

Cover Crop impacts on SCN



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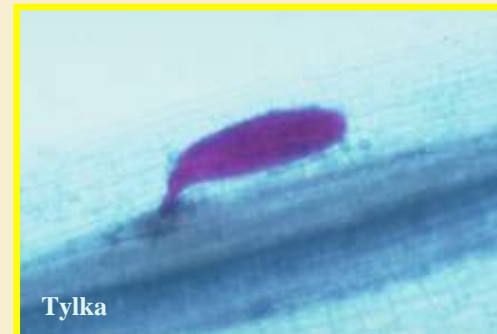
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Canada





- 21 to 24 days
- eggs survive up to 10 years



Rotate - with non host crops

Rotate - to resistant varieties

Rotate resistant varieties -avoid using
same resistant varieties in the same field

--- choose cultivars with different sources of
resistance





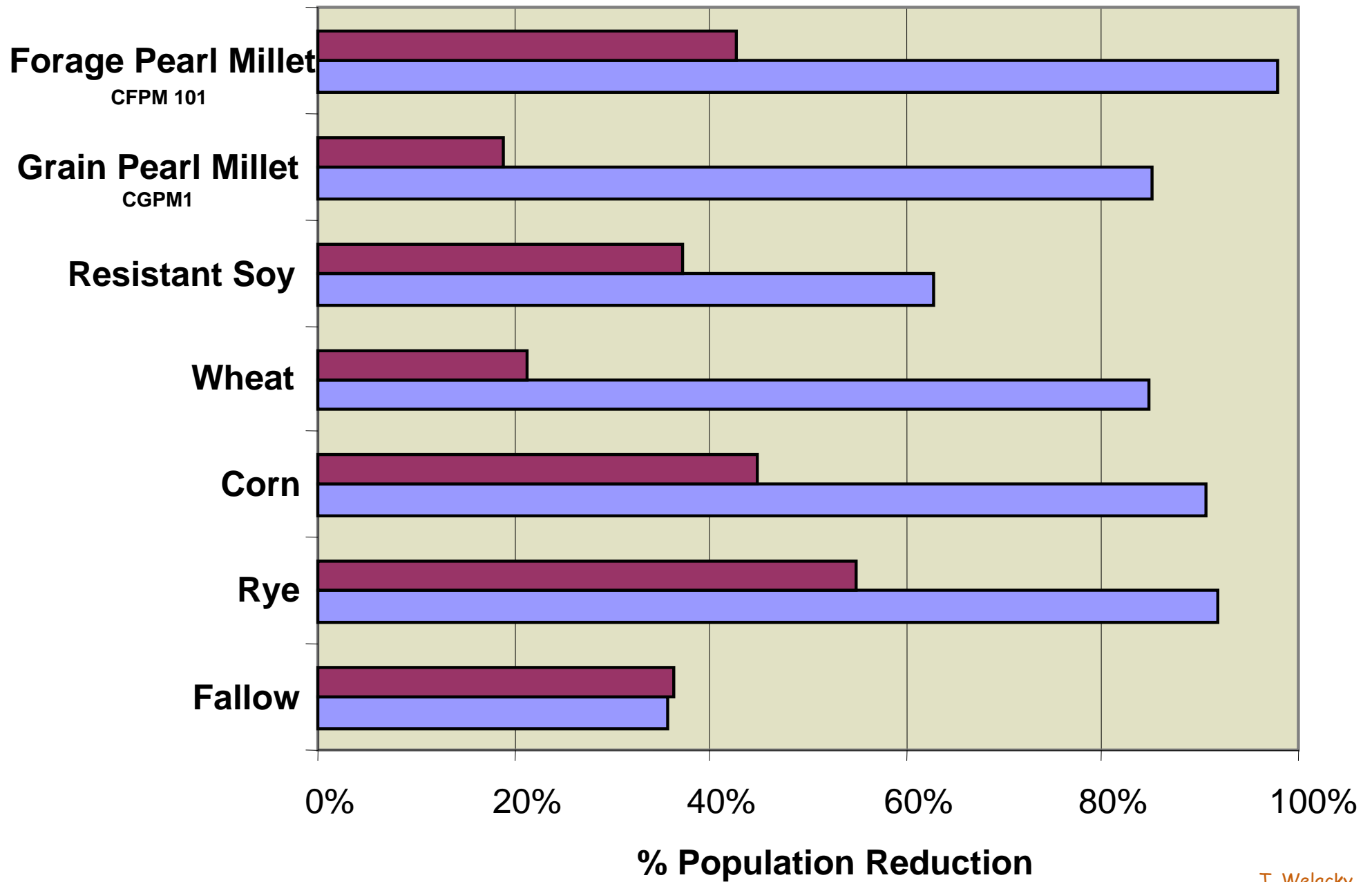
13.07.2006





06.07.2005

Effect of non host crops on SCN





13.07.2006

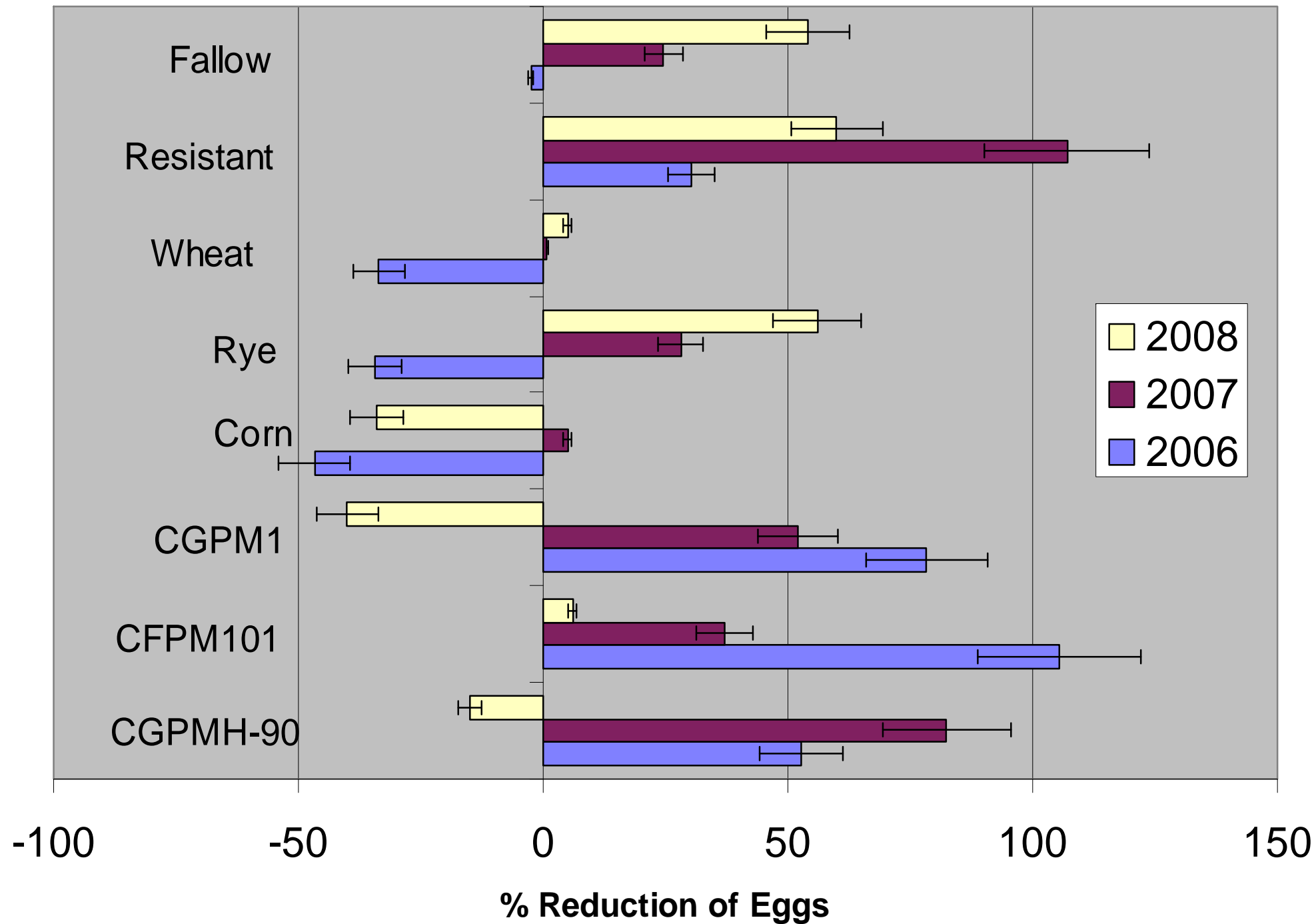


Table 4: Number of *P. penetrans* and reproduction factor on seven rotation crops grown in microplots at l'Acadie.

Rotation crop	Nb <i>P. penetrans</i>/kg soil spring 2001 *	Nb <i>P. penetrans</i>/kg soil fall 2001 *	Reproduction factor *
Oats	167 ± 77 ab	6353 ± 1546 a	79.4 ± 30.5 a
Soybean	132 ± 62 b	4396 ± 1834 ab	54.4 ± 23.2 ab
Rye	370 ± 65 a	6110 ± 1350 a	34.4 ± 9.1 ab
Corn	113 ± 24 ab	2043 ± 827 b	20.8 ± 9.2 ab
Brown mustard	267 ± 124 ab	5737 ± 2617 ab	27.7 ± 12.7 ab
Potato	264 ± 28 a	6026 ± 1136 a	24.4 ± 4.0 b
Grain pearl millet	160 ± 57 ab	253 ± 91 c	2.5 ± 1.2 c

* Means and standard errors followed by different letters are significantly different at the level of 5% of probability (Waller's test).

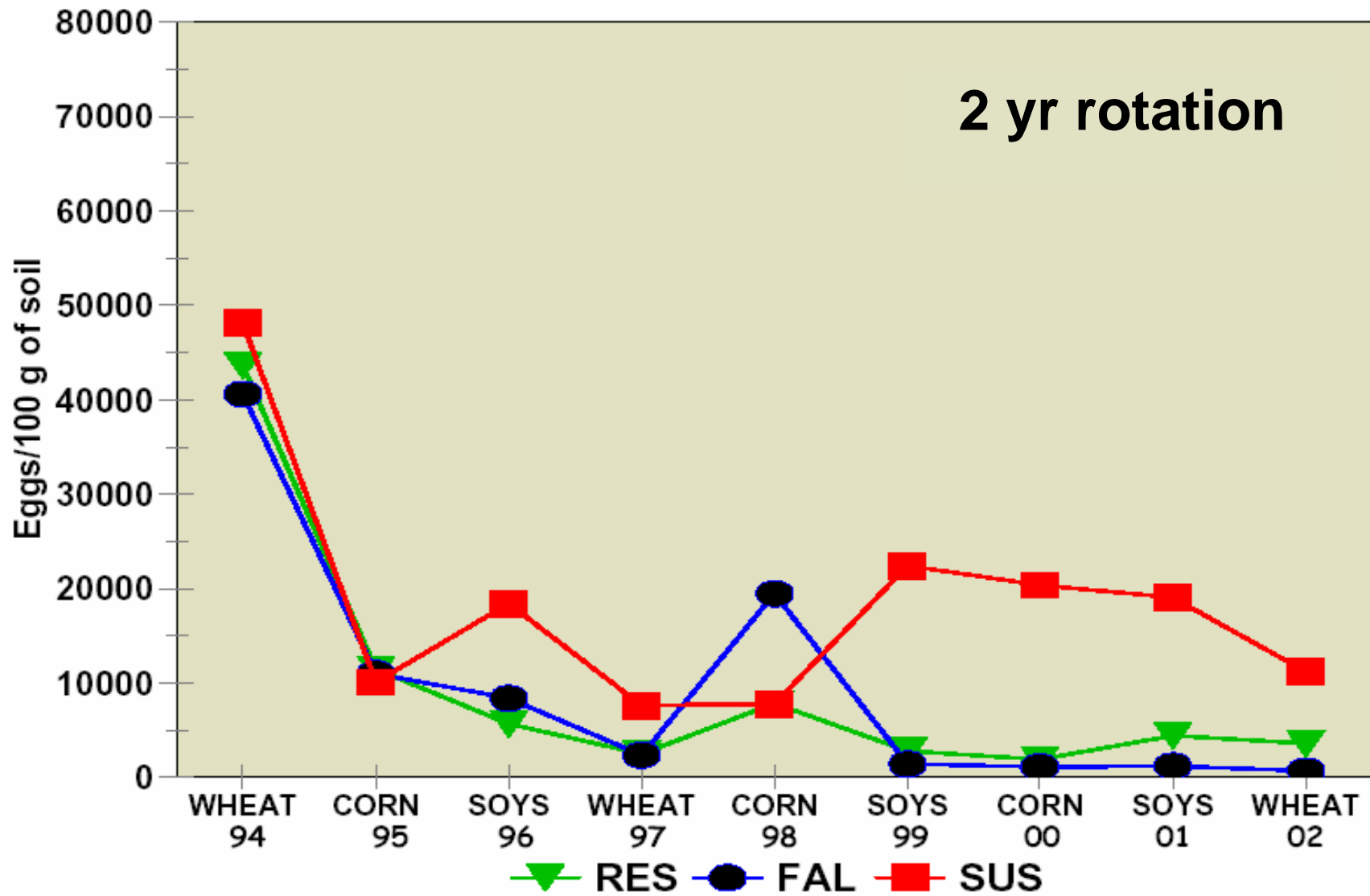
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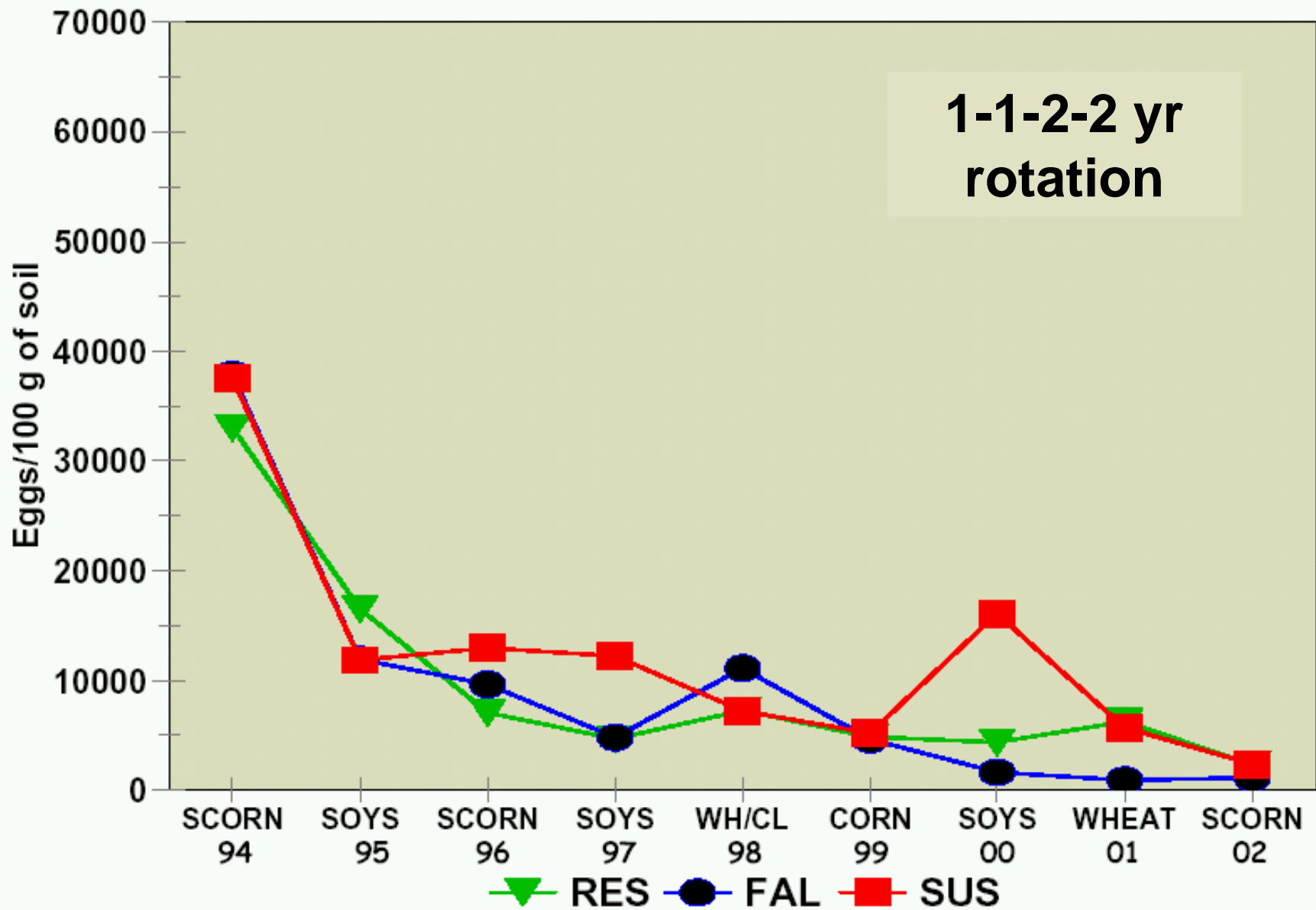
GRAIN AND FORAGE PEARL MILLET AS ROTATION CROPS WITH TOBACCO, POTATO AND CEREALS FOR THE SUPPRESSION OF *PRATYLENCHUS PENETRANS* IN QUEBEC - 2001

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Rotate - with non host crops







SCN Level
(eggs/100g soil)

**Risk
Rating**

**Yield
Loss**

Rotation

Sandy soils

0 - 500

> 2,000

Low Risk

High Risk

0 - 20 %

20 - 50 %

2 year

4 year

**Fine-textured silt /
clay soils**

0 - 1,000

> 3,000

Low Risk

High Risk

0 - 20 %

20 - 50 %

2 year

4 year

All soil Types

>10,000

**Damage On
Resistant Variety
May Occur**

50 - 100 %

Non-Host

Rotate-to resistant
varieties

Rotate-avoid using same resistant
varieties in the same field

--- choose cultivars with different
sources of resistance



Damage potential - to yield from 12 yrs on 19 farm fields

Years

4-5

6-7

8-9

10-11

Resistant	46.4	41.2	43.0	33.7
Susceptible	35.4	31.8	33.9	22.2

Bu/ac differences

10.0

9.4

9.1

11.5

Reasons to plant SCN resistant varieties

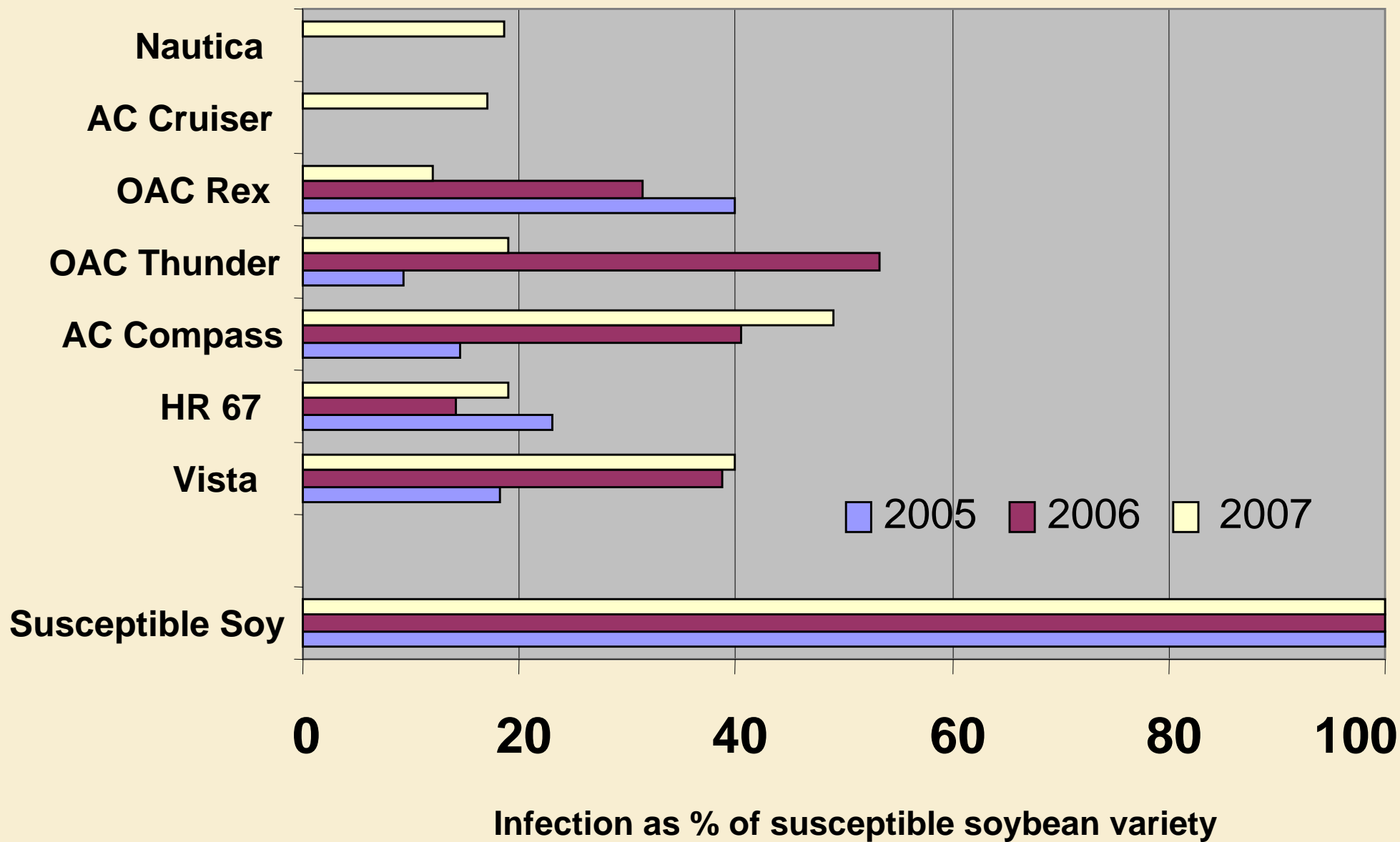
1. Increase Yields on infested soil
2. Decrease SCN population Levels
3. Decrease potential of SCN to spread



Rotate-non host crops

Edible bean varieties are
becoming hosts to SCN





Variety	Bean Type	Production of egg/plant
Vista	White	1,698
HR 67	White	745
AC Compass	White	1,970
OAC Thunder	White	1,159
OAC Rex	White	872
AC Cruiser	White	1,030
Nautica	White	2,052
Red Kanner	Light red kidney	3,257
Redhawk	Dark red kidney	3,662
AC Calmont	Dark red kidney	2,384
SVM Taylor Hort	Cranberry	3,404
AC Ole	Pinto	321
AC Harblack	Black bean	1,704
RCAT Harwich	Susceptible Soy	4,790
Sherwin (res)	Resistant Soy	1,263

Soybean Cyst Nematode effects on Ontario Pulse Crops

Welacky, T.W. and Park, S.J., Agriculture & Agri-Food Canada, Harrow, Ontario, N0R 1G0.



What are the effects of SCN on edible beans that are grown in rotation with soybeans?

Purpose of the Research:

Investigation of the reaction of edible beans was to:

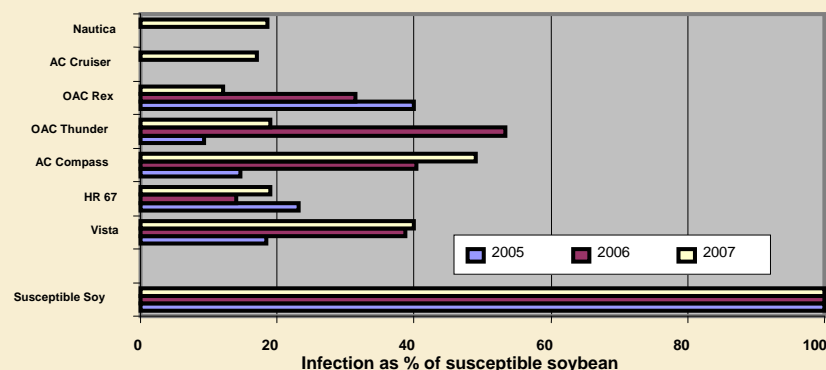
1. Evaluate commercial varieties of white beans and other edible beans for levels of reproduction of SCN.
2. Determine the effect of SCN infected edible beans on agronomic performance and seed quality.
3. Determine the impact of infected edible beans on increasing field populations and if these SCN eggs are infectious to future bean crops.

Methods:

Commercial varieties of white, kidney, cranberry and other edible beans were planted in SCN infested fields for 3 years.

Infection of edible beans by SCN was tested in a sandy loam fields with a population of 4-5,000 eggs/100g of soil. Test plots were 2.4 m x 7.0 m with sampling and root harvesting done by hand.

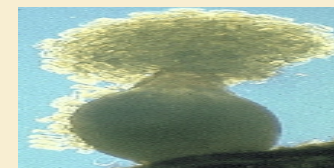
The predominant race was HG Type 2.5.7 (Race 1).



Summary:

Results from testing commercial edible beans indicated that many varieties were susceptible to the reproduction of Soybean Cyst Nematode on roots. Field testing for 3 years indicate a specific variety reaction to SCN as some varieties were more susceptible than others.

Evaluation of the effect of SCN infected edible beans on agronomic performance and seed quality in objective 2 is not complete at this time.



Tylka, Iowa S.U.

Results (To Date):

The following table relates to objectives 1 and 3 with the following field test results –

- 2007 white bean reactions to SCN root infection was similar to the 3 year averages noted in the “Field average” column,
- white beans in general had 10-20 % more SCN root infection than the resistant variety, Sherwin
- white beans varied considerably in the number of eggs that were produced by each variety with 4 varieties having less and 3 with more eggs per plant than the resistant soybean
- kidney and cranberry beans increased SCN on the roots more than other types of edible beans
- pinto and black beans were comparable to whit beans for SCN reproduction

Results from 3 years of field testing indicate that commercial white beans increase SCN populations in the field slightly more than resistant soybeans but less than susceptible soybeans.

Table: Reproduction of SCN on edible beans rated as a % of the susceptible soybean RCAT Harwich

Variety	Bean Type	2005	2006	2007	Field average	Production of egg/plant
Vista	White	18	39	40	32	1,698
HR 67	White	23	14	19	19	745
AC Compass	White	15	40	49	35	1,970
OAC Thunder	White	9	53	19	27	1,159
OAC Rex	White	40	31	12	28	872
AC Cruiser	White			17	17	1,030
Nautica	White			19	19	2,052
Red Kanner	Light red kidney	35	69	68	57	3,257
Redhawk	Dark red kidney	12	61	55	43	3,662
AC Calmont	Dark red kidney	13	32	67	37	2,384
SVM Taylor Hort	Cranberry	38	78	41	52	3,404
AC Ole	Pinto	20	28		24	321
AC Harblack	Black bean	10	64	20	32	1,704
RCAT Harwich	Susceptible Soy	100	100	100	100	4,790
Sherwin (res)	Resistant Soy	2		25	14	1,263



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SCN Research Funding

Ontario White Bean Producers
Ontario Soybean Growers
OMAFRA and U of Guelph