

CORDISOR: Components Of Resistance to DISEases of Oilseed Rape

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- 4 year Defra-LINK project (from April 2004)
- Collaborators RRES, NIAB, ADAS, SAC
- Industrial partners: HGCA, Saaten Union, Elsoms Seeds, CPB Twyford, Nickerson, Syngenta, Monsanto



Winter oilseed rape diseases

Project aim: to find better ways to rate cultivars for resistance and give more information on components of resistance to assist breeding programmes.



Stem
canker

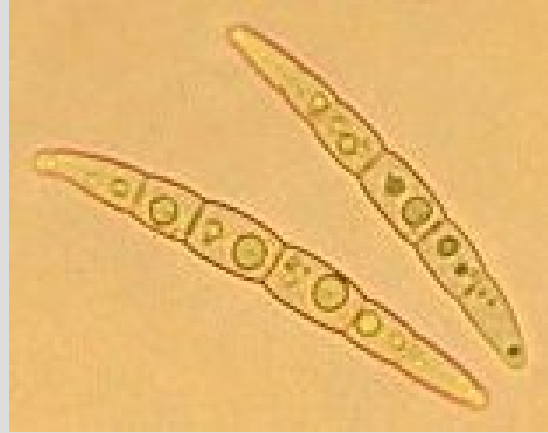


Light leaf spot



Epidemiology and components of resistance to stem canker

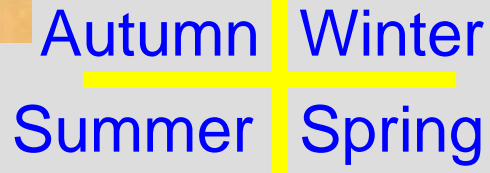
Air-borne ascospores



Major gene



Phoma leaf spots



Polygenic?



Time of RL resistance rating



Early phoma canker

Severe canker (harvest)

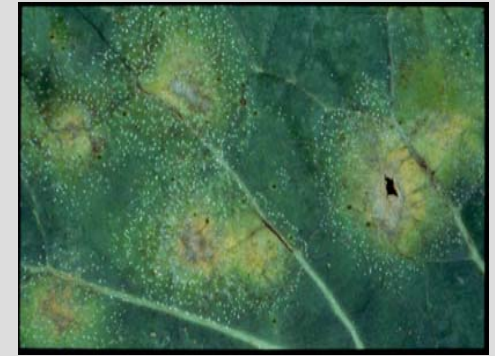
Polygenic?

Assess components of resistance to light leaf spot

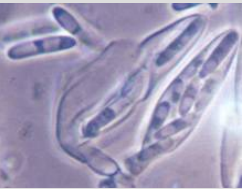
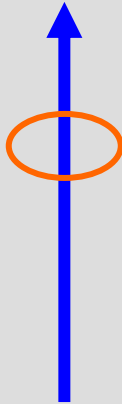


Spores

Meristem infection (symptomless, PCR) (autumn/winter)



Leaf infections (by incubation) (autumn/ winter)



Assessments:

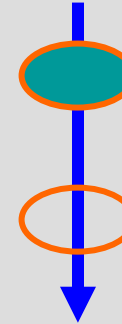
Visual



PCR



1st leaf symptoms, spread from leaves to stems & pods, plant growth (spring)



Yield loss vs LLS severity (summer)



Processing OSR tissue for PCR

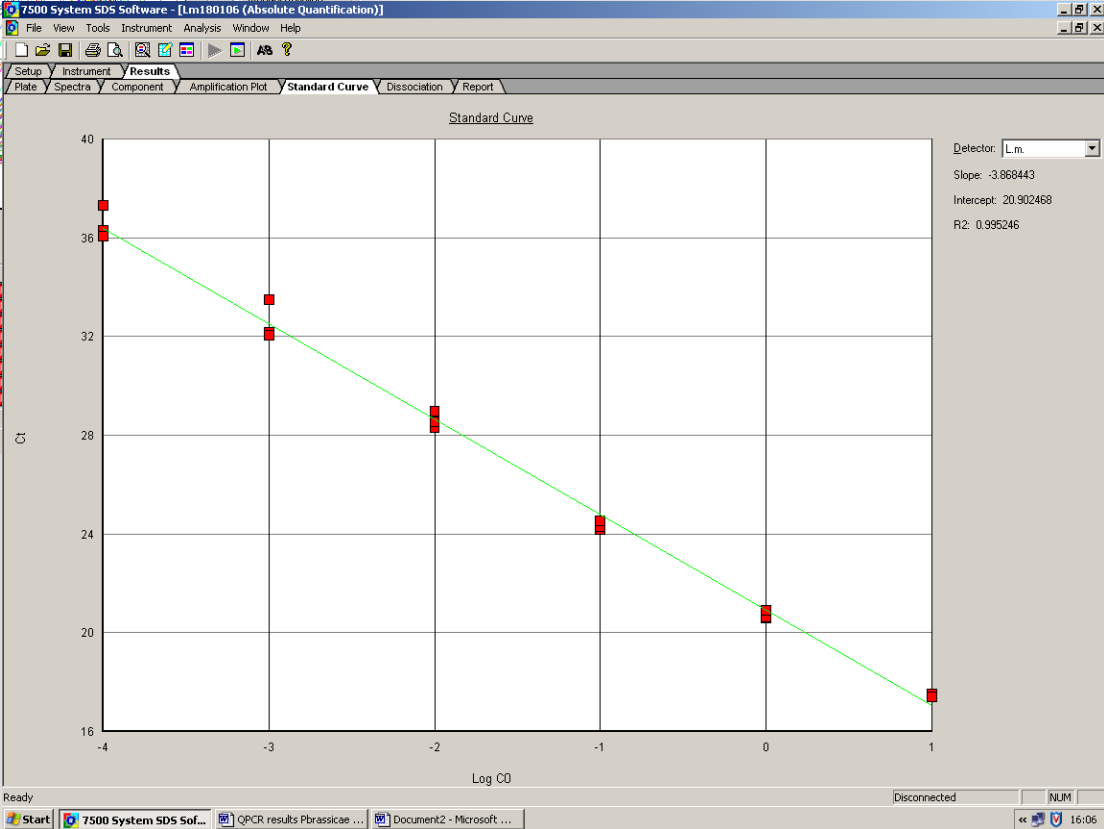
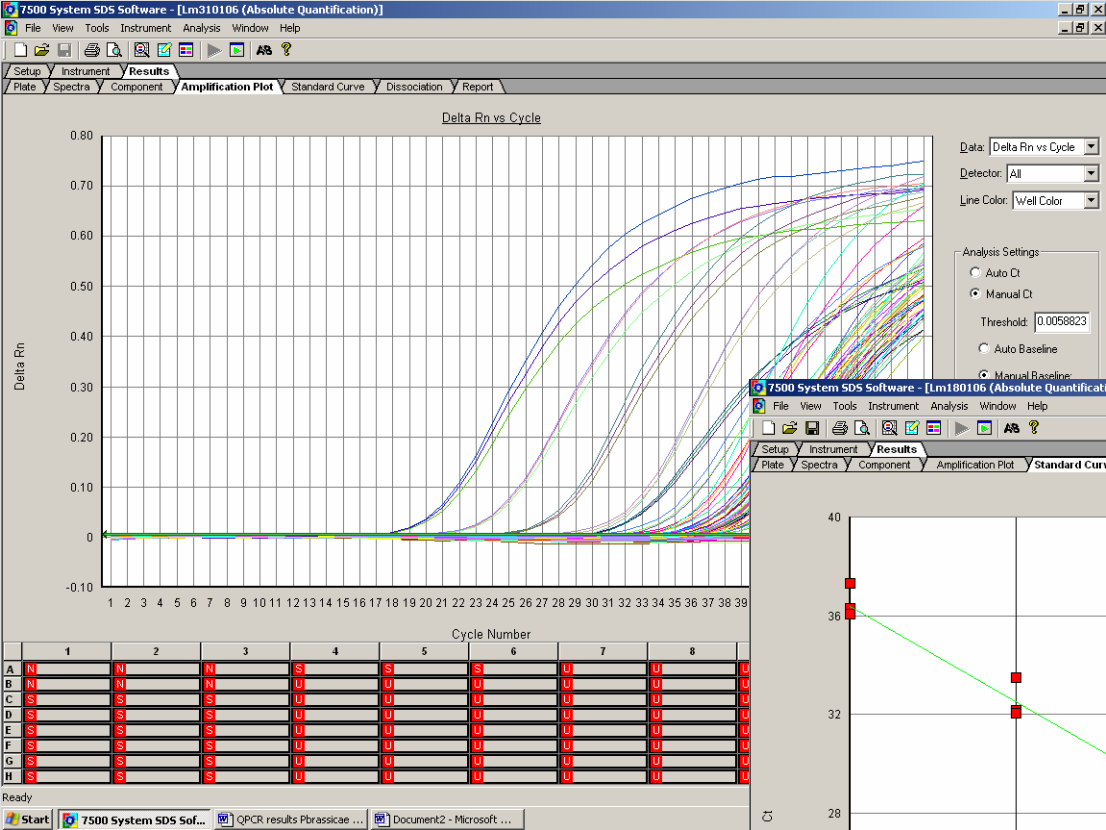


Upper or lower Leaf petiole,
crown and meristem samples



Powdered freeze
dried sample

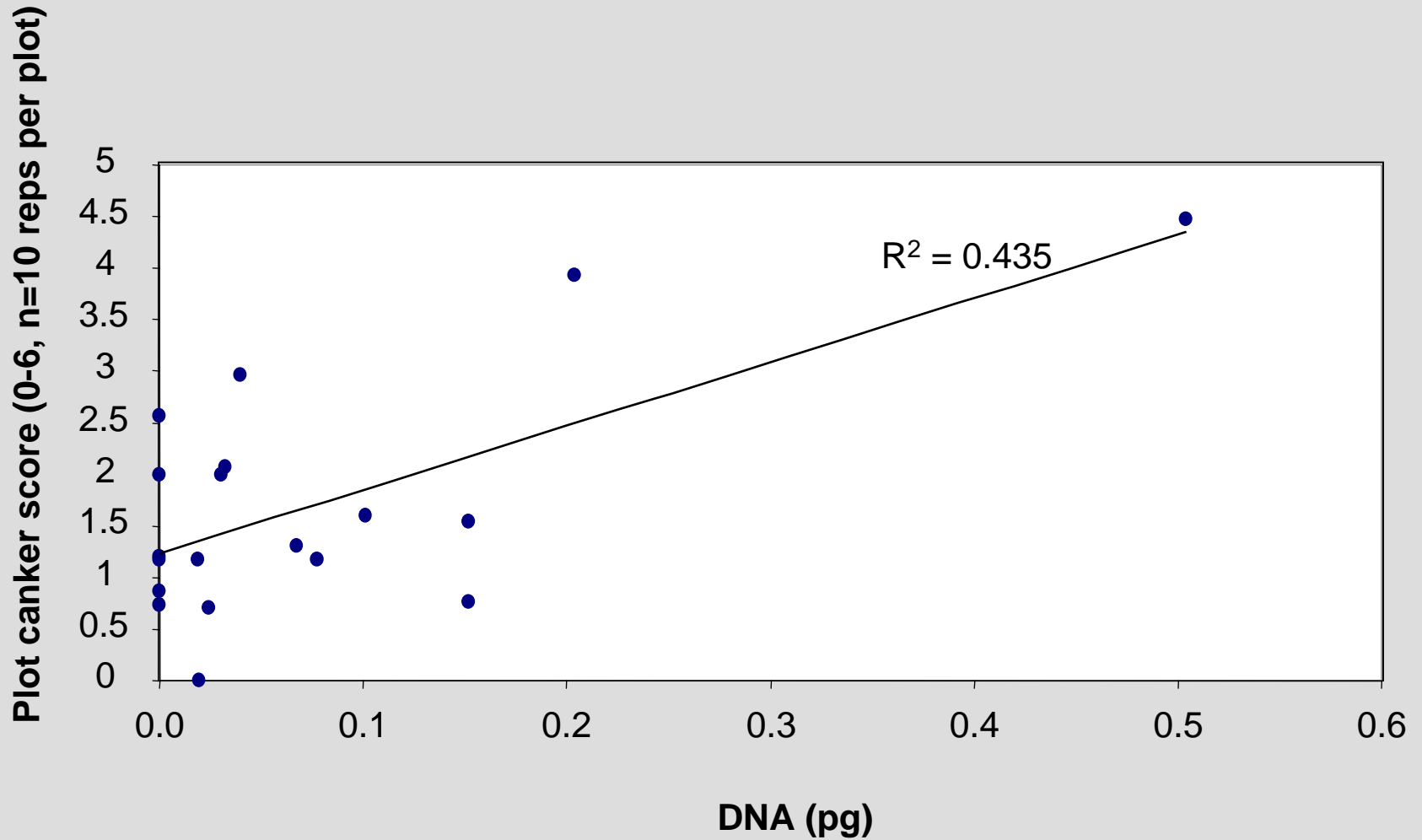
qPCR data



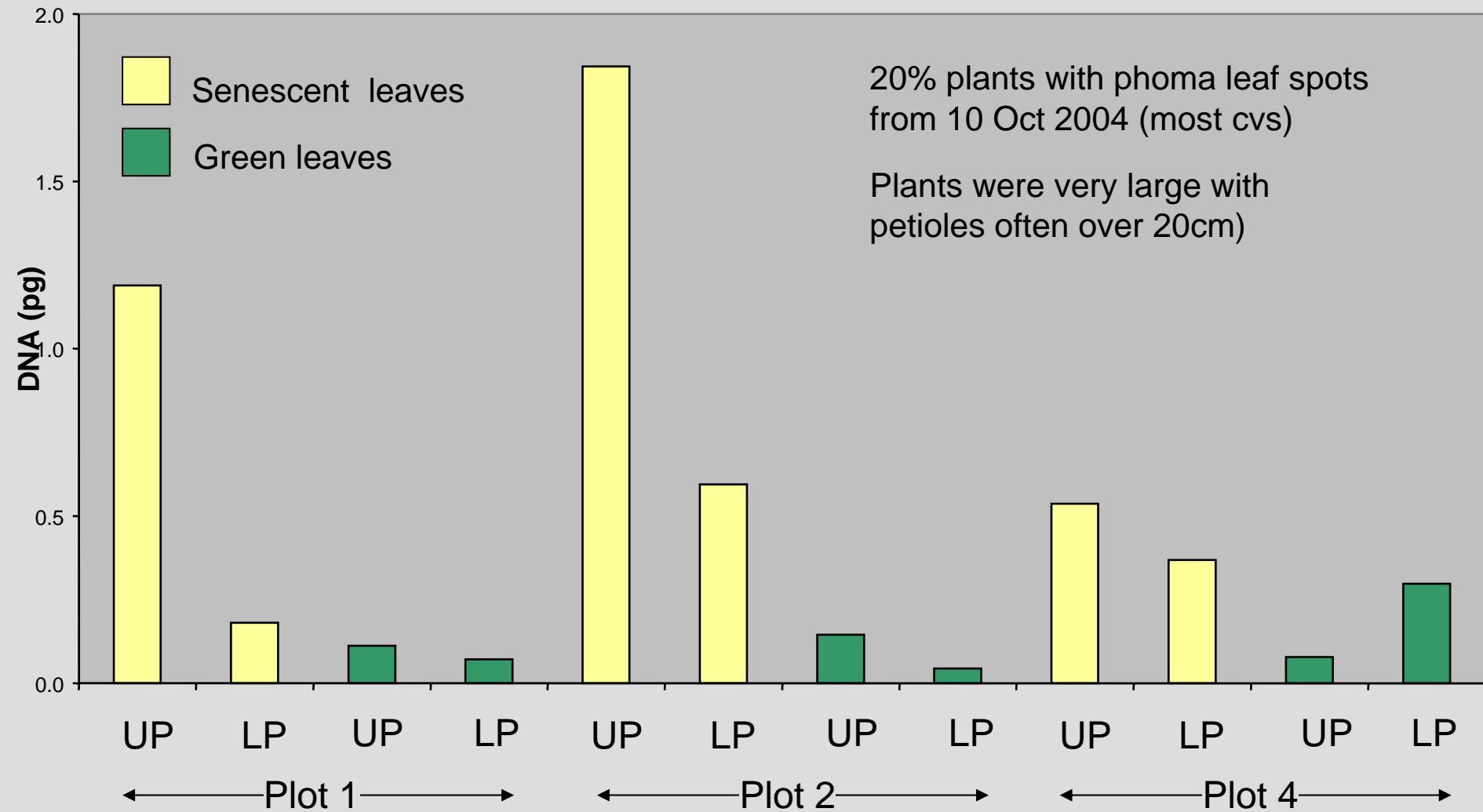
Standards + samples
amplification plot

Standard curve

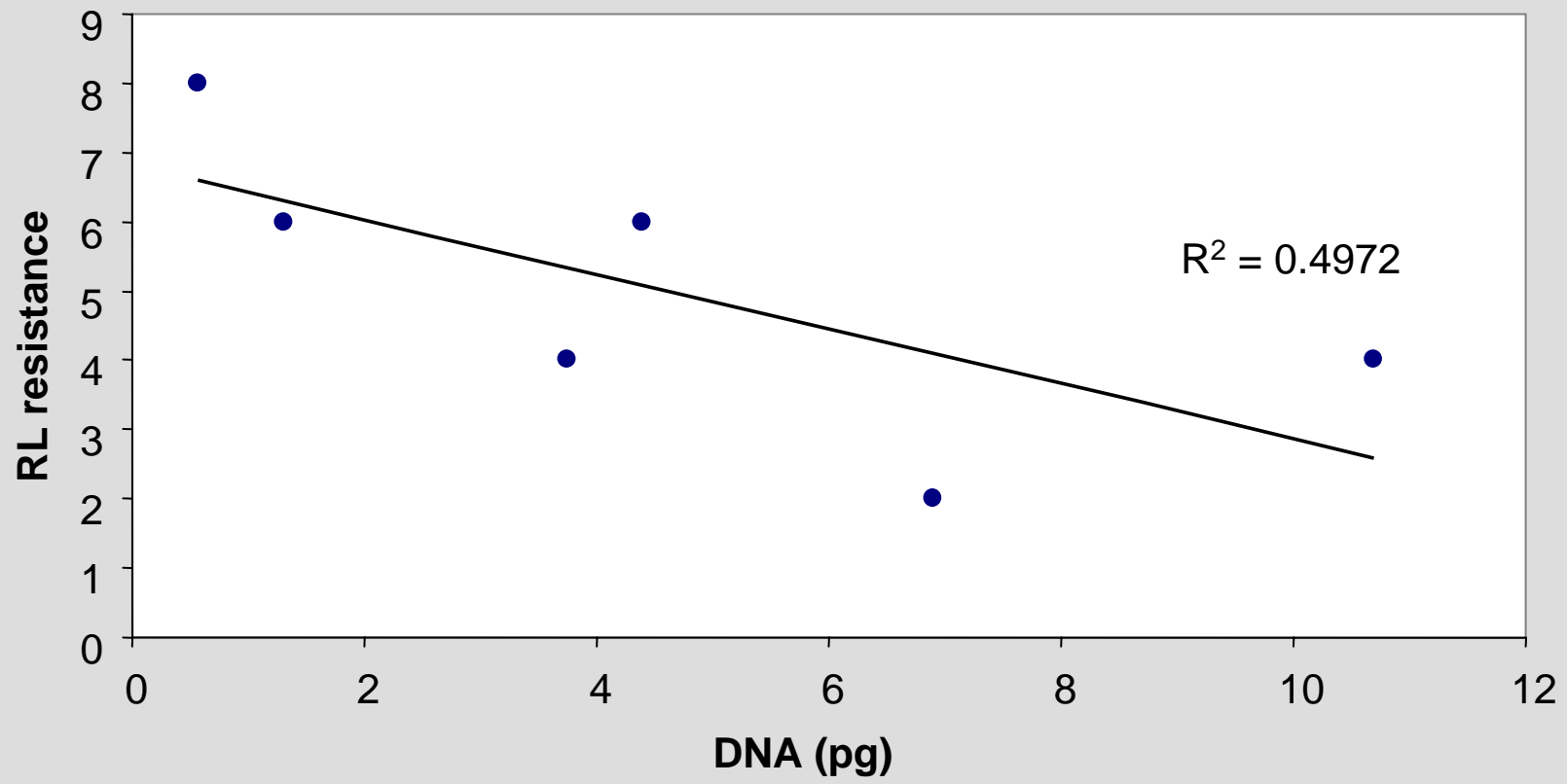
Canker score (site 2 June05) V *L. maculans* DNA in Lower Petioles (21Jan 05)



L. maculans DNA in OSR tissue (2/11/04 site 2)



P. brassicae DNA in 'meristems' (site 3, Feb 06) V RL 2005 LLS resistance rating



NB: A better comparison can be made when final pod severity data are available

Phoma Stem Canker – further research

- Best time for sampling petioles ?
- Best part of petiole to use ?
- Best sample size ?
- Validity of method over several seasons ?
- Which leaves to sample ? – older leaves will be sampled on large plants

Light Leaf Spot – further research

- Currently testing more samples
- Concentrate on late winter
- look at resistance to leaf colonisation
- related Ph.D project (to start autumn 2006) using qPCR and GFP to assess type of resistance to *P. brassicae*