Irrigated Crop Insects Lethbridge January 2018

Scott Meers
Alberta Agriculture and Forestry

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Insect Surveys 2017

- 7 Insects with an annual survey

- 6 Maps out NOW!
  - Wheat midge, wheat stem sawfly, pea leaf weevil
  - Grasshopper, cabbage seedpod weevil, bertha armyworm
- Others
  - Hemp, flax, soybeans
  - Western Bean Cutworm
  - Canola Midge

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Acknowledgements

- Agriculture Fieldmen
- Applied Research Associations
- Company Agrologists
- Private Consultants
- Producers
- Agriculture Canada
- Alberta Agriculture and Forestry technicians
- Shelley Barkley

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FIELD HEROES

THINK BENEFICIALS BEFORE YOU SPRAY

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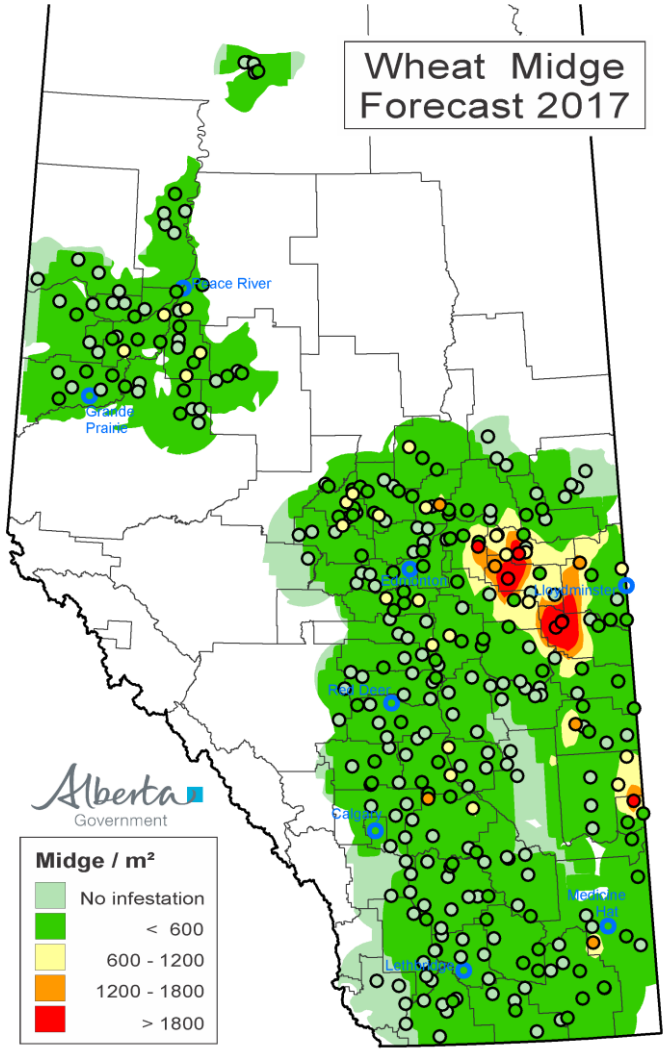

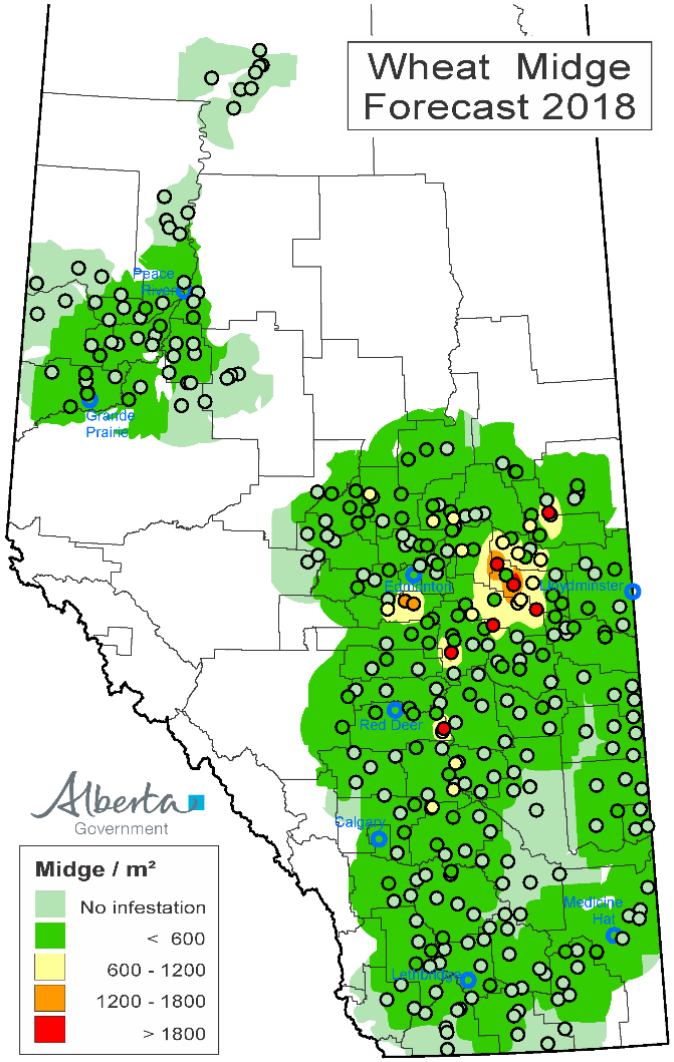

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Diamondback Moth

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Bottom Line

- Diamondback moth
  - 2017 has no bearing on 2018

- Parasitism/Disease often controls

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Pea Leaf Weevil

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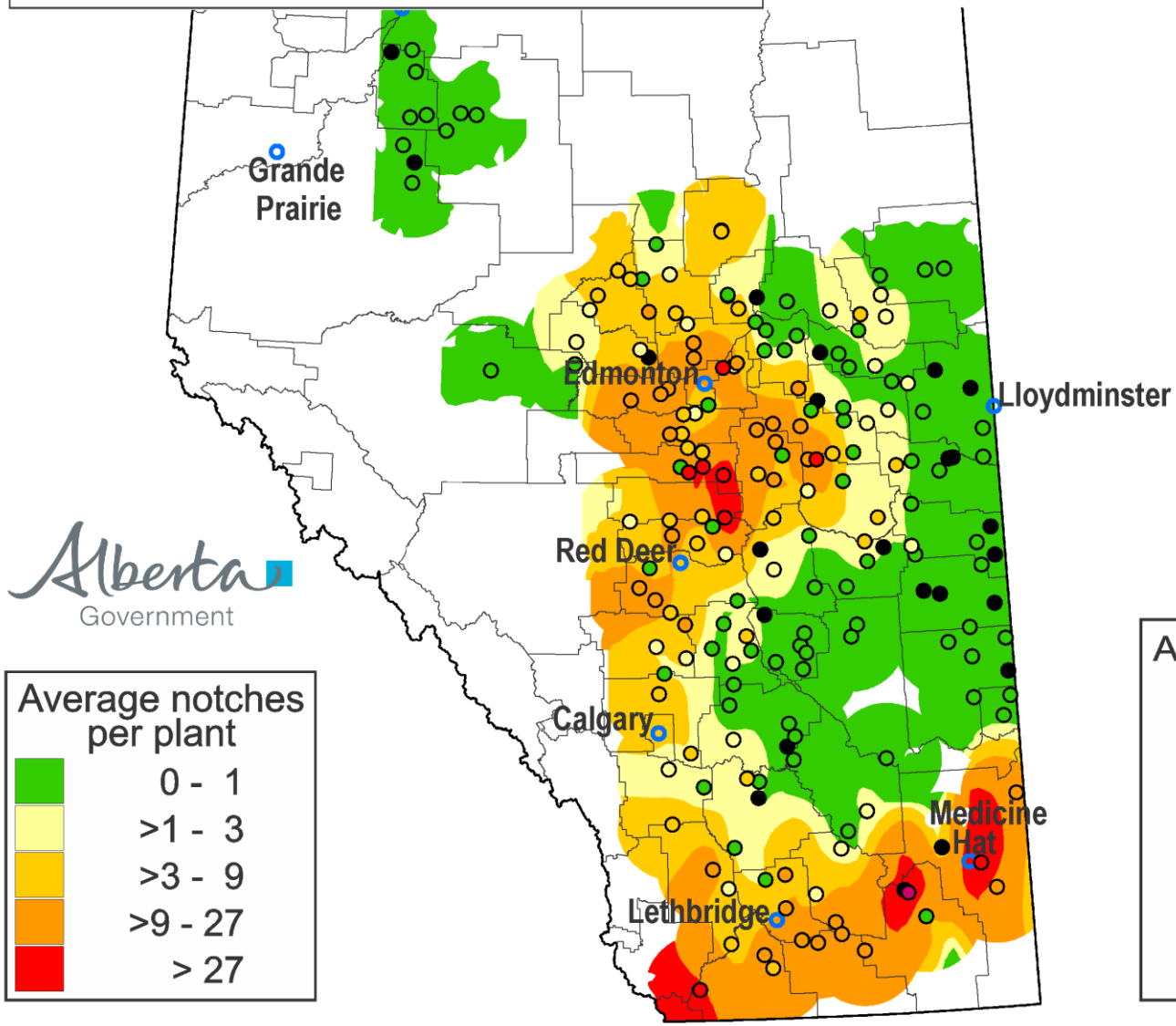
Larval Damage

Pea Leaf Weevil 2017



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Bottom Line

- Pea leaf weevil
  - Range expansion again
  - Overall lower but fluctuations normal
  - Seed treat peas and fababeans in irrigation area

  - Parasitism very low
  - New biological control project proposed

Cabbage Seed Pod Weevil

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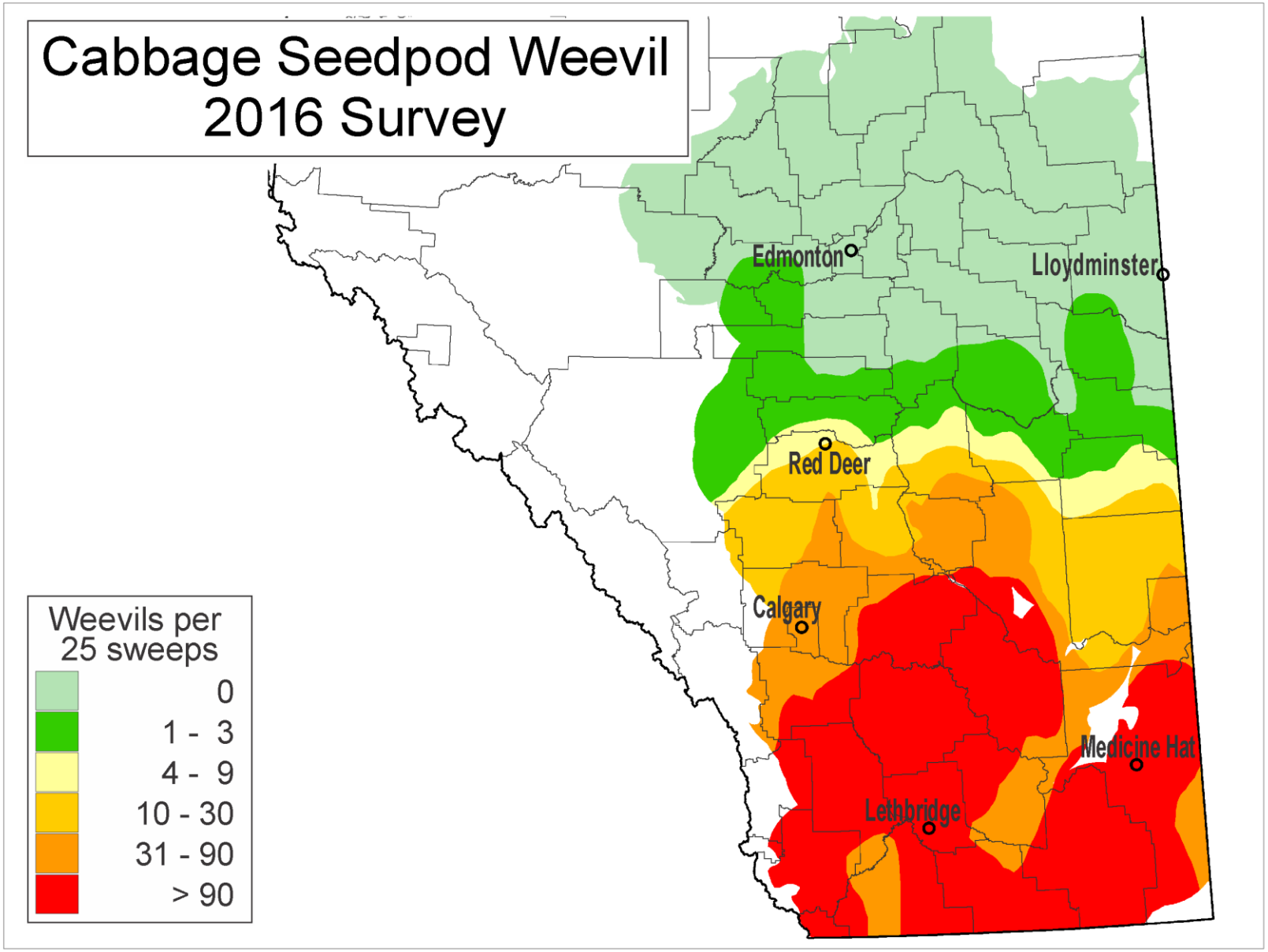
Cabbage Seedpod Weevil 2016 Survey



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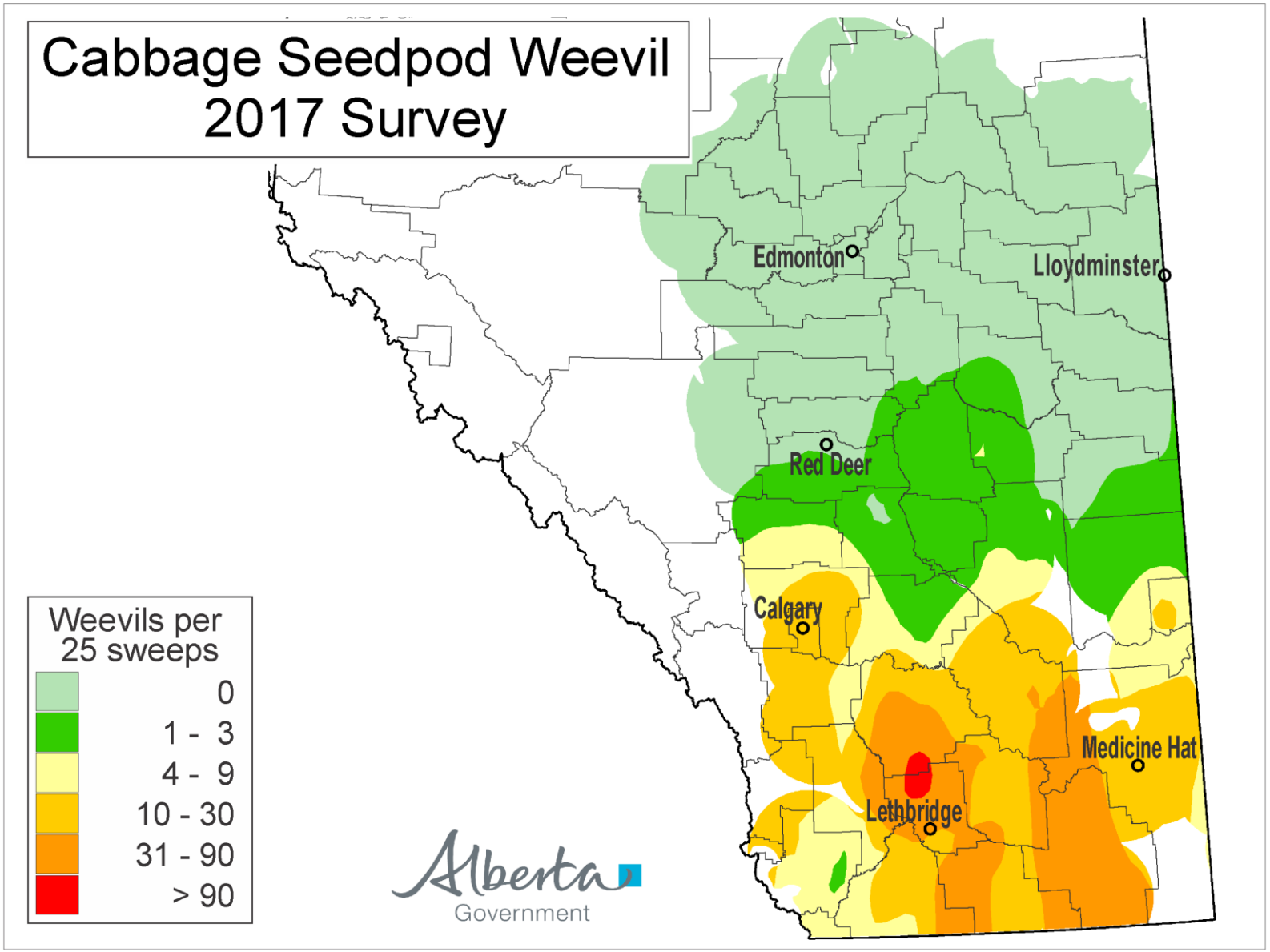

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Action Threshold for seedpod weevils

- 25-40 per 10 sweeps recommended
- Sample 1 week after first flowers appear and take 10, 180 degree walking sweeps
- Ideal: 5 samples along the edge and 5 inside (spread out)
- Minimum:
  - Stop at two opposite corners
  - Take two samples 50 m apart
  - One along the edge and another inside

Bottom Line

- Cabbage seedpod weevil
  - Range reduction
  - Fluctuations are normal

  - Higher threshold recommendations
    - 25 to 40/10sweeps
  - Very low parasitism
  - Population driver – weather

Cutworm Tracking

- On Roping the Web
- Agrologist input
- Web based (cell phone friendly) input page
- Color coded by species
- Google map
- Mapped to center of a 2x2 township area

- THE IDEA IS TO CREATE A VISUAL WARNING SYSTEM

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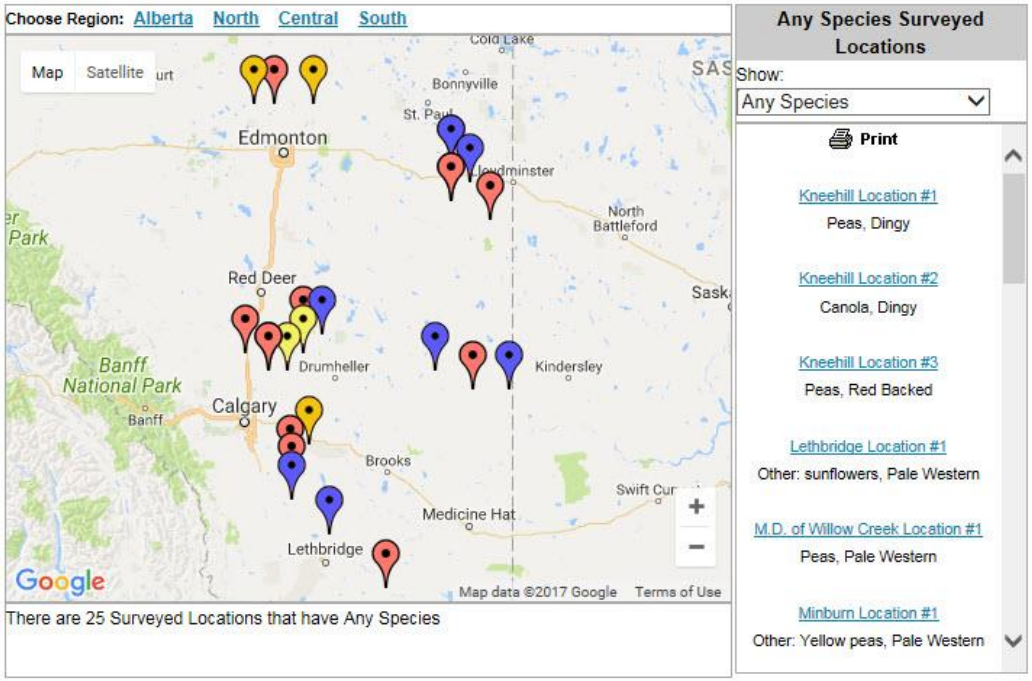
Cutworm Survey Results (about)



Legend

- Red Backed
- Army
- Dingy
- Pale Western
- Other

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Bottom Line

- Cutworms
  - WATCH!
  - Consider seed treatments
- Population drivers
  - Parasitism via tachinid flies and wasps
  - Viral and fungal diseases
- Please participate in reporting tool!

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Canola Flower Midge

- Not officially named
- New species
- Very low incidence
- Only attacks flowers
- 2017 delineation survey

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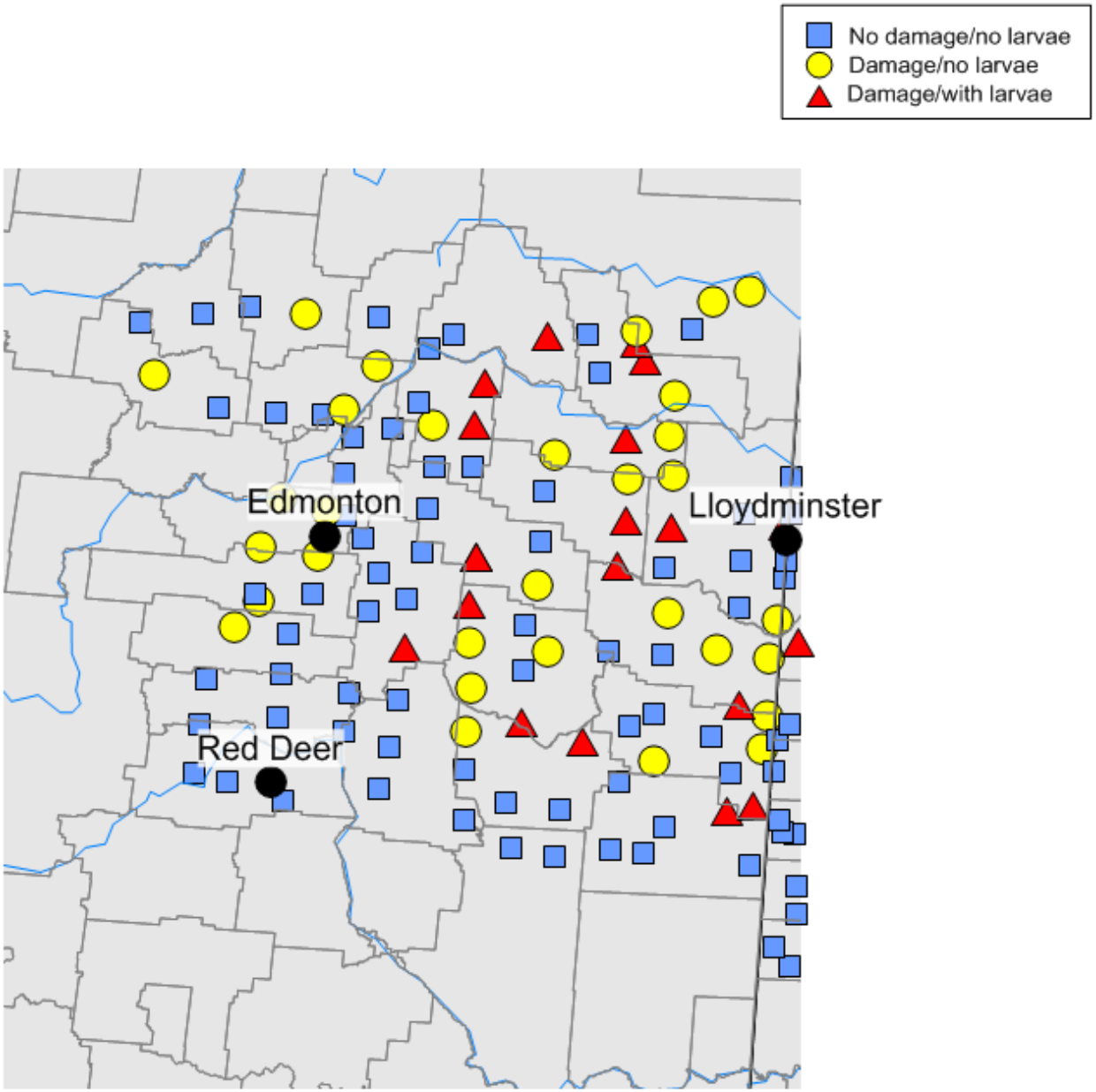
Canola midge survey - 2017

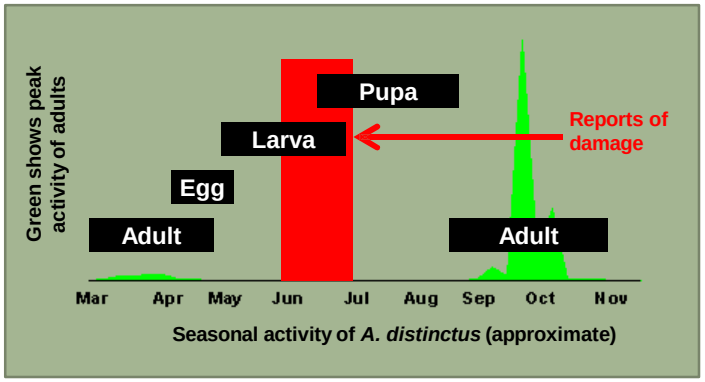


Aphodius distinctus (Dung Beetle) – a new pest?

Adult (5-6 mm long)

Larva (3-4 mm)

Pupa (3-4 mm)



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Top 6 insects in hemp sweeps

- Thrips – by far!
- Lygus adults and nymphs
- Leafhoppers

- Syrphid flies
- Ladybird beetles
- Minute pirate bugs

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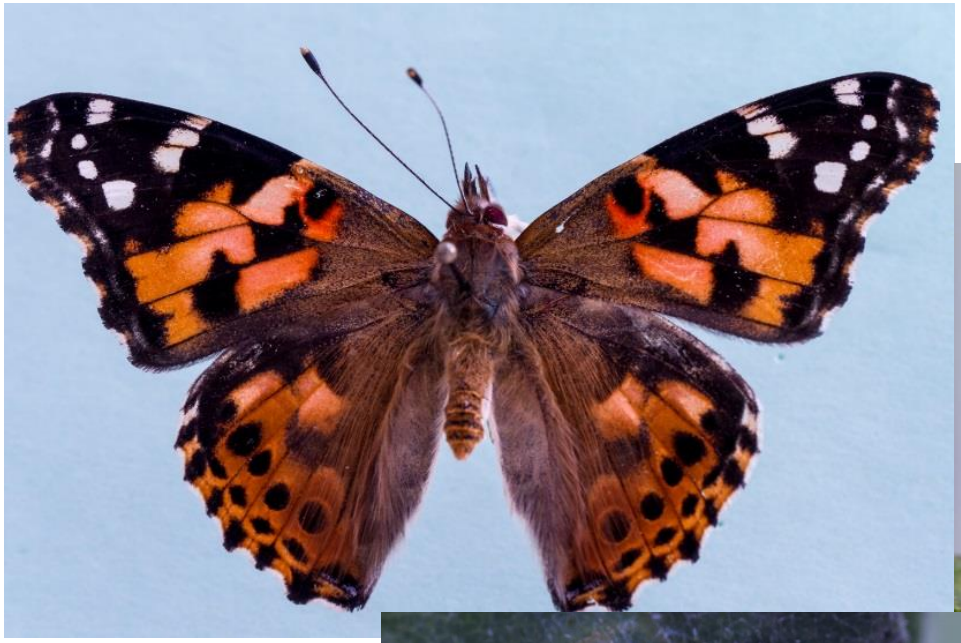
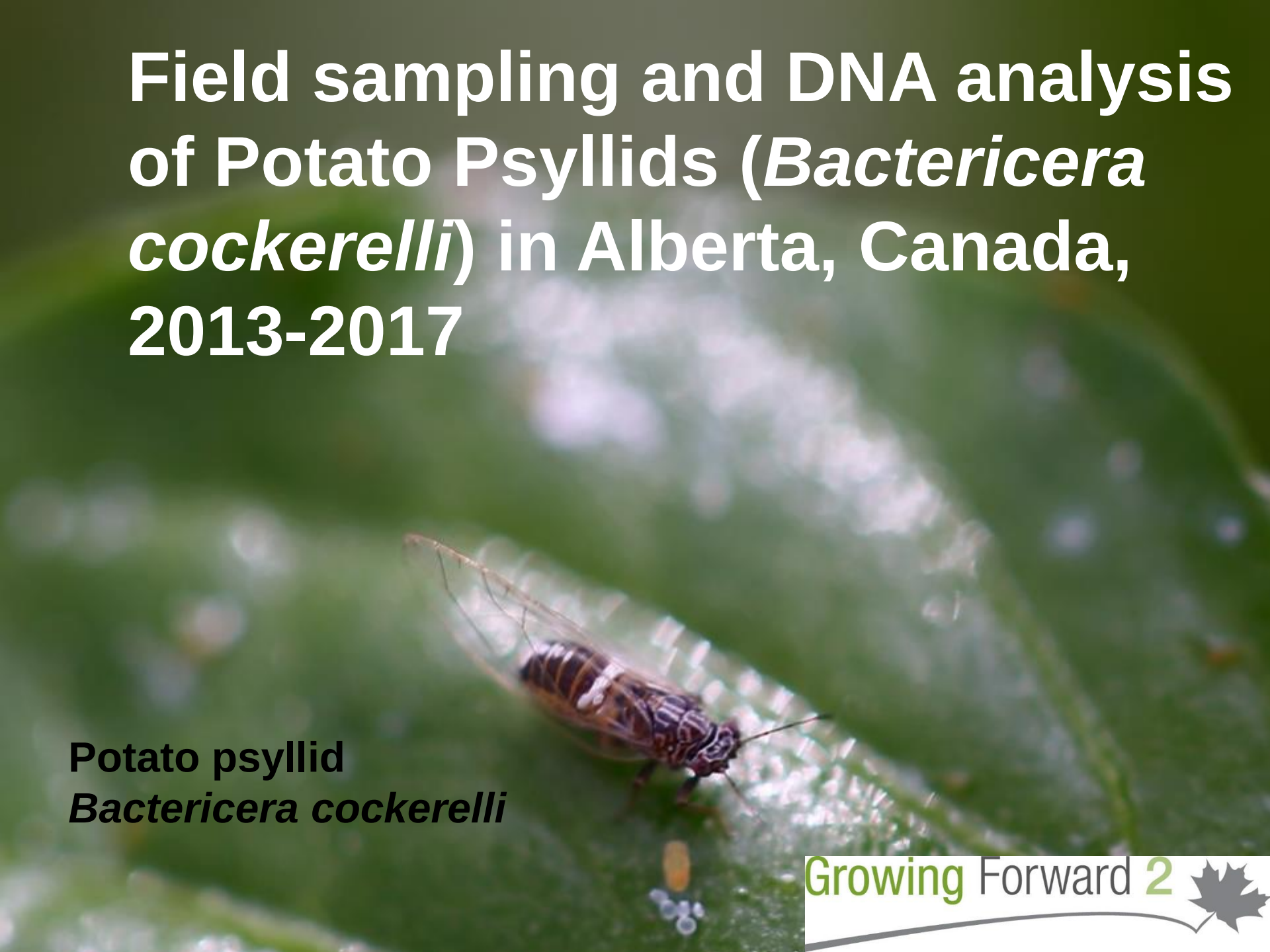
Odds and Ends

- Mite – new species in Timothy
  - Bryobia sp. nr lagodechiaina
- Green Peach Aphid in Hemp
- Western Bean cutworm – not picking up in pheromone traps
- Painted Lady – sunflowers and soybeans



Field sampling and DNA analysis of Potato Psyllids (*Bactericera cockerelli*) in Alberta, Canada, 2013-2017



Potato psyllid
Bactericera cockerelli

Growing Forward 2

Canadian Potato Psyllid and Zebra Chip Monitoring Network 2013-2017

Growing Forward 2

Agriculture and Agri-Food Canada / Agriculture et Agroalimentaire Canada

Canadian Horticultural Council / Conseil canadien de l'horticulture

University of Lethbridge

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James Lynn Margaret Martin-Johnson

CDCN: Tina Lewis
For list of all, see newsletter

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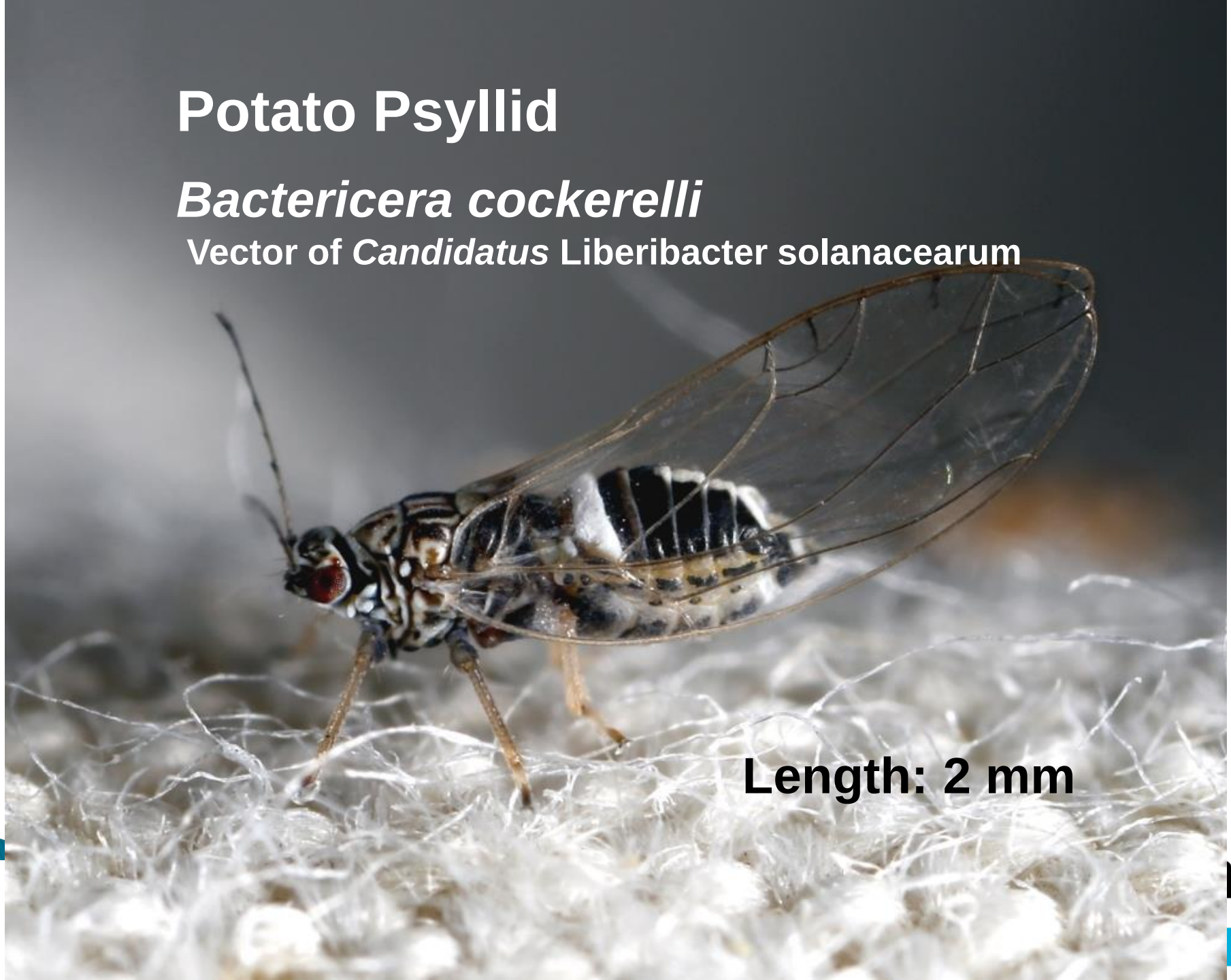
Potato Psyllid

Bactericera cockerelli

Vector of *Candidatus* Liberibacter solanacearum



Length: 2 mm

Potato Psyllid and Zebra Chip presented a significant threat as it moved north, especially 2004 - 2011.

SERVING THE NATIONAL POTATO INDUSTRY

POTATO GROWER

April 2013 Issue

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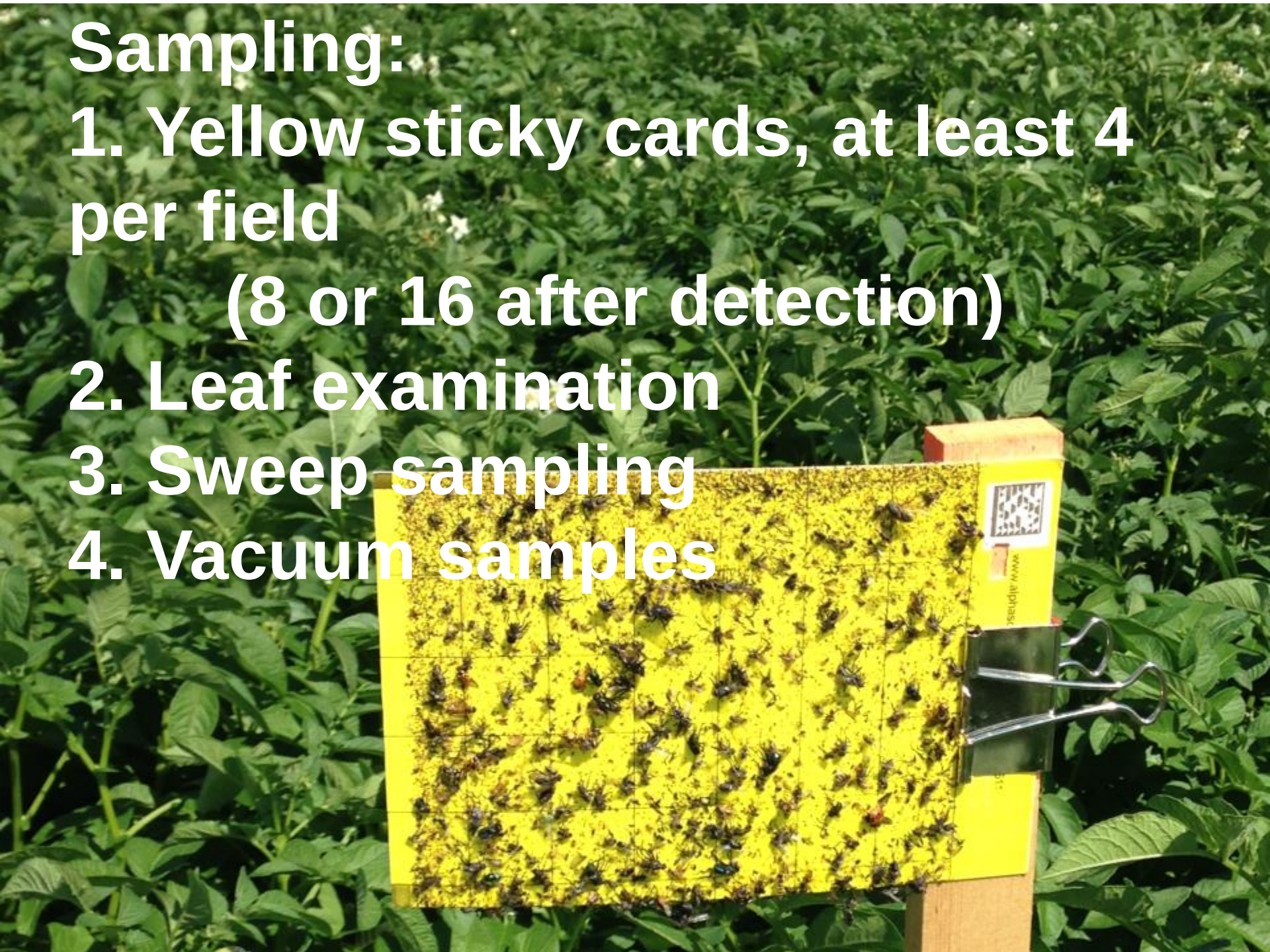
Sampling:
1. Yellow sticky cards, at least 4 per field
(8 or 16 after detection)
2. Leaf examination
3. Sweep sampling
4. Vacuum samples

Canadian Potato Psyllid and Zebra Chip Monitoring Network

2013-2017

- Alberta
- British Columbia
- Manitoba
- New Brunswick
- Newfoundland and Labrador
- Ontario
- Prince Edward Island
- Nova Scotia
- Quebec
- Saskatchewan

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FIAT LUX

Canada

Growing Forward 2

Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

Canadian Horticultural Council | Conseil canadien de l'horticulture

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Available on-line or on paper.

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Summary

1. The potato psyllid is present in very low numbers in Alberta, but slowly increasing.

2. The first specimens known from Alberta in 2015, Saskatchewan and Manitoba were found in 2016-2017.

3. Lso (zebra chip pathogen) was found in potato psyllids found in Alberta in 2017.

4. No Lso pathogen or zebra chip symptoms have been found yet in potatoes or potato plants.

5. Promax ran a parallel program as well

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Insecticide Resistance

- Insecticide Resistance Action Committee (IRAC)
- 580 spp worldwide resistant to at least one class of chemistry
- 30 classes of insecticides
  - 6 in Alberta

Insecticide Resistance IRAC

- A heritable change in the sensitivity of a pest population that is reflected in the repeated failure of a product to achieve the expected level of control.

Likely suspects in Alberta

- Colorado potato beetle
- Alfalfa weevil
- European corn borer
- Diamondback moth
- Canola flea beetle

Alfalfa Weevil

- Synthetic Pyrethroids

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Insecticides in Alberta

- Group 1A carbamates Sevin, EcoBran
- Group 1B Organophospates: Malathion, chlorpyrifos (Lorsban), dimethoate (Cygon) phorate (Thimet)
- **Group 3 Synthetic Pyrethroids: Decis, cyhalothrin-lamda (Matador, Silencer)**
- Group 4A Chloronicotines (Neonics)
- Group 4C Sulfoximines (Visivio)
- Group 23 Tetramic acids Movento
- Group 28 Diamides: Coragen, Fortenza

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- It’s a numbers game the more numbers exposed the more times the more likely to select resistant individuals
- NOT caused by – selected by chemicals

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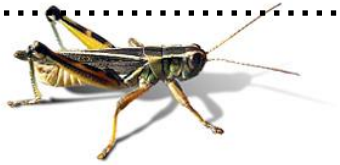

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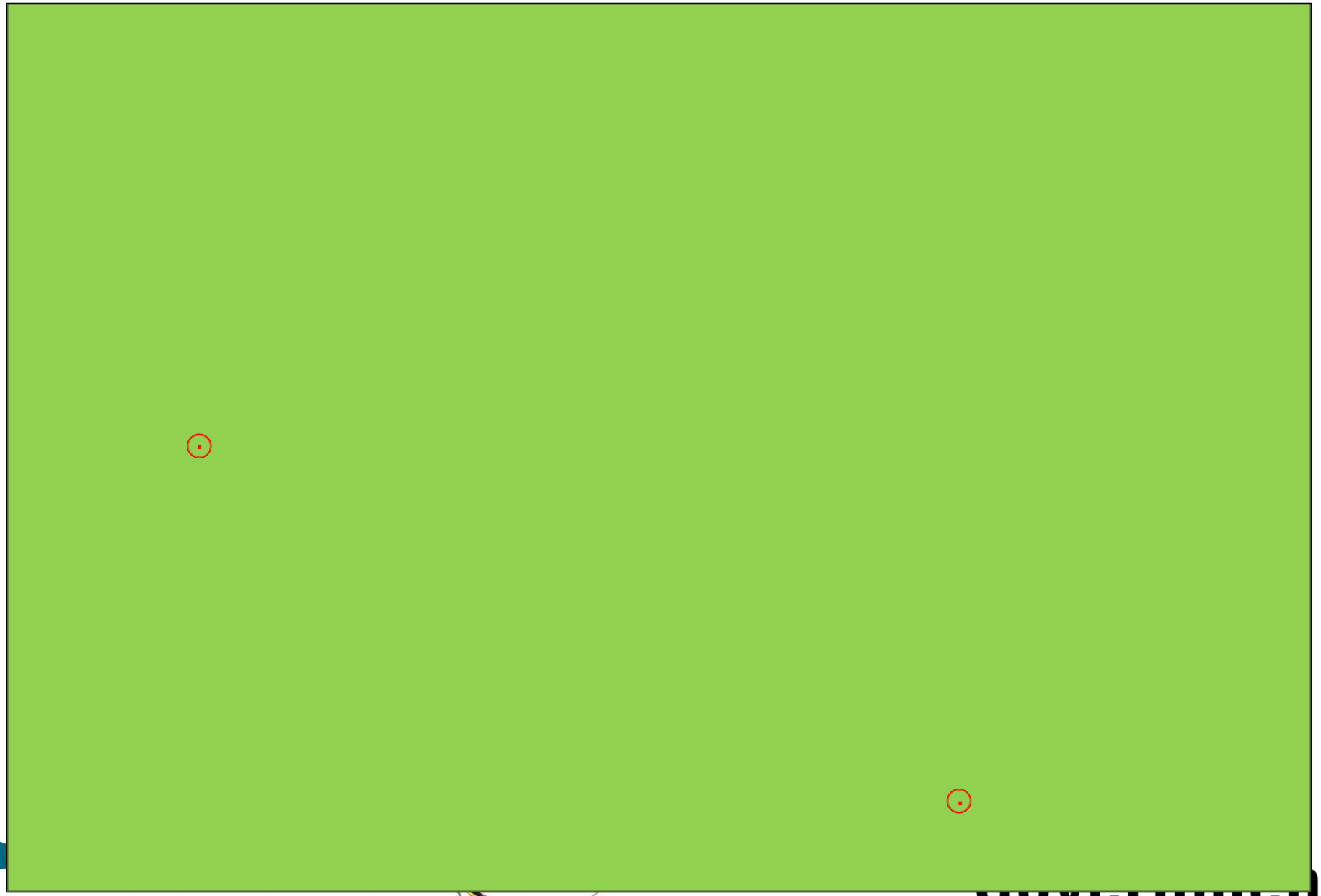

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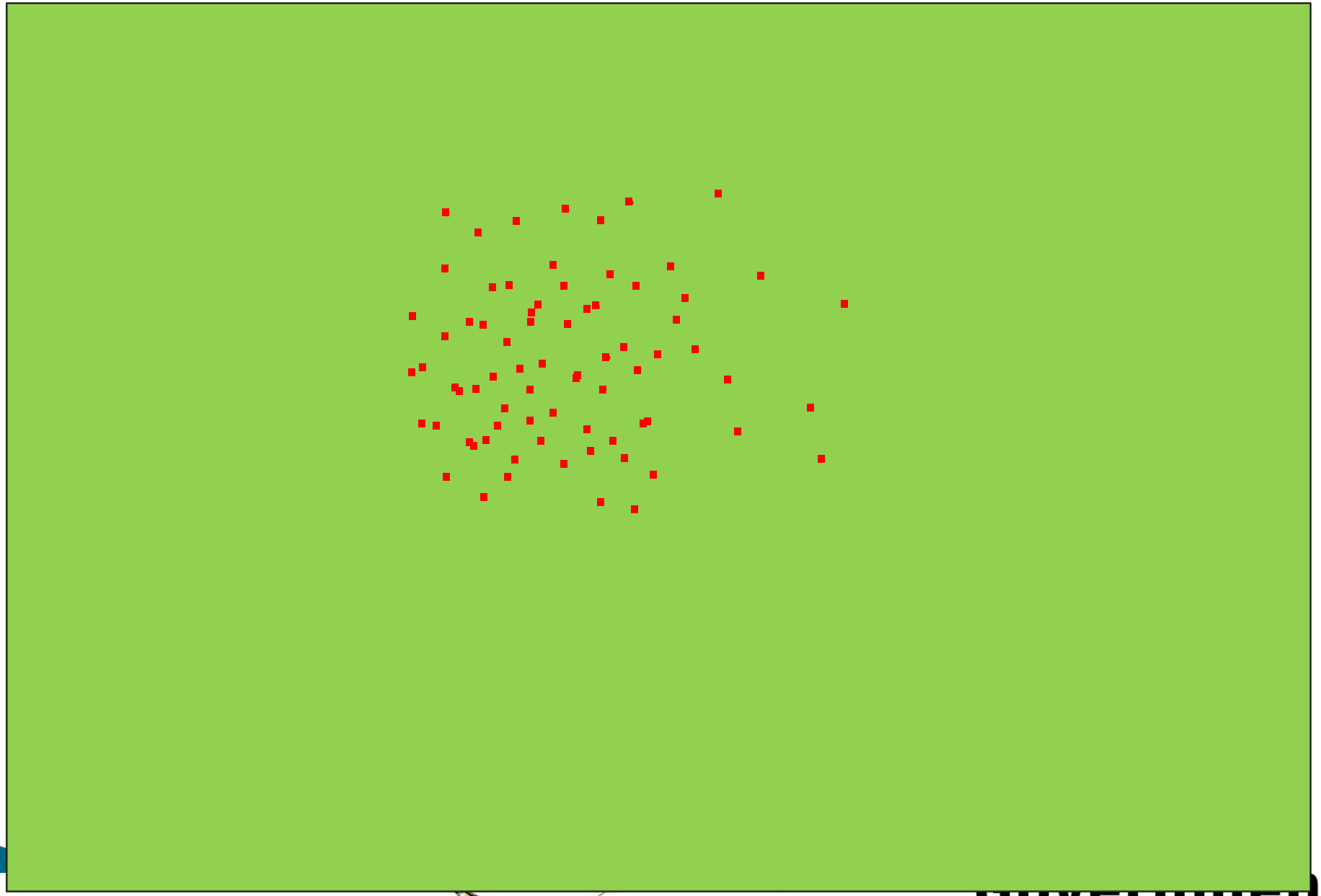

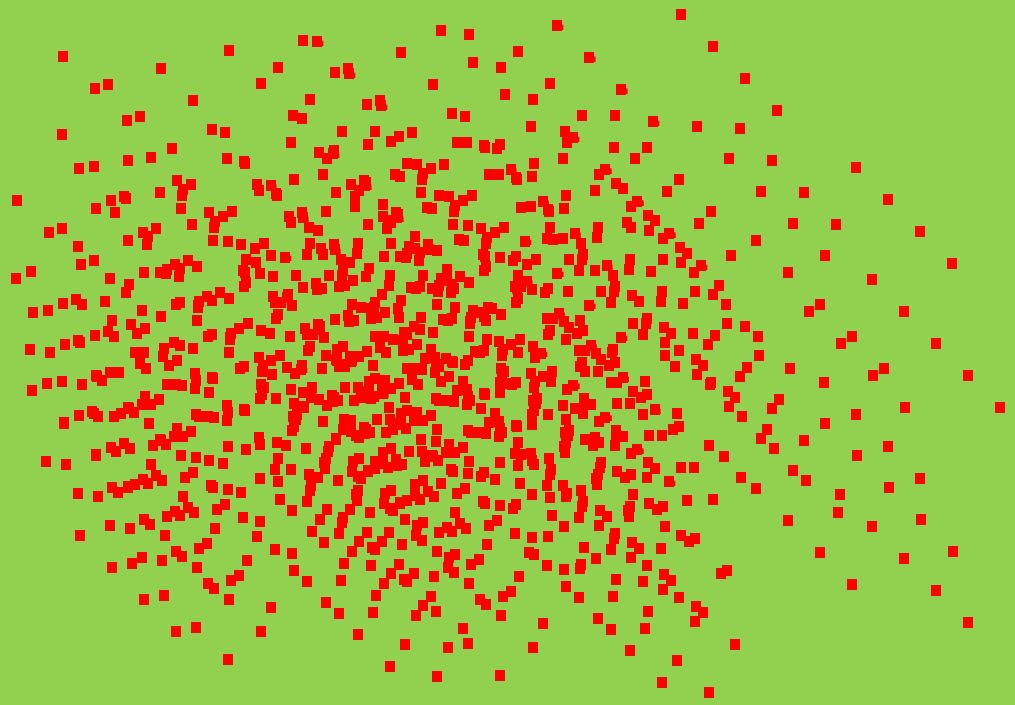

Resistance faster if:

- Lots of insects
- Multigenerational insects
  - Aphids not so much
- Offspring/generation
- Genetics
  - Variability
  - Dominant vs recessive trait
  - Frequency of trait
- Isolation of population
- Multiple spray applications
- Lack of diversity in products used
- Highly effective products
  - Residual products

So what to do?

- Different insecticide groups
  - Rotate
  - Tough to do
  - Need more options
- Thresholds!
- Do not use propholactic sprays
- Take advantage of all management and biological options

Insect Information

- http://www.agric.gov.ab.ca
  - Maps tab – top right hand corner
- www.agriculture.alberta.ca/bugs-pest
  - Links to related information
- In season Call of the Land with Caitlynn Reesor
  - Also available as podcasts
- Weekly email updates
- Ag Info Centre
  - 310-FARM (310-3276)
  - Harry, Mark, Neil

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