



PGRO Variety Trials Results 2019

Vining Peas

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WEATHER FOR THE 2019 SEASON.

Comments below are a summary taken from the meteorology website for the UK <https://www.metoffice.gov.uk/research/climate/maps-and-data/summaries/index>.

Spring 2019

February 21 to 27 saw record-breaking temperatures and plenty of dry sunny weather. Overall the spring was 2°C warmer than average in the South and East. The first half of March was wet with storms Freya and Gareth passing through. The second half of March was dry and the dry spell continued well into April. May was a little cooler than average and rainfall a little below average. Sunshine was well above average.

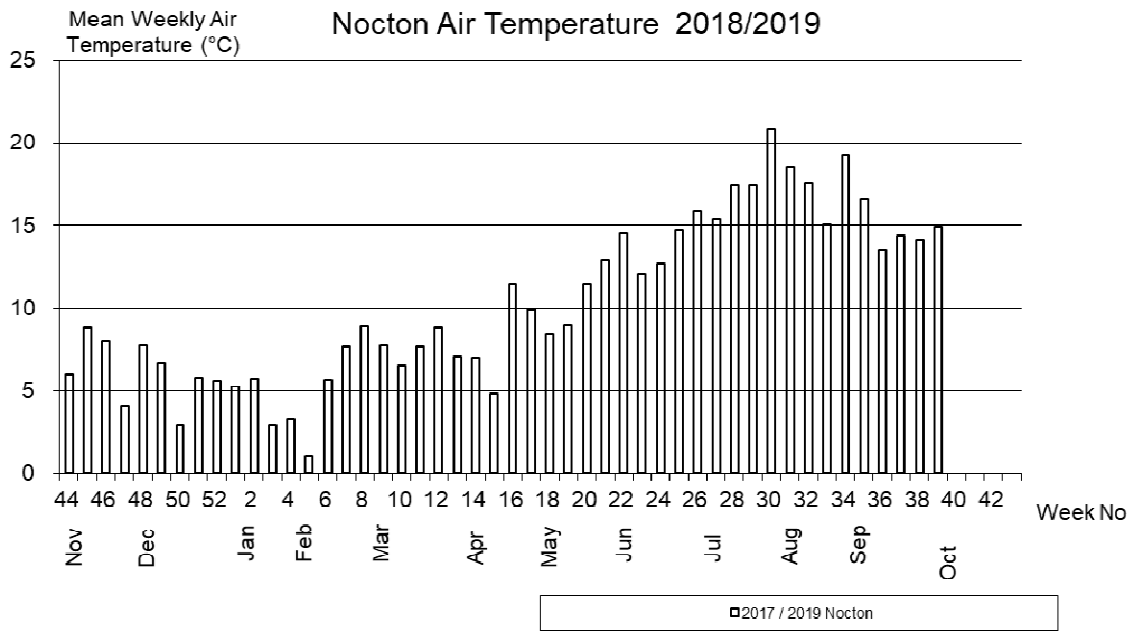
Summer 2019

The first two-thirds of June was generally very wet in most areas, and cooler than average, but the latter part of June and most of July were more settled with some warm spells. The warmth peaked on June 29th, and again on July 25th with a new UK maximum temperature record being set. Numerous thundery outbreaks occurred during the second half of July too, making the month somewhat wetter than average overall. The majority of August was unsettled and showery, though there was a drier spell later on during which it became hot especially in south-eastern areas.

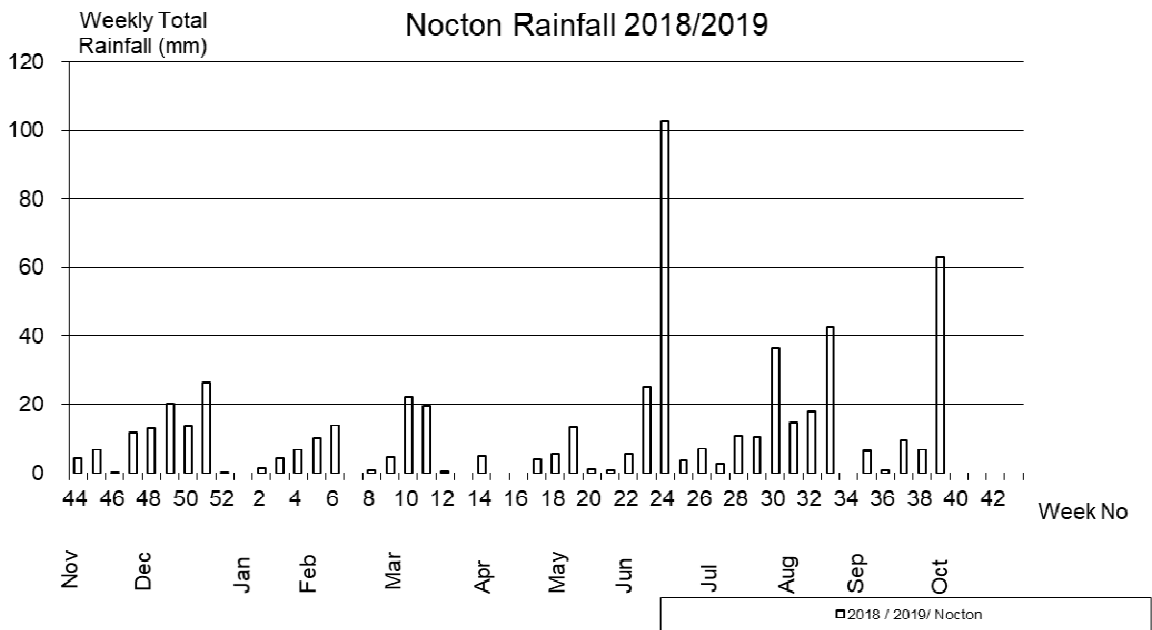
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METEROLOGICAL DATA - 2018 / 2019 season



Nocton weekly rainfall totals (mm) 2018/2019



Nocton monthly rainfall totals (mm) 2018/2019

Month	2018/2019 Monthly Rainfall (mm) Nocton
November	31.4
December	62.8
January	15.4
February	22.0
March	46.6
April	9.0
May	23.6
June	140.4
July	72.4
August	69.8
September	-
October	-

VINING PEAS

SUMMARY

2017 was a warm and rather dry spring. It was generally warmer than average during March and early April, but the second half of April was cooler, with some cold nights and numerous late frosts. May was predominantly warm, especially early and late in the month. April was much drier than average for most areas. Sunshine has been above average for spring in most areas.

The summer months were rather warm and wet. It was generally warmer than average during June and early July, especially in southern and eastern areas, but the second half of July was cooler, with an unsettled westerly regime. Both of these months were rather wet generally, and only a few areas were drier than average in each of them. Sunshine amounts have been slightly below average for summer so far in the majority of places.

2018 had an unsettled spring with frequent periods of rainfall. Temperatures were below average for much of March and the first half of April. May was one of the warmest on record. The summer months were warm and sunny with short periods of unsettled weather. Temperatures were well above average with long periods with no recorded rainfall. No rainfall was recorded between 17 June and 18 July (harvest period).

In **2019**, February 21 to 27 saw record-breaking temperatures and plenty of dry, sunny weather. Overall the spring was 2°C warmer than average in the South and East. The first half of March was wet with storms Freya and Gareth passing through. The second half of March was dry and the dry spell continued well into April. May was a little cooler than average and rainfall a little below average. Sunshine was well above average.

The first two-thirds of June was generally very wet in most areas, and cooler than average, but the latter part of June and most of July were more settled with some warm spells. The warmth peaked on June 29th, and again on July 25th with a new UK maximum temperature record being set. Numerous thundery outbreaks occurred during the second half of July too, making the month somewhat wetter than average overall. The majority of August was unsettled and showery, though there was a drier spell later on during which it became hot especially in south-eastern areas.

Standard Size Varieties, Nocton 2017 – 2019 Tables 1 & 2

Varieties were evaluated in Standard Preliminary Trial 2017 and Standard Main Trials 2018 and 2019.

This 3 year data set comprises data from only the Nocton site.

Six varieties CS-455AF, DGL0027, LG Valiant (06S54009A), D165641, SV0823QG, PFR 1601 completed 3 years of evaluation in 2019.

Yields from the yield standard Oasis were lowest in 2018 (5.86 t/ha) and highest in 2017 (9.97 t/ha) at TR100. Yields in 2019 were similar to 2017 at TR100. Maturity of Oasis when compared to Avola ranged from +11 days in 2019 to +9 in 2017 and 2018.

Sherwood, a possible replacement for Avola matured one day later than Avola and gave higher, but not significantly higher yields than Avola.

CS-455AF (Crites Seed) was semi-leafless and matured 3 days later than Avola. Yields (74%) at TR100 were significantly lower than Oasis. Produce was much smaller than Avola, medium-small size grade and a little larger than Sherwood. Standing ability was good (7).

DGL0027 (Syngenta) was semi-leafless and overall matured 4 days later than Avola. Overall yields (64 & 61%) were lower than Oasis, significantly so at TR100. Yields were particularly low in 2018. Produce was much smaller than Avola, medium-small size grade and a little larger than Sherwood. Standing ability was good (8).

LG Valiant (06S54009A) (Limagrain UK) was semi-leafless and matured 2 days earlier than Oasis at TR100. Yields (92 & 95%) were only a little lower than Oasis. Yields were significantly lower than Oasis in 2019. Produce was a little smaller than Oasis, medium size grade. Standing ability was good (8).

D165641 (Syngenta) was semi-leafless and matured 2 days earlier than Oasis. Yields (87 & 85%) were lower than Oasis, significantly so at TR120. Produce was a little larger than Oasis, medium-large size grade. Standing ability was good (7).

SV0823QG (Semini's Vegetable Seeds) was semi-leafless and matured at the same time as Oasis. Yields (89 & 84%) were lower than Oasis, significantly so at TR120. Produce was smaller than Oasis, medium-small size grade at TR100. Standing ability was good (7).

PFR 1601 (Plant & Food Research) matured at the same time as Oasis. Yields (93 & 90%) were lower, but not significantly lower than Oasis. Produce was smaller than Oasis, medium-small size grade at TR100. Standing ability was average (8), but better than Oasis (1).

Petits Pois Varieties, Holbeach 2019 - 2019 Tables 3 & 4

Three petits pois varieties, Norvert (D95387), SV3946QB and SV6064QC completed trials in 2019.

Waverex the yield standard gave the highest yields in 2019 (7.28 t/ha at TR100) and the lowest in 2018 (4.12 t/ha) at TR100. Produce gave peas with 76% <8.75mm in diameter. Standing ability was poor (3).

Norvert (D95387) (Syngenta) matured 4 days earlier than Waverex. Yields (87/79%) were lower, but not significantly higher than Waverex. Yields at TR100 were similar to Waverex in 2017 and 2018, but were significantly lower in 2019. Produce was a little smaller than Waverex with 86% of the peas <8.75mm diameter at TR100. Haulm was a little longer than Waverex and standing ability (3) was similar.

SV3946QB (Semini's Vegetable Seeds) matured 2 days later than Waverex. Yields have been variable over the three years. Overall, yields were similar to Waverex at TR100 and lower, but not significantly lower at TR120. Produce was larger than Waverex, medium-small size grade with only 44% of the peas <8.75mm diameter. Standing ability (3) was similar to Waverex.

SV6064QC (Semini's Vegetable Seeds) was semi-leafless and matured 4 days later than Waverex. Yields have been variable over the three years. Overall Yields were a little lower than Waverex, but not significantly so. Produce was smaller than Waverex, very small-small size grade with 93% of the peas <8.75mm diameter. Standing ability was better than average (6).

TRIALS IN 2019

Standard size varieties were evaluated in Main, Preliminary and Screening Trials at Nocton, Lincs. Trials of standard and petits pois varieties were evaluated at Holbeach, South Lincolnshire. A trial of varieties selected by the vining pea grower groups and funded by the Agriculture and Horticulture Development Board (AHDB-Horticulture) was grown near Holbeach, Lincolnshire. Data from this trial will be presented in an AHDB report.

Promising varieties from 2016 Preliminary Trials were assessed in the Main Trial. Preliminary Trial varieties were at National List stage of testing in an EU member country.

Seed of all varieties was treated to control damping off, downy mildew and *Ascochyta* diseases. Avola was the standard variety for maturity (Sherwood was also included as a potential replacement for Avola); Oasis was the yield standard and Ambassador was the late maturing standard. Waverex was the petits pois yield and maturity standard.

Nocton trials were drilled on 23 March and Holbeach trials on 24 April. The peas emerged well and evenly, with few losses. At Nocton, broad-leaved weeds were controlled pre-emergence with Nirvana. Weevil (*Sitona lineatus*) and field thrips (*Thrips angusticeps*) were controlled with an application of Hallmark (lambda-cyhalothrin). Aphid (*Acyrtosiphon pisum*) and pea moth (*Cydia nigricana*) were controlled with insecticide. At Holbeach inputs were the same as the surrounding commercial crop, with the exception of a post-emergence herbicide.

The vining pea harvest started about 3 days later than 2018 on the 24 June and was completed on 25 July. Pea colour for most varieties was good and unless otherwise stated the uniformity of colour was also good.

A sample from all trials were frozen for later colour and Brix assessments. Most varieties became darker in colour after freezing and defrosting than in the raw state.

Standard Pea Main Trial, Nocton - Tables 5 & 6

This site received adequate moisture for the seed to germinate well. Little rain fell during the harvest period at this site.

Yields from the yield standard Oasis (9.91 t/ha) were 4.05 t/ha higher than in 2017 at TR100.

Bonfire along with Avola were the first varieties to mature. SV0823QG and PFR 1601 matured later than Oasis and Ambassador was the latest variety to mature.

D165641(101%) and PFR 1601(101%) gave good yields, similar yields to Oasis at TR100 as did Marimba(100%) at TR120.

Several varieties including, Bonfire(67%), Avola(51%), Sherwood(67%), CS-455AF(72%), DGL0027(70%), LG Valiant(82%), Dancer(63%), and Ambassador(80%) gave significantly lower yields than Oasis at TR100.

Several varieties had very good standing (8) ability including, CS-455AF, DGL0027, and Dancer all of these were semi-leafless.

Standard Pea Preliminary Trial, Nocton – Tables 7 & 8

Four Preliminary trial varieties were evaluated.

Avola was the first variety to mature, 11 days before Oasis.

CS-464AF (101&102%) gave similar yields to Oasis at TR100 and TR120.

The following varieties gave significantly lower yields than Oasis at TR100 including, Avola(51%), Sherwood(67%), GV 490(77%), GV 8288(56%), Marquis(68%), Ambassador(80%).

Marquis had excellent standing ability(9).

A number of varieties, as shown in the downy mildew table were susceptible to downy mildew.

Standard Pea Screening Trial, Nocton – Tables 9 & 10

Five Screening trial varieties were evaluated.

Avola was the first variety to mature, 11 days before Oasis. Darlin and Ambassador matured 1 and 3 days later than Oasis respectively.

No variety matched the yields of Oasis.

Avola(49%), Sherwood(67%), SP-45(67%), FR-43(49%), 98-053(76%), 98W-407(35%) gave significantly lower yields than Oasis.

Semi-leafless Darlin had excellent standing ability(9).

A number of varieties, as shown in the downy mildew table were susceptible to downy mildew.

Petits Pois Main & Preliminary Trials, Holbeach – Tables 9 & 10

Waverex the yield standard gave good yields (7.28t/ha), yielding 3.16t/ha higher than 2018.

Main Trial Varieties

Natalie and Norvert had early maturity, maturing 6 and 4 days respectively earlier than Waverex.

SV6064QC(105%) was a little higher yielding than Waverex at TR100. SV3946QB(93%) was lower yielding than Waverex at TR100, but not significantly so. Natalie(61%) and Norvert(68%) gave significantly lower yields than Waverex at TR100.

Waverex gave produce with 72% of the peas <8.75mm diameter. SV064QC gave produce with 93% of the peas <8.75mm diameter, smaller than Waverex. Produce from SV3946QB was larger, medium-small size grade. Produce from Natalie(87%) and Norvert(84%) was a little smaller than Waverex.

It is important that untreated seed is entered for trials so that downy mildew susceptibility can be evaluated.

As part of the variety evaluation work 64 varieties of vining peas were sown in disease observation trials at two locations in. Both trials were situated in a field with a history of pea growing. Only one site produced downy mildew infection. Plants were scored for infection on two occasions during the season, to include both primary systemically infected seedlings and secondary infection on the foliage and pods. The data were combined to give an indication of the relative susceptibility to downy mildew.

Susceptible	Moderately Susceptible	Slightly Susceptible	Moderate Field Resistance	Good Field Resistance
GV 390	Ambassador	98-053	Aloha	Afivert
GV 490	Anubis	98W-407	Beverly	Ashton
	Avola	CS-441AF	Boston	Belvedere
	Boogie	CS-455AF	D165641	Bonfire
	CS-464AF	LG Valiant	Dancer	D85460
	CS-468AF	O8S05676	Darlin	Digit
	GV8288	Oasis	Ebba	Geer
	Kimberley	PFR 15-A10	FR-43	Kiss
	LG Midnight	Span	GV 389	LG Infinity
	Savannah	Tomahawk	Ida	Maurice
	SP-45		Kengo	Norvert
	Vidor		LG Dolphin	Selune
			LG Stingray	SV0823QG
			Linnea	SV3946QB
			Lyric	SV6064QC
			Marimba	Wav 1107
			Marquis	Wav 418
			PFR 15-PA42	
			PFR 1601	
			Querida	
			SV1022	
			SV8112QH	
			Waverex	

The results of these tests and those of previous years were incorporated in the PGRO Advisory Leaflet of Vining Pea Varieties.

Downy mildew was also seen in the variety evaluation trials at the Nocton site. The data from this site is presented below.

Susceptible	Moderately Susceptible	Slightly Susceptible	Moderate Field Resistance	Good Field Resistance
98W-407	98-053	CS-455AF	Belvedere	Bonfire
Ambassador	GV8288	D165641	CS-464AF	
Avola	LG Valiant		Dancer, Darlin	
FR-43	Oasis		DGL0027, Lyric	
GV 490	PFR 1601		Marimba, Marquis	
	SP-45		Querida, Sherwood	
	SV6064QC		SV0823QG	

TABLE 1 - VINING PEA VARIETY EVALUATIONS. Summary of Standard Vining Peas - Nocton 2017 - 2019

Varieties placed in order of maturity. Standard varieties underlined

Variety	Source	1000 Seed Weight g	@ TR 100				@ TR 120				Haulm length cm	Standing Ability 9=erect 1=lodged	Pea wt. as % of total weight	Raw pea colour 1=pale 6=dark				
			Maturity (± days) Avola	Yield % of Oasis	% in size grades L M S VS				Maturity (± days) Avola	Yield % of Oasis					% in size grades L M S VS			
<u>Avola</u>	<u>SVS</u>	<u>215</u>	<u>0</u>	<u>59-</u>	<u>43</u>	<u>46</u>	<u>10</u>	<u>1</u>	<u>0</u>	<u>62-</u>	<u>66</u>	<u>31</u>	<u>3</u>	<u>0</u>	<u>62</u>	<u>2</u>	<u>18</u>	<u>5.3</u>
<u>Sherwood</u>	<u>SVS</u>	<u>180</u>	<u>+1</u>	<u>69-</u>	<u>24</u>	<u>53</u>	<u>20</u>	<u>3</u>	<u>0</u>	<u>68-</u>	<u>32</u>	<u>54</u>	<u>12</u>	<u>2</u>	<u>52</u>	<u>3</u>	<u>20</u>	<u>5.4</u>
CS-455AF	(SL) CS	213	+3	74-	37	51	11	1	+2	76-	55	39	5	1	51	7	22	5.3
DGL0027	(SL) Syn	197	+4	64-	34	54	10	2	+4	61-	41	51	7	1	51	8	17	5.2
LG Valiant(06S54009A)	(SL) LUK	202	+8	92	19	57	22	2	+6	95	25	60	14	1	60	8	27	5.3
D165641	(SL) Syn	200	+8	87	33	53	13	1	+6	85-	42	50	8	0	46	7	24	5.4
<u>Oasis</u>	<u>LUK</u>	<u>197</u>	<u>+10</u>	<u>100</u>	<u>24</u>	<u>57</u>	<u>18</u>	<u>1</u>	<u>+9</u>	<u>100</u>	<u>32</u>	<u>57</u>	<u>10</u>	<u>1</u>	<u>59</u>	<u>1</u>	<u>25</u>	<u>5.1</u>
				(8.85t/ha)						(9.70t/ha)								
SV0823QG	(SL) SVS	180	+10	89	17	55	25	3	+9	84-	22	63	14	1	67	7	21	5.3
PFR 1601	PFR	189	+10	93	17	58	23	2	+10	90	24	64	11	1	56	5	22	5.1
<u>Ambassador</u>	<u>vW</u>	<u>196</u>	<u>+12</u>	<u>79-</u>	<u>30</u>	<u>60</u>	<u>9</u>	<u>1</u>	<u>+11</u>	<u>74-</u>	<u>37</u>	<u>58</u>	<u>5</u>	<u>0</u>	<u>70</u>	<u>3</u>	<u>18</u>	<u>5.1</u>
Significance @ P=0.05				SD						SD								
LSD @ P=0.05				15.7						12.6								
CV %				12.3						9.9								

KEY: Yield: + Significantly greater than Oasis @ P = 0.05; - Significantly less than Oasis @ P = 0.05

Size grades: L = large > 10.2mm; M = medium 8.75 - 10.2mm; S = small 7.5 - 8.75mm; VS = very small < 7.5mm

SL = Semi-leafless; SF = Semi-fasciated

Source of varieties see Appendix

TABLE 2 - VINING PEA VARIETY EVALUATIONS. Summary of quality data – Standard pea varieties – Nocton 2017 – 2019

Variety	Year	Tenderometer Reading	Appearance				Brix %
			Colour (3-8)	Brightness (1-2)	Uniformity (1-5)	No. of blonds (1-5)	
Avola	17	101.0	5.5	2.0	4.5	1.0	13.3
	18	99.0	5.0	2.0	4.3	2.0	12.5
	19	104.0	5.7	1.0	3.7	2.0	12.5
Sherwood	17	103.0	5.0	2.0	4.5	1.0	13.0
	18	97.0	5.3	2.0	4.3	2.0	13.8
	19	106.0	5.8	1.0	4.7	1.0	12.4
CS-455AF	17	99.5	5.5	2.0	4.5	1.0	12.6
	18	96.5	5.8	2.0	4.0	2.0	14.5
	19	97.5	6.2	1.0	4.7	1.0	13.4
DGL0027	17	106.0	5.5	1.0	5.0	1.0	11.8
	18	102.0	6.3	1.5	4.0	2.0	14.0
	19	101.0	5.8	1.0	4.7	1.0	12.9
LG Valiant	17	109.5	5.5	2.0	4.0	1.0	13.2
	18	100.5	5.8	2.0	4.5	2.0	14.2
	19	104.0	6.2	1.0	5.0	1.0	12.7
D165641	17	106.5	5.5	2.0	5.0	1.0	12.9
	18	102.0	5.8	2.0	4.5	2.0	14.4
	19	99.5	5.7	1.0	4.7	1.0	11.6
Oasis	17	98.5	5.5	2.0	4.5	1.0	12.6
	18	99.0	5.8	2.0	3.8	1.5	15.0
	19	98.5	5.8	1.0	4.2	1.0	12.3
SV0823QG	17	99.0	5.5	2.0	4.5	1.0	10.5
	18	98.5	6.0	2.0	4.3	2.0	13.3
	19	98.0	7.0	1.0	5.0	1.0	11.9
PFR 1601	17	100.0	5.5	2.0	5.0	1.0	12.4
	18	99.0	5.3	2.0	3.3	1.0	13.2
	19	102.0	6.0	1.0	4.0	1.0	12.7
Ambassador	17	107.5	5.0	2.0	4.0	1.0	12.2
	18	97.0	5.5	1.5	3.8	2.0	13.6
	19	97.5	5.5	1.0	3.0	3.0	12.6

KEY: Uniformity; Uniformity; No. of blonds: (1-5) - a high figure indicates that the variety shows the character to a high degree

Colour: a high figure indicates a darker green; Brightness: 1 = bright, 2 = dull; Brix - measured using Atago pocket refractometer PAL-1 and gives an indication of sugar content

TABLE 3 - VINING PEA VARIETY EVALUATIONS. Summary of Petits Pois Vining Peas - Holbeach 2017 - 2019

Varieties placed in order of maturity. Standard varieties underlined

Variety	Source	1000 Seed Weight g	@ TR 100							@ TR 120							Standing Ability 9=erect 1=lodged	Pea wt. as % of total weight	Raw pea colour 1=pale 6=dark
			Maturity (± days) Waverex	Yield % of Waverex	% in size grades L M S VS				Maturity (± days) Waverex	Yield % of Waverex	% in size grades L M S VS				Haulm length cm				
Norvert (D95387)	Syn	100	-4	87	1	15	50	36	-4	79	1	18	58	23	65	3	12	4.4	
<u>Waverex</u>	<u>vW</u>	<u>97</u>	<u>0</u>	<u>100</u>	<u>3</u>	<u>21</u>	<u>42</u>	<u>34</u>	<u>0</u>	<u>100</u>	<u>4</u>	<u>29</u>	<u>47</u>	<u>20</u>	<u>61</u>	<u>3</u>	<u>15</u>	<u>4.8</u>	
				(5.33t/ha)						(6.48t/ha)									
SV3946QB	SVS	105	+2	122	11	45	36	8	+1	80	1	10	51	38	65	3	13	5.0	
SV6064QC	(SL) SVS	86	+4	98	1	6	41	52	+4	88	4	29	47	20	61	6	14	4.8	
Significance @ P=0.05				NSD						NSD									
LSD @ P=0.05				27.4						30.0									
CV %				16.5						20.4									

KEY: Yield: + Significantly greater than Waverex @ P = 0.05; - Significantly less than Waverex @ P = 0.05

Size grades: L = large > 10.2mm; M = medium 8.75 - 10.2mm; S = small 7.5 - 8.75mm; VS = very small < 7.5mm

SL = Semi-leafless; SF = Semi-fasciated

Source of varieties see Appendix

TABLE 4 - VINING PEA VARIETY EVALUATIONS. Summary of quality data - Petits Pois Peas, Holbeach - 2017 - 2019

Variety	Year	Tenderometer Reading	Appearance				Brix %
			Colour (3-8)	Brightness (1-2)	Uniformity (1-5)	No. of blonds (1-5)	
Norvert	17	97.0	4.5	2.0	5.0	1.0	11.6
	18	95.0	5.0	2.0	4.0	2.0	12.6
	19	102.5	5.0	1.0	5.0	1.0	11.9
Waverex	17	103.5	5.0	2.0	5.0	1.0	12.5
	18	101.5	5.3	2.0	3.3	1.0	13.4
	19	99.0	5.7	1.0	3.7	2.3	13.3
SV3946QB	17	102.5	5.0	2.0	4.0	2.0	11.1
	18	134.0	5.3	1.5	2.5	1.0	12.2
	19	100.5	5.5	1.0	3.3	2.3	11.5
SV6064QC	17	106.5	5.5	2.0	5.0	1.0	12.3
	18	99.0	6.0	1.5	4.8	2.0	13.8
	19	102.5	6.5	1.0	4.7	1.0	13.5

KEY: Uniformity; Uniformity; No. of blonds: (1-5) - a high figure indicates that the variety shows the character to a high degree

Colour: a high figure indicates a darker green; Brightness: 1 = bright, 2 = dull; Brix - measured using Atago pocket refractometer PAL-1 and gives an indication of sugar

TABLE 5 - VINING PEA VARIETY EVALUATIONS. Summary of agronomic data Standard Vining Pea Main Variety Trial, Nocton - 2019

Varieties placed in order of maturity. Standard varieties underlined. All varieties sown on 21 March.

Results are means of three replicates. Target population 100 plants per m² sown in ten 15 cm rows.

Variety	Source	1000 Seed Weight g	@ TR 100							@ TR 120							Standing Ability 9=erect 1=lodged	Pea wt. as % of total weight	Raw pea colour 1=pale 6=dark
			Maturity (± days) Avola	Yield % of Oasis	% in size grades L M S VS				Maturity (± days) Avola	Yield % of Oasis	% in size grades L M S VS				Haulm length cm				
Bonfire	(SL) vW	175	0	67-	14	54	28	4	0	74-	19	61	18	2	49	7.3	22	4.3	
<u>Avola</u>	<u>SVS</u>	<u>220</u>	<u>0(24/6)</u>	<u>51-</u>	<u>38</u>	<u>50</u>	<u>11</u>	<u>1</u>	<u>0(28/6)</u>	<u>59-</u>	<u>62</u>	<u>35</u>	<u>3</u>	<u>0</u>	<u>63</u>	<u>2.0</u>	<u>18</u>	<u>4.7</u>	
<u>Sherwood</u>	<u>SVS</u>	<u>183</u>	<u>+1</u>	<u>67-</u>	<u>29</u>	<u>55</u>	<u>14</u>	<u>2</u>	<u>0</u>	<u>68-</u>	<u>35</u>	<u>53</u>	<u>10</u>	<u>2</u>	<u>56</u>	<u>7.0</u>	<u>20</u>	<u>4.7</u>	
CS-455AF	(SL) CS	223	+3	72-	36	52	11	1	+2	72-	48	44	7	1	50	8.3	22	4.6	
Belvedere	vW	203	+4	87	15	48	31	6	+3	90	20	59	19	2	52	5.7	26	4.0	
DGL0027	(SL) Syn	176	+5	70-	30	55	11	4	+3	65-	35	54	9	2	56	8.7	18	3.9	
Marimba	vW	185	+7	90	10	48	34	8	+6	100	15	61	22	2	52	1.3	25	4.3	
Lytic	vW	170	+8	95	13	52	31	4	+6	88	17	63	18	2	52	1.7	23	4.3	
LG Valiant(06S54009A)	(SL) LUK	204	+8	82-	12	45	37	6	+6	79-	18	58	22	2	59	8.0	24	4.4	
D165641	(SL) Syn	208	+8	101	17	55	25	3	+6	88	29	57	13	1	46	6.7	25	4.7	
Querida	vW	161	+10	90	16	48	32	4	+10	83-	24	65	11	0	51	2.7	21	4.8	
<u>Oasis</u>	<u>LUK</u>	<u>204</u>	<u>+11</u>	<u>100</u>	<u>23</u>	<u>55</u>	<u>20</u>	<u>2</u>	<u>+10</u>	<u>100</u>	<u>33</u>	<u>57</u>	<u>9</u>	<u>1</u>	<u>61</u>	<u>1.2</u>	<u>23</u>	<u>4.7</u>	
					<u>(9.91t/ha)</u>						<u>(11.39t/ha)</u>								
Dancer	(SL) vW	174	+11	63-	8	38	42	12	+10	74-	14	56	30	0	62	8.7	17	4.3	
SV0823QG	(SL) SVS	163	+12	89	17	53	25	5	+10	80-	22	60	16	2	69	6.3	18	4.9	
PFR 1601	PFR	175	+12	101	20	53	24	3	+11	96	31	57	11	1	58	5.3	22	4.7	
<u>Ambassador</u>	<u>vW</u>	<u>205</u>	<u>+14</u>	<u>80-</u>	<u>27</u>	<u>59</u>	<u>13</u>	<u>1</u>	<u>+12</u>	<u>70-</u>	<u>30</u>	<u>61</u>	<u>8</u>	<u>1</u>	<u>73</u>	<u>3.0</u>	<u>17</u>	<u>4.3</u>	
Significance @ P=0.05				SD					SD										
LSD @ P=0.05				14.7					15.3										
CV %				11.0					11.7										

KEY: Yield: + Significantly greater than Oasis @ P = 0.05; - Significantly less than Oasis @ P = 0.05

Size grades: L = large > 10.2mm; M = medium 8.75 - 10.2mm; S = small 7.5 - 8.75mm; VS = very small < 7.5mm

SL = Semi-leafless; SF = Semi-fasciated

Source of varieties see Appendix

TABLE 6 - VINING PEA VARIETY EVALUATIONS. Summary of quality data - Standard Vining Pea Main Variety Trial, Nocton - 2019

Variety	Tenderometer Reading	Appearance				Brix %
		Colour (3-8)	Brightness (1-2)	Uniformity (1-5)	No. of blonds (1-5)	
Bonfire	99.0	5.5	1.0	5.0	1.0	12.8
Avola	104.0	5.7	1.0	3.7	2.0	12.5
Sherwood	106.0	5.8	1.0	4.7	1.0	12.4
CS-455AF	97.5	6.2	1.0	4.7	1.0	13.4
Belvedere	102.0	6.2	1.0	5.0	1.0	13.3
DGL0027	101.0	5.8	1.0	4.7	1.0	12.9
Marimba	100.0	5.8	1.0	4.7	1.0	12.5
Lyric	101.0	5.2	1.0	4.3	1.0	12.1
LG Valiant(06S54009A)	104.0	6.2	1.0	5.0	1.0	12.6
D165641	99.5	5.7	1.0	4.7	1.0	11.6
Querida	101.0	7.0	1.0	5.0	1.0	12.9
Dancer	94.5	6.0	1.0	5.0	1.0	13.8
Oasis	98.5	5.8	1.0	4.2	1.0	12.3
SV0823QG	98.0	7.0	1.0	5.0	1.0	11.9
PFR 1601	102.0	6.0	1.0	4.0	1.0	12.7
Ambassador	97.5	5.5	1.0	3.0	3.0	12.6

KEY: Uniformity; Uniformity; No. of blonds; (1-5) - a high figure indicates that the variety shows the character to a high degree

Colour: a high figure indicates a darker green; Brightness: 1 = bright, 2 = dull; Brix - measured using Atago pocket refractometer PAL-1 and gives an indication of sugar content

TABLE 7 - VINING PEA VARIETY EVALUATIONS. Summary of agronomic data Standard Vining Pea Preliminary Variety Trial, Nocton - 2019

Varieties placed in order of maturity. Standard varieties underlined. All varieties sown on 21 March.

Results are means of three replicates. Target population 100 plants per m² sown in ten 15 cm rows.

Variety	Source	1000 Seed Weight g	@ TR 100				@ TR 120				Haulm length cm	Standing Ability 9=erect 1=lodged	Pea wt. as % of total weight	Raw pea colour 1=pale 6=dark				
			Maturity (± days) Avola	Yield % of Oasis	% in size grades L M S VS				Maturity (± days) Avola	Yield % of Oasis					% in size grades L M S VS			
<u>Avola</u>	<u>SVS</u>	<u>220</u>	<u>0(24/6)</u>	<u>51-</u>	<u>38</u>	<u>50</u>	<u>11</u>	<u>1</u>	<u>0(28/6)</u>	<u>59-</u>	<u>62</u>	<u>35</u>	<u>3</u>	<u>0</u>	<u>63</u>	<u>2.0</u>	<u>18</u>	<u>4.7</u>
<u>Sherwood</u>	<u>SVS</u>	<u>183</u>	<u>+1</u>	<u>67-</u>	<u>29</u>	<u>55</u>	<u>14</u>	<u>2</u>	<u>0</u>	<u>68-</u>	<u>35</u>	<u>53</u>	<u>10</u>	<u>2</u>	<u>56</u>	<u>7.0</u>	<u>20</u>	<u>4.7</u>
GV 490	Ver	183	+5	77-	42	51	6	1	+4	67-	38	55	6	1	53	4.0	22	4.5
GV 8288	(SL) Ver	181	+9	56-	9	40	45	6	+7	49-	18	59	22	1	58	3.7	15	4.7
Marquis	(SL) vW	153	+9	68-	4	32	51	13	+7	64-	7	43	42	8	58	9.0	18	4.4
CS-464AF	(SL) CS	206	+9	101	17	55	25	3	+7	102	29	61	9	1	61	2.7	24	4.8
<u>Oasis</u>	<u>LUK</u>	<u>204</u>	<u>+11</u>	<u>100</u>	<u>23</u>	<u>55</u>	<u>20</u>	<u>2</u>	<u>+10</u>	<u>100</u>	<u>33</u>	<u>57</u>	<u>9</u>	<u>1</u>	<u>61</u>	<u>1.2</u>	<u>23</u>	<u>4.7</u>
				(9.91t/ha)					(11.39t/ha)									
<u>Ambassador</u>	<u>vW</u>	<u>205</u>	<u>+14</u>	<u>80-</u>	<u>27</u>	<u>59</u>	<u>13</u>	<u>1</u>	<u>+12</u>	<u>70-</u>	<u>30</u>	<u>61</u>	<u>8</u>	<u>1</u>	<u>73</u>	<u>3.0</u>	<u>17</u>	<u>4.3</u>
Significance @ P=0.05				SD					SD									
LSD @ P=0.05				14.7					15.3									
CV %				11.0					11.7									

KEY: Yield: + Significantly greater than Oasis @ P = 0.05; - Significantly less than Oasis @ P = 0.05

Size grades: L = large > 10.2mm; M = medium 8.75 - 10.2mm; S = small 7.5 - 8.75mm; VS = very small < 7.5mm

SL = Semi-leafless; SF = Semi-fasciated

Source of varieties see Appendix

TABLE 8 - VINING PEA VARIETY EVALUATIONS. Summary of quality data - Standard Vining Pea Preliminary Variety Trial, Nocton - 2019

Variety	Tenderometer Reading	Appearance				Brix %
		Colour (3-8)	Brightness (1-2)	Uniformity (1-5)	No. of blonds (1-5)	
Avola	104.0	5.7	1.0	3.7	2.0	12.5
Sherwood	106.0	5.8	1.0	4.7	1.0	12.4
GV 490	109.0	5.8	1.0	3.8	1.0	12.2
GV8288	103.5	6.0	1.0	4.7	1.0	12.9
Marquis	100.5	6.5	1.0	5.0	1.0	12.9
CS-464AF	101.5	6.0	1.0	4.7	1.0	13.3
Oasis	98.5	5.8	1.0	4.2	1.0	12.3
Ambassador	97.5	5.5	1.0	3.0	3.0	12.6

KEY: Uniformity; Uniformity; No. of blonds; (1-5) - a high figure indicates that the variety shows the character to a high degree

Colour: a high figure indicates a darker green; Brightness: 1 = bright, 2 = dull; Brix - measured using Atago pocket refractometer PAL-1 and gives an indication of sugar content

TABLE 9 - VINING PEA VARIETY EVALUATIONS. Summary of agronomic data Standard Vining Pea Screening Variety Trial, Nocton - 2019

Varieties placed in order of maturity. Standard varieties underlined. All varieties sown on 21 March.

Results are means of two replicates. Target population 100 plants per m² sown in ten 15 cm rows.

Variety	Source	1000 Seed Weight g	@ TR 100				@ TR 120				Haulm length cm	Standing Ability 9=erect 1=lodged	Pea wt. as % of total weight	Raw pea colour 1=pale 6=dark				
			Maturity (± days) Avola	Yield % of Oasis	% in size grades L M S VS				Maturity (± days) Avola	Yield % of Oasis					% in size grades L M S VS			
<u>Avola</u>	<u>SVS</u>	<u>220</u>	<u>0(24/6)</u>	49-	<u>40</u>	<u>49</u>	<u>10</u>	<u>1</u>	<u>0(28/6)</u>	64-	<u>64</u>	<u>34</u>	<u>2</u>	<u>0</u>	<u>63</u>	<u>2.0</u>	<u>18</u>	<u>4.7</u>
<u>Sherwood</u>	<u>SVS</u>	<u>183</u>	<u>+1</u>	67-	<u>29</u>	<u>55</u>	<u>14</u>	<u>2</u>	<u>0</u>	73-	<u>34</u>	<u>53</u>	<u>11</u>	<u>2</u>	<u>56</u>	<u>7.0</u>	<u>20</u>	<u>4.7</u>
SP-45	PLS	227	+2	67-	35	50	13	2	+1	66-	39	52	8	1	54	2.5	21	4.9
FR-43	PLS	175	+3	49-	6	36	48	10	+1	43-	12	49	33	6	52	4.5	16	4.0
98-053	PLS	213	+5	76-	15	48	33	4	+4	92	23	61	15	1	55	7.0	24	3.9
98W-407	(SL) PLS	149	+9	35-	3	35	50	12	+7	30-	8	49	38	5	54	1.0	12	4.4
<u>Oasis</u>	<u>LUK</u>	<u>204</u>	<u>+11</u>		<u>100</u>	<u>24</u>	<u>55</u>	<u>18</u>	<u>+10</u>	<u>100</u>	<u>32</u>	<u>58</u>	<u>9</u>	<u>1</u>	<u>61</u>	<u>1.2</u>	<u>23</u>	<u>4.7</u>
					(9.4t/ha)					(10.9t/ha)								
Darlin (Wav 418)	(SL) vW	163	+12	78	2	22	54	22	+11	72-	4	36	53	7	62	9.0	15	4.5
<u>Ambassador</u>	<u>vW</u>	<u>205</u>	<u>+14</u>	<u>82</u>	<u>26</u>	<u>59</u>	<u>14</u>	<u>1</u>	<u>+12</u>	<u>70-</u>	<u>41</u>	<u>58</u>	<u>0</u>	<u>1</u>	<u>73</u>	<u>3.0</u>	<u>17</u>	<u>4.3</u>
Significance @ P=0.05				SD					SD									
LSD @ P=0.05				21.8					16.0									
CV %				13.75					10.0									

KEY: Yield: + Significantly greater than Oasis @ P = 0.05; - Significantly less than Oasis @ P = 0.05

Size grades: L = large > 10.2mm; M = medium 8.75 - 10.2mm; S = small 7.5 - 8.75mm; VS = very small < 7.5mm

SL = Semi-leafless; SF = Semi-fasciated

Source of varieties see Appendix

TABLE 10 - VINING PEA VARIETY EVALUATIONS. Summary of quality data - Standard Vining Pea Screening Variety Trial, Nocton - 2019

Variety	Tenderometer Reading	Appearance				Brix %
		Colour (3-8)	Brightness (1-2)	Uniformity (1-5)	No. of blonds (1-5)	
Avola	104.0	5.7	1.0	3.7	2.0	12.5
Sherwood	106.0	5.8	1.0	4.7	1.0	12.4
SP-45	99.5	6.0	1.0	4.2	1.0	11.6
FR-43	107.5	6.0	1.0	3.8	1.0	12.4
98-053	99.0	5.7	1.0	4.7	1.0	12.8
98W-407	100.5	6.0	1.0	5.0	1.0	12.6
Oasis	98.5	5.8	1.0	4.2	1.0	12.3
Darlin (Wav 418)	102.0	6.0	1.0	4.0	1.0	13.6
Ambassador	97.5	5.5	1.0	3.0	3.0	12.6

KEY: Uniformity; Uniformity; No. of blonds; (1-5) - a high figure indicates that the variety shows the character to a high degree

Colour: a high figure indicates a darker green; Brightness: 1 = bright, 2 = dull; Brix - measured using Atago pocket refractometer PAL-1 and gives an indication of sugar content

TABLE 11 - VINING PEA VARIETY EVALUATIONS. Summary of agronomic data Vining Pea Petits Pois Main & Preliminary Variety Trials, Holbeach - 2019

Varieties placed in order of maturity. Standard varieties underlined. All varieties sown on 24 April.

Results are means of two replicates. Target population 100 plants per m² sown in ten 15 cm rows.

Variety	Source	1000 Seed Weight g	@ TR 100				@ TR 120				Haulm length cm	Standing Ability 9=erect 1=lodged	Pea wt. as % of total weight	Raw pea colour 1=pale 6=dark				
			Maturity (± days) Waverex	Yield % of Waverex	% in size grades L M S VS				Maturity (± days) Waverex	Yield % of Waverex					% in size grades L M S VS			
PP Standard																		
<u>Waverex</u>	<u>vW</u>	<u>97</u>	<u>0(19/7)</u>	<u>100</u> (7.287t/ha)	<u>4</u>	<u>24</u>	<u>39</u>	<u>33</u>	<u>0(21/7)</u>	<u>100</u> (9.21t/ha)	<u>6</u>	<u>31</u>	<u>42</u>	<u>21</u>	<u>72</u>	<u>5.0</u>	<u>18</u>	<u>4.8</u>
PP Main Trial																		
Natalie (Wav 1107)	vW	98	- 6	61-	1	12	44	43	- 5	56-	1	20	58	21	61	4.0	11	4.4
Norvert(D95387)	Syn	98	- 4	68-	1	15	49	35	- 4	59-	2	22	54	22	66	2.0	10	4.1
SV3946QB	SVS	110	+ 1	93	15	50	26	9	+ 1	74-	16	55	23	6	72	5.0	14	4.6
SV6064QC	(SL) SVS	84	+ 2	105	1	6	46	47	+ 3	91-	1	14	58	27	62	5.5	19	4.5
Digit	(SL) Ver	142	- 4	63-	2	23	42	33	- 4	63-	5	35	42	18	61	4.5	12	4.5
GV 389	(SL) Ver	141	- 3	85	9	40	38	13	- 1	67-	16	56	28	0	64	2.5	12	4.5
GV 390	(SL) Ver	122	+ 4	96	5	30	50	15	+ 4	76-	9	41	43	7	68	7.0	14	4.6
Significance @ P=0.05				SD				SD										
LSD @ P=0.05				17.8				8.3										
CV %				9.0				4.8										

KEY: Yield: + Significantly greater than Waverex @ P = 0.05; - Significantly less than Waverex @ P = 0.05

Size grades: L = large > 10.2mm; M = medium 8.75 - 10.2mm; S = small 7.5 - 8.75mm; VS = very small < 7.5mm

SL = Semi-leafless; SF = Semi-fasciated

Source of varieties see Appendix

TABLE 12 - VINING PEA VARIETY EVALUATIONS. Summary of quality data - Vining Pea Petits Pois Main & Preliminary Variety Trials, Holbeach - 2019

Variety	Tenderometer Reading	Appearance				Brix %
		Colour (3-8)	Brightness (1-2)	Uniformity (1-5)	No. of blonds (1-5)	
PP Standard						
Waverex	99.0	5.7	1.0	3.7	2.3	13.3
PP Main Trial						
Natalie (Wav 1107)	98.0	6.5	1.0	5.0	1.0	12.6
Norvert(D95387)	102.5	5.0	1.0	5.0	1.0	11.9
SV3946QB	100.5	5.5	1.0	3.3	2.3	11.4
SV6064QC	102.5	6.5	1.0	4.7	1.0	13.4
PP Preliminary Trial						
Digit	103.5	5.0	1.0	3.0	3.0	13.2
GV 389	100.5	6.0	1.0	5.0	1.0	12.9
GV 390	101.0	5.5	1.0	4.7	1.0	13.1

KEY: Uniformity; Uniformity; No. of blonds; (1-5) - a high figure indicates that the variety shows the character to a high degree

Colour: a high figure indicates a darker green; Brightness: 1 = bright, 2 = dull; Brix - measured using Atago pocket refractometer PAL-1 and gives an indication of sugar content

APPENDIX 1

KEY TO SOURCE OF VARIETIES

CS	Crites Seed Inc., USA
EI	Elsoms Seeds Ltd, UK
GA	General Availability
LUK	Limagrain UK Ltd, UK
PFR	The New Zealand Institute for Plant and Food Research Ltd
PLS	Pure Line Seeds Inc., USA
SVS	Seminis Vegetable Seeds, UK
Syn	Syngenta Seeds, UK
Ver	Verisem, France
vW	van Waveren, Germany