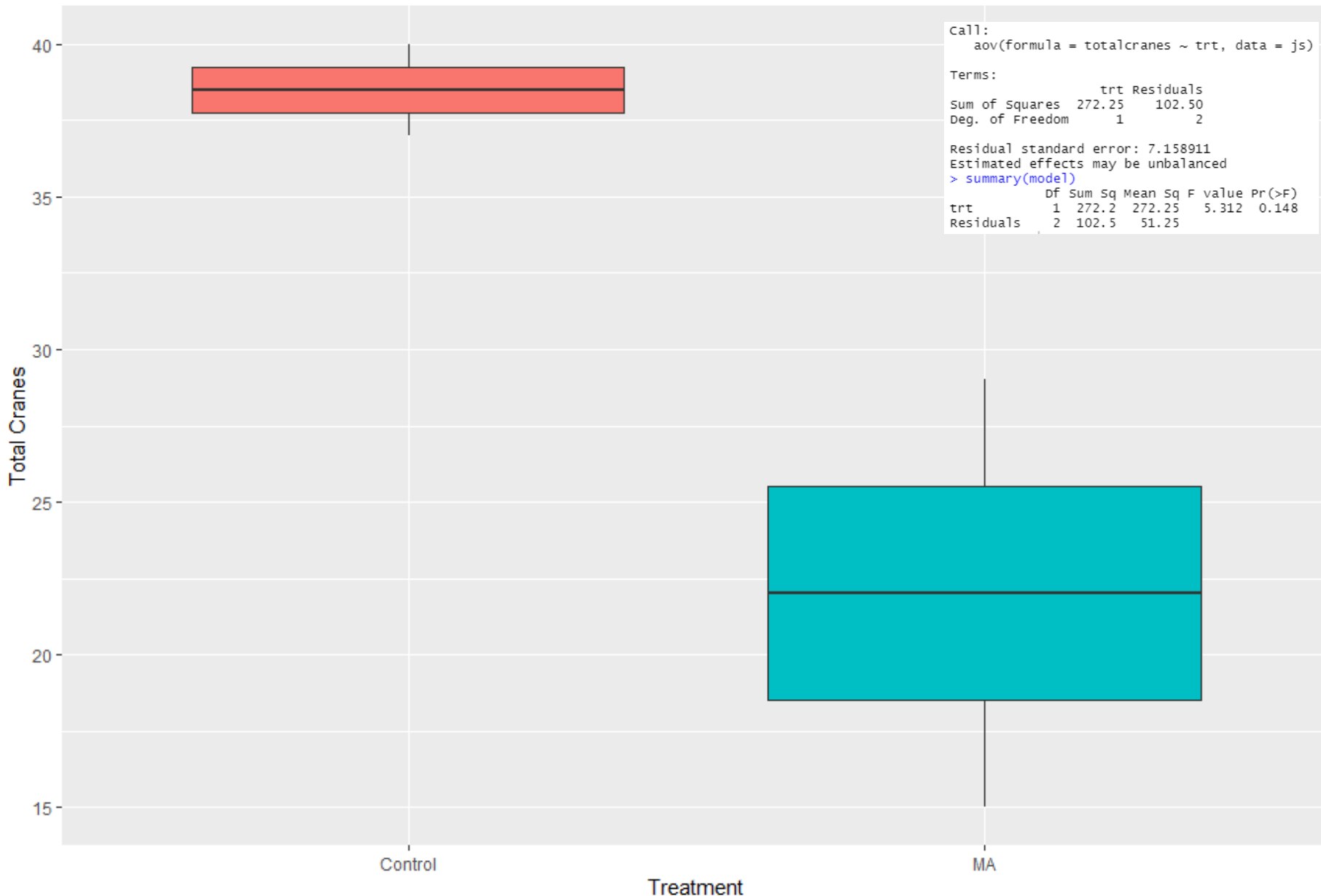
Results - Steinbrecher

- Low crane numbers as compared to years past
- Control fields averaged:
 - 39 total cranes observed (37, 40)
 - 7.5 days with cranes (14% of total days)
 - 0.73 cranes per day
- Treated fields averaged:
 - 22 total cranes observed (15, 29)
 - 6.5 days with cranes (12% of total days)
 - 0.41 cranes per day
- Large difference in potato damage observed

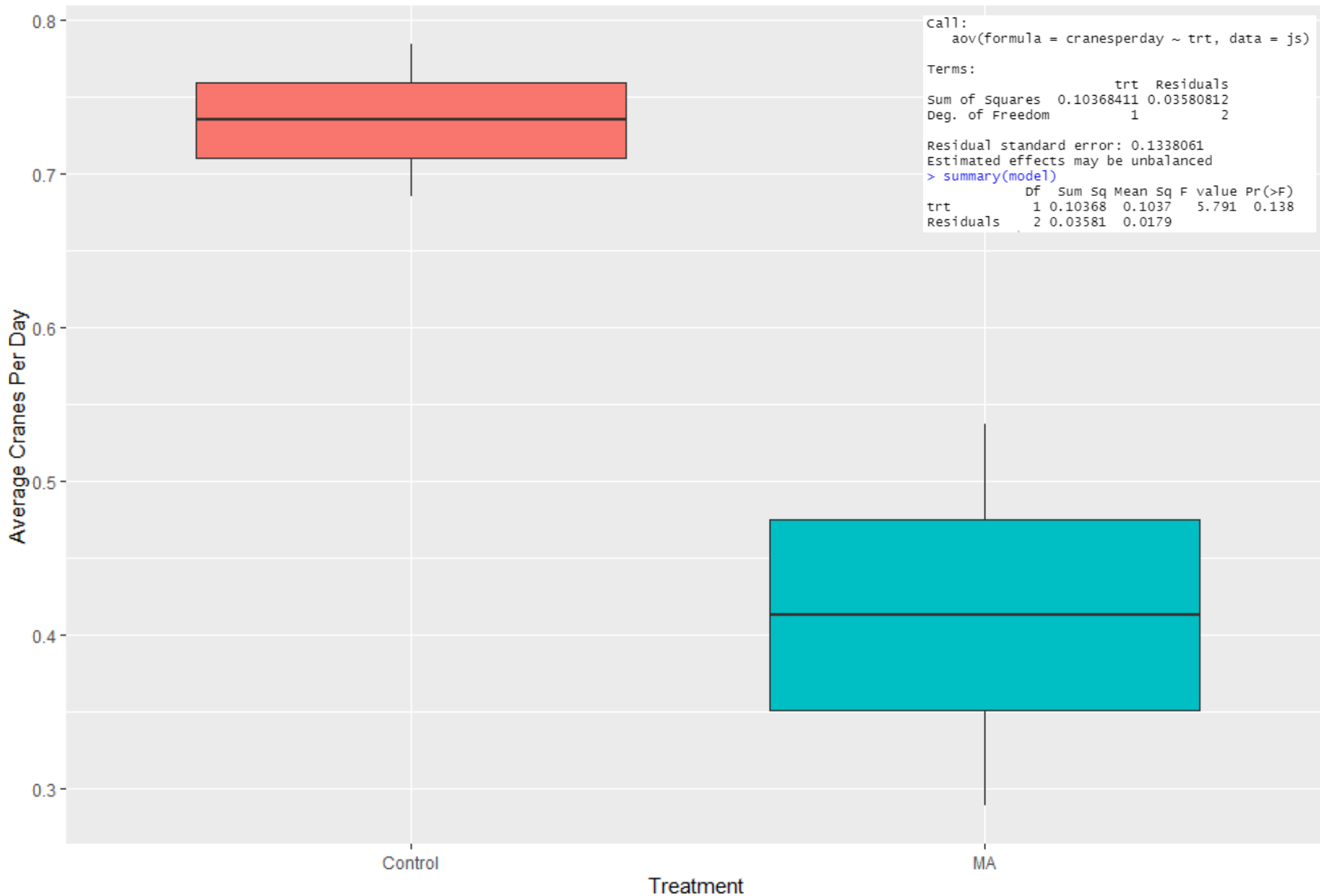
Steinbrecher Average Cranes Per Day by Treatment



Steinbrecher Total Cranes by Treatment



Steinbrecher Average Cranes per Day by Treatment

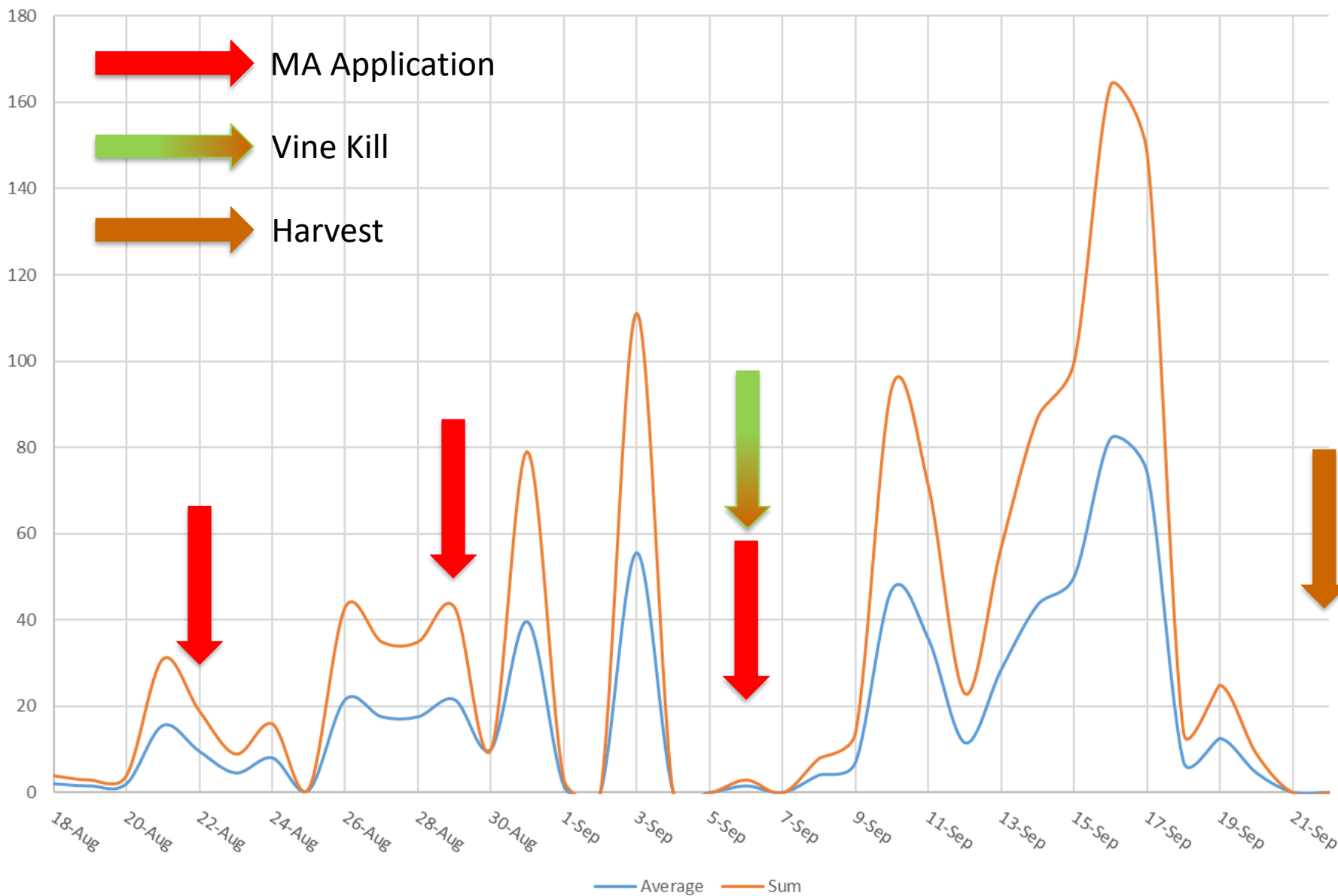


Results - VanDrese

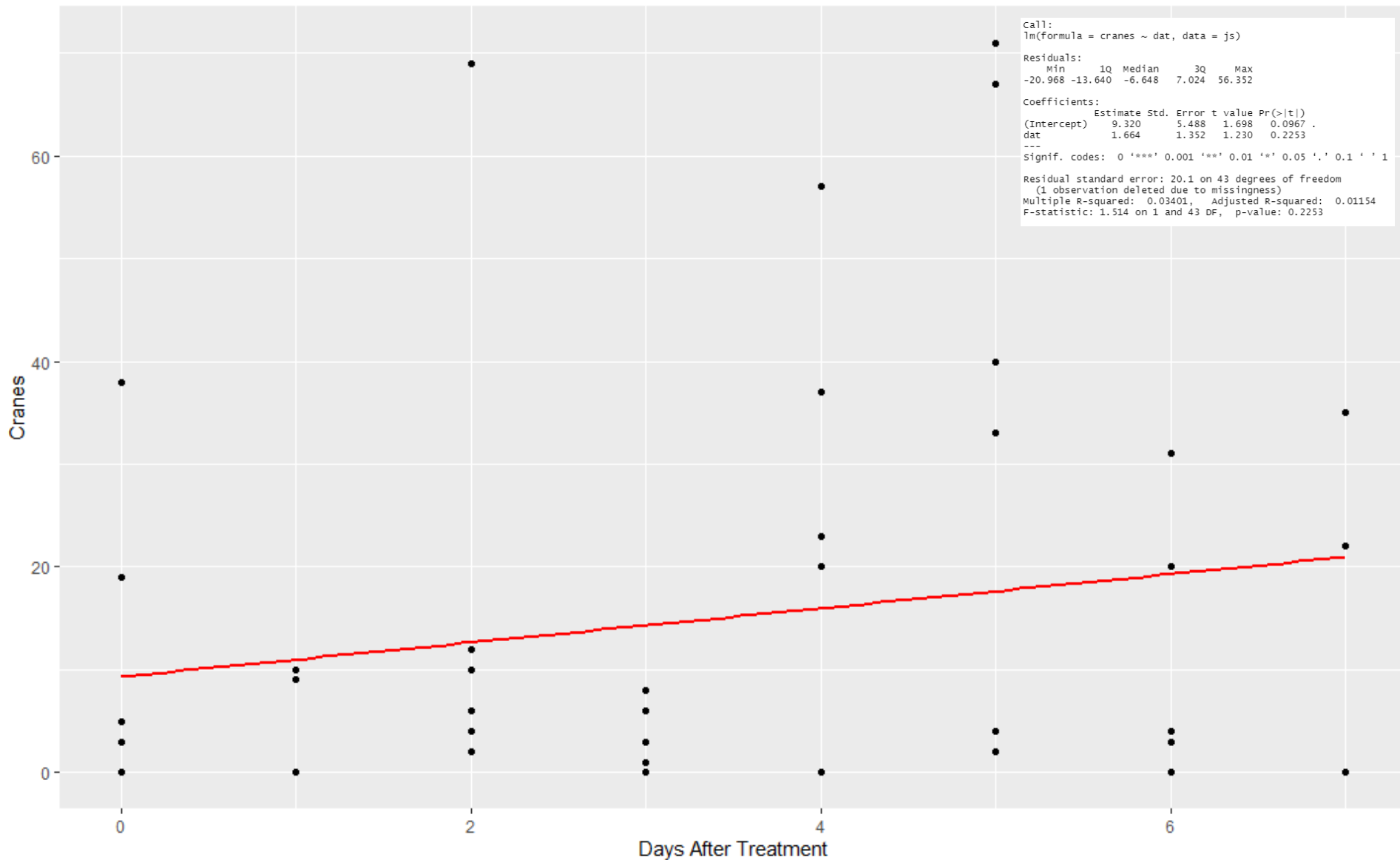
- Avg. crane numbers as compared to years past
- Two cameras in the treated field averaged:
 - 628 total cranes observed (348, 908)
 - 25 days with cranes (70% of total days)
 - 17.8 cranes per day
- Repellency observed after first app, but less so following second and third apps.
- Little change in potato damage observed



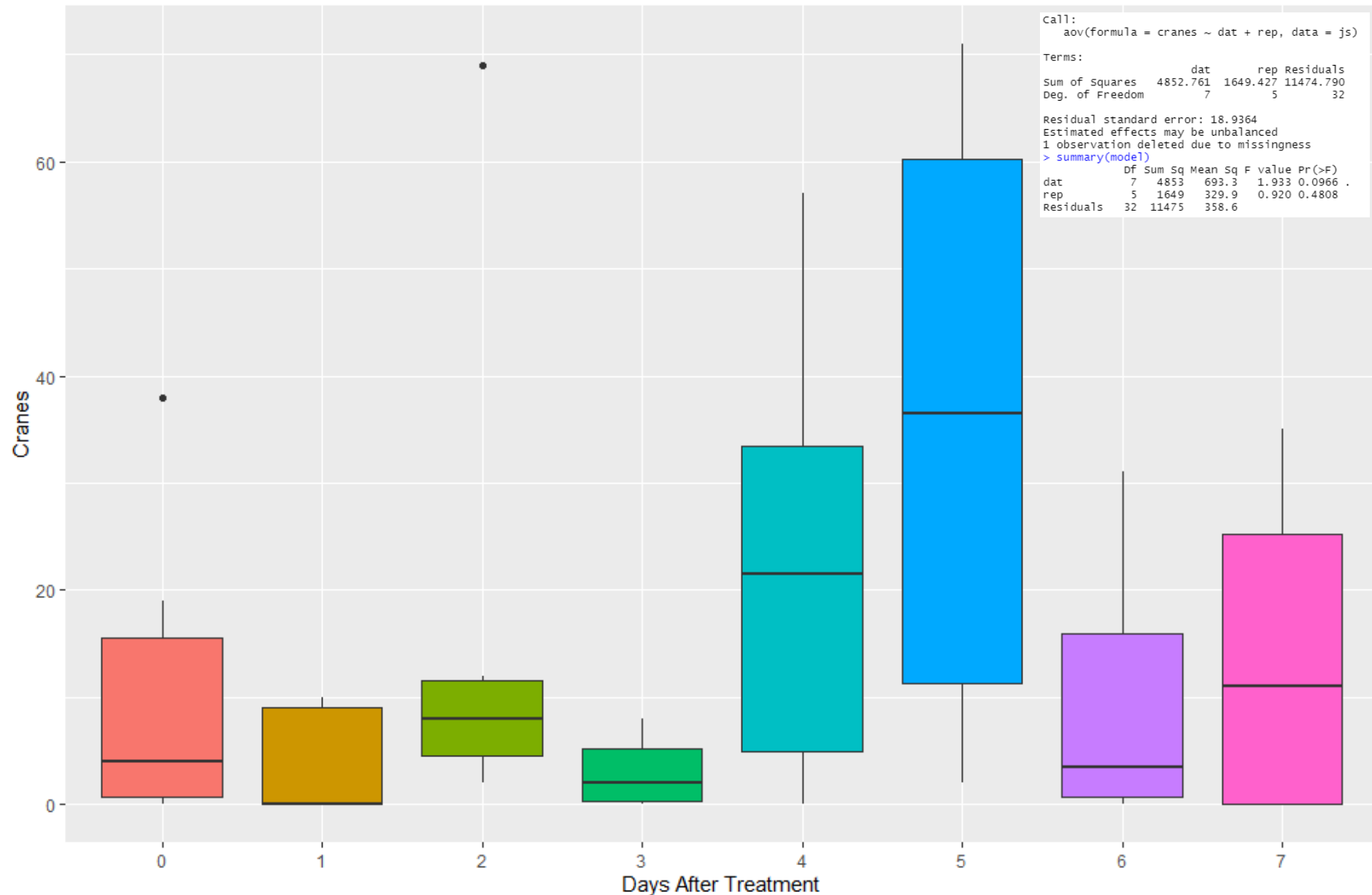
VanDrese Cranes Per Day Across Two Cameras



VanDrese Cranes by Days After Treatment



VanDrese Cranes by Days After Treatment



Discussion

- Sandhill cranes eat potatoes!
 - Damage starts after small grain harvest, increases after vine kill in potatoes
 - Early maturing and small-vined potato varieties are most preferred/susceptible
 - Deer and crows were also observed eating potatoes
 - Wildlife damage tubers, but are also a food safety risk
- MA reduced the number of cranes in treated potato fields at Steinbrecher
- MA was effective for 3-4 days at VanDrese
- We can't say if MA protected potato yield/quality

Next Steps

- Repeat experiment with good control fields
- Continue applying MA through vine kill
- Use max rate of 42 oz/a
- Measure potato damage/loss directly



Acknowledgements

- Michigan Potato Industry Commission
- Avian Enterprises
- Carl and Scott Steinbrecher
- Galen and Wendell VanDrese
- International Crane Foundation

