Grasshopper Bio-pesticide field experiment at 4 Wing Cold Lake

Presented by Mrs. Kathleen Gurski
Wildlife Control Officer
4 Wing Cold Lake

With assistance from reports written by:
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Professor of Environmental Sciences
University of Lethbridge, Alberta

- Background On 4 Wing Cold Lake
  - Grasshopper control
- Bio-control study
  - Metarhizium
  - 4 Wing study
  - Elrose, SK and Pearce, AB
- Conclusion
- Questions
- Resources

Background

- Canadian forces spend millions of dollars and hundreds of man-hours in maintenance because of damage to aircraft caused by bird/mammal strikes.


RESCUE
FROM EITHER SIDE
DANGER

Who likes grasshoppers?


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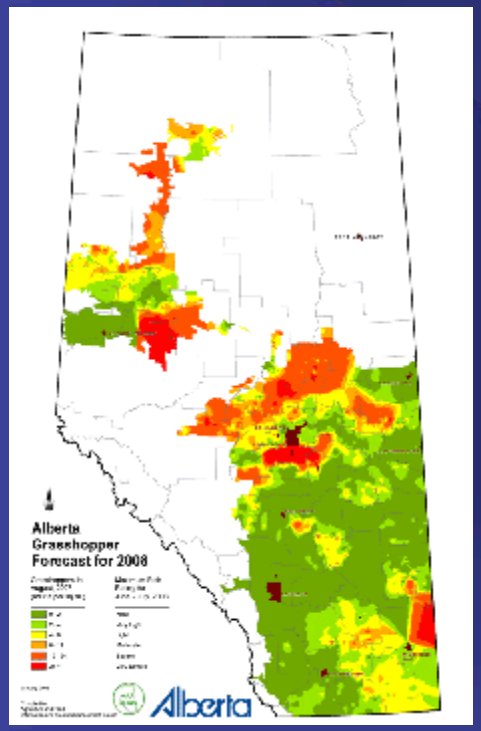
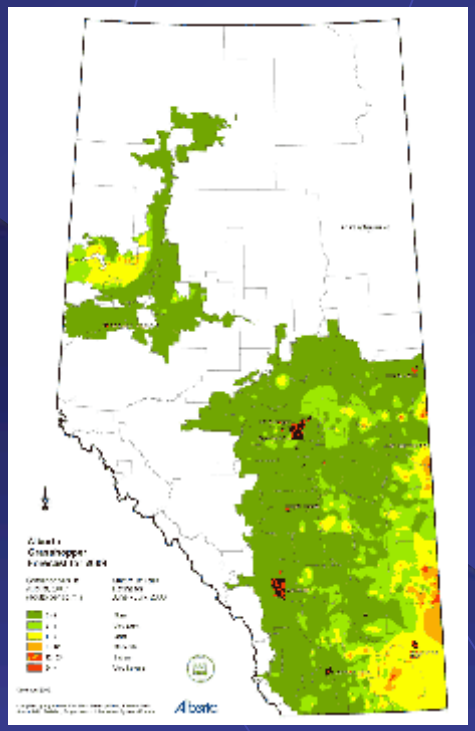
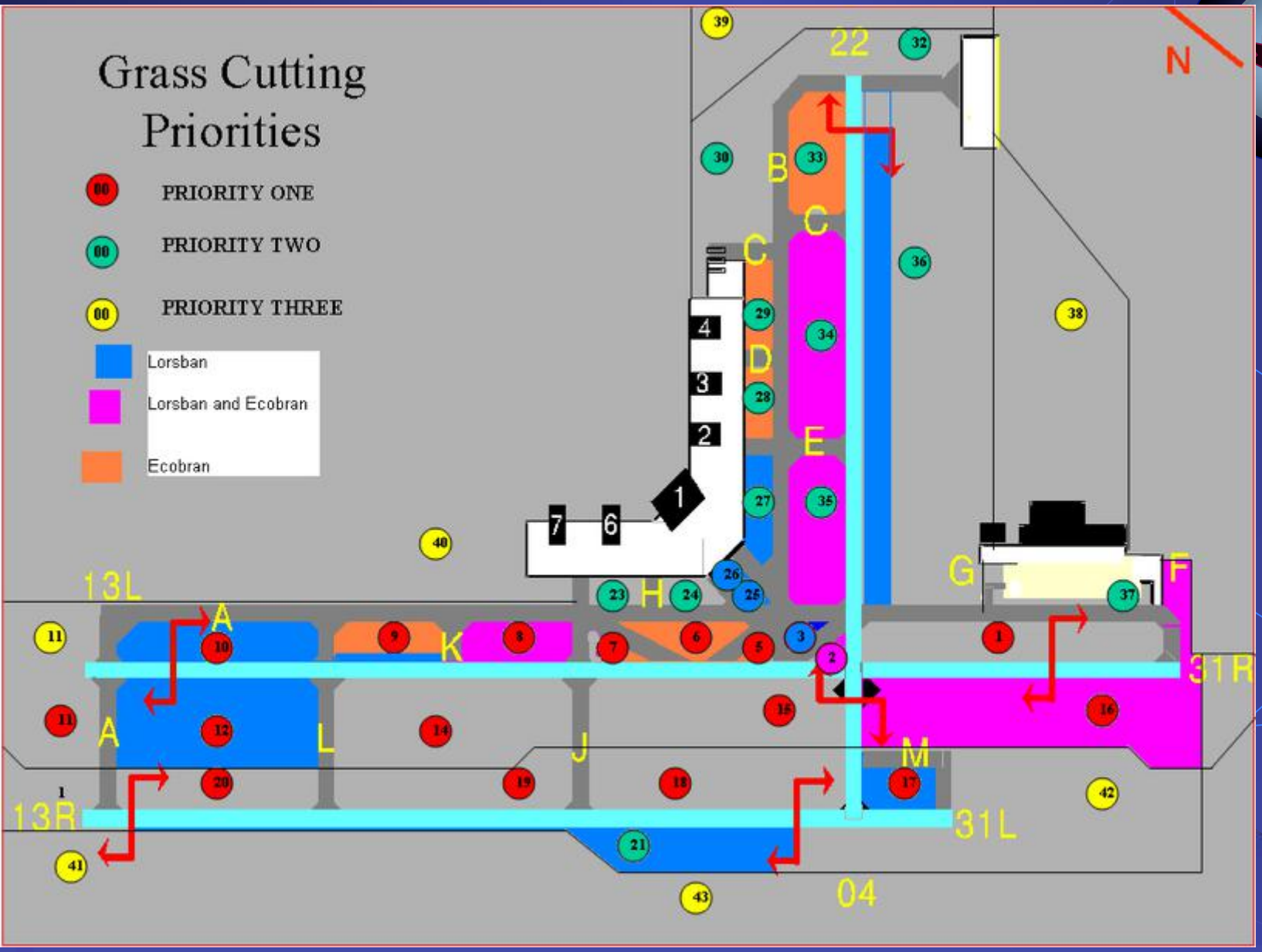

Alberta
Grasshopper
Forecast for 2008
Alberta




9


Grass Cutting Priorities
PRIORITY ONE
PRIORITY TWO
PRIORITY THREE
Lorsban
Lorsban and Ecobran
Ecobran
N
22
13L
31R
13R
31L
04
A
B
C
D
E
F
G
H
J
K
L
M

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BSc: USask (Biology, High Hon.);
MSc, PhD: UBC, Dept of Plant Science,
& Institute of Animal Resource Ecology.

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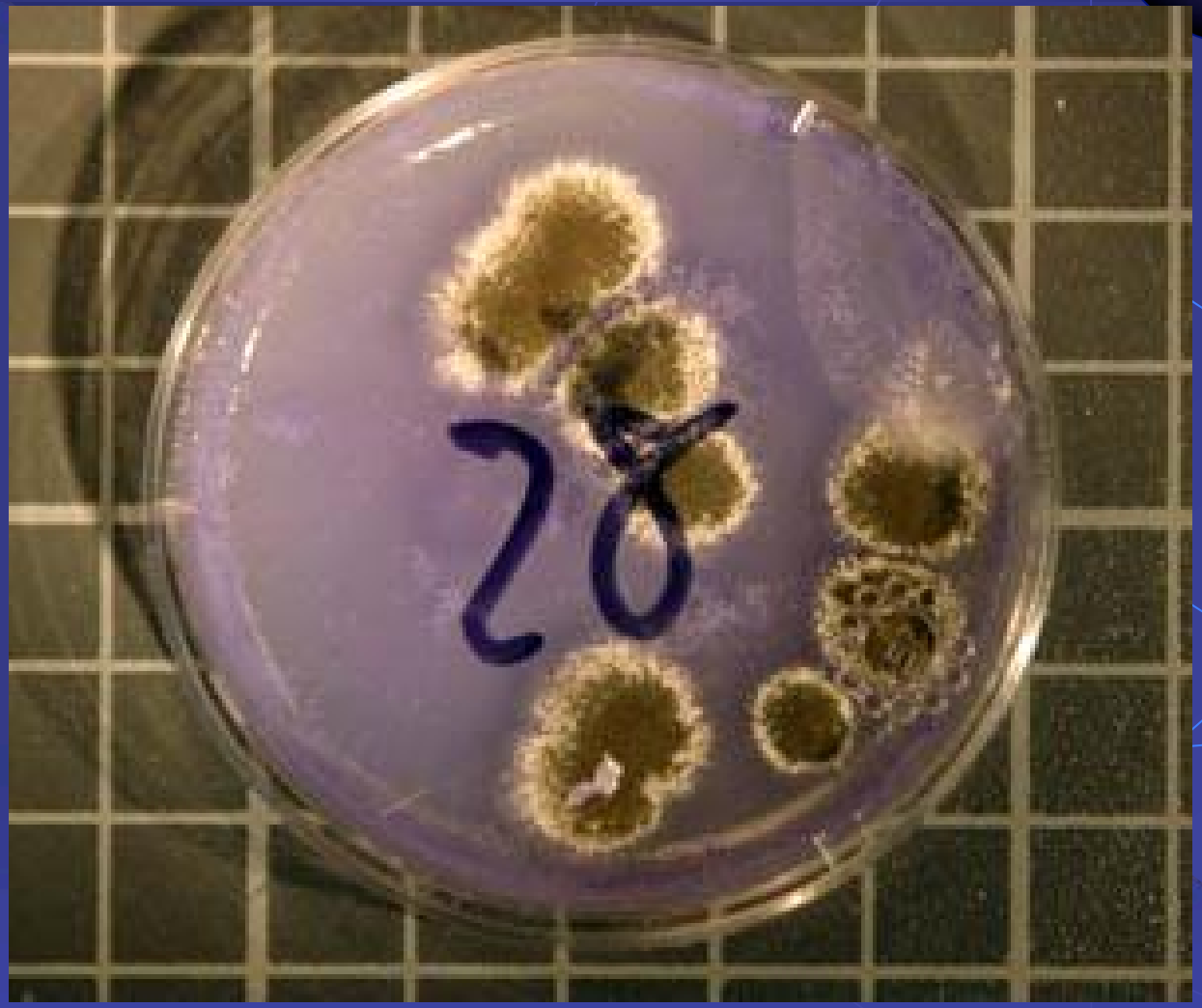
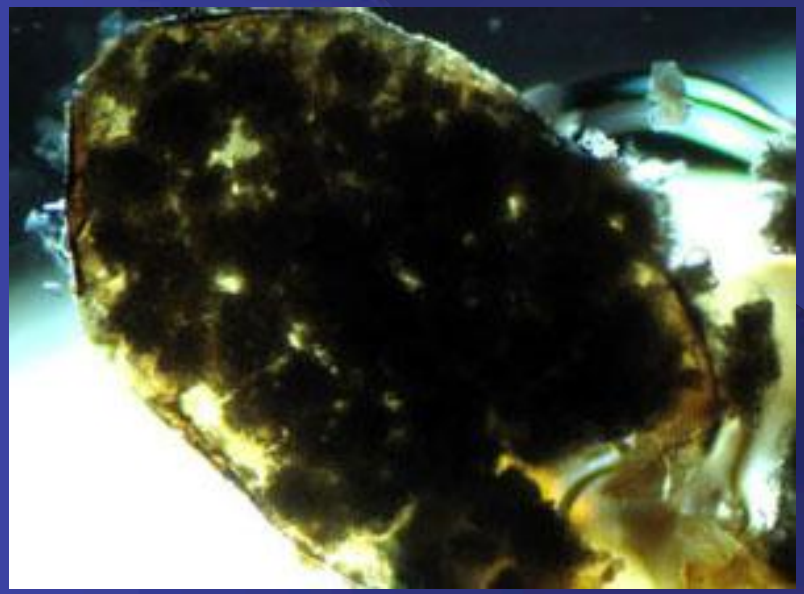
Lethbridge, Alberta, Canada T1K 3M4.

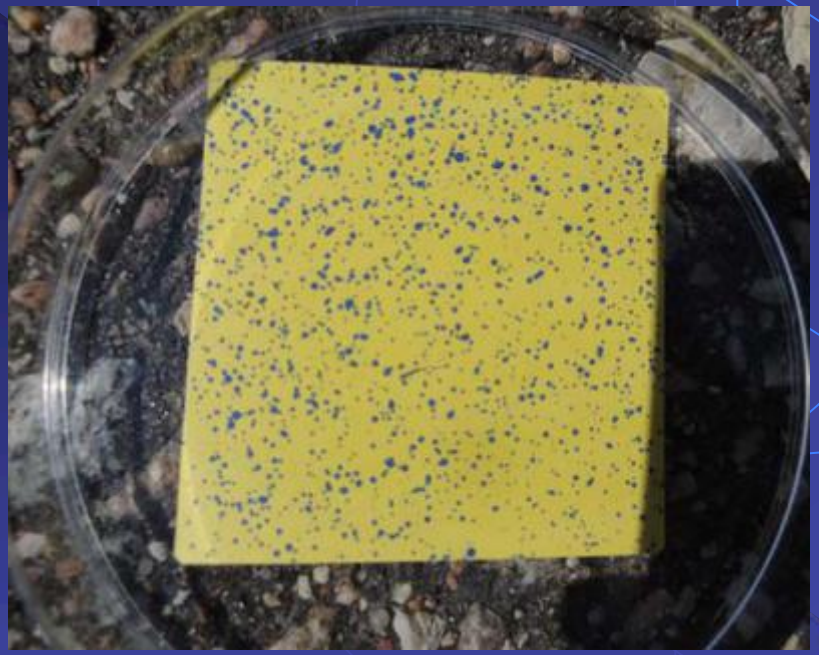
Metarhizium anisopliae S54



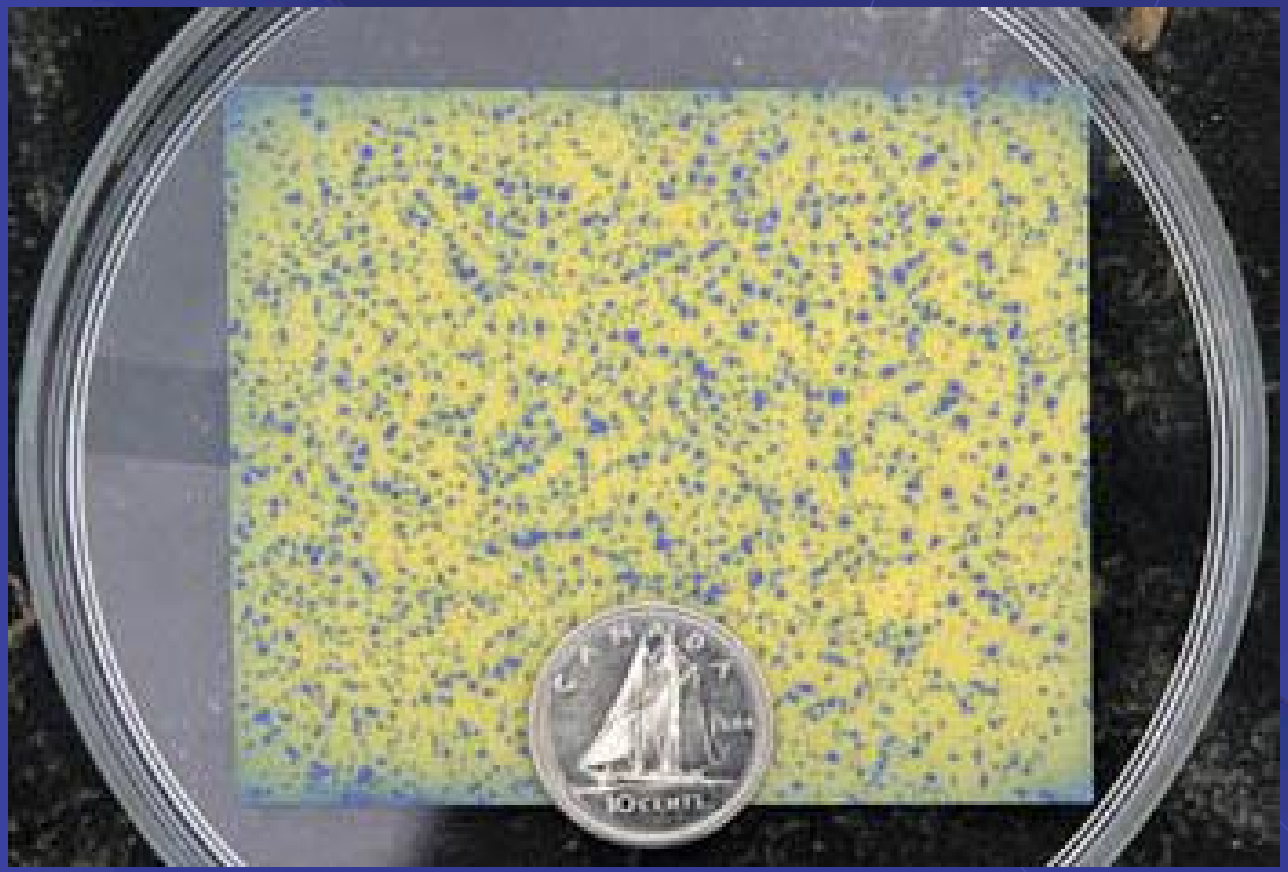


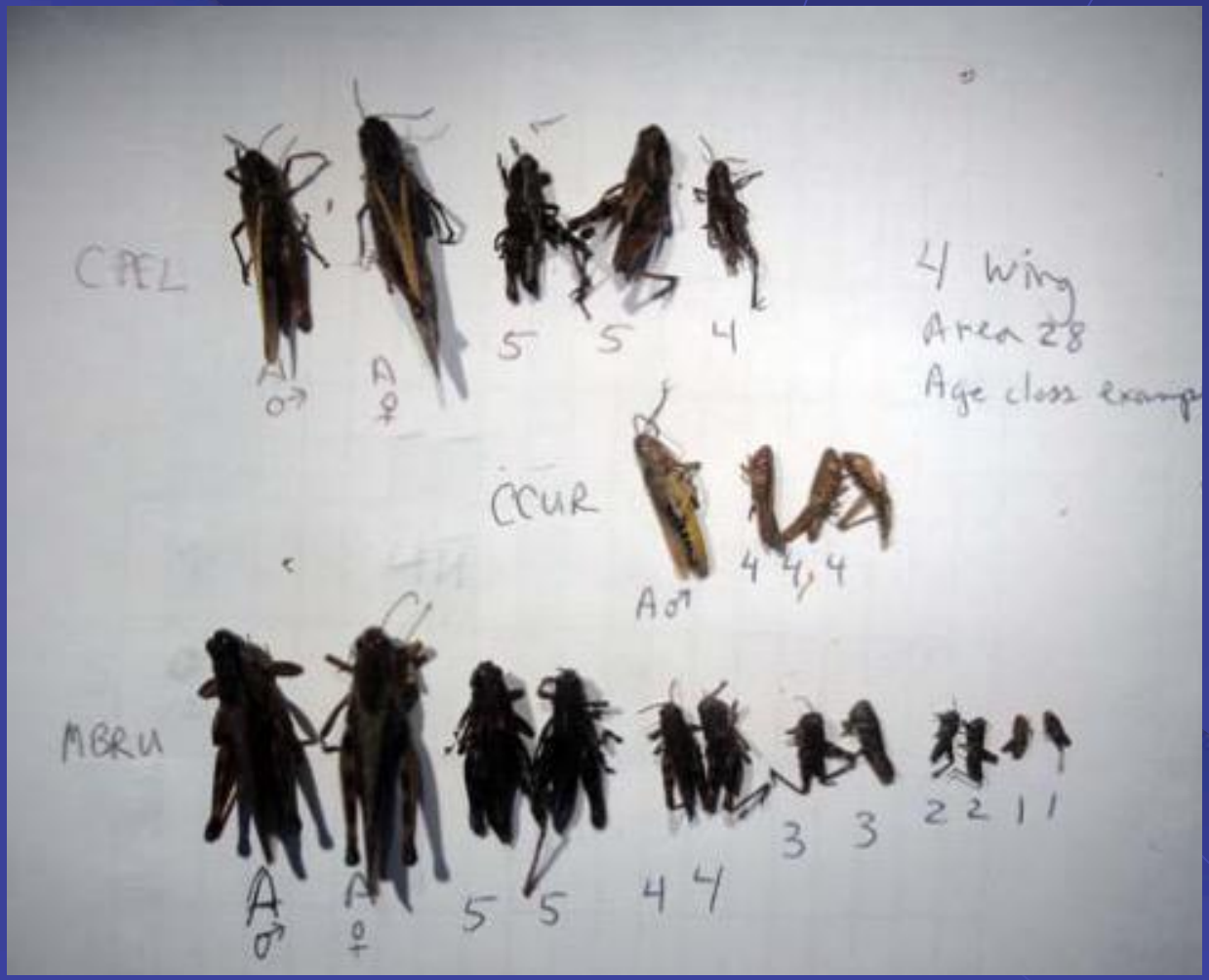
Cockroach killed by *M. anisopliae*

4 Wing Study




Area 35
@E


10 CENTS


CFEL
A ♂
A ♀
5 5 4
4 wing
Area 28
Age class examp
CCUR
A ♂
4 4 4
MBRU
A ♂
A ♀
5 5
4 4
3 3
2 2 1 1

SPECIES	I1	I2	I3	I4	I5	AD.	SUM	SITE NAME	DATE 2009
C PELLUCIDA					2		2	1	2-Jul
Mel bivitattus			1				1	1	
Mel bruneri		3	3	4			10	1	
Mel dawsoni		12					3		

SPECIES	I1	I2	I3	I4	I5	AD.	SUM	SITE NAME	DATE 2009
C PELLUCIDA	8	10	8	10			36	2	26-Jun
Mel bivitattus		3	9	6			18	2	
Mel bruneri	19	55	38	14			126	2	

For more information please contact:

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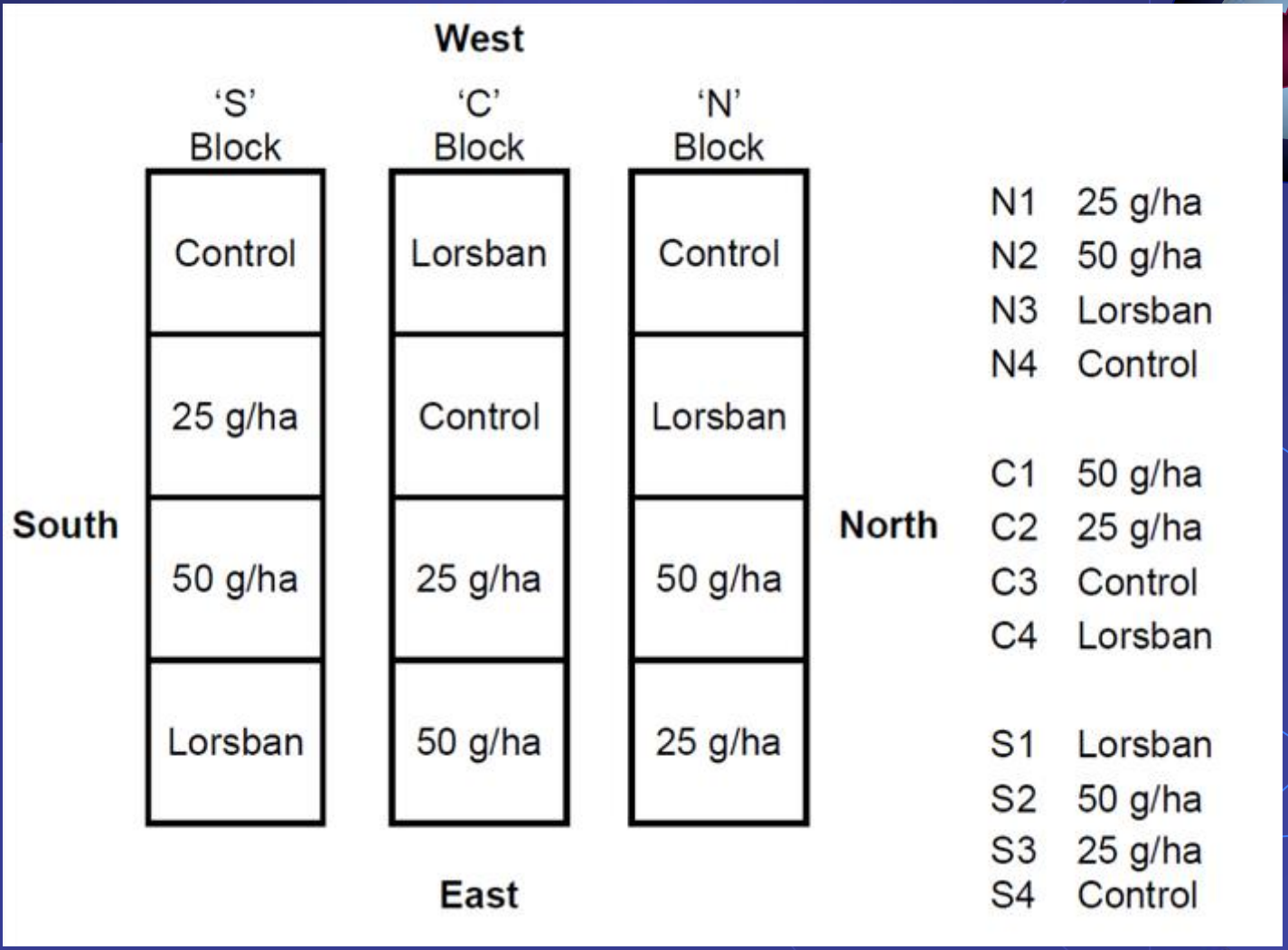
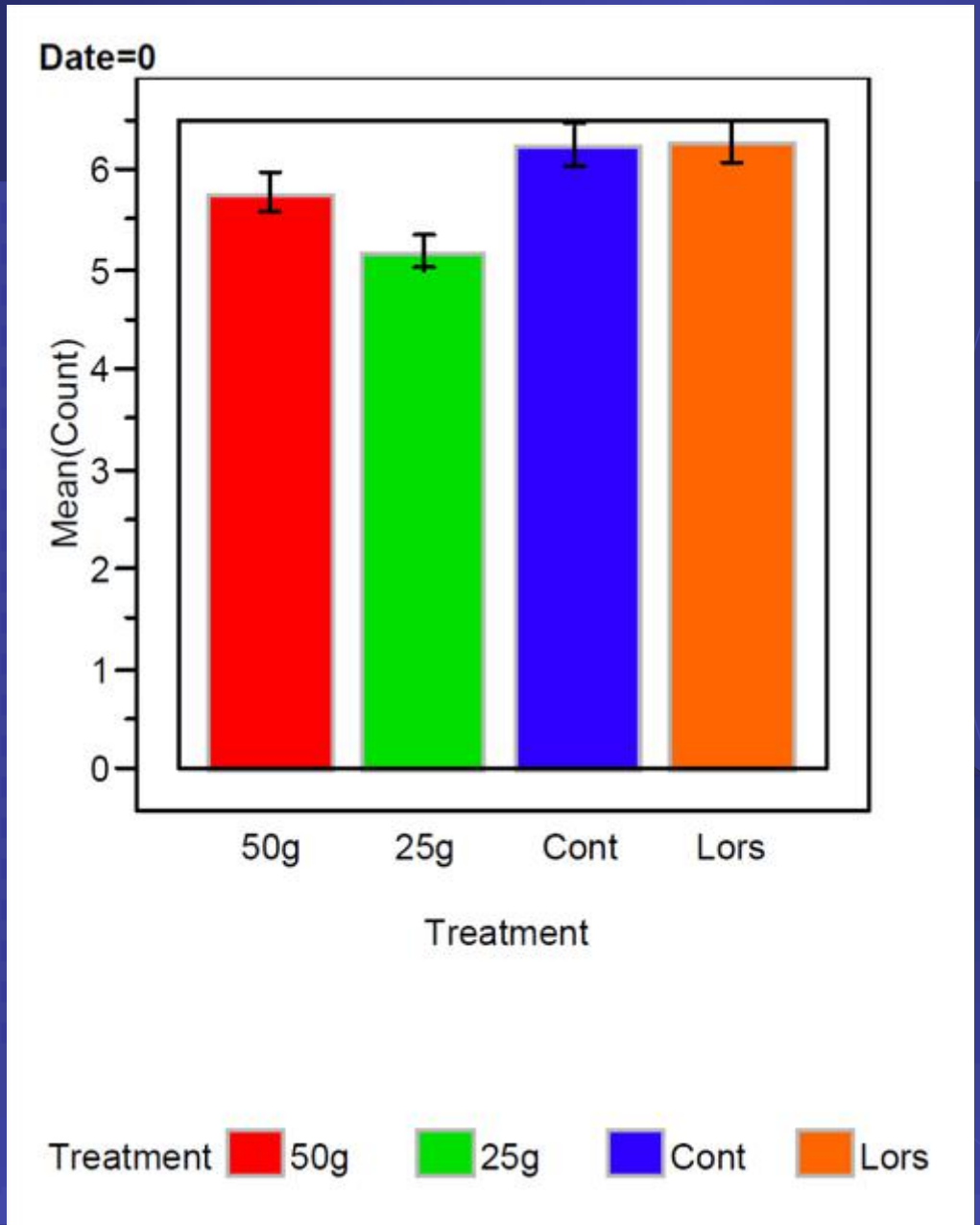
Email: kathleen.gurski@forces.gc.ca

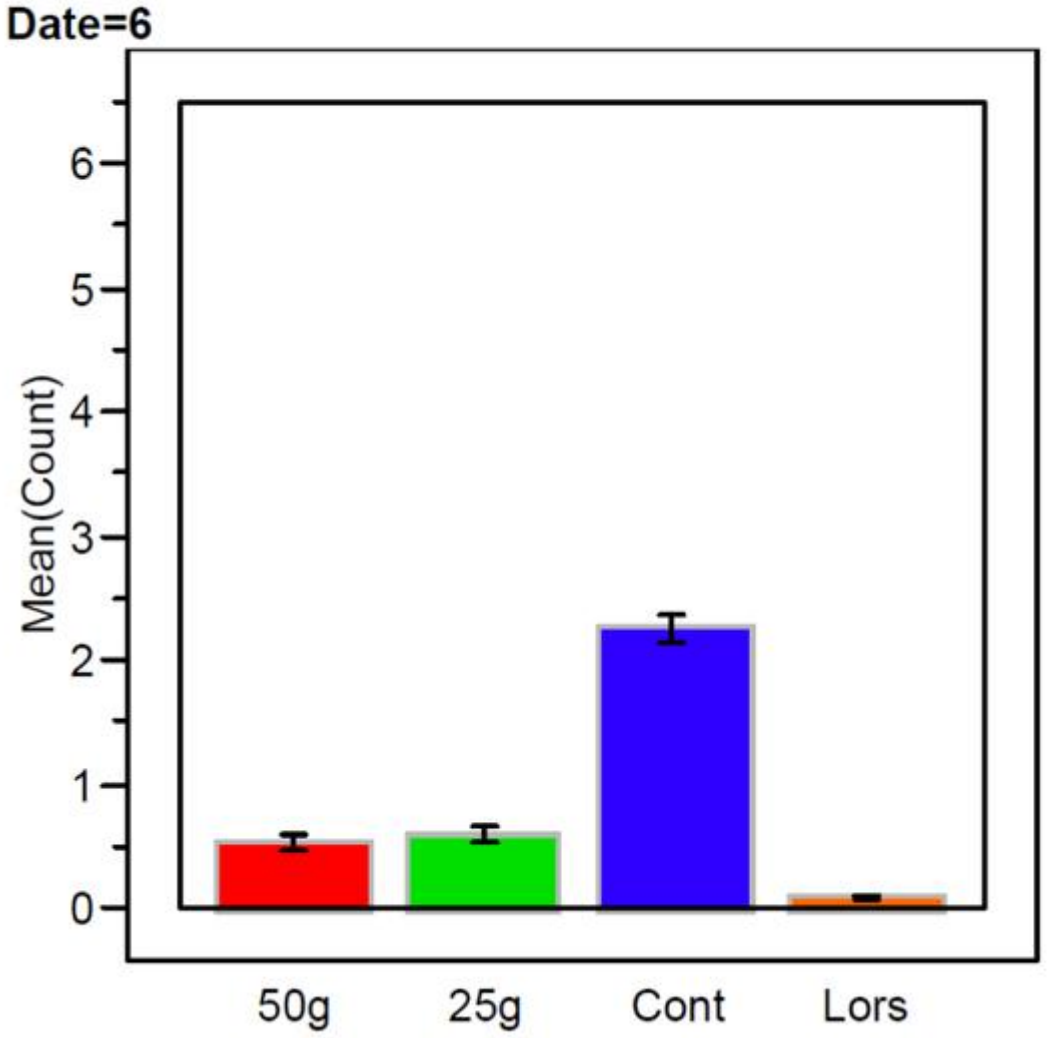
Elrose and Pearce Studies

- The dataset for the site near Elrose, SK, consisted of three dates, with 720 counts per date, each in a 0.25 sq. m. ring.

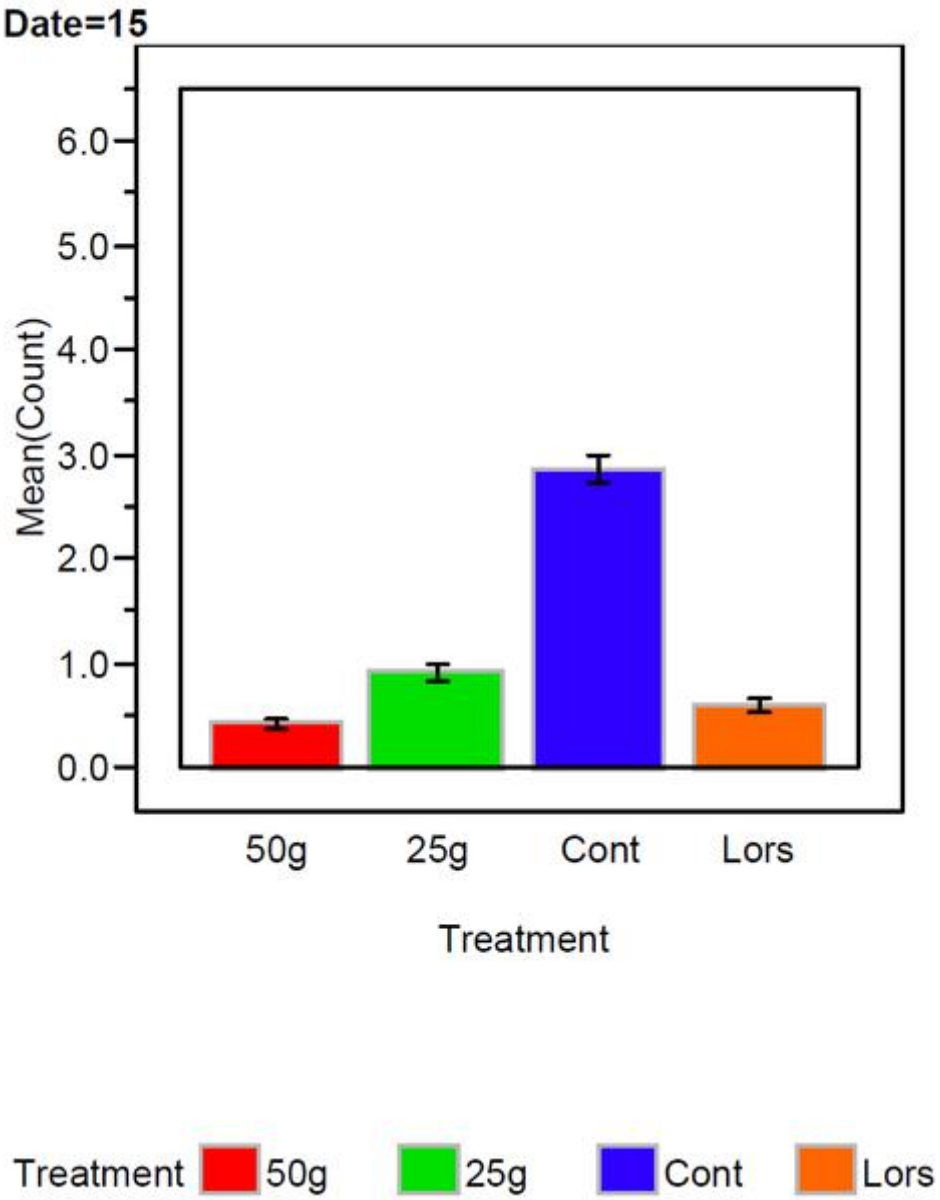

West
'S' Block
'C' Block
'N' Block
Control
Lorsban
Control
25 g/ha
Control
Lorsban
50 g/ha
25 g/ha
50 g/ha
Lorsban
50 g/ha
25 g/ha
South
North
East
N1 25 g/ha
N2 50 g/ha
N3 Lorsban
N4 Control
C1 50 g/ha
C2 25 g/ha
C3 Control
C4 Lorsban
S1 Lorsban
S2 50 g/ha
S3 25 g/ha
S4 Control


Date=0
Mean(Count)
0
1
2
3
4
5
6
50g
25g
Cont
Lors
Treatment
Treatment
50g
25g
Cont
Lors

(Elrose, SK, July, 2008, example)



(Elrose, SK, July, 2008, example)



Conclusion

- Based on research data that Dr. Dan presented bio-control is slower acting but, over two weeks, was as effective as Lorsban, which is one of the pesticides previously used by the wing to control the grasshopper population.

- *Metarhizium* is still in the testing stage but this method of pest control could be commercially viable within the next two years.

Special Thank You

- Dan Johnson, PhD
  - Professor of Environmental Science
  - University of Lethbridge
  - Canada research Chair for Sustainable Grassland Ecosystems
  - Department of Geography

Reference

- Final report: Environmental research at the 4 Wing Cold Lake Airfield, regarding grasshopper abundance, a factor in risk of aircraft bird strike, and non-chemical methods for suppression - 2010
- Environmental research at the 4 Wing Airfield r, regarding grasshopper abundance, a factor in risk of aircraft bird strike. – 2009
- Grasshopper identification and control methods to protect crops and the environment
- 4 Wing Annual Wildlife reports 2009-2012