Assessment of stem canker on oilseed rape

Method/protocol submitted by:

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Adapted from Jon West

Objectives of the method/protocol:

To estimate the attacks of stem canker on oilseed rape in experimental plots.

Brief description of the method/protocol:

This protocol presents a sampling method and a scoring scale to assess stem canker development in field experiments on oilseed rape.

Possible uses of this method/protocol:

To estimate the components of resistance to diseases in oilseed cultivars.

Method/protocol:

- Sampling of the stems:

Assessment is by pulling up 30 stems per plot just before swathing. Here the size of the plots is approximatively 10-15 m x 3 m. Stems should be pulled at random throughout the plot, but since access is likely to be very difficult, aim to take 15 stems from the second drill row on each side of the plot, using the first 3-5m of the plot length. If sampling is not carried out prior to swathing, it must be done as soon as possible afterwards, within a maximum of 2 days.

- Severity classes:

The external symptoms only should be assessed by assigning stem base symptoms on each of the 30 stems to one of the following categories:
0: No infection observable
1: <25% girdling of the stem
2: 26-50% girdling
3: 51 -75% girdling
4: 76 -100% girdling
5: 100% girdling + stem weakness
6: 100% girdling + stem death
Any records made should show clearly the number of plants per plot in each disease category.

- Measurement of canker severity:

A disease index (DI) on a 0-100 scale will be calculated using the formula:

$$\frac{(0xa + 1xb + 2xc \text{ etc})}{(a+b+c + \text{etc})} \times 100/6$$

where a, b, c etc are the number of plants in each disease category.
(reference: the HGCA recommended list winter oilseed rape trials protocol protocol 2004/05)

A ‘G2’ index is calculated as:

$$(0a + 1b + 3c + 5d + 7e + 9f)/(a+b+c+d+e+f)$$

where a-f are the numbers of plants in each disease category (0-5 scale in which category f = stem 100% girdled comprises f and g in the HGCA 0-6 score; 0, 1,3, 5 ,7 and 9 are coefficients).

Contrarily to the disease index, the ‘G2’ index progressively weights the canker severity as the severity increases.

Advantages / Disadvantages of the method/protocol:

Relatively quick method to analyse large areas of crop. It can be done by an individual.

References or examples of studies carried out by using this method/protocol:

West, J. et al.(2008): Components of resistance to diseases in winter oilseed rape cultivars : CORDISOR, HGCA project report ; no. 446, London : HGCA.