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Supplementary comparison of winter oilseed rape varieties, 1995

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Summary

Twenty one varieties of oilseed rape were compared on a high yielding site under a regime of intensive husbandry. Early crop growth was fairly uniform although Apex, Mandarin and Capricorn were rather slow to establish, but during the winter there was some frost scorch which was most obvious on Nickel. At crop maturity there was some lodging in several varieties including Nickel, Alaska, Mandarin, Falcon and Gaspard - a high erucic acid variety. The highest yields were produced by Navajo (5.89 t/ha) and Inca (5.72 t/ha) which performed significantly better than the control varieties

Object

To evaluate the relative performance of a range of winter oilseed rape varieties grown under "best local practice" on a heavy soil.

Method

The comparison comprised a total of 21 varieties including 5 standards (=control varieties) and one high erucic acid variety as listed in Table 1.

Table 1. *Varieties*

(C)Apex	Alaska	Gazelle	Navajo	
(C)Envol	Amber	Hansen	Nickel	
(C)Falcon	Cannon	Idol	Rapier	
(C)Bristol	Capricorn	Inca	Rocket	
(C)Express	Comanche	Mandarin	Tomahawk	Gaspard#

(C) = control
= High erucic acid variety

*Not for publication without the Director's consent. This report deals primarily with only one year's work, so

any conclusions given are provisional.

The varieties were sown on 7 September 1994 in plots arranged in randomised incomplete blocks with 4 replicates. All plots received normal crop husbandry inputs applied overall by farm equipment operated from wheelings established between adjacent replicates. The inputs included fertilisers, herbicide, insecticides and a full fungicide programme (Table 2).

Table 2. *Fungicide programme and active ingredients used*

Date	GS	Fungicide (rate l/ha)	Active ingredient (g ai/l)
24 Nov.	1,08	Sportak 45 (1.1)	prochloraz (450)
3 April	3,5	Sportak 45 (1.1)	
3 May	4,5	Compass (3.0)	iprodione + thiophanate methyl (167 + 167)

Early plant vigour was scored on 5 October and plant populations were assessed on 17 October. Frost scorch was recorded on 27 January and relative earliness of flowering was recorded on 5 May. Crop lodging was scored on 12 July prior to the trial being swathed. The trial was harvested by combine on 23 July.

Results and discussion

The trial was drilled into a seedbed with a good mixture of fine and some coarse crumb with moisture present below the seed. In general, plant establishment and early growth were satisfactory (Table 3) . The mean plant population was 86.5/m^2 and the lowest population was given by the control varieties Bristol and Falcon with 70.0 and 71.8 respectively, all well above the critical minimum of 30 - 40 plants/m^2. Apex, Mandarin and Capricorn showed the poorest early plant vigour but this was a temporary effect.

All the varieties escaped serious frost damage in the winter but there was some differential leaf scorch following a short period of cold weather in January. Nickel appeared to be the worst affected in this comparison but all varieties quickly grew away from this effect in the spring.

As a result of mainly dry weather and the intensive fungicide programme used disease levels were low. Elsewhere at this site there was some phoma leaf spot (*Phoma lingam)* and also light leaf spot *(Pyrenopezziza brassicae)* which appeared to develop rapidly for a short while in the early spring. Subsequently, predominantly dry weather through April and May ensured generally low disease levels.

Gazelle was the first variety to begin flowering closely followed by Bristol, Envol and Express. At the other extreme Alaska, Amber, Cannon, Gaspard, Rapier and Tomahawk were almost as late as Capricorn.

Table 3. *Early vigour, establishment, winter hardiness and earliness of flowering in oilseed rape varieties*

Variety	Early vigour score*	Plant popn. nos/m²	Winter hardiness**	Earliness of flowering***
(Control=C)	(5 Oct.)	(25 Oct.)	(27 Jan.)	
Navajo	6.8	95.1	7.3	2.0
Inca	6.8	94.2	5.8	2.0
Falcon (C)	6.8	71.8	6.8	2.0
Gazelle	7.0	90.6	6.8	3.0
Express (C)	7.0	73.6	6.0	2.5
Hansen	6.8	82.5	6.0	2.0
Bristol (C)	6.0	70.0	7.5	2.5
Envol (C)	6.8	107.6	7.5	2.5
Rapier	7.5	89.7	6.0	1.0
Idol	6.8	80.7	7.5	2.0
Rocket	6.3	95.1	6.3	2.0
Tomahawk	8.0	89.7	6.8	1.0
Comanche	6.5	88.8	5.0	3.0
Apex (C)	5.5	80.7	6.0	2.0
Gaspard#	7.8	97.8	6.3	1.0
Alaska	8.0	81.6	6.8	1.0
Mandarin	5.5	76.2	7.0	2.0
Amber	7.3	72.7	6.5	1.0
Nickel	8.0	117.5	5.0	2.0
Capricorn	5.8	76.2	7.5	1.0
Cannon	7.5	85.2	6.8	1.0
LSD	0.80	22.36	0.68	0.31
SE per plot (60 df)	±0.56	±15.82	±0.48	±0.22
CV (%)	8.2	18.3	7.4	12.1

*Scale 0-9; 9=vigorous, 0=dead

**Scale 0-9; 9=no frost damage, 0=severe scorch, plant dead

***Scale 1-3; 3=early, 1=late

= High erucic acid variety

There was considerable crop growth after flowering and this led to extensive crop leaning and lodging in some varieties (Table 4), notably Nickel and to lesser extent Alaska, Falcon, Mandarin and Gaspard. In contrast, the stiffest varieties were Apex, Bristol, Cannon,

Capricorn, Comanche, Express, Rapier, Rocket, and Tomahawk.

Table 4. *Stem stiffness and yield of oilseed rape*

Variety (Control=C)	Stem stiffness* (12 July)	Yield t/ha (at 91%dm)	Relative yield (cf controls)
Navajo	6.3	5.89	109
Inca	8.5	5.72	106
Falcon (C)	5.0	5.61	104
Gazelle	8.3	5.46	101
Express (C)	9.0	5.43	101
Hansen	8.8	5.40	100
Bristol (C)	9.0	5.36	100
Envol (C)	8.0	5.34	99
Rapier	9.0	5.29	98
Idol	6.8	5.29	98
Rocket	9.0	5.26	98
Tomahawk	9.0	5.26	98
Comanche	9.0	5.23	97
Apex (C)	9.0	5.16	96
Gaspard#	6.0	5.00	93
Alaska	4.0	5.01	93
Mandarin	5.0	4.97	92
Amber	8.5	4.96	92
Nickel	2.8	4.95	92
Capricorn	9.0	4.60	86
Cannon	9.0	4.34	81
LSD	1.44	0.352	6.5
SE per plot (60 df)	±1.02	±0.123	
CV%	13.4	4.4	

High erucic acid variety
* Scale 0-9; 9 = no lodging, 0 = flat

This was a high yielding site where Navajo gave the top yield of 5.89 t/ha but even the poorest variety, Cannon, produced a reasonable 4.34 t/ha. In the tables of results the varieties are listed in yield ranking order with the highest yielding varieties at the top. The only varieties giving yields significantly above the average of the control varieties were Navajo and Inca. Several varieties gave yields significantly below the controls, these include Alaska, Amber, Capricorn, Gaspard, Mandarin, Nickel and most notably Cannon.

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Appendix

The following information is presented as an appendix which is available on request:

Field details
Experiment diary
Method

Field details

Crop: Winter oilseed rape

Field reference: OS: TM119619

Site: The Rosery Farm, Little Stonham, Suffolk

Previous crop:
1994 Fallow
1993 Winter wheat
1992 Winter wheat
1991 Spring beans

Soil type and series: Sandy clay loam (Beccles series)

Soil analysis:

pH	P	K	Mg	OM%	
8.0	36	206	56	2.2	
	(3)	(2)	(2)		

Cultivations:

August 1994	plough and press
6 September	harrow

Experiment diary

Date	*Operation*
7 Sept 1994	Trial drilled
15 Sept	Herbicides applied, Tristar (2.0 l/ha) + Butisan S (0.85 l/ha)
10 Nov	38 kg/ha N
16 Nov	Cypermethrin (0.25 l/ha)
24 Nov	Sportak 45 (1.1 l/ha)
27 Feb 1995	60 kg/ha N (as sulphate of ammonia)
15 Mar	160 kg/ha N (as urea/ammonia nitrate)
28 Mar	Cypermethrin (0.25 l/ha)
3 Apr	Sportak 45 (1.1 l/ha)
3 May	Compass (3.0 l/ha)
16 June	Aphox (0.11 kg/ha)
12 July	Trial swathed
23 July	Trial combined

Method

Plot layout

Plots were sown with oilseed rape at 120 seeds/m^2 using an Oyjord drill. The drilled plots were 12 m long and 1.56 m wide from outside row to outside row (14 rows at 12.0 cm spacing) separated by a gap of 60 cm. Plots were in pairs with adjacent halves sown to the same variety and were laid out in randomised blocks. There were 4 replicates.

Common treatments such as fertiliser, insecticides, herbicides, fungicides or growth regulators were applied across all plots with farm machinery using wheelings, 12 m apart. For harvest purposes, plot length was reduced to 9.5 m.

Harvest details

Plots were swathed at the brown seed stage and were later harvested using a Sampo 2010 combine which was modified for plot work and used electronic weighing (Novatech M864 Loadmeter). Trials were harvested by replicate.

Post harvest determinations

Moisture content was determined (at NIAB) by taking a 200 g subsample, oven drying for 40 hours at 100-102°C and weighing at an ambient temperature.