

# The provision of independent information on new oilseed rape varieties in the UK

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## Abstract

The UK Home-Grown Cereals Authority (HGCA) funds and manages extensive independent trials of winter oilseed rape (*Brassica napus*) varieties, and identifies those which have the potential to provide a consistent economic benefit to the UK oilseeds industry. The information is published in the *Recommended List for Cereals and Oilseeds* (HGCA, 2006), and is also available electronically at the HGCA website [www.hgca.com](http://www.hgca.com) and on a CD-ROM.

**Key words:** variety evaluation, oilseed rape, *Brassica napus*, knowledge transfer

## Introduction

The UK Home-Grown Cereals Authority (HGCA) funds independent trials of oilseed rape (*Brassica napus*) varieties. These are managed by a company, Crop Evaluation Ltd (CEL), owned by the HGCA. For winter varieties (typically drilled in August or September), only those varieties which meet specified criteria are 'Recommended' and added to the HGCA Recommended List (RL). For spring-sown varieties, less extensive trialling is undertaken and a Descriptive List is produced. This paper focuses on winter oilseed rape.

## Variety Trials

In order for new varieties to be registered in the European Union, they have to be on the National List (NL) of a member state. This requires demonstrating that they are distinct, uniform and stable (DUS) and of value for cultivation and use (VCU). To determine the latter, varieties are grown in trials throughout England and Scotland using a standard protocol, and yield, oil content, disease resistance, lodging resistance, and a range of other characteristics are measured over two seasons. The trials are funded and grown by the plant breeders but inspected by the HGCA acting for the UK agricultural departments. The Recommended List (RL) system uses this data to identify the most promising varieties for, typically, a further year's trialling and testing and the three-year dataset is used to determine which varieties should be recommended. As the standard NL trialling system does not provide enough data for the RL in years 1 and 2, additional trials are funded by HGCA and the breeders. RL trials have either fungicide treated and untreated plots ('Core'sites) or only treated plots ('Regional'sites), replicated three times. Details of the trials are shown in Table 1 and RL trial sites in Figure 1.

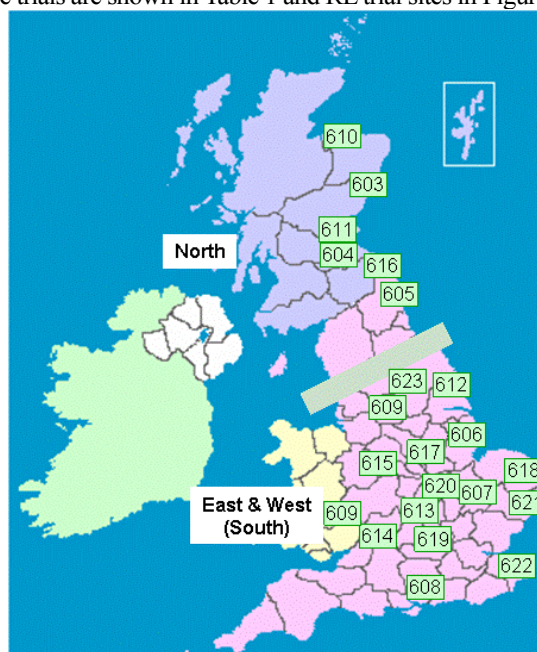


Figure 1. Trial site location of Recommended List trials 2005/6

Disease incidence is recorded wherever it occurs but, as the majority of trials are fungicide treated, additional data is provided by untreated disease observation plots (associated with NL trials), one inoculated NL trial and two inoculated RL trials specifically designed to provide information on resistance to canker (*Leptosphaeria maculans*), and two inoculated RL trials specifically designed to provide information on resistance to light leaf spot (*Pyrenopeziza brassicae*) (Table 1).

**Table 1. Number of trials in Recommended List matrix 2005-6**

Trial type	Year of testing	North region	South region	Total
National List *	1	3	9 (6)	12
National List	2	2	9	11
National List pathology	2	0	2	1
Recommended List (core)	3	3	4	7
Recommended List (regional)	3	3	11	14
Recommended List pathology	3	0	2	2

\*number of trials with disease observation plots in brackets


	Lioness	Es Betty	Excalibur	Barrel	NK Grace	NK Bravour	Toccata	Castile
	Variety type	Conv	RH	RH	Conv	Conv	Conv	RH
Scope of Recommendation	UK	UK	UK	UK	UK	UK	UK	UK
Gross output (yield adjusted for oil content) as % control								
UK fungicide treated (4.8 t/ha)	107	106	106	106	106	106	104	104
North region fungicide treated (4.9 t/ha)	111	111	109	107	110	110	106	103
South region fungicide treated (4.7 t/ha)	104	104	104	105	104	104	103	104
Untreated gross output as % treated control in comparable trials								
UK without fungicide	91	-	-	-	-	87	84	83
Seed yield as % control								
UK fungicide treated trials (4.5 t/ha)	103	107	106	102	105	104	104	104
UK without fungicide (3.9 t/ha)	110	-	-	-	-	107	105	105
Agronomic features								
Resistance to lodging	8	8	7	7	8	8	7	8
Stem stiffness	8	7	7	6	8	7	7	7
Shortness of stem	7	6	7	6	7	7	5	8
Earliness of flowering	7	7	8	7	7	7	7	8
Earliness of maturity	5	6	7	5	5	5	5	6
Seed quality (at 9% moisture)								
Oil content of seed, fungicide treated (%)	46.1	43.3	43.3	46.0	44.6	44.9	43.6	43.2
Glucosinolate (micromoles/g of seed)	7.8	13.6	16.7	10.5	11.2	8.7	16.6	12.8
Disease resistance								
Light leaf spot	6	6	7	7	7	6	6	5
Stem canker	5	4	6	5	5	5	5	7
Year first listed	05	06	06	06	06	05	03	05

Figure 2. Extract from HGCA, 2006. The full table can be viewed at [www.hgca.com/varieties](http://www.hgca.com/varieties)

## Recording and Reporting

A number of records are made on RL trials (not all records are taken on regional trials) including: emergence, establishment, early vigour, winter hardiness, grazing damage, flowering, lodging, plant height, stem stiffness, maturity, seed loss, disease, yield and dry matter. Keys are provided to enable standardisation of data. Seed samples are taken from each plot and sent to a central laboratory for oil determination by nuclear magnetic resonance (NMR). Trials contractors are required to report sowing information within 2 weeks of sowing, post emergence information within 2 months of sowing, disease records and most other information on the growing crop pre-harvest, and yield and other harvest records within 5 days of harvest. All trials are inspected by CEL inspectors during the season.

## Analysis

Analysis of datasets is carried out by CEL using statistical analysis software (GENSTAT) and techniques which allow for different sized datasets. Decisions on the validity of trials and trials data are made by CEL, with reference to the trials contractor if appropriate.

## Harvest Results

Trials data are available on-line and in the farming press once they have been checked, usually within a few days of harvest. This allows growers to verify decisions on varieties they propose to drill that season.

## Recommendations

Varieties are added to the Recommended List when they are considered by the CEL Oilseeds Committee to have the potential to provide a consistent economic benefit to the UK oilseeds industry. Currently, recommendations are made for a single market, defined as 'double low', which requires low erucic acid content, and glucosinolate content to be below 20 micromoles per gram of seed. Within this, there are two segments: 'conventional' (open pollinated varieties) and 'hybrid' (restored hybrid varieties). To get a full recommendation, varieties have to reach minimum standards for stem canker and light leaf spot (both 3 on a 1-9 scale where 1 is highly susceptible and 9 is highly resistant) and lodging (5 on a similar 1-9 scale), such that it would be acceptable for growers across the whole of the UK. Stem canker is a more significant problem in the Southern region of the UK and light leaf spot in the Northern region, so regional recommendations are possible which take account of this. In addition, varieties can be classified as 'specialist' if they have specific characteristics, such as resistance to club root (*Plasmodiophora brassicae*).

Candidate varieties are automatically recommended if the gross output (i.e. yield adjusted for oil content) is a full 2% higher than the yield target specified by the committee based on existing varieties. If this is not the case, they need to have a balance of features that are sufficiently better than existing varieties such that they can potentially provide a more consistent economic return in the UK market.

## Knowledge Transfer

All recommendations have to be approved by the Board of CEL before the information is published on the website ([www.hgca.com/varieties](http://www.hgca.com/varieties)), in the booklet 'HGCA Recommended List for Cereals and Oilseeds 2005/6' (HGCA, 2006, and see Figure 2) and on a CD-ROM in interactive format. The booklet and CD-ROM are distributed to about 30,000 people, mostly growers and agronomists. All three media contain full information on the yield, agronomic and disease resistance characteristics of recommended varieties.

The electronic version of the Recommended List, both on CD-ROM and the web, has an interactive module called *RLPlus*, which allows the user to personalise the data. Varieties can be ranked according to various characteristics including fungicide treated or untreated yield, resistance to specific diseases, lodging and oil content. Additionally, *Varieties on your Farm* allows the grower to see how varieties might perform under their conditions. A comparison can be made, for example, of the yield of two or three varieties grown on a specific soil type, giving preference to trials located near the farm. A further option allows trials data for a number of years to be studied in detail. Soil type, typical yields and farm location can be specified to allow the grower or agronomist to only include trials which they believe to be really relevant to them.

## References

HGCA, 2006. HGCA Recommended List for Cereals and Oilseeds 2006/07. HGCA London, 32pp.