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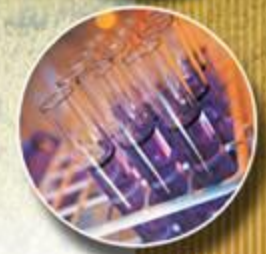


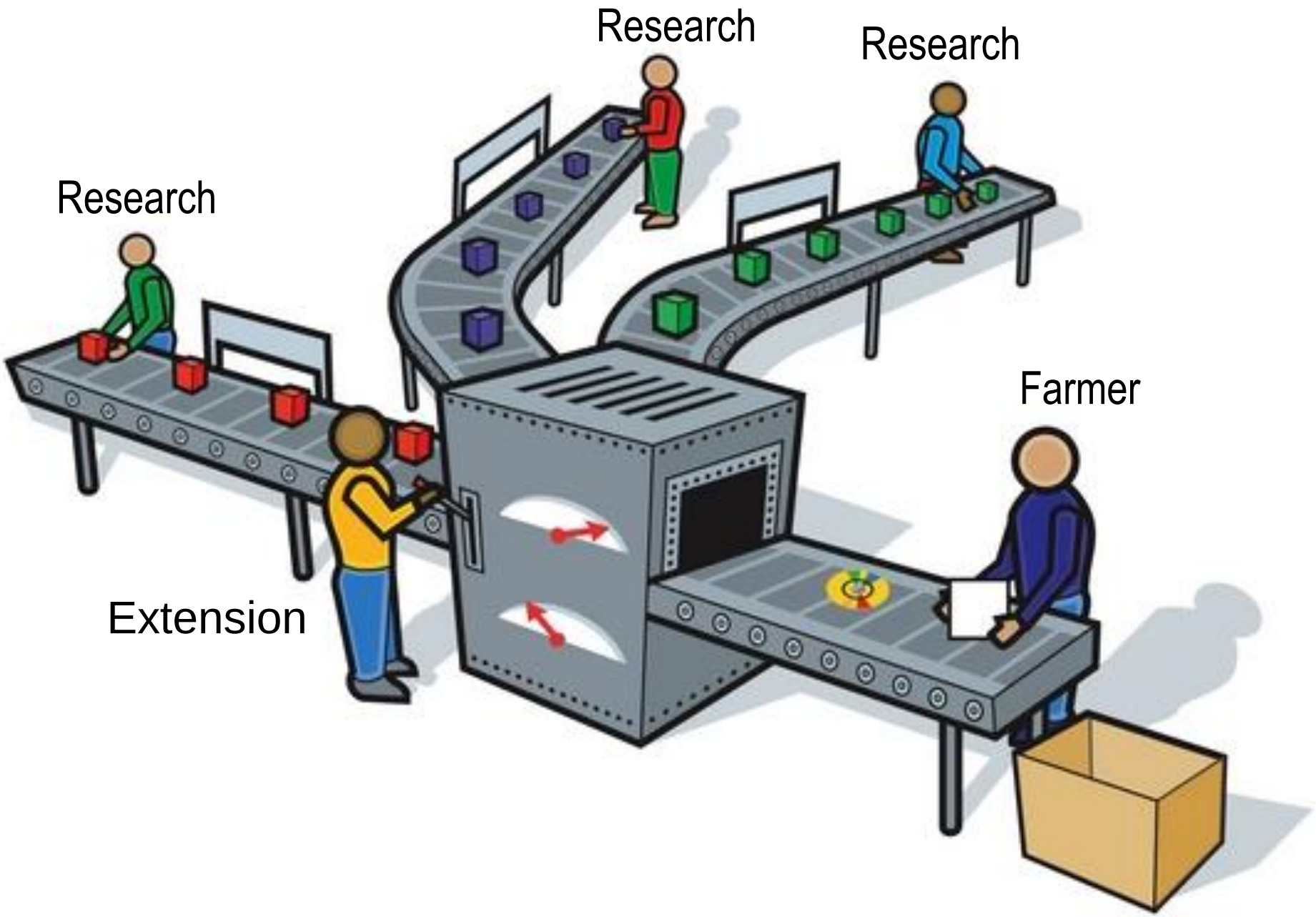
Managing small areas of clubroot infestation

Bruce D. Gossen and M. R. McDonald

AAFC, Saskatoon and University of Guelph

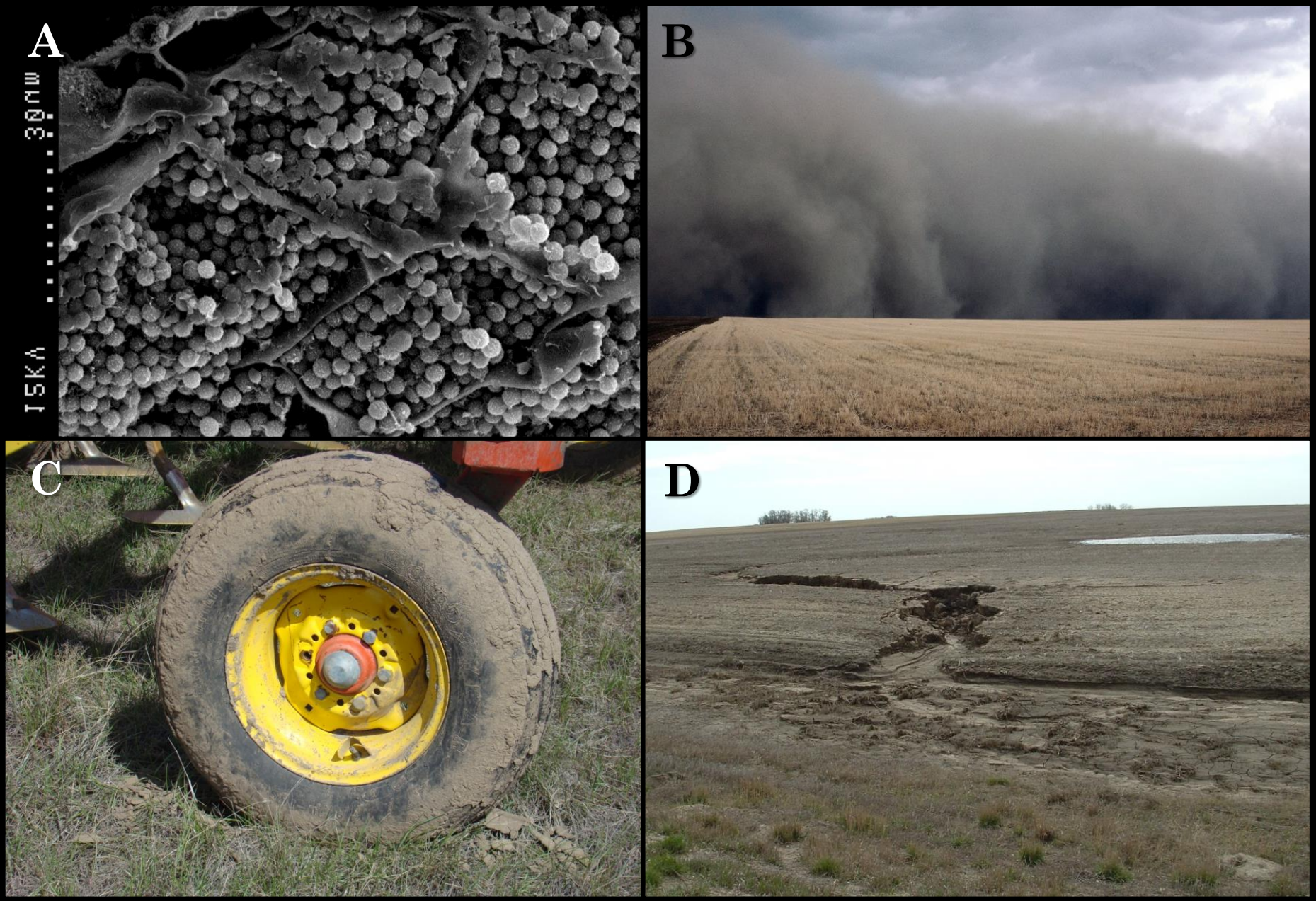
International Clubroot Workshop, August 2018

Canada


Research
Research
Research
Farmer
Extension

No single approach effective on its own!

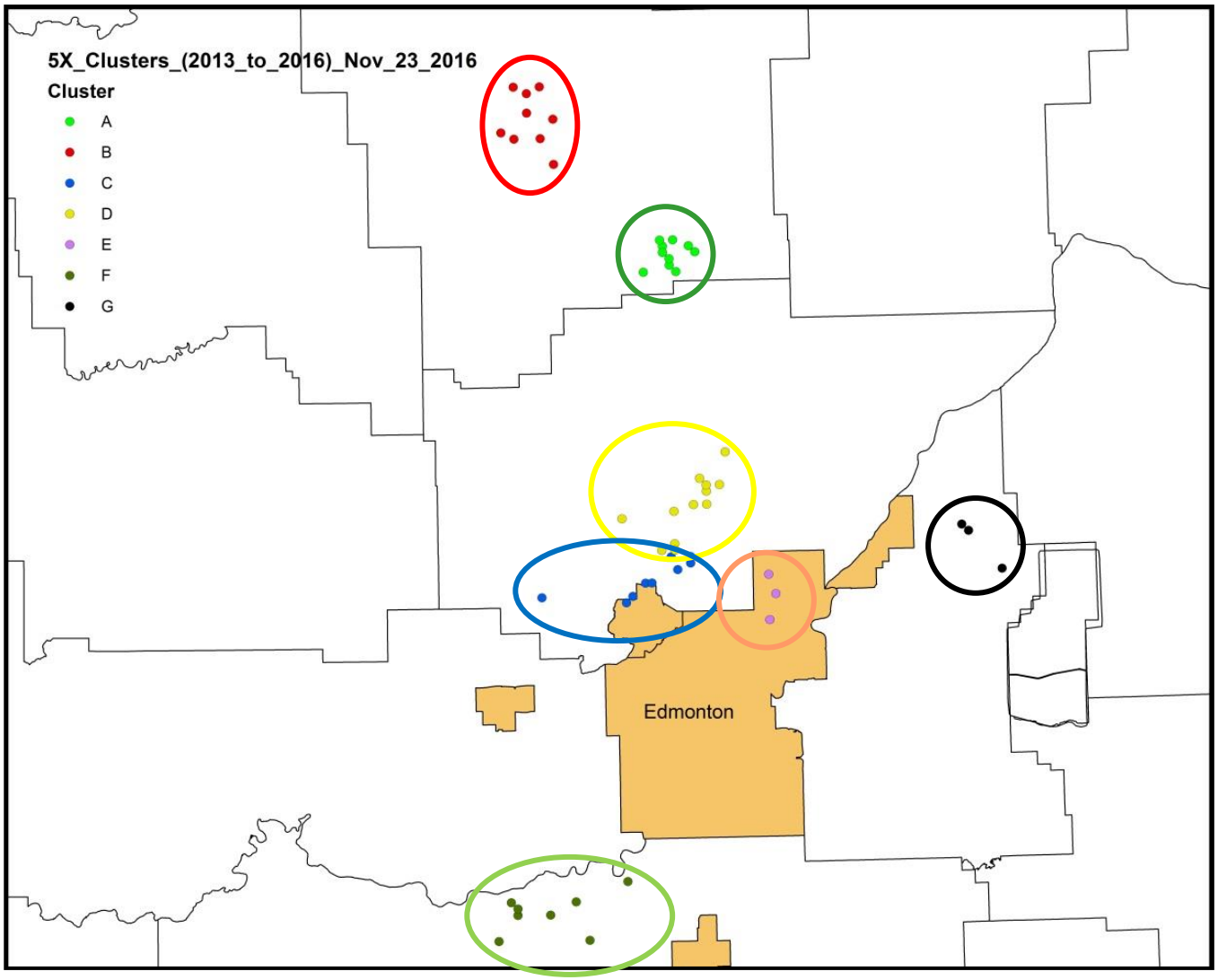
- Spore conc. in soil is important.
- Spore conc. is difficult to change - even fumigants do not eliminate the pathogen.
- Most strategies for reducing spore conc. are expensive - generally too costly to be applied to entire fields.
- Producers need an effective way to minimize movement of soil out of infested patches and to reduce spore conc.


A
B
C
D


WARN

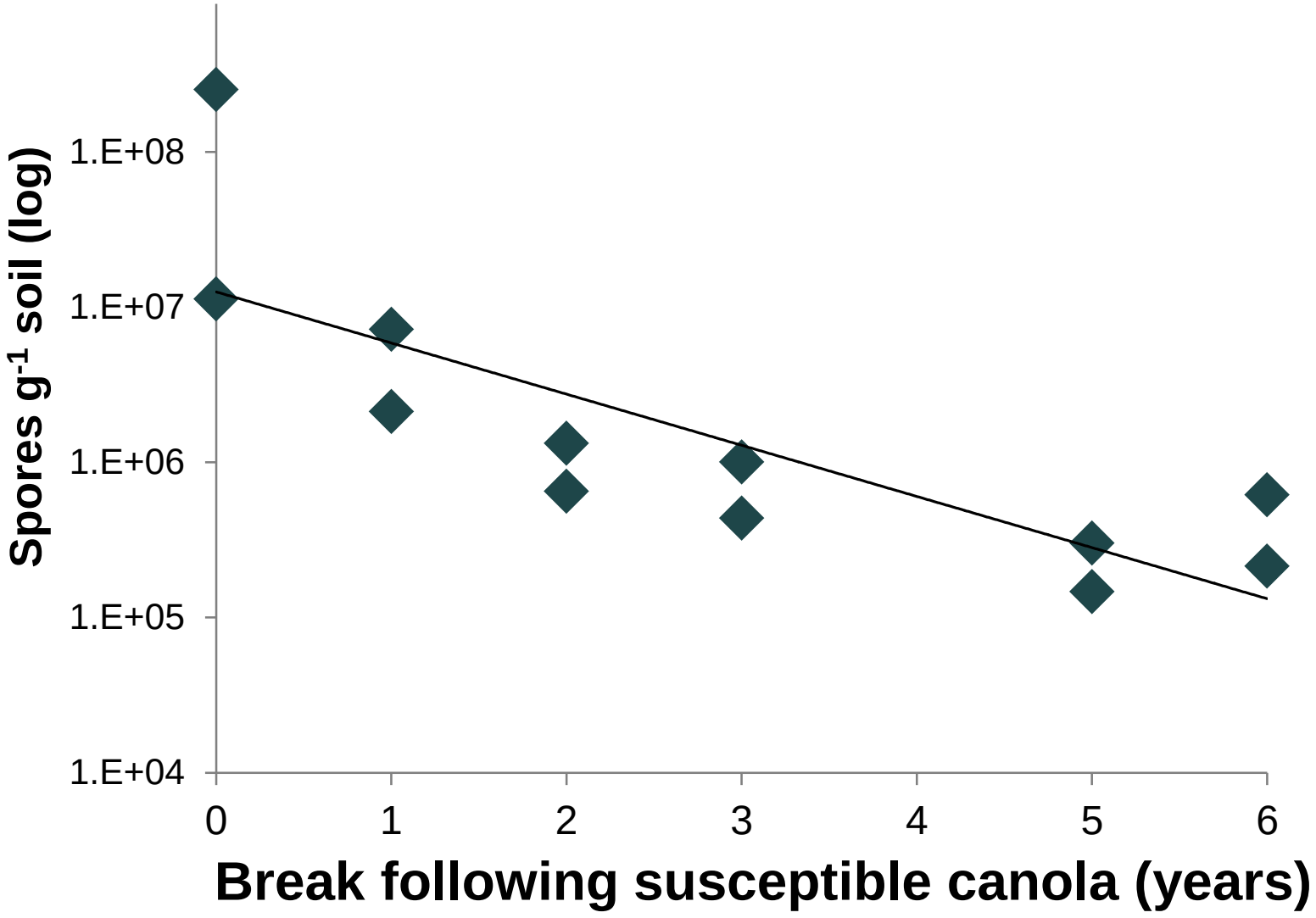
Clusters of Fields with New Strains

- New types found in clusters
- Spreading to nearby fields?

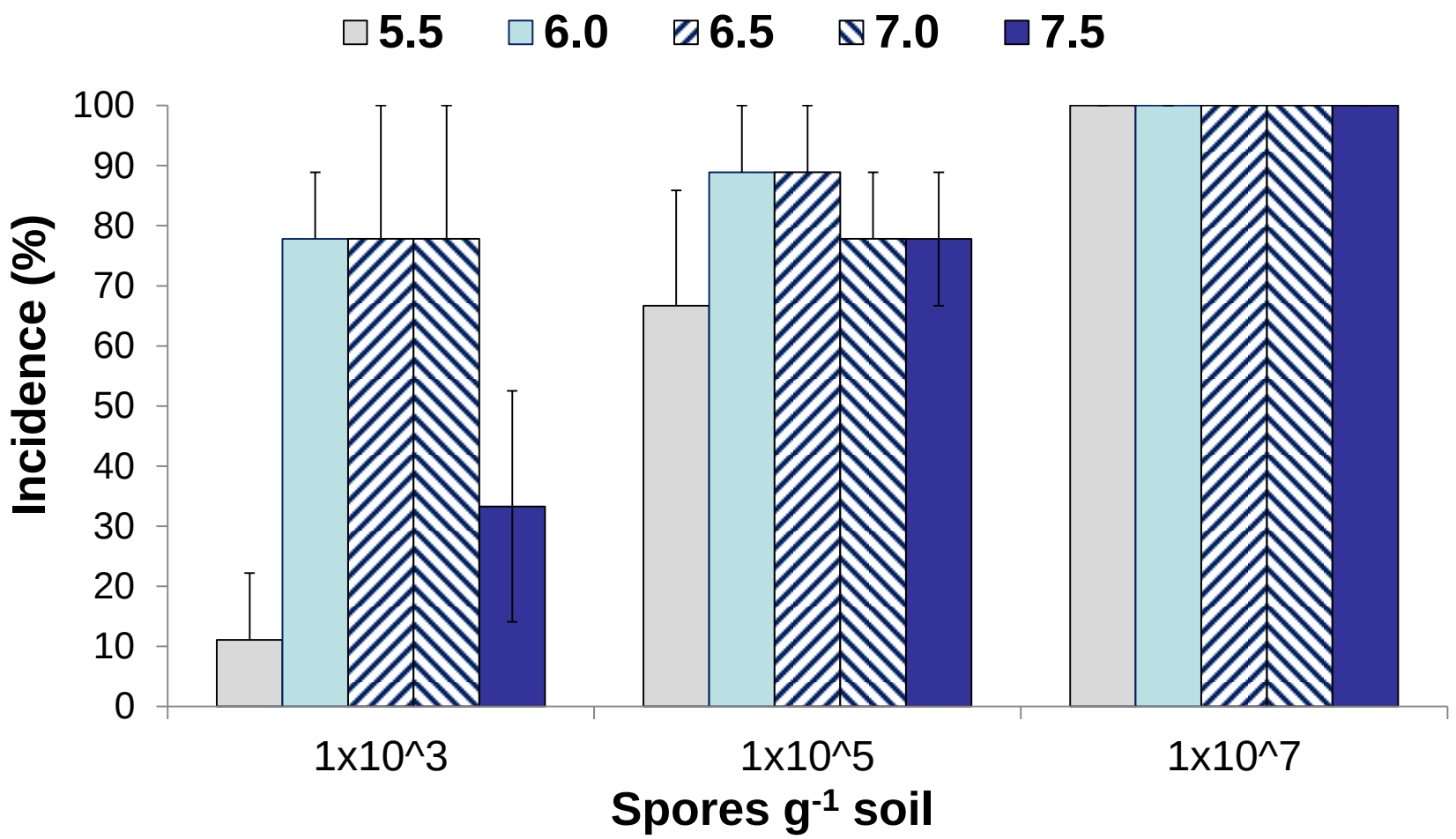


(Strelkov & Hwang)

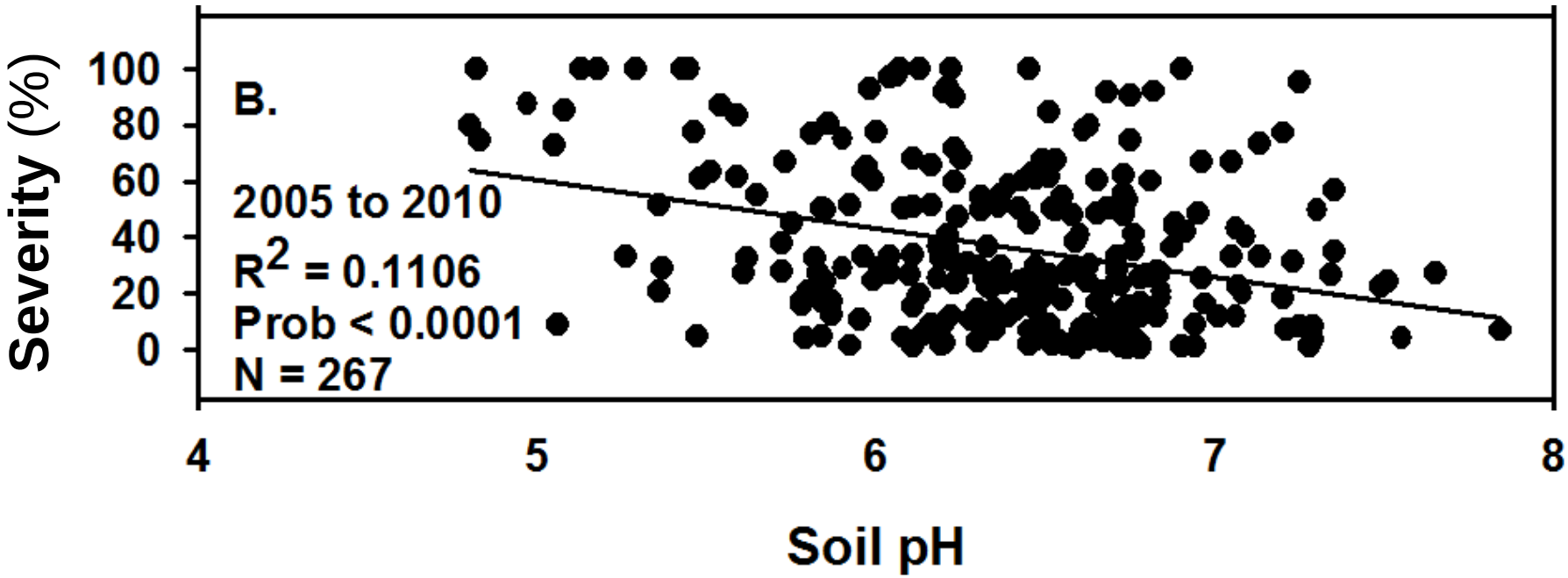
Spore Conc. after Susceptible Canola



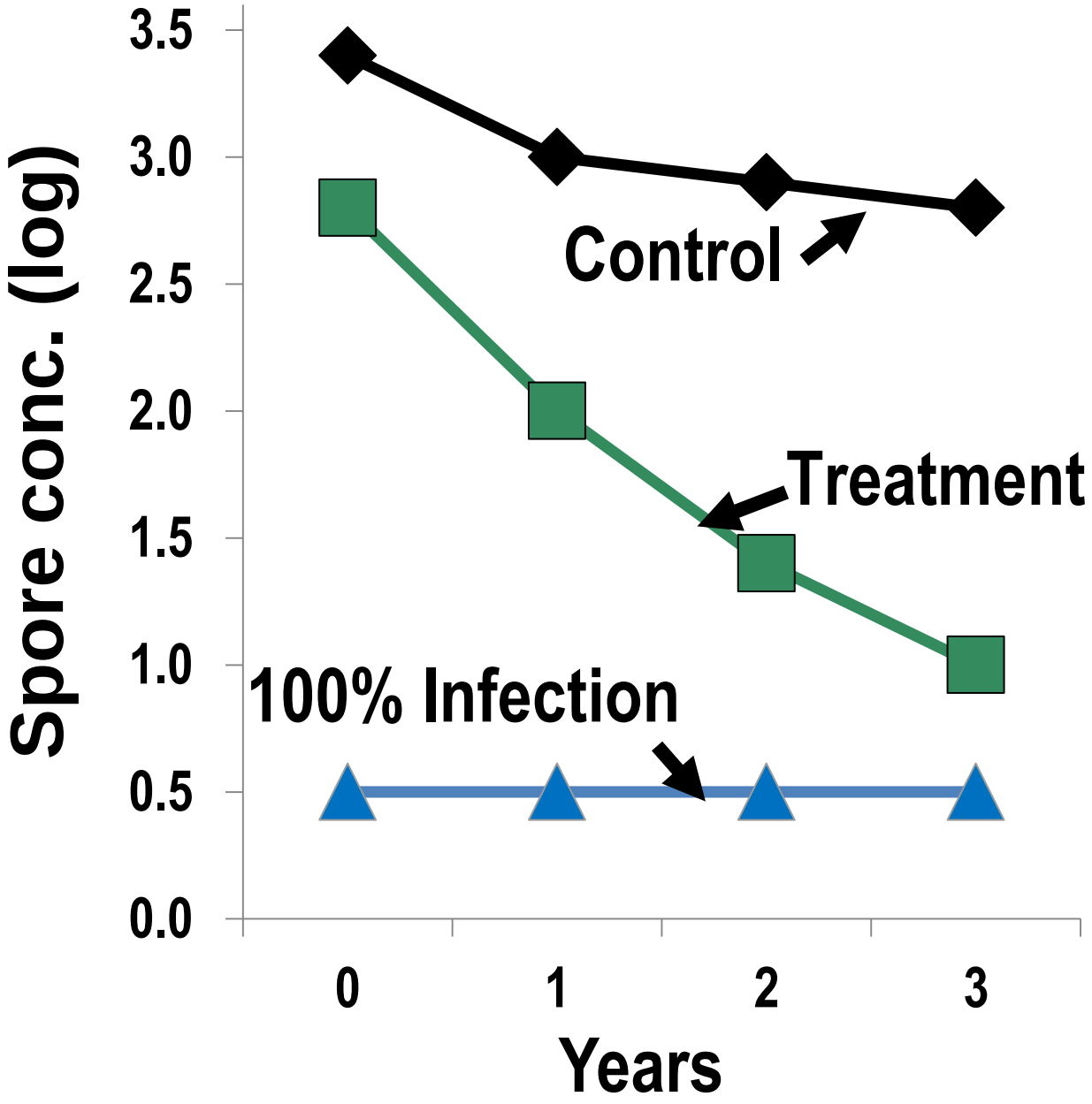
Resting spore conc. and pH



Does moderate pH reduce clubroot?



Field with clubroot in Alberta: pH above 7.5 reduces clubroot, but otherwise the relationship is quite weak


Spore conc. (log)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Control
Treatment
100% Infection
0
1
2
3
Years

Severity (DSI), Fumigation trial, 2015

0	3.3	1.1	3.3	3.3	11.1
3.3	7.8	7.8	60	48.9	56.7
21.1	26.7	31.1	10	35.6	48.9
3.3	12.2	10	15.6	71.1	28.9
15.6	45.6	67.8	20	64.4	74.4
36.7	25.6	20	18.9	66.7	48.9

Bait crops

- Some (most?) non-host crops stimulate spore germination.
- Examined before, but in fields with high spore conc.
- Quantification has improved.

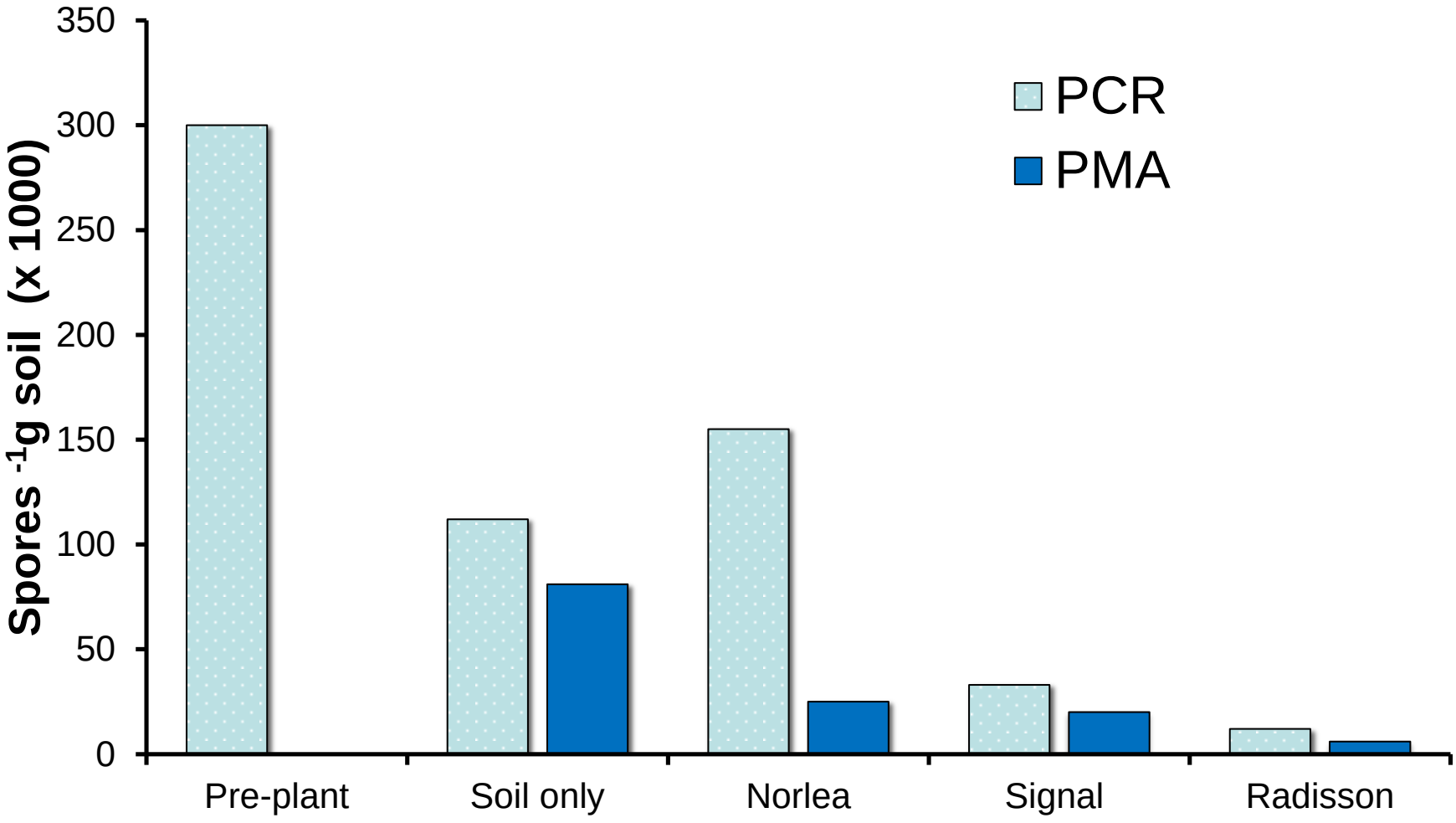
Perennial grasses

- Lots of roots, good coverage.
- Limits movement of soil.
- Area is out of production.

Cereal crops

- Lots of roots.
- Maintain cash flow.

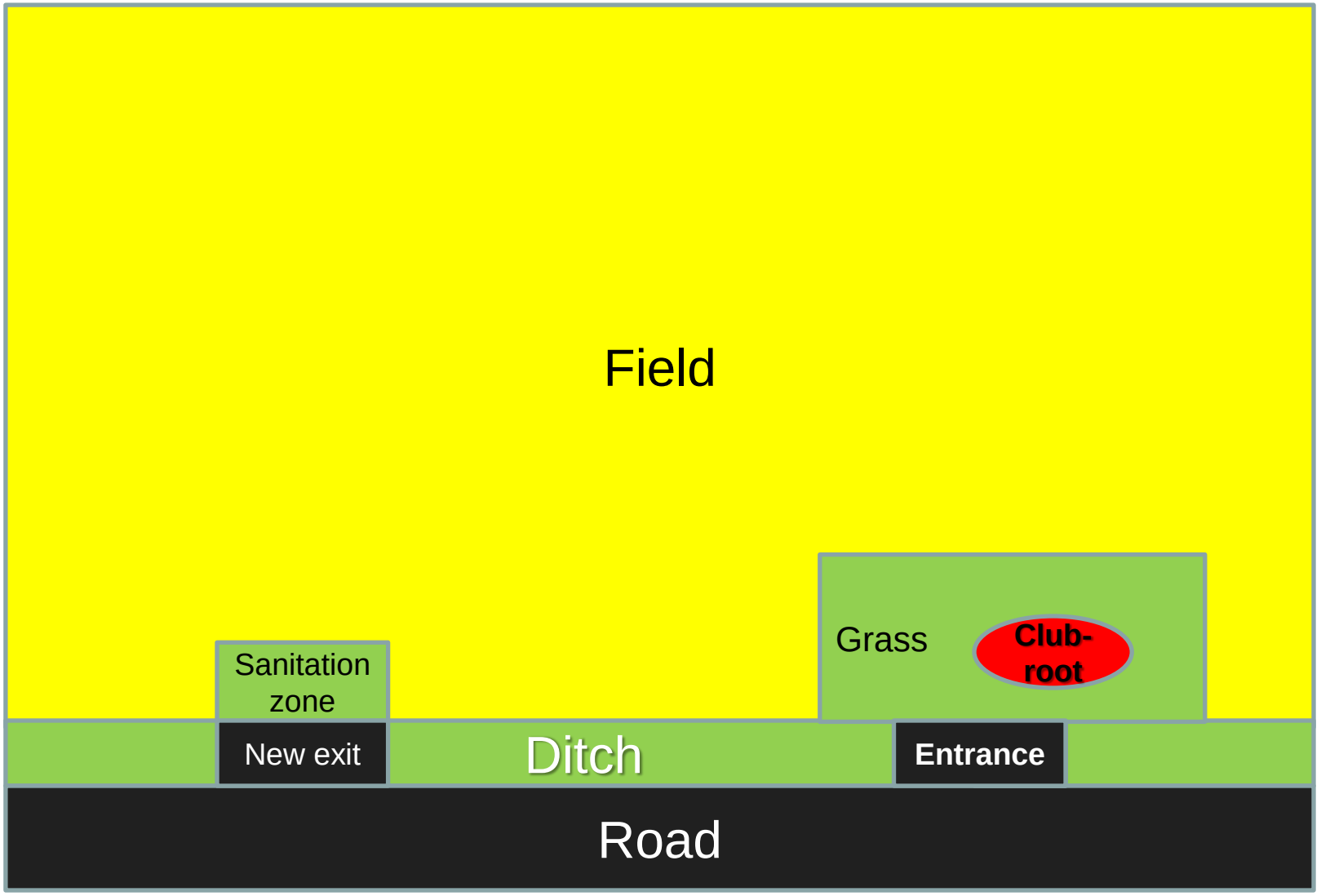
Resting spores at 8 weeks after seeding



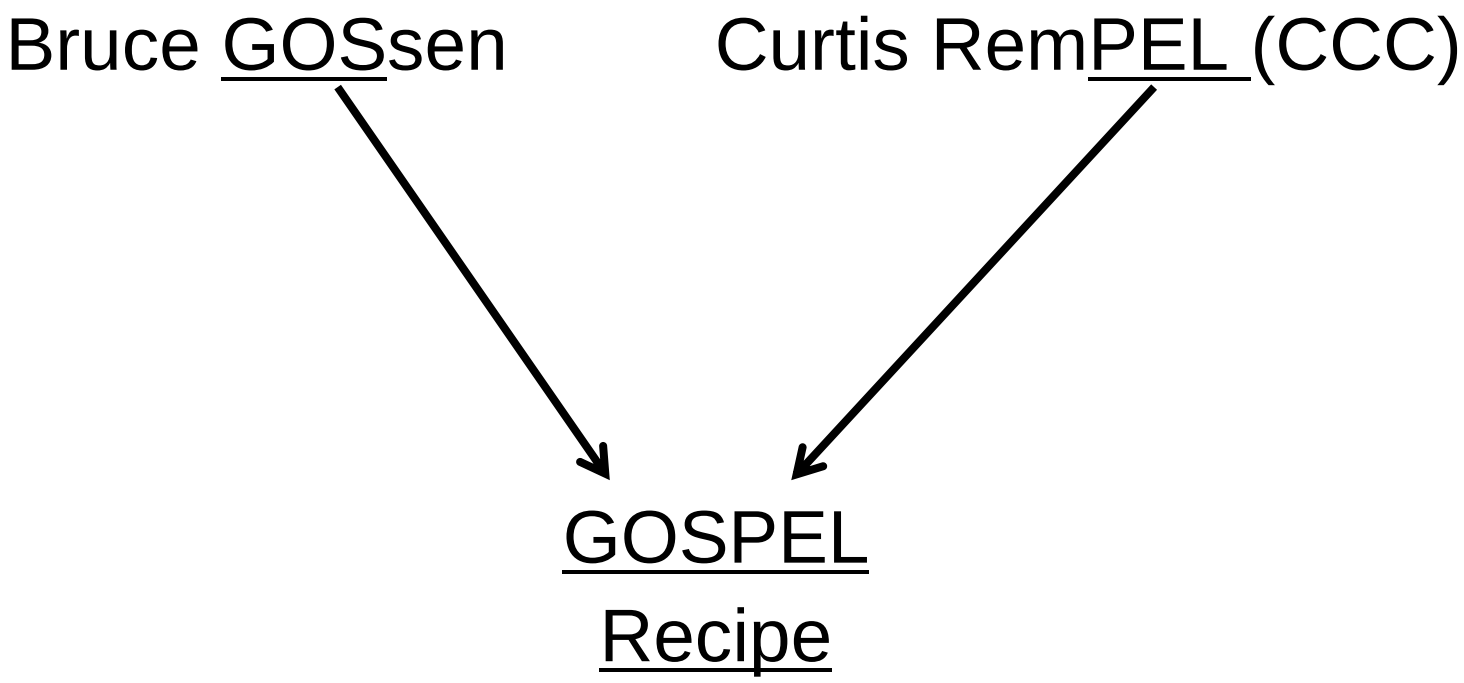
Gossen's Recipe for Eradicating Clubroot

- Identify and mark infested area
  - Symptomatic plants.
  - Mark x2 affected area (at least!) in every direction.
  - Exclude traffic.
- Initial treatment
  - Incorporate lime to pH 7.5 (fumigate / solarize?).
  - Seed sod-forming grass.
  - When established, traffic allowed.
  - Synergy / antagonism between pH & grass?
- Evaluate and terminate
  - Use soil sampling to monitor spore conc.
  - When levels fall enough, break sod.
  - Use only clubroot-resistant cultivars.

CCC - Manage your patch!



Patch Management



From: Dan Orchard

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Questions / Comments?

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