



National Institute of Agricultural Botany

BRUSSELS SPROUTS
TASTE TESTING

1994/1995

Vegetable Trials Section
on behalf of HDC

BRUSSELS SPROUTS TASTE ASSESSMENTS 1994/95

Project No: 98a

Project co-ordinator: A.J.Whitlock

Project Leader: M.J.Day

Introduction

Sixteen brussels sprout taste panels were carried out over the 1994/95 winter period. The produce was obtained from three sites Biggleswade and Kirton as in previous years and a new site at Halsall (courtesy of S & G) in Lancashire.

Forty six varieties of sprouts were tested, thirty five of which had been tested in previous years. Twenty three of these varieties were in the 1994 NIAB performance trial, and the remaining twenty three varieties were in demonstration or private trial. Varieties which had been tasted before were: Cyrus, PEX 4290, NIZ 92-193, Dasher, Amoroso, Pantera, Uniline, Revenge, NIZ 87-693, Masterline, Silverline and Falstaffe.

Taste tests have been carried out on material from more than one site. It was considered important to test produce from a range of soil types to determine if the bitterness of varieties relative to one another varies according to where they are grown.

Objective

To assess for bitterness in Brussels Sprouts from varieties listed on the NIAB Descriptive List of Brussels Sprouts and newer varieties currently in trial, from a selected range of soil types. To make this information available to growers and consumers and encourage increased consumption of sprouts.

Method

Sprouts were hand picked and transported to NIAB HQ. They were refrigerated overnight before being prepared for the taste test the following day.

The sprouts were trimmed in the usual domestic manner, put in separate but identical saucepans with just enough water to cover and boiled until cooked but still firm.

Eight varieties were tested on most occasions. The panel members sampled varieties in different orders to eliminate any bias due to "taste bud fatigue". Tap water and cream crackers were provided to cleanse the palate between varieties.

The panel members were taken from a pool of 19, which included both men and women, ranging in age from 20-50. It was not always possible to have the same 6 panel members for each tasting, however there were 6 core panel members and at least 3 of them were present on all of the panels.

The sprouts were scored on a 1-5 scale for sweetness, bitterness, flavour and pleasantness. Texture was also scored.

Results

1. Site comparisons

No obvious differences between sites were observed and the overall mean scores were similar to the 1993-94 season.

The overall mean scores for bitterness were lowest at Kirton and Biggleswade. (both 2.4). Tarleton had a slightly higher overall mean (2.6).

Produce from Lancashire had to be trimmed to a greater extent because of disease.

2. Variety Comparisons

a) Consistency of Results (please refer to table 1)

For most varieties there was good consistency of results between the produce tasted from different sites.

The 1994/95 results generally compare very well with the results from previous years for most varieties. However there are exceptions: Ottoline, Adri and Roger had higher scores for bitterness this year compared with previous trials. Rampart had a much lower score for bitterness this year than in previous years.

b) Bitterness (please refer to table 2)

Bitterness scores ranged from 1.7 (Uniline) to 3.7 (Stephen).

Overall bitterness scores of above 3.0 were found from December in Ajax, Philemon, Revenge(+) and Stephen.

Only two varieties Ajax and Stephen had scores of 3.7 compared to five varieties last year which had scores of 4.0 or above. With the exception of Revenge all these varieties had been previously tested in 1990-93 period. All varieties had received similar high scores for bitterness.

This is the second year that Philemon has received a high score for Bitterness. Bitterness scores were much lower than when the project began in 1992.

The 6 varieties with the lowest overall scores for bitterness (below 2) were Cavalier, Sheriff, Content, Cascade, NIZ 87-693 (+) and Uniline (+).

c) Strength of flavour (please refer to table 3)

Mean scores ranged from 2.2 (Silverline) to 3.8 (Stephen and Ajax).

The five varieties with the highest scores for flavour (i.e. strongest - 3.4 or above) were: Talent, Ajax, Philemon and Revenge(+). All these varieties except for Talent had high scores for bitterness.

The five varieties which had the lowest scores for flavour (2.5 or below) were PEX 4290(+), NIZ 87-693(+), Silverline(+), Adeline and Corinth. NIZ 87-693 had one of the lowest scores for bitterness.

d) Sweetness (please refer to table 4)

The range in mean sweetness was between 1.3 (Stephen) and 3.2 (Uniline), as in previous years a smaller range than bitterness and flavour.

This year only Uniline(+) had a score of 3.0 or above compared to four varieties (Adri, Prelent, Content and Cavalier) last year.

There were 17 varieties with sweetness scores below 2: Philemon, Patent, Suzette, Tavernos, Stan, Icarus, Richard, Rampart, Dolmic, Rubine, Roger, Ajax, Dasher, Stephen, Cyrus(+), Masterline(+), and Falstaffe(+). In the 1993-94 season, Tavernos, Stan, Rampart, Rubine, Ajax and Stephen had similar scores for sweetness.

+ = Varieties tested in 1994 only

e) **Late Varieties** (please refer to table 5)

Looking solely at the late maturing varieties, which were tasted from December onwards, a different range of the least bitter and most sweet varieties is shown.

The four least bitter varieties were: Sheriff, Cascade, NIZ 87-693(+) and Uniline(+).

The four most sweet varieties were: Sheriff, Diego, Cascade and Uniline(+).

Hence the three varieties from the late produce which were low in bitterness and high in sweetness were Cascade, Sheriff and Uniline (+).

From the early varieties, the two which were both lowest for bitterness and highest for sweetness were Adri and Prelent these were the same as last year's results.

+ = Varieties tested in 1994 only

Conclusions

- 1) It is possible to detect differences between bitterness in varieties of Brussels Sprouts.
- 2) Good consistency was found between the results in 1994-95 and those from previous years.
- 3) A high score for bitterness is usually accompanied by a high score for flavour, and a low score for sweetness. Varieties which have high scores for bitterness are usually found to be unpleasant.
- 4) A low score for bitterness is not necessarily accompanied by a high score for sweetness.
- 5) The five most bitter varieties from the 1990-1994 combined data are: Roger, Rampart, Ajax, Stephen and Revenge(+)
- 7) The five sweetest varieties from the 1990-1994 combined data are: Diego, Collette, Sheriff, Topaz and Uniline(+)
- 8) From the early varieties the two varieties which were low in bitterness and high in sweetness were Adri and Prelent.
- 9) From the late varieties the three varieties which were low in bitterness and high in sweetness were Cascade, Sheriff and Uniline(+).

+ = Varieties tested in 1994 only

Future Plans

This report completes the third year of a three year contract. New varieties are continuously introduced into NIAB trials and the proposal would be to continue tasting only varieties in main and preliminary trials

**Table 1: TASTE TEST SUMMARY (in alphabetical order)
COMPARISON OF 1994 DATA WITH COMBINED 1990-1994 DATA**

Variety	Bitterness		Flavour		Sweetness		Pleasantness	
	1994	90-94	1994	90-94	1994	90-94	1994	90-94
ADELINE	2.3	2.2	2.4	2.5	2.1	2.2	2.8	2.8
ADONIS	2.2	2.3	2.8	2.8	2.4	2.2	3.0	3.0
ADRI	2.3	2.0	2.6	2.7	2.4	2.6	3.0	3.1
AJAX	3.7	3.6	3.8	3.7	1.6	1.6	2.0	2.1
AMOROSO +	2.6	2.6	3.1	3.1	2.6	2.6	3.1	3.1
ARISTON	2.1	2.2	2.9	2.7	2.2	2.1	3.2	3.0
CASCADE	1.8	2.0	2.7	2.7	2.7	2.6	3.1	3.2
CAVALIER	1.9	2.0	2.8	2.8	2.5	2.8	3.3	3.2
CLAUDETTE	2.2	2.1	2.8	2.7	2.4	2.3	3.1	3.0
COLLETTE	2.0	1.9	2.9	2.9	2.8	2.7	3.2	3.2
CONTENT	1.8	1.9	2.6	2.7	2.6	2.7	3.2	3.3
CORINTH	2.1	2.0	2.4	2.4	2.3	2.3	3.1	3.1
CYRUS +	3.0	3.0	3.2	3.2	1.8	1.8	2.7	2.7
DASHER +	2.0	2.0	2.8	2.8	1.3	1.3	2.3	2.3
DIABLO	2.3	2.5	2.6	3.0	2.2	2.3	2.8	2.8
DIEGO	2.4	2.6	3.0	3.1	2.8	2.4	3.6	3.2
DOLMIC	2.4	2.3	2.6	2.8	1.8	2.1	2.4	2.8
FALSTAFFE +	2.6	2.6	2.8	2.8	1.9	1.9	2.3	2.3
ICARUS	2.4	2.5	2.6	2.9	1.9	2.0	2.7	2.7
LUNET	2.3	2.1	3.0	2.8	2.4	2.6	3.4	3.3
MASTERLINE +	2.3	2.3	2.7	2.7	1.8	1.8	3.2	3.2
NIZ 92-193 +	2.2	2.2	3.3	3.3	2.6	2.6	3.2	3.2
NIZ87-693 +	1.8	1.8	2.5	2.5	2.3	2.3	3.3	3.3
ODETTE	2.6	2.8	3.2	3.2	2.1	2.0	2.7	2.6
OLIVER	2.4	2.2	3.2	2.9	2.3	2.5	3.1	3.0
OTTOLINE	2.7	2.4	2.8	2.7	2.1	2.3	2.6	2.8
PATENT	2.7	2.5	2.8	2.8	1.9	2.2	2.8	2.9
PEX4290 +	2.4	2.4	2.5	2.5	2.3	2.3	2.7	2.7
PHILEMON	3.2	3.0	3.4	3.2	1.9	2.0	3.0	2.8
PRELENT	2.3	2.2	2.7	2.7	2.3	2.5	3.3	3.3
RAMPART	2.6	3.2	2.9	3.3	1.8	1.7	2.8	2.4
RASALON	2.0	2.2	2.8	2.9	2.3	2.2	3.1	3.0
REVENGE +	3.2	3.2	3.4	3.4	2.0	2.0	2.6	2.6
RICHARD	2.4	2.6	2.7	3.0	1.9	1.9	2.4	2.5
ROGER	2.8	3.1	3.2	3.4	1.7	1.8	2.4	2.2
RUBINE	2.7	2.7	2.8	3.0	1.7	1.6	1.8	1.9
SHERIFF	1.9	1.8	3.0	2.7	2.8	2.9	3.4	3.6
SILVERLINE +	2.5	2.5	2.2	2.2	2.2	2.2	2.8	2.8
STAN	2.2	2.0	3.1	2.7	1.9	2.0	2.9	2.9
STEPHEN	3.7	3.8	3.8	3.8	1.3	1.4	1.9	2.0
SUZETTE	2.7	2.7	3.1	3.1	1.9	1.9	2.9	2.9
TALENT	2.6	2.5	3.4	3.1	2.1	2.1	2.9	2.9
TAVERNOS	2.3	2.4	2.9	2.8	1.9	1.9	2.5	2.6
TOPAZ	2.1	2.2	3.1	3.0	2.9	2.8	3.3	3.3
TOPLINE	2.4	2.5	3.1	3.1	2.4	2.4	3.4	3.2
UNILINE +	1.7	1.7	2.7	2.7	3.2	3.2	4.0	4.0

+ varieties tested in 1994 only

Bitterness

1 = not bitter

3 = sl bitter

5= v. bitter

Sweetness

1 = not sweet

3 = sl. sweet

5= v. sweet

Flavour

1 = weak

3 = medium

5= strong

Pleasantness

1 = not pleasant

5= v. pleasant

**Table 2: TASTE TEST SUMMARY (in order of bitterness)
COMPARISON OF 1994 DATA WITH COMBINED 1990-1994 DATA**

Variety	Bitterness		Flavour		Sweetness		Pleasantness	
	1994	90-94	1994	90-94	1994	90-94	1994	90-94
STEPHEN	3.7	3.8	3.8	3.8	1.3	1.4	1.9	2.0
AJAX	3.7	3.6	3.8	3.7	1.6	1.6	2.0	2.1
PHILEMON	3.2	3.0	3.4	3.2	1.9	2.0	3.0	2.8
REVENGE +	3.2	3.2	3.4	3.4	2.0	2.0	2.6	2.6
CYRUS +	3.0	3.0	3.2	3.2	1.8	1.8	2.7	2.7
ROGER	2.8	3.1	3.2	3.4	1.7	1.8	2.4	2.2
PATENT	2.7	2.5	2.8	2.8	1.9	2.2	2.8	2.9
OTTOLINE	2.7	2.4	2.8	2.7	2.1	2.3	2.6	2.8
RUBINE	2.7	2.7	2.8	3.0	1.7	1.6	1.8	1.9
SUZETTE	2.7	2.7	3.1	3.1	1.9	1.9	2.9	2.9
ODETTE	2.6	2.8	3.2	3.2	2.1	2.0	2.7	2.6
RAMPART	2.6	3.2	2.9	3.3	1.8	1.7	2.8	2.4
TALENT	2.6	2.5	3.4	3.1	2.1	2.1	2.9	2.9
FALSTAFFE +	2.6	2.6	2.8	2.8	1.9	1.9	2.3	2.3
AMOROSO +	2.6	2.6	3.1	3.1	2.6	2.6	3.1	3.1
SILVERLINE +	2.5	2.5	2.2	2.2	2.2	2.2	2.8	2.8
DOLMIC	2.4	2.3	2.6	2.8	1.8	2.1	2.4	2.8
OLIVER	2.4	2.2	3.2	2.9	2.3	2.5	3.1	3.0
ICARUS	2.4	2.5	2.6	2.9	1.9	2.0	2.7	2.7
PEX4290 +	2.4	2.4	2.5	2.5	2.3	2.3	2.7	2.7
RICHARD	2.4	2.6	2.7	3.0	1.9	1.9	2.4	2.5
TOPLINE	2.4	2.5	3.1	3.1	2.4	2.4	3.4	3.2
DIEGO	2.4	2.6	3.0	3.1	2.8	2.4	3.6	3.2
TAVERNOS	2.3	2.4	2.9	2.8	1.9	1.9	2.5	2.6
MASTERLINE +	2.3	2.3	2.7	2.7	1.8	1.8	3.2	3.2
DIABLO	2.3	2.5	2.6	3.0	2.2	2.3	2.8	2.8
ADELINE	2.3	2.2	2.4	2.5	2.1	2.2	2.8	2.8
ADRI	2.3	2.0	2.6	2.7	2.4	2.6	3.0	3.1
LUNET	2.3	2.1	3.0	2.8	2.4	2.6	3.4	3.3
PRELENT	2.3	2.2	2.7	2.7	2.3	2.5	3.3	3.3
ADONIS	2.2	2.3	2.8	2.8	2.4	2.2	3.0	3.0
CLAUDETTE	2.2	2.1	2.8	2.7	2.4	2.3	3.1	3.0
STAN	2.2	2.0	3.1	2.7	1.9	2.0	2.9	2.9
NIZ 92-193 +	2.2	2.2	3.3	3.3	2.6	2.6	3.2	3.2
ARISTON	2.1	2.2	2.9	2.7	2.2	2.1	3.2	3.0
CORINTH	2.1	2.0	2.4	2.4	2.3	2.3	3.1	3.1
TOPAZ	2.1	2.2	3.1	3.0	2.9	2.8	3.3	3.3
COLLETTE	2.0	1.9	2.9	2.9	2.8	2.7	3.2	3.2
DASHER +	2.0	2.0	2.8	2.8	1.3	1.3	2.3	2.3
RASALON	2.0	2.2	2.8	2.9	2.3	2.2	3.1	3.0
CAVALIER	1.9	2.0	2.8	2.8	2.5	2.8	3.3	3.2
SHERIFF	1.9	1.8	3.0	2.7	2.8	2.9	3.4	3.6
CONTENT	1.8	1.9	2.6	2.7	2.6	2.7	3.2	3.3
NIZ87-693 +	1.8	1.8	2.5	2.5	2.3	2.3	3.3	3.3
CASCADE	1.8	2.0	2.7	2.7	2.7	2.6	3.1	3.2
UNILINE +	1.7	1.7	2.7	2.7	3.2	3.2	4.0	4.0

+ varieties tested in 1994 only

Bitterness

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Sweetness

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5= v. sweet

Flavour

1 = weak

3 = medium

5= strong

Pleasantness

1 = not pleasant

5= v. pleasant

Table 3: TASTE TEST SUMMARY (in alphabetical order)

COMBINED DATA 1990-1994

for scales see page 2

Variety	Years in test	Bitterness 90-94	Flavour 90-94	Sweetness 90-94	Pleasantness 90-94
ADELINE	3	2.2	2.5	2.2	2.8
ADONIS	3	2.3	2.8	2.2	3.0
ADRI	3	2.0	2.7	2.6	3.1
AJAX	4	3.6	3.7	1.6	2.1
AMOROSO	1	2.6	3.1	2.6	3.1
ARISTON	3	2.2	2.7	2.1	3.0
BILLION	2	2.0	2.7	2.5	3.3
CASCADE	5	2.0	2.7	2.6	3.2
CAVALIER	3	2.0	2.8	2.8	3.2
CLAUDETTE	3	2.1	2.7	2.3	3.0
COLLETTE	4	1.9	2.9	2.7	3.2
CONTENT	3	1.9	2.7	2.7	3.3
CORINTH	3	2.0	2.4	2.3	3.1
CYRUS	1	3.0	3.2	1.8	2.7
DASHER	1	2.0	2.8	1.3	2.3
DIABLO	3	2.5	3.0	2.3	2.8
DIEGO	2	2.6	3.1	2.4	3.2
DOLMIC	3	2.3	2.8	2.1	2.8
EDMUND	2	3.4	3.6	1.5	2.0
FALSTAFFE	1	2.6	2.8	1.9	2.3
ICARUS	3	2.5	2.9	2.0	2.7
ILIAS	1	3.5	3.6	1.7	2.2
LAURIS	2	4.1	3.6	1.3	1.5
LUNET	3	2.1	2.8	2.6	3.3
MASTERLINE	1	2.3	2.7	1.8	3.2
NIZ 92-193	1	2.2	3.3	2.6	3.2
NIZ87-693	1	1.8	2.5	2.3	3.3
NUN 9202	1	2.3	3.1	2.5	2.7
ODETTE	4	2.8	3.2	2.0	2.6
OLIVER	3	2.2	2.9	2.5	3.0
OTTOLINE	3	2.4	2.7	2.3	2.8
PANTERA	3	1.9	2.8	2.4	3.0
PATENT	4	2.5	2.8	2.2	2.9
PEX4290	1	2.4	2.5	2.3	2.7
PHILEMON	4	3.0	3.2	2.0	2.8
PRELENT	3	2.2	2.7	2.5	3.3
PSR 989	3	2.6	3.2	2.1	2.7
RAMPART	3	3.2	3.3	1.7	2.4
RASALON	4	2.2	2.9	2.2	3.0
REVENGE	1	3.2	3.4	2.0	2.6
RICHARD	3	2.6	3.0	1.9	2.5
ROGER	4	3.1	3.4	1.8	2.2
RUBINE	2	2.7	3.0	1.6	1.9
SHERIFF	3	1.8	2.7	2.9	3.6
SILVERLINE	1	2.5	2.2	2.2	2.8
STAN	3	2.0	2.7	2.0	2.9
STEPHEN	4	3.8	3.8	1.4	2.0
SUZETTE	4	2.7	3.1	1.9	2.9
TALENT	3	2.5	3.1	2.1	2.9
TARDIS	3	4.8	4.7	1.1	1.2
TAVERNOS	3	2.4	2.8	1.9	2.6
TOPAZ	4	2.2	3.0	2.8	3.3
TOPLINE	4	2.5	3.1	2.4	3.2
UNILINE	1	1.7	2.7	3.2	4.0

Table 4: TASTE TEST SUMMARY (in order of decreasing bitterness)

COMBINED DATA 1990-1994

for scales see page 2

Variety	Years in test	Bitterness 90-94	Flavour 90-94	Sweetness 90-94	Pleasantness 90-94
TARDIS	3	4.8	4.7	1.1	1.2
LAURIS	2	4.1	3.6	1.3	1.5
STEPHEN	4	3.8	3.8	1.4	2.0
AJAX	4	3.6	3.7	1.6	2.1
ILIAS	1	3.5	3.6	1.7	2.2
EDMUND	2	3.4	3.6	1.5	2.0
REVENGE	1	3.2	3.4	2.0	2.6
RAMPART	3	3.2	3.3	1.7	2.4
ROGER	4	3.1	3.4	1.8	2.2
CYRUS	1	3.0	3.2	1.8	2.7
PHILEMON	4	3.0	3.2	2.0	2.8
ODETTE	4	2.8	3.2	2.0	2.6
RUBINE	2	2.7	3.0	1.6	1.9
SUZETTE	4	2.7	3.1	1.9	2.9
RICHARD	3	2.6	3.0	1.9	2.5
DIEGO	2	2.6	3.1	2.4	3.2
PSR 989	3	2.6	3.2	2.1	2.7
FALSTAFFE	1	2.6	2.8	1.9	2.3
AMOROSO	1	2.6	3.1	2.6	3.1
ICARUS	3	2.5	2.9	2.0	2.7
DIABLO	3	2.5	3.0	2.3	2.8
SILVERLINE	1	2.5	2.2	2.2	2.8
TOPLINE	4	2.5	3.1	2.4	3.2
PATENT	4	2.5	2.8	2.2	2.9
TALENT	3	2.5	3.1	2.1	2.9
PEX4290	1	2.4	2.5	2.3	2.7
OTTOLINE	3	2.4	2.7	2.3	2.8
TAVERNOS	3	2.4	2.8	1.9	2.6
MASTERLINE	1	2.3	2.7	1.8	3.2
ADONIS	3	2.3	2.8	2.2	3.0
NUN 9202	1	2.3	3.1	2.5	2.7
DOLMIC	3	2.3	2.8	2.1	2.8
ADELINE	3	2.2	2.5	2.2	2.8
OLIVER	3	2.2	2.9	2.5	3.0
PRELENT	3	2.2	2.7	2.5	3.3
ARISTON	3	2.2	2.7	2.1	3.0
TOPAZ	4	2.2	3.0	2.8	3.3
NIZ 92-193	1	2.2	3.3	2.6	3.2
RASALON	4	2.2	2.9	2.2	3.0
CLAUDETTE	3	2.1	2.7	2.3	3.0
LUNET	3	2.1	2.8	2.6	3.3
ADRI	3	2.0	2.7	2.6	3.1
CORINTH	3	2.0	2.4	2.3	3.1
CAVALIER	3	2.0	2.8	2.8	3.2
STAN	3	2.0	2.7	2.0	2.9
BILLION	2	2.0	2.7	2.5	3.3
DASHER	1	2.0	2.8	1.3	2.3
CASCADE	5	2.0	2.7	2.6	3.2
CONTENT	3	1.9	2.7	2.7	3.3
COLLETTE	4	1.9	2.9	2.7	3.2
PANTERA	3	1.9	2.8	2.4	3.0
NIZ87-693	1	1.8	2.5	2.3	3.3
SHERIFF	3	1.8	2.7	2.9	3.6
UNILINE	1	1.7	2.7	3.2	4.0

**Table 5: TASTE TEST SUMMARY (in order of decreasing sweetness)
COMBINED DATA 1990-1994**

for scales see page 2

Variety	Years in test	Bitterness 90-94	Flavour 90-94	Sweetness 90-94	Pleasantness 90-94
UNILINE	1	1.7	2.7	3.2	4.0
SHERIFF	3	1.8	2.7	2.9	3.6
TOPAZ	4	2.2	3.0	2.8	3.3
CAVALIER	3	2.0	2.8	2.8	3.2
CONTENT	3	1.9	2.7	2.7	3.3
COLLETTE	4	1.9	2.9	2.7	3.2
ADRI	3	2.0	2.7	2.6	3.1
LUNET	3	2.1	2.8	2.6	3.3
CASCADE	5	2.0	2.7	2.6	3.2
AMOROSO	1	2.6	3.1	2.6	3.1
NIZ 92-193	1	2.2	3.3	2.6	3.2
PRELENT	3	2.2	2.7	2.5	3.3
NUN 9202	1	2.3	3.1	2.5	2.7
BILLION	2	2.0	2.7	2.5	3.3
OLIVER	3	2.2	2.9	2.5	3.0
DIEGO	2	2.6	3.1	2.4	3.2
PANTERA	3	1.9	2.8	2.4	3.0
TOPLINE	4	2.5	3.1	2.4	3.2
CLAUDETTE	3	2.1	2.7	2.3	3.0
PEX4290	1	2.4	2.5	2.3	2.7
NIZ87-693	1	1.8	2.5	2.3	3.3
DIABLO	3	2.5	3.0	2.3	2.8
CORINTH	3	2.0	2.4	2.3	3.1
OTTOLINE	3	2.4	2.7	2.3	2.8
RASALON	4	2.2	2.9	2.2	3.0
ADONIS	3	2.3	2.8	2.2	3.0
ADELINE	3	2.2	2.5	2.2	2.8
PATENT	4	2.5	2.8	2.2	2.9
SILVERLINE	1	2.5	2.2	2.2	2.8
DOLMIC	3	2.3	2.8	2.1	2.8
TALENT	3	2.5	3.1	2.1	2.9
PSR 989	3	2.6	3.2	2.1	2.7
ARISTON	3	2.2	2.7	2.1	3.0
STAN	3	2.0	2.7	2.0	2.9
PHILEMON	4	3.0	3.2	2.0	2.8
REVENGE	1	3.2	3.4	2.0	2.6
ICARUS	3	2.5	2.9	2.0	2.7
ODETTE	4	2.8	3.2	2.0	2.6
SUZETTE	4	2.7	3.1	1.9	2.9
RICHARD	3	2.6	3.0	1.9	2.5
TAVERNOS	3	2.4	2.8	1.9	2.6
FALSTAFFE	1	2.6	2.8	1.9	2.3
CYRUS	1	3.0	3.2	1.8	2.7
MASTERLINE	1	2.3	2.7	1.8	3.2
ROGER	4	3.1	3.4	1.8	2.2
RAMPART	3	3.2	3.3	1.7	2.4
ILIAS	1	3.5	3.6	1.7	2.2
RUBINE	2	2.7	3.0	1.6	1.9
AJAX	4	3.6	3.7	1.6	2.1
EDMUND	2	3.4	3.6	1.5	2.0
STEPHEN	4	3.8	3.8	1.4	2.0
DASHER	1	2.0	2.8	1.3	2.3
LAURIS	2	4.1	3.6	1.3	1.5
TARDIS	3	4.8	4.7	1.1	1.2

Table 6: TASTE TEST SUMMARY (in order of decreasing pleasantness)
COMBINED DATA 1990-1994

for scales see page 2

Variety	Years in test	Bitterness 90-94	Flavour 90-94	Sweetness 90-94	Pleasantness 90-94
UNILINE	1	1.7	2.7	3.2	4.0
SHERIFF	3	1.8	2.7	2.9	3.6
TOPAZ	4	2.2	3.0	2.8	3.3
NIZ87-693	1	1.8	2.5	2.3	3.3
BILLION	2	2.0	2.7	2.5	3.3
LUNET	3	2.1	2.8	2.6	3.3
PRELENT	3	2.2	2.7	2.5	3.3
CONTENT	3	1.9	2.7	2.7	3.3
CAVALIER	3	2.0	2.8	2.8	3.2
NIZ 92-193	1	2.2	3.3	2.6	3.2
CASCADE	5	2.0	2.7	2.6	3.2
DIEGO	2	2.6	3.1	2.4	3.2
TOPLINE	4	2.5	3.1	2.4	3.2
MASTERLINE	1	2.3	2.7	1.8	3.2
COLLETTE	4	1.9	2.9	2.7	3.2
ADRI	3	2.0	2.7	2.6	3.1
CORINTH	3	2.0	2.4	2.3	3.1
AMOROSO	1	2.6	3.1	2.6	3.1
OLIVER	3	2.2	2.9	2.5	3.0
PANTERA	3	1.9	2.8	2.4	3.0
ARISTON	3	2.2	2.7	2.1	3.0
RASALON	4	2.2	2.9	2.2	3.0
CLAUDETTE	3	2.1	2.7	2.3	3.0
ADONIS	3	2.3	2.8	2.2	3.0
SUZETTE	4	2.7	3.1	1.9	2.9
TALENT	3	2.5	3.1	2.1	2.9
STAN	3	2.0	2.7	2.0	2.9
PATENT	4	2.5	2.8	2.2	2.9
SILVERLINE	1	2.5	2.2	2.2	2.8
DOLMIC	3	2.3	2.8	2.1	2.8
DIABLO	3	2.5	3.0	2.3	2.8
PHILEMON	4	3.0	3.2	2.0	2.8
ADELINE	3	2.2	2.5	2.2	2.8
OTTOLINE	3	2.4	2.7	2.3	2.8
PEX4290	1	2.4	2.5	2.3	2.7
NUN 9202	1	2.3	3.1	2.5	2.7
PSR 989	3	2.6	3.2	2.1	2.7
CYRUS	1	3.0	3.2	1.8	2.7
ICARUS	3	2.5	2.9	2.0	2.7
ODETTE	4	2.8	3.2	2.0	2.6
REVENGE	1	3.2	3.4	2.0	2.6
TAVERNOS	3	2.4	2.8	1.9	2.6
RICHARD	3	2.6	3.0	1.9	2.5
RAMPART	3	3.2	3.3	1.7	2.4
DASHER	1	2.0	2.8	1.3	2.3
FALSTAFFE	1	2.6	2.8	1.9	2.3
ROGER	4	3.1	3.4	1.8	2.2
ILIAS	1	3.5	3.6	1.7	2.2
AJAX	4	3.6	3.7	1.6	2.1
EDMUND	2	3.4	3.6	1.5	2.0
STEPHEN	4	3.8	3.8	1.4	2.0
RUBINE	2	2.7	3.0	1.6	1.9
LAURIS	2	4.1	3.6	1.3	1.5
TARDIS	3	4.8	4.7	1.1	1.2

**Table 3: TASTE TEST SUMMARY (in order of flavour)
COMPARISON OF 1994 DATA WITH COMBINED 1990-1994 DATA**

Variety	Bitterness		Flavour		Sweetness		Pleasantness	
	1994	90-94	1994	90-94	1994	90-94	1994	90-94
STEPHEN	3.7	3.8	3.8	3.8	1.3	1.4	1.9	2.0
AJAX	3.7	3.6	3.8	3.7	1.6	1.6	2.0	2.1
REVENGE +	3.2	3.2	3.4	3.4	2.0	2.0	2.6	2.6
PHILEMON	3.2	3.0	3.4	3.2	1.9	2.0	3.0	2.8
TALENT	2.6	2.5	3.4	3.1	2.1	2.1	2.9	2.9
NIZ 92-193 +	2.2	2.2	3.3	3.3	2.6	2.6	3.2	3.2
ODETTE	2.6	2.8	3.2	3.2	2.1	2.0	2.7	2.6
CYRUS +	3.0	3.0	3.2	3.2	1.8	1.8	2.7	2.7
ROGER	2.8	3.1	3.2	3.4	1.7	1.8	2.4	2.2
OLIVER	2.4	2.2	3.2	2.9	2.3	2.5	3.1	3.0
AMOROSO +	2.6	2.6	3.1	3.1	2.6	2.6	3.1	3.1
TOPLINE	2.4	2.5	3.1	3.1	2.4	2.4	3.4	3.2
STAN	2.2	2.0	3.1	2.7	1.9	2.0	2.9	2.9
SUZETTE	2.7	2.7	3.1	3.1	1.9	1.9	2.9	2.9
TOPAZ	2.1	2.2	3.1	3.0	2.9	2.8	3.3	3.3
DIEGO	2.4	2.6	3.0	3.1	2.8	2.4	3.6	3.2
LUNET	2.3	2.1	3.0	2.8	2.4	2.6	3.4	3.3
SHERIFF	1.9	1.8	3.0	2.7	2.8	2.9	3.4	3.6
COLLETTE	2.0	1.9	2.9	2.9	2.8	2.7	3.2	3.2
TAVERNOS	2.3	2.4	2.9	2.8	1.9	1.9	2.5	2.6
ARISTON	2.1	2.2	2.9	2.7	2.2	2.1	3.2	3.0
RAMPART	2.6	3.2	2.9	3.3	1.8	1.7	2.8	2.4
OTTOLINE	2.7	2.4	2.8	2.7	2.1	2.3	2.6	2.8
RUBINE	2.7	2.7	2.8	3.0	1.7	1.8	1.8	1.9
ADONIS	2.2	2.3	2.8	2.8	2.4	2.2	3.0	3.0
RASALON	2.0	2.2	2.8	2.9	2.3	2.2	3.1	3.0
FALSTAFFE +	2.6	2.6	2.8	2.8	1.9	1.9	2.3	2.3
CLAUDETTE	2.2	2.1	2.8	2.7	2.4	2.3	3.1	3.0
DASHER +	2.0	2.0	2.8	2.8	1.3	1.3	2.3	2.3
CAVALIER	1.9	2.0	2.8	2.8	2.5	2.8	3.3	3.2
PATENT	2.7	2.5	2.8	2.8	1.9	2.2	2.8	2.9
RICHARD	2.4	2.6	2.7	3.0	1.9	1.9	2.4	2.5
MASTERLINE +	2.3	2.3	2.7	2.7	1.8	1.8	3.2	3.2
UNILINE +	1.7	1.7	2.7	2.7	3.2	3.2	4.0	4.0
PRELENT	2.3	2.2	2.7	2.7	2.3	2.5	3.3	3.3
CASCADE	1.8	2.0	2.7	2.7	2.7	2.6	3.1	3.2
ICARUS	2.4	2.5	2.6	2.9	1.9	2.0	2.7	2.7
ADRI	2.3	2.0	2.6	2.7	2.4	2.6	3.0	3.1
CONTENT	1.8	1.9	2.6	2.7	2.6	2.7	3.2	3.3
DOLMIC	2.4	2.3	2.6	2.8	1.8	2.1	2.4	2.8
DIABLO	2.3	2.5	2.6	3.0	2.2	2.3	2.8	2.8
PEX4290 +	2.4	2.4	2.5	2.5	2.3	2.3	2.7	2.7
NIZ87-693 +	1.8	1.8	2.5	2.5	2.3	2.3	3.3	3.3
ADELINE	2.3	2.2	2.4	2.5	2.1	2.2	2.8	2.8
CORINTH	2.1	2.0	2.4	2.4	2.3	2.3	3.1	3.1
SILVERLINE +	2.5	2.5	2.2	2.2	2.2	2.2	2.8	2.8

+ varieties tested in 1994 only

Bitterness

1 = not bitter
3 = sl bitter
5= v. bitter

Sweetness

1 = not sweet
3 = sl. sweet
5= v. sweet

Flavour

1 = weak
3 = medium
5= strong

Pleasantness

1 = not pleasant
3 = medium
5= v. pleasant

**Table 4: TASTE TEST SUMMARY (in order of sweetness)
COMPARISON OF 1994 DATA WITH COMBINED 1990-1994 DATA**

Variety	Bitterness		Flavour		Sweetness		Pleasantness	
	1994	90-94	1994	90-94	1994	90-94	1994	90-94
UNILINE +	1.7	1.7	2.7	2.7	3.2	3.2	4.0	4.0
TOPAZ	2.1	2.2	3.1	3.0	2.9	2.8	3.3	3.3
SHERIFF	1.9	1.8	3.0	2.7	2.8	2.9	3.4	3.6
COLLETTE	2.0	1.9	2.9	2.9	2.8	2.7	3.2	3.2
DIEGO	2.4	2.6	3.0	3.1	2.8	2.4	3.6	3.2
CASCADE	1.8	2.0	2.7	2.7	2.7	2.6	3.1	3.2
NIZ 92-193 +	2.2	2.2	3.3	3.3	2.6	2.6	3.2	3.2
AMOROSO +	2.6	2.6	3.1	3.1	2.6	2.6	3.1	3.1
CONTENT	1.8	1.9	2.6	2.7	2.6	2.7	3.2	3.3
CAVALIER	1.9	2.0	2.8	2.8	2.5	2.8	3.3	3.2
LUNET	2.3	2.1	3.0	2.8	2.4	2.6	3.4	3.3
TOPLINE	2.4	2.5	3.1	3.1	2.4	2.4	3.4	3.2
ADONIS	2.2	2.3	2.8	2.8	2.4	2.2	3.0	3.0
CLAUDETTE	2.2	2.1	2.8	2.7	2.4	2.3	3.1	3.0
ADRI	2.3	2.0	2.6	2.7	2.4	2.6	3.0	3.1
PEX4290 +	2.4	2.4	2.5	2.5	2.3	2.3	2.7	2.7
CORINTH	2.1	2.0	2.4	2.4	2.3	2.3	3.1	3.1
RASALON	2.0	2.2	2.8	2.9	2.3	2.2	3.1	3.0
NIZ87-693 +	1.8	1.8	2.5	2.5	2.3	2.3	3.3	3.3
PRELENT	2.3	2.2	2.7	2.7	2.3	2.5	3.3	3.3
OLIVER	2.4	2.2	3.2	2.9	2.3	2.5	3.1	3.0
ARISTON	2.1	2.2	2.9	2.7	2.2	2.1	3.2	3.0
DIABLO	2.3	2.5	2.6	3.0	2.2	2.3	2.8	2.8
SILVERLINE +	2.5	2.5	2.2	2.2	2.2	2.2	2.8	2.8
ODETTE	2.6	2.8	3.2	3.2	2.1	2.0	2.7	2.6
OTTOLINE	2.7	2.4	2.8	2.7	2.1	2.3	2.6	2.8
TALENT	2.6	2.5	3.4	3.1	2.1	2.1	2.9	2.9
ADELINE	2.3	2.2	2.4	2.5	2.1	2.2	2.8	2.8
REVENGE +	3.2	3.2	3.4	3.4	2.0	2.0	2.6	2.6
PHILEMON	3.2	3.0	3.4	3.2	1.9	2.0	3.0	2.8
PATENT	2.7	2.5	2.8	2.8	1.9	2.2	2.8	2.9
SUZETTE	2.7	2.7	3.1	3.1	1.9	1.9	2.9	2.9
TAVERNOS	2.3	2.4	2.9	2.8	1.9	1.9	2.5	2.6
FALSTAFFE +	2.6	2.6	2.8	2.8	1.9	1.9	2.3	2.3
STAN	2.2	2.0	3.1	2.7	1.9	2.0	2.9	2.9
ICARUS	2.4	2.5	2.6	2.9	1.9	2.0	2.7	2.7
RICHARD	2.4	2.6	2.7	3.0	1.9	1.9	2.4	2.5
CYRUS +	3.0	3.0	3.2	3.2	1.8	1.8	2.7	2.7
MASTERLINE +	2.3	2.3	2.7	2.7	1.8	1.8	3.2	3.2
RAMPART	2.6	3.2	2.9	3.3	1.8	1.7	2.8	2.4
DOLMIC	2.4	2.3	2.6	2.8	1.8	2.1	2.4	2.8
RUBINE	2.7	2.7	2.8	3.0	1.7	1.6	1.8	1.9
ROGER	2.8	3.1	3.2	3.4	1.7	1.8	2.4	2.2
AJAX	3.7	3.6	3.8	3.7	1.6	1.6	2.0	2.1
DASHER +	2.0	2.0	2.8	2.8	1.3	1.3	2.3	2.3
STEPHEN	3.7	3.8	3.8	3.8	1.3	1.4	1.9	2.0

+ varieties tested in 1994 only

Bitterness
1 = not bitter
3 = sl bitter
5= v. bitter

Sweetness
1 = not sweet
3 = sl. sweet
5= v. sweet

Flavour
1 = weak
3 = medium
5= strong

Pleasantness
1 = not pleasant
5= v. pleasant

**Table 5: TASTE TEST SUMMARY
LATE MATURING VARIETIES (in order of bitterness)**

COMPARISON OF 1994 DATA WITH COMBINED 1990-1994 DATA

Variety	Bitterness		Flavour		Sweetness		Pleasantness	
	1994	90-94	1994	90-94	1994	90-94	1994	90-94
STEPHEN	3.7	3.8	3.8	3.8	1.3	1.4	1.9	2.0
PHILEMON	3.2	3.0	3.4	3.2	1.9	2.0	3.0	2.8
REVENGE +	3.2	3.2	3.4	3.4	2.0	2.0	2.6	2.6
SUZETTE	2.7	2.7	3.1	3.1	1.9	1.9	2.9	2.9
ODETTE	2.6	2.8	3.2	3.2	2.1	2.0	2.7	2.6
SILVERLINE +	2.5	2.5	2.2	2.2	2.2	2.2	2.8	2.8
PEX4290 +	2.4	2.4	2.5	2.5	2.3	2.3	2.7	2.7
DIEGO	2.4	2.6	3.0	3.1	2.8	2.4	3.6	3.2
TAVERNOS	2.3	2.4	2.9	2.8	1.9	1.9	2.5	2.6
STAN	2.2	2.0	3.1	2.7	1.9	2.0	2.9	2.9
ADONIS	2.2	2.3	2.8	2.8	2.4	2.2	3.0	3.0
NIZ 92-193 +	2.2	2.2	3.3	3.3	2.6	2.6	3.2	3.2
ARISTON	2.1	2.2	2.9	2.7	2.2	2.1	3.2	3.0
RASALON	2.0	2.2	2.8	2.9	2.3	2.2	3.1	3.0
SHERIFF	1.9	1.8	3.0	2.7	2.8	2.9	3.4	3.6
NIZ87-693 +	1.8	1.8	2.5	2.5	2.3	2.3	3.3	3.3
CASCADE	1.8	2.0	2.7	2.7	2.7	2.6	3.1	3.2
UNILINE +	1.7	1.7	2.7	2.7	3.2	3.2	4.0	4.0

+ varieties tested in 1994 only

Bitterness
1 = not bitter
3 = sl bitter
5= v. bitter

Sweetness
1 = not sweet
3 = sl. sweet
5= v. sweet

Flavour
1 = weak
3 = medium
5= strong

Pleasantness
1 = not pleasant
5= v. pleasant