

PROCESSORS & GROWERS RESEARCH ORGANISATION

1990

VINING PEA TRIALS

1990

COMBINING PEA TRIALS

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THE SEASON

The 1990 season, like 1989 was atypical of weather conditions usually experienced in the pea and bean growing areas. The winter was again very mild with few frosts, leaving autumn ploughed soil unweathered so seedbeds were cloddy after pre-drilling cultivations. Some soils suffered from a moisture deficit from 1989 and this together with only about a third of the long term average rainfall in March, led to uneven emergence of crops.

The temperature in April was about two degrees warmer than usual, and rainfall was average for this month. In May maximum temperatures were about five degrees above average and there was only 10 mm precipitation, and a long hot dry spell began. Although there was rain in June and July the amounts were below average. Following a cooler period during the second week of June, daily temperatures were regularly above 20°C, increasing to 30°C by the end of July, drying out the soil very quickly after any rain. Vegetative growth of peas was not vigorous and most crops suffered drought stress during the short flowering period and during pod fill.

Fungal diseases were negligible but aphid were a problem, transmitting viruses, mainly Pea Enation Mosaic Virus (PEMV).

The vining pea harvest began towards the end of June, a fortnight earlier than usual but no earlier than in 1989. Relative differences between maturities of varieties were less than usual.

The combining pea harvest was carried out under ideal conditions, at Thornhaugh from the 20th July to the beginning of August. There was little lodging.

METEOROLOGICAL DATA

Month	1990 Average Temperature		Long Term Average Temperature	
	Maximum °C	Minimum °C	Maximum °C	Minimum °C
March	13.4	3.8	9.0	1.9
April	14.2	2.0	11.9	4.0
May	19.5	5.2	15.7	6.5
June	19.6	8.8	19.1	9.5
July	24.0	9.6	20.6	11.1
August	26.3	12.6	20.4	11.4

Month	1990 Monthly Rainfall (mm)	Long Term Average Rainfall (mm)
March	13.6	44.1
April	37.5	42.3
May	9.5	46.2
June	41.0	49.7
July	28.7	52.5
August	15.3	63.5

Source = Marholm, Peterborough

VINING PEAS

SUMMARY - MAIN TRIAL VARIETIES TESTED 1988 - 90

Three new varieties were compared to the standards; Sprite (quality and maturity), Scout (yield), Waverex (petits pois), and Puget (late maturing). Puget was not in the 1988 Preliminary Trial. The varieties were evaluated in 1988 Preliminary, 1989 and 1990 Main Trials. The weather during 1989 and 1990 was much warmer and dryer than normal, but in 1989 occasional showers relieved the drought stress. 1988 was much wetter by comparison and growth was much more vigorous.

Sublima matured 8 days after Sprite and yielded peas of mostly medium size grade. Yields were lower than Scout, but not significantly so. Haulm was shorter and not as heavy as that of Scout, but Sublima tended to lodge rather early and produce could be uneven in colour as a result.

Asunta also matured 8 days after Sprite. Produce from Asunta was larger than that of Waverex (mostly small size grade) and was generally good quality. Yields were significantly lower than Scout at TR 100, but were higher than those of Waverex. Asunta had medium length haulm with fine foliage and was resistant to lodging.

Main crop variety Ambassador (WAV F505) matured 9 days after Sprite. Haulm was not as heavy as Scout and straw was a little shorter. Yields were good, consistently higher than Scout, but not significantly so. Overall peas were of a similar size grade to Scout, but in 1989 the produce was larger than Scout, and in 1988 it was smaller.

TRIALS IN 1990

Varieties were evaluated in Main, Preliminary and Screening Trials.

Seed of all varieties was treated to control downy mildew, *Ascochyta* and damping off diseases. Breeders stock of standard varieties was used in all trials. Sprite was the standard variety for maturity and quality; Waverex petits pois; Scout yield; and Puget late maturity standard.

Because of the large numbers of entries into the Preliminary and Screening trials, Scout, the yield standard was duplicated in each replicate.

The Main and Preliminary Trials were sown on the 9th and 20th March respectively. Drilling conditions were not ideal and with little frost mould seedbeds were cloddy and also dry. Dry conditions continued and emergence was uneven and patchy as a result. Pea and bean weevil (*Sitona lineatus*) were very active during a spell of warm weather soon after emergence. The Screening trial was drilled after a period of rainfall on the 19th April. The seedbed conditions were better at this time and the peas emerged more evenly. Weevils were less active after emergence than in the earlier sown trials. The Main and Preliminary Trials required a follow-up post-emergence treatment for broad-leaved weed control.

Temperatures were above average throughout most of the season. The second week of June and the first week of July were a little wetter and cooler by comparison. Rainfall during the season was about half that of the long-term average and the month of May was very dry. Pea growth was not vigorous and haulm was shorter than usual. A small number of aphids were present at times during the growing period and may have transmitted viruses. Some varieties in the Screening trial were affected by pea seed-borne mosaic virus (PSbMV). Symptoms of infection were seen on the produce, but levels of infection were very low. Foliar diseases in trial varieties were negligible.

Harvesting began on the 26th June and was completed less than 4 weeks later on the 20th July. The season was relatively short and peas matured rapidly. Information on relative maturity differences should be treated with reserve in this atypical season.

MAIN TRIAL, THORNHAUGH - 1990

Promising varieties from 1988 and 1989 Preliminary trials were evaluated in the Main trial.

The smaller seeded varieties appeared to be affected more than other varieties by the dry conditions.

Sprite the maturity standard, matured first, followed a day later by D 9611. Sprite was the higher yielding of the two, and both were significantly lower yielding than Scout. Produce from Sprite was larger than usual, but had a bright, even colour. Produce from D 9611 was of small/medium size grade, slightly pale and a little uneven in colour. Both varieties were short strawed this year. D 9611 set triple pods at several nodes.

Micro matured a day before Scout. Micro was semi-leafless with long stiff straw and remained erect to harvest. Produce had a very attractive appearance. It was smaller and more even in size and colour than Waverex with 92% of the peas in the petits pois (< 8.75 mm) size grade. Yields were similar to Waverex. Micro matured rapidly up to freezing stage and several flat pods remained unfilled at harvest and it did not appear to achieve its full yield potential.

Scout matured 6 days after Sprite. Although not as long strawed as in some years, Scout lodged and the produce contained several paler peas. Size grade of peas was a little smaller than usual.

Waverex, Asunta and Sublima matured 7 days later than Sprite. Waverex yields were significantly lower than Scout, and 82% of peas were in the petits pois size grade and evenly coloured. Straw was short and plants remained erect at harvest. Asunta yielded similarly to Waverex and gave an attractive sample of peas of mainly small size grade with a good colour. Sublima gave similar yields to Scout of medium size grade peas with good even colour. Sublima lodged early.

Puget matured rapidly from freezing to canning stage. This triple podded variety gave good yields, higher than Scout, of medium size grade evenly coloured peas. Caty, also of main crop maturity gave lower yields than Waverex and the produce was larger (medium/small) than in previous trials, but the peas had a good dark even colour. Caty had short, dark coloured haulm.

Lynx and WAV F 505 matured 10 days after Sprite. Ambassador (WAV F 505) was slightly higher yielding than Scout and the even coloured peas were of a similar size grade. Lynx had long haulm, fine foliage and was triple podded. Yields were low, but a little higher than Waverex and the produce with 78% petits pois was only a little larger than Waverex. Peas had an even colour, but were slightly paler than Waverex.

876 ph 5.4 had long, but not heavy, foliage and had good standing ability. Yields were excellent, significantly higher than Scout. Peas were a dark, even colour and were smaller in size than either Scout or Puget.

PRELIMINARY TRIAL, THORNHAUGH - 1990

Varieties in this trial are at National List stage of testing and 30 varieties, including the standards were entered into trial this year. A range in variation of plant type was seen. Several varieties were early/second early maturity and a few were later maturing than Puget. Yields from the standard Scout were higher than in the Main trial but were lower than in 1989. Many varieties were significantly lower yielding than Scout.

WAV 750 and WAV 789 were the earliest maturing varieties 2 days before Sprite. Both varieties had fine foliage and medium length straw. Yields were also similar and significantly lower than Scout. Produce from WAV 750 was even coloured and medium/small size grade, while produce from WAV 789 was larger and more uneven in size.

RS 25509, WAV 706 and Daybreak matured a day before Sprite and all three were significantly lower yielding than Scout. RS 25509 yielded similarly to Sprite and produce was dark, even in colour and medium/small size grade. It was the shortest strawed variety in this group. WAV 706 was lower yielding and the produce, of medium/small size grade, was even in colour. Daybreak gave similar yield and size grade peas to Sprite but the colour of produce was uneven.

Sprite was significantly lower yielding than Scout. Produce was medium size grade.

VSB 4647 matured a day later and was lower yielding than Sprite. Peas were a little smaller than Sprite, but they were paler and more uneven in colour.

Ohmasa and Komasa matured 2 days after Sprite, and both gave peas of a similar size grade to Sprite and were a little uneven in colour. Komasa yielded higher than Sprite at TR 120. Ohmasa was higher yielding at both harvests.

The following varieties matured 4 days after Sprite:

Mure had fine foliage and short straw. Peas were an even size (medium) and colour. Yields were not significantly higher than Sprite. 336 ph 1.5 yielded very well, similar to Scout. Straw was long, like Scout and haulm was finer. Produce was smaller and more in even size than that of Scout, but although the peas had a dark colour they were some blond peas in the frozen sample. BO 5 was significantly lower yielding than Scout at TR 100 and the produce was larger than that of Scout. The peas were dark coloured, but there were several blond peas in the frozen sample. BO 5 had long, heavy foliage and lodged early. Yields of WAV 571 were a little higher than Waverex, and the produce larger size grade. Peas, however, even coloured. WAV 571 had medium - long straw and fine foliage.

Sunroy matured 5 days after Sprite. Peas were of medium size grade with a good even colour. Yields, however, were significantly lower than Scout.

Waverex was lower yielding than usual this season when compared with Scout. Produce was a little uneven in colour with 78% of the peas in the petits pois size grade. Waverex was typically short strawed.

The following varieties matured 7 days after Sprite:

Scout gave reasonable yields despite the dry conditions. Produce was typically large and uneven in colour with a few pale peas in the frozen sample. Aurigo gave peas almost as small as Waverex and yields were a

higher. Produce was slightly pale in appearance, with a few paler peas in the frozen sample. Aurigo had fine foliage. Bastion had a similar plant type to Aurigo, but was a little longer strawed (longer than Scout). Produce was of small/medium size grade and like Aurigo was slightly pale, with paler peas in the frozen sample. Yields were better than Aurigo and good considering the size of the produce. WAV 504 had medium length straw and relatively fine foliage. Yields were lower than Scout and the produce was almost as large, but the peas were even coloured. BO 3 gave good yields that were significantly higher than Scout at TR 120. Haulm was long, like Scout and the variety lodged. Produce was medium size grade, smaller than Scout, but slightly pale and uneven in colour.

BL 79-131 matured 8 days after Sprite. This semi-leafless variety had a good plant habit and gave an attractive sample of produce; medium size grade and even coloured. Yields, however, were rather low considering the size grade.

The following varieties matured 9 days after Sprite:

RS 26414 had longer straw than Scout. Peas were of medium/small size grade and were dark coloured, but the colour was a little uneven. Yields were a little lower than Scout. Puget yielded well, significantly higher than Scout. Peas were of medium size grade and the frozen sample contained several pale peas. D 17-608 was semi-leafless with long, stiff staw and remained erect to harvest. Peas were of small/medium size grade and even coloured. Yields were lower than Waverex but not significantly so. WAV 701 had long straw and lodged by harvest. Peas were smaller than Waverex, but they were slightly pale in colour and the frozen sample contained several paler peas. Yields were lower than Waverex.

Alfi matured 10 days after Sprite. Alfi was semi-leafless, long strawed and remained erect to harvest. Peas were as small as Waverex, but yields were lower than Waverex.

The following maincrop varieties matured 11 days after Sprite:

Semi-leafless varieties Karisma and NUN 8872 had very long straw but only lodged slightly by harvest. Yields of Karisma were good, better than Scout and pods were long and contained a large number of peas. Peas were medium size grade and of good even colour but had a poor flavour. Yields of Nun 8875 were low and peas were medium size grade and slightly pale in appearance. WAV 866 yielded a little higher than Waverex and peas of a similar size grade, but the peas were slightly pale and uneven in colour. WAV 866 had long straw, fine foliage and lodged by harvest. Nomad was leafy, long strawed and lodged early. Produce was of medium/large size grade, slightly pale in appearance and uneven in colour with several paler peas in the frozen sample. Yields were significantly lower than Scout at TR 120.

The most promising varieties in trial in terms of field performance and quality were WAV 750, RS 25509, 336 ph 1.5, Bastion and RS 26414. These varieties will be evaluated further in Main Trial in 1991

SCREENING TRIAL, THORNHAUGH - 1990

Twenty six varieties including the standards were entered in trial. Most varieties entered were of USA origin, the rest from Northern Europe. The varieties displayed a wide variation in plant type and habit. There were several early maturing varieties, but few were late maturing. Six varieties were semi-leafless and three of these were also semi-fasciated (Bikini types). Scout yielded well here, particularly at the canning stage.

In the first early maturity group several varieties matured before Sprite. CMG 276F was very early, maturing 5 days before Sprite. The variety had extremely short straw with single pods set at most nodes. Yields were significantly lower than Scout, but a little higher than Sprite. Produce was even coloured and of a similar size grade to Sprite. 89-33, 89-36 and 89-474 matured one day before Sprite. 89-36, was the highest yielding variety in this maturity group. 89-33 and 89-474 were short strawed and 89-36 was a little longer strawed. 89-474 was semi-leafless and remained erect to harvest. 89-36 and 89-474 had medium/large size grade produce, which was slightly pale, but even coloured. Produce of 89-33 was smaller, size grade with slightly pale, uneven coloured peas.

Sprite was significantly lower yielding than Scout and produce was slightly larger. Peas were pale and uneven in colour.

FR 605 matured 2 days after Sprite and yields were similar. The produce was smaller and although a little pale was even coloured. FR 605 set three or four pods per node. Although haulm was not long or heavy, FR 605 lodged.

89-402 matured 3 days after Sprite, and was higher yielding than Scout, but not significantly so. 89-402 had medium length straw and lodged. Peas were a little larger than Scout and dark coloured, but with a few paler peas in the frozen sample.

Maturing 1 day before Scout, FR 774 was semi-leafless, short strawed and had a good erect plant habit. A slight degree of fasciation was also evident. Yields were lower than Scout, significantly so at TR 120, and Produce was medium/small size grade with a good, even colour.

The following varieties matured 6 days after Sprite:

RS 22412 had a good plant habit, with fine foliage and medium length straw and only lodged slightly by harvest. Produce was as small as Waverex, but was more uneven in size with several larger peas in the frozen sample. Peas had a good colour, but were more uneven than those of Waverex. Yields were higher than Waverex, but significantly lower than Scout. BO 4 had dark coloured haulm and long straw similar to Scout, but lodging was less severe. Produce was medium size grade and uneven in colour with several blond peas in the frozen sample. Yields were significantly lower than Scout at TR 120. CMG 261F had short straw, heavy foliage and lodged. Produce, however had a good colour, but with a few pale peas in the frozen sample. Peas were medium/large size grade. WAV 557 was semi-leafless and had a good plant habit, remaining erect to harvest. Yields were lower than Scout, significantly so at the canning stage. Produce had a good, even colour, but was larger than Scout at TR 120.

The following varieties matured 7 days after Sprite:

Scout was long strawed and lodged early. Pea colour was good, but the produce had several pale peas in the frozen sample. UM 1004 was long strawed, like Scout, but lodged less. Produce was a little uneven in colour and medium size grade, smaller than Scout. Yields were lower than Scout, but not significantly so. CMG 281F and CMG 270F both had a good plant habit; semi-leafless, semi-fasciated and remained erect to harvest. CMG 270 was triple podded. Yields of CMG 281F and CMG 270F were excellent and significantly higher than Scout. Produce from both varieties was dark, even coloured and medium/large size grade, slightly smaller than Scout.

XPF 227 and XPF 226 yielded peas that were smaller than Waverex. Produce from both varieties was uneven in colour and several peas from XPF 226 were blemished by PSbMV (subsequent tests showed no seed infection of XPF 226 by

PSbMV). Waverex gave peas with a good even colour. XPF 227 had medium length straw, while XPF 226 was a little longer strawed. Waverex was short strawed. Yields of XPF 227 and XPF 226 were lower than Waverex at TR 100, but differences were not significant. Waverex was one day later in maturity, 8 days after Sprite.

CMG 264F, CAT and 89-95 also matured 8 days after Sprite. CMG 264F was long strawed and leafy like Scout, but lodged less. Yields were very good, significantly higher than Scout at TR 100. Peas were dark but slightly uneven in colour, and smaller than Scout. CAT had heavy, medium length foliage and lodged. Produce as a result was uneven in colour with blond peas in the frozen sample. CAT was lower yielding than Waverex, and peas were small/medium size grade. 89-95 had fine foliage, but lodged. Produce was as small as Waverex at TR 100, but larger at TR 120. Peas were dark, but slightly uneven in colour. Yields were a little higher than Waverex.

Puget, CMG 271F and BO 8 matured 9 days after Sprite. Puget gave high yields of mostly medium size grade peas that were uneven in colour. CMG 271F (like CMG 281F and CMG 270F) was semi-leafless, semi-fasciated and had medium length straw. Peas were dark, even coloured and smaller than Scout at both harvests. Yields were a little lower than Scout. BO 8 was very low yielding, long strawed, heavily foliaged and lodged. Produce was dark but uneven in colour and medium/small size grade.

FR 740 was the latest variety to mature, 10 days after Sprite. Haulm was medium length and foliage not too heavy. Produce was medium size grade with a good even colour. Yields were a little lower than Scout.

The most promising varieties in this trial were:-

CMG 281, CMG 270 and CMG 271 all semi-leafless and semi-fasciated types which may also perform well in wet seasons. CMG 264F also gave very high yields. 89-36 and 89-402 matured as first and second early varieties respectively and were high yielding.

DISEASE RESISTANCE TESTS - 1990

Each variety was sown in soil with a known history of downy mildew; Thornhaugh, Cambridgeshire and Gosberton, Lincolnshire.

Exceptionally dry conditions prevailed throughout the period of the test and there were no infections of downy mildew. No assessments were possible and all varieties will be tested again in 1991.

VINING PEA VARIETY STUDIES. Summary of agronomic data - Summary of Vining Peas Tested 1988 - 90
 Varieties placed in order of maturity. Standard varieties underlined
 Results are means of three replicates. Target population 90 plants per m² sown in ten 15 cm rows

Variety	Source	Seeds /Kg	At Practical Freezing Stage				At Practical Canning Stage				Haulm length as % of total weight	Raw pea colour 1=pale 5=dark					
			Maturity relative to Sprite (± days)	Yield of shelled peas as % Scout @ TR 100	% in size grades L M S VS	Maturity relative to Sprite (± days)	Yield of shelled peas as % Scout @ TR 120	% in size grades L M S VS									
<u>Sprite</u>	<u>As</u>	<u>4635</u>	0	<u>76</u>	39	40	19	2	0	83	48	42	8	2	61	14	4.0
<u>Scout</u>	<u>CM</u>	<u>4826</u>	+ 6	<u>100</u>	42	44	12	2	+ 6	100	56	36	7	1	85	15	5.0
				(6.31t/ha)						(7.12t/ha)							
<u>Waverex</u>	<u>VW</u>	<u>10768</u>	+ 7	<u>71</u>	0	17	43	40	+ 7	74	0	24	50	26	59	13	4.0
<u>Sublima</u>	<u>Sp</u>	<u>7617</u>	+ 7	96	8	48	30	14	+ 7	94	15	56	24	5	63	15	4.0
<u>Asunta</u>	<u>Nun</u>	<u>9323</u>	+ 8	81	0	25	53	22	+ 8	84	1	29	57	13	69	14	4.0
<u>WAV F505 (Ambassador)</u>	<u>VW</u>	<u>5696</u>	+ 9	110	39	49	10	2	+ 9	109	47	45	7	1	79	17	4.0
<u>Puget</u> *	<u>Bro</u>	<u>4352</u>	+10	112	22	56	18	4	+ 9	115	35	54	10	1	58	16	4.0
				SD						SD							
				12.9						21.7							
				7.7						12.7							

* Significantly < Scout @ P = 0.05
 Size grades: L = large > 10.3 mm; M = medium 8.75 mm - 10.3 mm; S = small 7.5 mm - 8.75 mm; VS = very small < 7.5 mm
 * = 2 years data only

VINING PEA VARIETY STUDIES. Summary of agronomic data - Main Variety Trial, Thornhaugh - 1990
 Varieties placed in order of maturity. Standard varieties underlined. All varieties sown on 9th March
 Results are means of three replicates. Target population 90 plants per m² sown in ten 15 cm rows

Variety	Source	Seeds /kg	At Practical Freezing Stage					At Practical Canning Stage					Haulm length cm	Pea wt. as % of total weight	Raw pea colour 1=pale 5=dark		
			Maturity relative to Sprite (± days)	Yield of shelled peas as % Scout	% in size grades L M S VS	Maturity relative to Sprite (± days)	Yield of shelled peas as % Scout	% in size grades L M S VS									
<u>Sprite</u>	<u>As</u>	<u>5091</u>	0(25/6)	<u>57</u>	<u>44</u>	<u>38</u>	<u>16</u>	<u>2</u>	0(28/6)	<u>53</u>	<u>48</u>	<u>40</u>	<u>10</u>	<u>2</u>	<u>49</u>	<u>12</u>	<u>4.0</u>
D 9611	S&G	9494	+ 1	49	1	25	47	27	0	47	1	35	47	17	49	13	4.0
Micro (XPF 224)	(SL) As	11438	+ 5	50	0	8	47	45	+ 4	50	0	15	52	33	54	10	4.0
<u>Scout</u>	<u>CM</u>	<u>5015</u>	+ 6	<u>100</u>	<u>30</u>	<u>53</u>	<u>14</u>	<u>3</u>	+ 6	<u>100</u>	<u>45</u>	<u>47</u>	<u>7</u>	<u>1</u>	<u>65</u>	<u>16</u>	<u>5.0</u>
				(4.78t/ha)						(5.23t/ha)							
<u>Waverex</u>	<u>vW</u>	<u>10636</u>	+ 7	<u>52</u>	0	18	46	36	+ 7	53	0	28	51	21	43	13	4.0
Sublima	Bk	7360	+ 7	96	3	51	33	13	+ 7	98	8	63	25	4	52	16	4.0
Asunta	Nun	9381	+ 7	55	0	25	52	23	+ 7	58	1	30	52	17	51	12	4.0
<u>Puget</u>	<u>Bro</u>	<u>4753</u>	+ 9	<u>104</u>	<u>18</u>	<u>61</u>	<u>17</u>	<u>4</u>	+ 8	<u>113</u>	<u>28</u>	<u>57</u>	<u>12</u>	<u>3</u>	<u>53</u>	<u>17</u>	<u>4.0</u>
Caty	Cl	7825	+ 9	48	1	41	43	15	+ 9	49	2	51	38	9	49	11	4.0
Lynx	MJ	11779	+10	66	0	21	57	22	+ 9	60	0	25	58	17	65	11	3.5
WAV F 505 (Ambassador)vW		5376	+10	100	31	58	9	2	+ 9	102	45	48	6	1	59	20	4.5
876 ph 5.4	Bk	7163	+11	126 ⁺	8	61	26	5	+10	131 ⁺	10	69	18	3	67	20	4.5
Significance @ P = 0.05				SD													
LSD @ P = 0.05				16.8													
CV %				13.2													

+ Significantly > Scout @ P = 0.05; - Significantly < Scout @ P = 0.05
 Size grades: L = large > 10.3 mm; M = medium 8.75 mm - 10.3 mm; S = small 7.5 mm - 8.75 mm; VS = very small < 7.5 mm
 (SL) = Semi-leafless

VINING PEA VARIETY STUDIES. Summary of agronomic data - Preliminary Variety Trial, Thornhaugh - 1990
 Varieties placed in order of maturity. Standard varieties underlined. All varieties sown on 20th March
 Results are means of three replicates. Target population 90 plants per m² sown in ten 15 cm rows

Variety	Source	Seeds /kg	At Practical Freezing Stage				At Practical Canning Stage				Raw pea colour 1=pale 5=dark
			Maturity relative to Sprite (± days)	Yield of shelled peas as % Scout @ TR 100	% in size grades L M S VS	Maturity relative to Sprite (± days)	Yield of shelled peas as % Scout @ TR 120	% in size grades L M S VS	Haulm length cm	Pea wt. total weight	
WAV 750	vW	4458	- 2	67	11 45 33 11	- 3	68	13 54 27 6	52	18	4.5
WAV 789	vW	4044	- 2	68	27 39 28 6	- 2	67	25 58 15 2	52	17	4.5
RS 25509	RS	6479	- 1	59	8 46 36 10	- 2	57	12 60 25 3	49	15	4.5
WAV 706	vW	4758	- 1	42	7 46 35 12	- 1	38	10 63 24 3	57	11	4.0
Daybreak	Rog	4767	- 1	62	29 55 14 2	- 1	66	45 45 9 1	56	17	4.0
Sprite	AS	5091	+ 1	60	25 55 18 2	0(1/7)	60	41 47 11 1	51	13	4.0
VSB 4647	Bk	6209	+ 1	56	11 51 30 8	+ 1	58	24 57 16 3	53	14	4.5
Ohmasa	AT	3790	+ 2	79	23 55 19 3	+ 3	72	48 47 4 1	53	16	4.0
Komasa	AT	4160	+ 2	64	24 52 20 4	+ 3	83	49 44 6 1	51	15	4.5
Mure	Sch	6396	+ 4	55	6 60 28 6	+ 4	64	10 72 16 2	40	13	4.5
336 PH 1.5	Bk	6172	+ 4	96	8 55 30 7	+ 4	108	13 68 17 2	64	17	4.0
BO 5	Sch	5546	+ 4	75	48 39 11 2	+ 4	94	59 35 5 1	60	18	5.0
WAV 571	vW	7301	+ 4	58	0 29 52 19	+ 4	53	0 33 57 10	60	11	4.0
Sunroy (RS 2270)	RS	6013	+ 5	56	1 44 42 13	+ 4	51	2 59 31 8	58	11	4.5
Waverex	vW	10636	+ 6	50	0 22 48 30	+ 6	47	1 33 43 23	43	14	4.0
Scout	CM	5015	+ 7	100	41 45 12 2	+ 6	100	54 36 8 2	65	18	5.0
				(5.98t/ha)			(6.56t/ha)				
Nun 6310 (Aurigo)	Nun	9216	+ 7	64	0 22 51 27	+ 6	75	0 27 58 15	60	15	4.0
WAV 504	vW	5371	+ 7	91	39 54 6 1	+ 6	89	43 52 4 1	54	19	4.5
Nun 6313 (Bastion)	Nun	8259	+ 7	90	1 26 56 17	+ 7	88	1 39 52 8	68	14	4.0
BO 3	Sch	6444	+ 7	115	27 50 17 6	+ 7	120	38 49 11 2	65	20	4.0
BL 79-131 (SL)	Bl	6013	+ 8	81	10 61 25 4	+ 7	82	11 70 17 2	65	17	4.5

Continued/.....

VINING PEA VARIETY STUDIES. Summary of agronomic data - Preliminary Variety Trial, Thornhaugh - 1990
 Varieties placed in order of maturity. Standard varieties underlined. All varieties sown on 20th March
 Results are means of three replicates. Target population 90 plants per m² sown in ten 15 cm rows

Variety	Source	Seeds /kg	At Practical Freezing Stage				At Practical Canning Stage				Raw pea colour 1=pale 5=dark
			Maturity relative to Sprite (± days)	Yield of shelled peas as % Scout @ TR 100	% in size grades L M S VS	Maturity relative to Sprite (± days)	Yield of shelled peas as % Scout @ TR 120	% in size grades L M S VS	Haulm length as % of total weight		
RS 26414	RS	7388	+ 9	97	3 50 37 10	+ 8	94	6 69 22 3	16	4.5	
<u>Puget</u>	<u>Bro</u>	<u>4753</u>	+ 9	<u>127</u> ⁺	<u>18 60 18 4</u>	+ 8	<u>148</u> ⁺	<u>33 53 11 3</u>	<u>21</u>	<u>4.0</u>	
D 17-608	(SL) S&G	9975	+ 9	45 ⁻	1 35 44 20	+ 8	49 ⁻	2 38 44 16	12	4.0	
WAV 701	vW	10290	+ 9	40 ⁻	0 6 32 62	+ 9	43 ⁻	0 11 41 48	9	4.0	
Alfi (Diva)	(SL) As	10934	+10	34 ⁻	0 20 46 34	+10	36 ⁻	1 36 46 17	9	4.0	
Karisma (XPF 214)	(SL) As	6430	+11	106	21 66 12 1	+10	112	34 59 6 1	19	4.0	
WAV 866	vW	8388	+11	57 ⁻	0 19 51 30	+11	54 ⁻	1 33 51 15	9	4.0	
Nun 8872	(SL) Nun	4926	+11	72 ⁻	21 56 20 3	+11	73 ⁻	37 51 10 2	12	4.0	
Nomad	Rog	4551	+11	92	25 58 15 2	+11	84 ⁻	39 49 10 2	14	4.0	
Significance @ P = 0.05				SD			SD				
LSD @ P = 0.05				16.7			15.0				
CV %				16.9			14.6				

⁺ Significantly > Scout @ P = 0.05; ⁻ Significantly < Scout @ P = 0.05
 Size grades: L = large > 10.3 mm; M = medium 8.75 mm - 10.3 mm; S = small 7.5 mm - 8.75 mm; VS = very small < 7.5 mm
 (SL) = semi-leafless

VINING PEA VARIETY STUDIES. Summary of agronomic data - Screening Variety Trial, Thornhaugh - 1990
 Varieties placed in order of maturity. Standard varieties underlined. All varieties sown on 19th April
 Results are means of two replicates. Target population 90 plants per m² sown in ten 15 cm rows

Variety	Source	Seeds /kg	At Practical Freezing Stage					At Practical Canning Stage					Haulm length cm	Pea wt. as % of total weight	Raw pea colour 1=pale 5=dark
			Maturity relative to Sprite (± days)	Yield of shelled peas as % Scout	% in size grades L M S VS	Maturity relative to Sprite (± days)	Yield of shelled peas as % Scout	% in size grades L M S VS							
CMG 276F	CM	3967	- 5	69	35 48 14 3	- 5	64	67 26 6 1	39	18	4.5				
89-33	PLS	6345	- 1	79	12 54 27 7	- 1	71	18 59 18 5	47	16	4.0				
89-36	PLS	4877	- 1	102	32 53 13 2	- 1	84	49 42 8 1	59	18	4.5				
89-474	(SL) PLS	4637	- 1	59	40 49 9 2	- 1	50	52 41 6 1	48	16	4.5				
Sprite	As	5091	+ 2	66	36 44 16 4	0(9/7)	55	49 40 9 2	54	13	4.0				
FR 605	Bro	5447	+ 3	63	20 56 21 3	+ 2	52	31 53 14 2	58	13	4.0				
89-402	PLS	4605	+ 3	120	35 51 12 2	+ 3	103	52 41 6 1	61	22	4.5				
FR 774	(SL) Bro	4725	+ 5	76	8 46 35 11	+ 5	65	12 52 29 7	50	17	4.0				
RS 22412	RS	8809	+ 6	70	1 13 38 48	+ 5	65	1 18 44 37	64	16	4.5				
BO 4	Sch	7942	+ 6	86	16 53 26 5	+ 6	71	19 55 23 3	71	17	4.0				
CMG 261F	CM	4899	+ 6	98	23 59 15 3	+ 6	81	38 54 7 1	49	17	4.5				
WAV 557	(SL) vW	4032	+ 6	81	27 52 18 3	+ 6	67	48 44 7 1	62	16	5.0				
Scout	CM	5015	+ 7	100	31 52 15 2	+ 7	100	34 55 10 1	71	19	5.0				
UM 1004	PS	6964	+ 7	95	11 58 26 5	+ 7	78	17 63 17 3	70	17	4.0				
CMG 281F	(SF/SL) CM	4712	+ 7	130	26 60 13 1	+ 7	111	33 60 6 1	55	23	5.0				
XPF 227	As	10818	+ 7	54	0 7 39 54	+ 7	54	0 17 50 33	59	13	4.0				
CMG 270F	(SF/SL) CM	4416	+ 7	139	24 62 13 1	+ 7	125	36 61 3 0	54	22	5.0				
XPF 226	As	9120	+ 7	47	0 5 40 55	+ 7	39	0 6 33 61	67	9	4.0				
CMG 264F	CM	5048	+ 8	134	13 70 15 2	+ 8	113	17 73 9 1	72	24	4.5				
Waverex	vW	10636	+ 8	61	0 18 48 34	+ 8	51	0 14 76 10	49	20	4.0				
CAT	Sch	6455	+ 8	52	2 29 48 21	+ 8	48	3 45 42 10	61	11	4.0				
89-95	PLS	6860	+ 8	70	0 15 54 31	+ 8	60	1 35 50 14	66	16	5.0				
Puget	Bro	4753	+ 9	117	12 58 24 6	+ 8	105	16 63 18 3	58	21	4.0				
CMG 271F	(SF/SL) CM	4943	+ 9	93	21 63 15 1	+ 8	77	29 66 5 0	50	18	5.0				
BO 8	Sch	7150	+ 9	37	3 43 41 13	+ 9	41	6 58 31 5	72	9	4.5				
FR 740	Bro	4485	+10	92	13 67 18 2	+10	87	15 73 10 2	65	18	4.5				

Significance @ P = 0.05 SD 23.3
 LSD @ P = 0.05 16.4
 CV %

† Significantly > Scout @ P = 0.05; - Significantly < Scout @ P = 0.05
 Size grades: L = large > 10.3 mm; M = medium 8.75 mm - 10.3 mm; S = small 7.5 mm - 8.75 mm; VS = very small < 7.5 mm
 (SL) = semi-leafless; (SF) = semi-fasciated

COMBINING PEAS

TRIALS IN 1990

In 1990 there was a large variety trials programme, consisting of six replicated trials. A high proportion of the varieties were semi-leafless and a significant number were tare-leaved. The control varieties this year were Countess, Solara and Orb and their mean yield was used as the yield control in the trials. Maturities were related to Countess. The human consumption quality standards were marrowfat Maro and small blue Conquest.

The Screening, Preliminary and one of the Recommended List (RL) Trials were carried out at Thornhaugh on a sandy loam soil type. The other PGRO RL trial sites were at Chatteris, Cambs on a peaty loam and at Caythorpe, Lincs on a sandy clay loam. The RL trials form part of the NIAB/PGRO co-ordinated series of trials, from which the Recommended List is produced. Varieties in these trials are either fully or provisionally recommended or are candidates for the Recommended List jointly selected from the most promising registered varieties. Six varieties were in the RLO category, where extra data is sought before being put forward for full Recommended List evaluation. Varieties in the Preliminary Trial are at National List Stage of testing. Breeders material at an earlier stage of development is evaluated in the Screening Trial.

Seed for the three RL trials was treated to control damping off diseases and *Ascochyta*. Seed for the remaining trials was additionally treated to control downy mildew. Trials were drilled during the period 6th to the 15th March.

At Thornhaugh, drilling conditions were far from ideal and seedbeds were dry and cloddy, but there were few seedbed losses in the mild spring and emergence was satisfactory. Early growth was good and haulm lengths were similar to 1989. Disease levels were negligible, but aphid (*Acyrtosiphon pisum*) and pea moth (*Cydia nigricana*) were a problem later in the season. Isolated areas of peas affected by pea enation mosaic virus (PEMV) were seen in the Thornhaugh trials.

At Chatteris seedbed conditions were dry, but subsequent growth was very vigorous and the varieties withstood the drought better on this moisture retentive soil than at the other sites. Haulm was very long and most varieties lodged to some extent. Aphids and pea moth were controlled. Downy mildew (*Peronospora viciae*) was present at low levels in the trial. At harvest some late maturing varieties showed symptoms of powdery mildew (*Erysiphe pisi*) which delayed maturity slightly.

Drilling conditions at Caythorpe were good and emergence was more even. Growth at this site was much less vigorous and haulm was particularly short so few varieties lodged. Again control of aphids and pea moth was necessary.

The hot, dry weather advanced maturity and varieties were combined under ideal conditions, during the period 20th July to 9th August. Maturity was uneven for some varieties however, with stems and occasional pods remaining green particularly at the top of the plants.

Produce quality was good this season, with negligible levels of staining and *Botrytis* and these were not recorded. The marrowfats and small blues were rather bleached and there was a high percentage of "non-soakers" as a result of exceptionally dry harvest conditions. All small blue and marrowfat varieties were canned to assess quality for human consumption. Samples were evaluated by a panel from the British Edible Pulse Association and by individual canning companies.

RECOMMENDED LIST TRIAL, THORNHAUGH - 1990 (NIAB/PGRO)

Yields were higher than in 1989 and growth was a little more vigorous despite the very dry conditions. The trial was located on an area where the soil was more moisture retentive than the rest of the trial ground. In the hot dry conditions the peas matured early and maturity differences between varieties were less than usual.

Samples of the small blue and marrowfat varieties for processing were obtained from the Chatteris trial this year, since the produce was free from damage by pea moth.

Small blue seeded peas, Mascot, Conquest and Helka were significantly lower yielding than the mean of the control varieties. Mascot significantly outyielded Conquest and has potential for canning for human consumption. Echo and Orb gave similar yields to the control. Echo and Orb were semi-leafless and showed excellent standing ability and ease of harvest. Echo was a little longer strawed than Orb. Helka, also semi-leafless showed inferior standing ability, but was also relatively easy to harvest. Conquest the longest strawed variety in this group, was typically weak strawed and lodged early and lodging was severe by harvest. Harvesting was therefore difficult. Tare-leaved Mascot also lodged, but not as early, nor as severely as Conquest. Mascot was the earliest small blue variety to mature, but only five days before Countess. Orb and Conquest matured only 4 and 3 days respectively before Countess this year. Helka matured at the same time as Conquest.

Both large blue seeded varieties, Solara and Arena were semi-leafless, stood well and were easy to harvest. Solara had short straw, while Arena had long straw. Solara yielded a little lower than the mean of the control varieties and Arena a little higher. Solara matured 3 days before Countess and Arena 2 days before. Produce of Arena was much smaller seeded than that of Solara.

Most varieties in trial were white seeded. Bohatyr, Rex and Celeste were conventional-leaved, the remainder of the white peas were semi-leafless. Bohatyr and Rex were very long strawed, and as in 1989 they did not exhibit their usual "elbow" growth characteristic. However, both varieties lodged late, but not severely and they were not difficult to combine. Celeste stood well and was almost erect at harvest. All the semi-leafless white peas stood well and were easy to harvest, but as in previous years Leo had slightly inferior standing ability to the other semi-leafless peas. Mary had short straw, like Solara, Baroness and Countess were long strawed, and the remaining varieties in this group had medium length straw. Several varieties in this group were significantly higher yielding than the mean of the control varieties. Baroness was the highest yielding of these, closely followed by Leo, Celeste and Tivoli. Yields of Countess and Bohatyr were a little higher than the mean of the controls. Yields for Mary and Renata were a little lower than the mean of the controls and Anno was the lowest yielding of the white seeded peas. Yield results for Rex have been omitted since irrigation spray drift from an adjacent field affected two plots of Rex on one side of the trial. Renata and Celeste were the earliest maturing in this group, 4 days before Countess. Leo, Tivoli and Anno were three days earlier, Bohatyr, Rex and Mary were two days earlier and finally Baroness was one day earlier than Countess. Countess had the largest seed size in this group and Anno the smallest.

Princess was late to mature this year together with Maro and Guido, 2 days later than Countess. Progreta matured at the same time as Countess and Bunting one day earlier. All the marrowfat varieties yielded higher than the mean of the control varieties. Progreta was the highest yielding

variety in the trial and together with Guido was significantly higher yielding than the controls. Yields of Bunting, Maro and Princess were similar. Semi-leafless Princess showed excellent standing ability and ease of harvesting. Tare-leaved Progreta was also easy to harvest. Maro was longer strawed than Guido in this trial and showed better standing ability and ease of harvesting. Bunting and Guido both lodged but neither variety was too difficult to harvest. Produce of Guido was larger than that of either Maro or Bunting. Produce from Princess and Progreta was much smaller than Maro.

RECOMMENDED LIST TRIAL, CHATTERIS - 1990 (NIAB/PGRO)

Growth at this site was very vigorous and highlighted varietal differences in straw lengths and lodging, although usual associated problems with foliage rotting and staining of the produce were not encountered because the weather was dry at harvest. Due to the bulk of haulm and lodging, harvesting was not as easy as at the two other RL sites. The mean yield of the control varieties was extremely high 8.36 t/ha and some varieties outyielded this figure. Maturity differences were greater than at the other two sites, but still not as great as in previous years.

Produce quality was excellent and samples of the small blue and marrowfat varieties were processed and canned. Selected varieties were additionally canned without colour additive.

The yields of the small blue varieties showed a similar trend to the Thornhaugh site. Helka, Mascot and Conquest were significantly lower yielding than the mean of the control varieties. Mascot gave significantly higher yields than Conquest. Semi-leafless varieties Echo and Orb yielded a little lower than the mean of the controls. Echo had longer straw than Orb but slightly better standing ability and ease of harvesting. Helka, also semi-leafless stood as well as Echo at this site. Conquest was the longest strawed variety in this group and showed similar standing ability to Mascot. Conquest lodged earlier than Mascot, but Mascot was perhaps a little easier to harvest because it is tare-leaved. Mascot, (as at Thornhaugh), was the earliest to mature in this group, 8 days before Countess. Orb matured earlier than at Thornhaugh, 7 days before Countess. Conquest was 4 days earlier and Echo 2 days earlier than Countess. Helka was late maturing at this site, the same as Countess. Orb, Helka and Echo had very poor canning quality, and samples showed a high degree of breakdown of the peas. They were also larger seeded than the standard small blue Conquest. Conquest and Mascot canned well and Mascot was as small seeded as Conquest this year.

Both large blue seeded varieties Solara and Arena were semi-leafless. Solara was relatively short strawed and Arena long strawed. Solara stood well and was easy to harvest. Arena lodged, but not severely and harvesting was a little more difficult. Yields showed a similar trend to the Thornhaugh site; Solara was a little lower yielding than the control and Arena similar to the control. Solara matured 4 days before Countess and Arena was later maturing, the same as Countess. As at Thornhaugh produce from Solara was much larger seeded than that of Arena.

Anno was the earliest of the white seeded peas to mature, 9 days before Countess. Tivoli, Rex, Renata and Celeste were all 5 days earlier than the standard. Mary and Leo were 4 days earlier and Baroness 3 days earlier than Countess. Bohatyr, Rex and Celeste were conventional-leaved with similar plant habit. Rex was a little longer strawed than Bohatyr and both were very long strawed, Celeste had medium length straw. These varieties showed their "elbow" growth characteristic at this site. Bohatyr stood and harvested marginally better than Rex. The other white seeded varieties

were semi-leafless. Leo, Baroness and Countess all had long straw, but stood reasonably well and were relatively easy to harvest. Baroness had better standing ability than Leo or Countess. Mary and Renata had short straw. Mary stood slightly better than Renata but both lodged more than Countess. Anno and Tivoli had medium length straw. Anno stood as well as Countess, while Tivoli lodged a little more. Baroness was the highest yielding variety in the trial, and Countess and Celeste also yielded significantly higher than the mean of the control varieties. Rex, Renata, Mary and Leo yielded similar to, or slightly higher than the mean of the controls, but here Tivoli (unlike at Thornhaugh) was significantly lower yielding. Countess had the largest seed size in this group and Anno the smallest.

Progreta was earlier maturing at this site, 3 days before Countess. Bunting and Princess matured one day before the standard. Maro matured at the same time as Countess and Guido one day later. In contrast to the Thornhaugh site Guido was longer strawed than Maro. Princess and Bunting had similar length straw, while Progreta was shorter strawed. Maro, Guido and Bunting lodged and were not as easy to harvest as tare-leaved Progreta, which stood slightly better. Semi-leafless Princess stood well and was easy to harvest. Yields of Progreta were significantly higher than the mean of the control varieties. Yields of Maro and Bunting were slightly higher than the controls and Princess a little higher than these. In contrast to Thornhaugh, Guido was slightly but not significantly lower yielding than the controls and Maro. Progreta, Maro, Bunting and Guido all gave good canned samples, with little breakdown of the peas. Although Princess showed a higher level breakdown of the peas than the other varieties, it was a better sample than seen in previous years. Produce from Guido was larger than that of Maro or Bunting. Produce from Princess and Progreta was much smaller by comparison.

RECOMMENDED LIST TRIAL, CAYTHORPE - 1990 (NIAB/PGRO)

The mean yield of the standard varieties of 4.11 t/ha was the lowest of the three RL sites. Growth was not as vigorous as at Thornhaugh. Some of the longer strawed varieties seemed to be affected more by drought than others in terms of yield. Short straw and less vigorous growth meant few varieties lodged and harvesting was generally easy.

Mascot, Orb and Echo were higher yielding than the mean of the control varieties, Mascot significantly so; yields of Helka were similar. Although Conquest was lower yielding than the mean of the controls, yields were much higher than at either the Thornhaugh or Chatteris sites. Conquest had long haulm, was typically weak strawed, lodged early and lodging was severe by harvest. Tare-leaved Mascot stood better here and was fairly easy to harvest. Helka, Orb and Echo stood well and were also easy to harvest, particularly Echo.

Semi-leafless large blue varieties Solara and Arena stood well at this site and were easily harvested. Solara had short straw and Arena had longer straw. Yields of Solara were lower than the mean of the controls, but Arena was very low yielding in contrast to the other two RL sites. Solara matured 4 days before Countess and Arena one day before.

As at the Chatteris site Anno was the earliest of the white seeded peas to mature, 7 days before Countess. At this site, Bohatyr, Rex and Leo matured at the same time as Countess. Rex had longer straw than Bohatyr at this site and both were relatively long strawed. Celeste was shorter strawed. Rex, Bohatyr and Celeste did not lodge at this site and were easy to harvest. The semi-leafless white seeded peas Anno, Mary, Renata, Baroness, Tivoli, Leo and Countess all stood well and were easy to harvest. Mary

had very short straw, and so did Solara. Yields of Baroness were very high in this trial, significantly higher than the mean of the control varieties. In contrast to the Thornhaugh and Chatteris sites Bohatyr, Rex and Celeste were very low yielding as was Anno. Seed size of produce from Countess was the largest in this group and Anno was the smallest.

Yields of Progreta and Guido were significantly higher than the mean of the control varieties. Princess, however, was significantly lower yielding in contrast to the other two RL sites. Progreta and Princess stood well and were easy to harvest. Guido lodged more, but was not too difficult to harvest. Progreta matured one day before Countess, while Guido and Princess matured at the same time as the standard.

PRELIMINARY TRIAL, THORNHAUGH - 1990

Twenty one varieties most at the National List stage of testing were evaluated; 12 were semi-leafless and 3 were tare-leaved. While the preliminary trial is not an official National List site, it contains many of the varieties entered into the official trials system and provides a useful "shop window". Varieties were assessed for suitability for canning.

All varieties unless otherwise stated showed good standing ability and ease of harvest.

Orb was the only small blue-seeded variety in the trial. Yields were good, equal to the mean of the control varieties. Maturity was later than in previous years trials. It suffered from delayed maturity due to green stems and pods.

Montego was the earliest of the large blue seeded peas to mature, 6 days before Countess. Montego was conventional-leaved and plants were short like Solara. Yields were similar to the mean of the controls. Tagora (CEB 1121) and Favorit (CEB 1122) matured 4 and 2 days respectively before Countess. As in the 1989 trial, Favorit outyielded Tagora which was significantly lower yielding than the mean of the control varieties. Haulm was similar in length to Solara for both varieties. Ascona, Solara and 721/803 were semi-leafless and matured 2 days before Countess. Yields of Ascona were significantly lower than the control, while 721/803 was significantly higher. Ascona had similar plant habit and straw length to Solara and 721/803 had slightly longer straw. Standing ability of 721/803 was inferior to that of Solara but it was still relatively easy to harvest. Atol was the latest of the large blues to mature, one day later than Countess. Atol was conventional-leaved with short straw but plants lodged early and lodging was severe by harvest. Yields were significantly lower than the control.

Several varieties were white seeded. 4-9549 and Montana were the earliest maturing in this group, 5 days before Countess. Semi-leafless Montana stood well, while conventional-leaved 4-9549 had inferior standing ability and ease of harvest compared with other varieties in this group. Montano had short straw. 4-9549 had a larger seed size than Countess. 4-9033, MF 89-2 and Messire matured 2 days before Countess. 4-9033 had conventional leaftype with straw a little longer than Solara. Yields were the highest in the trial. MF 89-2 was very long strawed, but stood very well in this dry season and was easy to harvest. Yields, however, were lower. Tare-leaved Messire had medium length straw and showed excellent harvestability. Yields were significantly higher than the mean of the control varieties. Maturing one day before Countess 4-9002 was also tare-leaved with medium length haulm. 4-9056, a semi-leafless erect variety of similar maturity as Countess yielded significantly better than the mean of the control varieties. 4-4009 was also semi-leafless with long straw but yields were lower.

Jaygee was semi-leafless and coloured flowered. It had long weak straw and lodged early. Yields of Jaygee were good.

The three marrowfat types all gave similar yields to the mean of the control varieties, Maro yields were slightly but not significantly higher. Marrowfats Maro and Promar matured at the same time as Countess. Standing ability of Maro was average and better than in previous years. Tare-leaved Promar had relatively short straw and stood well. Semi-leafless Fantasia (871-3) matured later, a day after Countess. It was long strawed, but stood well this year. The canned produce from Maro showed a little breakdown of the peas. Fantasia was slightly smaller than Maro but there was very little breakdown of the peas. Promar also canned well like Fantasia, but the peas were much smaller than those of Maro.

SCREENING TRIAL, THORNHAUGH - 1990

Eighteen varieties at an early stage of evaluation were tested. Six varieties were conventional-leaved, one was tare-leaved and the remainder were semi-leafless. As in 1989 a significant number of new marrowfat varieties were entered.

PZ 2 was the earliest maturing small blue variety, 7 days before Countess, followed by Orb and PC 2, 6 days earlier. All three varieties were semi-leafless. PC 2 and PZ 2 were longer strawed than Orb, which was noticeably shorter in this trial, but while Orb and PZ 2 showed good standing ability PC 2 lodged earlier and standing ability was inferior. Orb yielded well, but PC 2 was significantly lower yielding than the mean of control varieties. The small blue varieties were canned and compared to Conquest which was grown in a discard area sown at the same time. Conquest canned well showing little breakdown of the peas. Canned produce of PZ 2 was larger size than Conquest, PC 2 was of similar size, but both showed a higher level of breakdown than Conquest. Orb also showed a high degree of breakdown.

Solara was later maturing in this trial, one day before Countess and had short straw. PW 832 was semi-leafless and was also short strawed. Yields were significantly lower than the mean of the control varieties.

Countess and PW 834 were the only two semi-leafless white seeded peas in the trial, the remainder were conventional-leaved.

XA1 08 AA and Conf 2 matured 2 days before Countess. Both had medium length straw and showed poor standing ability. XA1 08 AA was white seeded with dimpled grain and a black hilum. PW 830 and Conf 1 matured at the same time as Countess, while PW 834 was 2 days later in maturity. PW 830 was short strawed and showed poor standing ability. Conf 1 was a little longer strawed and stood well. PW 834, semi-leafless, had longer straw than Countess and both also stood well. PW 834 gave significantly lower yields than the mean of the control varieties. Countess yielded slightly higher than the mean of the control varieties, while PW 830 and Conf 1 were a little lower yielding.

Several new marrowfat varieties were entered this year and with the exception of XAF 06 AT all were relatively large seeded.

OU 2/3 was the earliest maturing in this group 2 days before Countess, and 152 was the latest, 2 days later than Countess. Maro and 4-9013 were conventional-leaved and both showed inferior standing ability to the other varieties in this group. 4-9049 was tare-leaved, the remaining varieties OU 2/3, 871-8, XAF 06 AT and 152 were semi-leafless. OU 2/3 and XAF 06 AT were very long strawed. 4-9013 and 152 were significantly lower yielding

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than the mean of the control varieties. Maro gave similar yields to the control and 4-9013 and 871-8 were higher yielding. Yields of OU 2/3 and XAF 06 AT were significantly higher than the control. XAF 06 AT was a mixture of plant types, some semi-leafless and varying degrees of leafless peas and peas were a mixture of round and dimpled seeds. Maro, OU 2/3, 4-9013, 871-8 and 4-9049 all canned very well. Canned produce of OU 2/3 and 871-8 was slightly larger than that of Maro and that of 4-9013 was of a similar size. Produce of 4-9049 was smaller than Maro. Produce of 152 and XAF 06 AT was much smaller than that of Maro, and neither had good canning quality, XAF 06 AT was very poor.

COMBINING PEA VARIETY STUDIES. Summary of agronomic data - Recommended List Variety Trial, Thornhaugh - 1990
 Standard varieties underlined. Control varieties for yield; Countess, Solara and Orb
 All varieties sown on 6th March. Results are means of three replicates

Variety	Source	Seed 1000 grain weight(g)	Maturity days (±) Countess	Yield % of Control @ 15% MC	Straw length (cm)	Standing ability 9=erect 1=lodged	Ease of harvest 9=easy 1=difficult	1000 grain weight (g)
SMALL BLUES: Target population 95 plants/m²								
Mascot (AA)	(TL) PBI	174	- 5	93 ⁻	53	2	3	205
Echo	(SL) Ni	230	- 4	99	59	8	8	214
<u>Conquest</u>	<u>Bk</u>	<u>136</u>	- 4	<u>78⁻</u>	<u>62</u>	<u>1</u>	<u>2</u>	<u>198</u>
Helka	(SL) Ni	194	- 4	92 ⁻	57	6	7	221
<u>Orb</u>	<u>Bk</u>	<u>238</u>	- 3	<u>99</u>	<u>51</u>	<u>8</u>	<u>8</u>	<u>224</u>
LARGE BLUES: Target population 70 plants/m²								
<u>Solara</u>	<u>(SL) D</u>	<u>272</u>	- 3	<u>97</u>	<u>47</u>	<u>7</u>	<u>8</u>	<u>309</u>
Arena (NRPB 621)	(SL) Ni	246	- 2	101	70	8	8	232
WHITES: Target population 70 plants/m²								
Renata	(SL) FSF	274	- 4	96	56	7	8	269
Celeste (NRPB 640)	(SL) Ni	259	- 4	110 ⁺	58	7	8	247
Leo	(SL) D	236	- 3	113 ⁺	73	6	8	238
Tivoli (LD 8907)	(SL) ICI	301	- 3	109 ⁺	65	7	8	262
Anno	(SL) ICI	252	- 3	94	56	8	8	229
Bohatyr	(SL) Ni	236	- 2	104	81	4	7	259
Rex	(SL) Ni	278	- 2	*	83	5	7	273
Mary (PAJ 4-0241)	(SL) Ni	317	- 2	97	47	7	7	308
Baroness	(SL) Bk	323	- 1	115 ⁺	65	7	7	296
<u>Countess</u>	<u>(SL) Bk</u>	<u>363</u>	0	<u>104</u>	<u>66</u>	<u>7</u>	<u>7</u>	<u>327</u>
MARROWFATS: Target population 65 plants/m²								
Bunting	(TL) Bat	374	- 1	104	54	3	4	348
Progreta	(TL) Prog	286	0	116 ⁺	60	7	8	301
<u>Maro</u>	<u>GA</u>	<u>338</u>	+ 2	<u>106</u>	<u>69</u>	<u>6</u>	<u>7</u>	<u>334</u>
Princess	(SL) Bk	309	+ 2	105	61	8	8	310
Guido	(SL) SI	395	+ 2	109 ⁺	55	3	6	385
Mean yield of control varieties t/ha								
Significance @ P = 0.05								
LSD @ P = 0.05								
CV %								

* Significantly > control @ P = 0.05; - Significantly < control @ P = 0.05
 (SL) = semi-leafless; (TL) = tare-leaved; * Data not analysed - irrigation drift

COMBINING PEA VARIETY STUDIES. Summary of agronomic data - Recommended List Variety Trial, Chatteris - 1990
 Standard varieties underlined. Control varieties for yield; Countess, Solara and Orb
 All varieties sown on 8th March. Results are means of three replicates

Variety	Source	Seed 1000 grain weight(g)	Maturity days (±)Countess	Yield % of Control @ 15% MC	Straw length (cm)	Standing ability 9=erect 1=lodged	Ease of harvest 9=easy 1=difficult	1000 grain weight (g)
SMALL BLUES: Target population 95 plants/m²								
Mascot (AA)	(TL) PBI	174	- 8	92 ⁻	77	2	3	219
Orb	(SL) <u>Bk</u>	<u>238</u>	- 7	<u>96</u>	<u>81</u>	<u>3</u>	<u>5</u>	<u>245</u>
Conquest	(SL) <u>Bk</u>	<u>136</u>	- 4	<u>72⁻</u>	<u>93</u>	<u>2</u>	<u>3</u>	<u>218</u>
Echo	(SL) Ni	230	- 2	99	<u>92</u>	4	6	248
Helka	(SL) Ni	194	0	91 ⁻	88	4	6	231
LARGE BLUES: Target population 70 plants/m²								
Solara	(SL) <u>D</u>	<u>272</u>	- 4	97	<u>68</u>	<u>7</u>	<u>8</u>	<u>318</u>
Arena (NRPB 621)	(SL) Ni	246	0	100	93	4	5	268
WHITES: Target population 70 plants/m²								
Anno	(SL) ICI	252	- 9	97	82	5	6	262
Tivoli (LD 8907)	(SL) ICI	301	- 5	92 ⁻	84	4	6	270
Rex	(SL) Ni	278	- 5	103	101	3	5	283
Renata	(SL) FSF	274	- 5	100	71	3	5	302
Bohatyr	(SL) Ni	236	- 5	96	98	4	6	275
Celeste (NRPB 640)	(SL) Ni	259	- 5	108 ⁺	87	3	5	264
Mary (PAJ 4-0241)	(SL) Ni	317	- 4	104	72	4	6	350
Leo	(SL) D	236	- 4	101	95	5	6	235
Baroness	(SL) Bk	323	- 3	116 ⁺	96	6	7	309
Countess	(SL) <u>Bk</u>	<u>363</u>	0(8/8)	<u>107⁺</u>	<u>100</u>	<u>5</u>	<u>6</u>	<u>349</u>
MAROFATS: Target population 65 plants/m²								
Progreta	(TL) Prog	286	- 3	111 ⁺	85	3	5	333
Bunting	(SL) Bat	374	- 1	102	95	2	4	374
Princess	(SL) Bk	309	- 1	106	96	6	7	330
Maro	(SL) GA	<u>338</u>	0	102	<u>82</u>	<u>2</u>	<u>4</u>	<u>366</u>
Guido	(SL) SI	395	+ 1	98	96	2	4	394
Mean yield of control varieties t/ha								
Significance @ P = 0.05								
LSD @ P = 0.05								
CV %								

† Significantly > control @ P = 0.05; - Significantly < control @ P = 0.05
 (SL) = semi-leafless; (TL) = tare-leaved

COMBINING PEA VARIETY STUDIES. Summary of agronomic data - Recommended List variety Trial, Caythorpe - 1990
 Standard varieties underlined. Control varieties for yield; Countess, Solara and Orb
 All varieties sown on 7th March. Results are means of three replicates

Variety	Source	Seed 1000 grain weight(g)	Maturity days (±)Countess	Yield % of Control @ 15% MC	Straw length (cm)	Standing ability 9=erect 1=lodged	Ease of harvest 9=easy 1=difficult	1000 grain weight (g)
SMALL BLUES: Target population 95 plants/m²								
Mascot (AA)	(TL) PBI	174	- 7	114 ⁺	55	5	7	198
Orb	(SL) Bk	238	- 6	110	55	7	8	202
Echo	(SL) Ni	230	- 6	109	59	8	8	217
Helka	(SL) Ni	194	- 5	99	57	7	7	206
Conguest	Bk	136	- 4	92	67	1	2	192
LARGE BLUES: Target population 70 plants/m²								
Solara	(SL) D	272	- 4	91	42	7	7	276
Arena	(SL) Ni	246	- 1	52 ⁻	58	7	8	234
WHITES: Target population 70 plants/m²								
Anno	(SL) ICI	252	- 7	65 ⁻	61	7	7	197
Mary (PAJ 4-0241)	(SL) Ni	317	- 5	105	40	7	7	299
Renata	(SL) FSF	274	- 5	92	52	7	7	244
Celeste (NRPB 640)	(SL) Ni	259	- 4	81 ⁻	61	7	8	209
Baroness	(SL) Bk	323	- 2	134 ⁺	62	8	8	293
Tivoli (LD 8907)	(SL) ICI	301	- 2	112	62	7	8	248
Bohatyr	(SL) Ni	236	0	64 ⁻	73	6	7	250
Rex	(SL) Ni	278	0	67 ⁻	63	7	8	250
Leo	(SL) D	236	0	96	60	8	8	240
Countess	(SL) Bk	323	0(1/8)	99	66	7	8	320
MARROWFATS: Target population 65 plants/m²								
Progreta	(TL) Prog	286	- 1	118 ⁺	59	7	8	307
Guido	(SL) SI	395	0	116 ⁺	63	4	6	355
Princess	(SL) Bk	309	0	76 ⁻	58	7	8	273
Mean yield of control varieties t/ha								
Significance @ P = 0.05								
LSD @ P = 0.05								
CV %								

+ Significantly > control @ P = 0.05; - Significantly < control @ P = 0.05
 (SL) = semi-leafless; (TL) = tare-leaved

COMBINING PEA VARIETY STUDIES. Summary of agronomic data - Preliminary Variety Trial, Thornhaugh - 1990
 Standard varieties underlined. Control varieties for yield; Countess, Solara and Orb
 All varieties sown on 14th March. Results are means of three replicates

Variety	Source	Seed 1000 grain weight(g)	Maturity days (±) Countess	Yield % of Control @ 15% MC	Straw length (cm)	Standing ability 9=erect 1=lodged	Ease of harvest 9=easy 1=difficult	1000 grain weight (g)
SMALL BLUES: Target population 95 plants/m²								
<u>Orb</u>	<u>Bk</u>	<u>238</u>	- 5	<u>100</u>	<u>55</u>	<u>7</u>	<u>8</u>	<u>218</u>
LARGE BLUES: Target population 70 plants/m²								
Montego (Ceb 120)	SI	308	- 6	99	51	6	7	278
Tagora (Ceb 1121)	SI	340	- 4	88	53	7	7	311
Favorit (Ceb 1122)	SI	333	- 2	102	50	6	7	275
Ascona	SI	303	- 2	90	52	6	7	271
<u>Solara</u>	<u>SI</u>	<u>272</u>	- 2	<u>96</u>	<u>51</u>	<u>7</u>	<u>8</u>	<u>309</u>
721/803	Wh	254	- 2	109 ⁺	56	5	7	292
Atol (E 19)	Ha	231	+ 1	89	56	2	3	257
WHITES: Target population 70 plants/m²								
4-9549	Mar	362	- 5	103	44	3	5	355
Montano (Ceb 1418)	SI	303	- 5	106	55	7	7	297
4-9033	Mar	234	- 2	115 ⁺	57	6	7	251
MF 89-2	Mar	280	- 2	92	82	9	9	241
Messire (SER 4405)	Twy	298	- 2	110 ⁺	61	8	9	263
4-9002	Mar	286	- 1	105	64	8	9	292
4-9056	Mar	344	0	113 ⁺	56	8	8	327
4-4009	Mar	234	0	94	74	8	9	245
<u>Countess</u>	<u>Bk</u>	<u>363</u>	0(30/7)	<u>104</u>	<u>70</u>	<u>7</u>	<u>8</u>	<u>329</u>
COLOURED FLOWERED: Target population 65 plants/m²								
Jaygee (XAL 08 AA)	(SL) WWJ	254	- 1	104	71	3	5	286
MARROWFATS: Target population 65 plants/m²								
<u>Maro</u>	<u>GA</u>	<u>338</u>	0	<u>99</u>	<u>66</u>	<u>4</u>	<u>6</u>	<u>364</u>
Promar (4-9001)	(TL) Mar	336	0	95	55	8	8	296
Fantasia (871-3)	(SL) Bk	368	+ 1	92	67	8	8	354
Mean yield of control varieties t/ha								
Significance @ P = 0.05								
LSD @ P = 0.05								
CV %								

† Significantly > control @ P = 0.05; - Significantly < control @ P = 0.05
 (SL) = semi-leafless; (TL) = tare-leaved

COMBINING PEA VARIETY STUDIES. Summary of agronomic data - Screening Variety Trial, Thornhaugh - 1990
Standard varieties underlined. Control varieties for yield; Countess, Solara and Orb
All varieties sown on 15th March. Results are means of two replicates

Variety	Source	Seed 1000 grain weight(g)	Maturity days (±)Countess	Yield % of Control @ 15% MC	Straw length (cm)	Standing ability 9=erect 1=lodged	Ease of harvest 9=easy 1=difficult	1000 grain weight (g)
SMALL BLUES: Target population 95 plants/m²								
PZ 2	Bk	201	- 7	95	60	7	7	226
<u>Orb</u>	<u>Bk</u>	<u>238</u>	- 6	<u>105</u>	<u>50</u>	<u>7</u>	<u>8</u>	<u>205</u>
PC 2	Bk	173	- 6	89-	59	4	6	190
LARGE BLUES: Target population 70 plant/m²								
<u>Solara</u>	<u>D</u>	<u>272</u>	- 1	<u>93</u>	<u>49</u>	<u>7</u>	<u>8</u>	<u>306</u>
PW 832	Conf	280	- 1	86-	48	7	8	302
WHITES: Target population 70 plants/m²								
XAL 08 AA	WWJ	242	- 2	100	62	2	3	299
Conf 2	Conf	229	- 2	93	62	2	3	269
PW 830	Conf	321	0	97	49	2	4	320
Conf 1	Conf	212	0	99	55	7	8	295
<u>Countess</u>	<u>Bk</u>	<u>363</u>	<u>0(30/7)</u>	<u>102</u>	<u>59</u>	<u>8</u>	<u>8</u>	<u>341</u>
PW 834	Conf	276	+ 2	72-	69	7	8	265
MARROWFATS: Target population 65 plants/m²								
OU 2/3	Bk	348	- 2	109+	70	7	8	345
4-9049	Mar	314	- 1	80-	56	7	8	314
4-9013	Mar	383	0	108	57	4	6	334
871-8	Bk	350	0	106	59	8	8	341
XAF 06 AT	WWJ	233	+ 1	111+	74	7	8	277
<u>Maro</u>	<u>GA</u>	<u>338</u>	<u>+ 1</u>	<u>101</u>	<u>62</u>	<u>5</u>	<u>7</u>	<u>341</u>
152	ICI	302	+ 2	91-	62	7	8	293
Mean yield of control varieties t/ha								
Significance @ P = 0.05								
LSD @ P = 0.05								
CV %								

† Significantly > control @ P = 0.05; - Significantly < control @ P = 0.05
(SL) = semi-leafless; (TL) = tare-leaved

APPENDIX I

KEY TO SOURCE OF VARIETIES

As	Asgrow Seed Company 9634-190-31 7000 Portage Road Kalamazoo MI 49001	USA
AT	AT Seed Company Inc. 1038-5 Kamiokada Iwata City Shizuoka 438	Japan
Bat	Brooke Bond Foods Limited Wadsley Bridge Sheffield S6 1NG	UK
Bk	Booker Seeds Limited Boston Road Sleaford Lincolnshire NG34 7HA	UK
B1	André Blondeau Rue Nestor Longue Epee B.P. No. 1 59235 Bersee	France
Bro	W. Brotherton Seed Co. Inc. P.O. Box 1136 Moses Lake Washington 98837	USA
C1	Société Clause Comptabilité 1 Avenue Lucien Clause 91220 Bretigny Cedex	France
CM	Crites-Moscow Growers Inc. Box 8912 Moscow Idaho 83843	USA
Conf	Confidential	
D	Dalgety Agriculture Limited Dalgety House, Works Lane Setchey Kings Lynn Norfolk PE33 0AU	UK
FSF	Farmers Seeds Federal Perryfields Trials Centre Thorn Farms, Evesham Road Inkberrow Worcester WR7 4LJ	UK
GA	General Availability	

Ha	Harlow Agricultural Merchants Limited Latchmore Bank Little Hallingbury Bishops Stortford Hertfordshire CM22 7PJ	UK
ICI	ICI Seeds UK Limited Marsh Lane Boston Lincolnshire PE21 7RR	UK
Mar	Maribo (UK) Ltd. Potterhanworth Lincoln LN4 2DY	UK
MJ	CO.VA.L.P.A. - Mon Jardin Soc. Coop a.r.l. Viale Gramsci 39 I-41037 Mirandola (Modena)	Italy
Ni	Nickerson Seeds Limited Rothwell Lincoln LN7 6DT	UK
Nun	Nunhems Zaden BV Postbus 4005 6080 AA Haelen	Holland
PBI	Plant Breeding International Cambridge Maris Lane Trumpington Cambridge CB2 2LQ	UK
PLS	Pure Line Seeds Inc. P.O. Box 8866 Moscow Idaho 83843	USA
Prog	Progreta Limited The Stone House Back Lane Leadenham Lincoln LN5 OPW	UK
PS	Pro Seeds 91 Hatfield Road Witham Essex CM8 1EF	UK
Rog	Rogers Brothers Seed Co. International Group P.O. Box 4727 Boise ID 83711-0727	USA
RS	Royal Sluis Postbus 22 1600 AA Enkhuizen	Holland

Sch	Schäfer Brothers Seed Co. P.O. Box 3437 D-3400 Gottingen	W. Germany
S&G	Sluis & Groot BV P.O. Box 13 Enkhuizen	Holland
SI	Seed Innovations Limited 1 Paradise Road Downham Market Norfolk PE38 9HS	UK
Sp	Carl Sperling & Co. D-314 Luneburg Postfach 2640	W. Germany
Twy	Twyford Seeds Limited Scotts Farm Kings Sutton Banbury Oxfordshire OX17 3QW	UK
vW	van Waveren Pflanzenzucht GmbH D-3405 Rosdorf Uber Gottingen	W. Germany
Wh	Wherry & Sons Limited South Street Bourne Lincolnshire PE10 9LU	UK
WWJ	W.W. Johnson & Sons Limited London Road Boston Lincolnshire PE21 8AD	UK

