

Evaluation of sire lines:
G Performer and Shade Oak Duroc
and dam lines:
F1 SEPQ and Fertilis 25

25th and 26th station trials





Outline

- Description of the test
- Results of sire and dam lines
 - Live performances
 - Carcass quality
 - Meat quality
- Additional results
- Conclusion



Description of the test

- Objective of the test:
 - To measure in a controlled and non limiting environment, performances of commercial pigs born from females representative of dam and sire lines for which semen is available in Quebec



Description of the test

- The results are a reference for:
 - Quebec swine industry
 - commercial producers
 - slaughterhouses
 - advisers
 - scientists
 - decision-makers
 - etc.
 - Participating organizations



Description of the test

- Two commercial trials

Trial 25

November 2008



May 2009

May 2009



Trial 26

October 2009

- Dam and sire lines evaluation
- 3 participating organizations



Description of the test

Sire

Dam

Lines

G Performer

Shade Oak Duroc

F1 SEPQ

Fertilis 25

Participating organizations

Génétiporc inc.

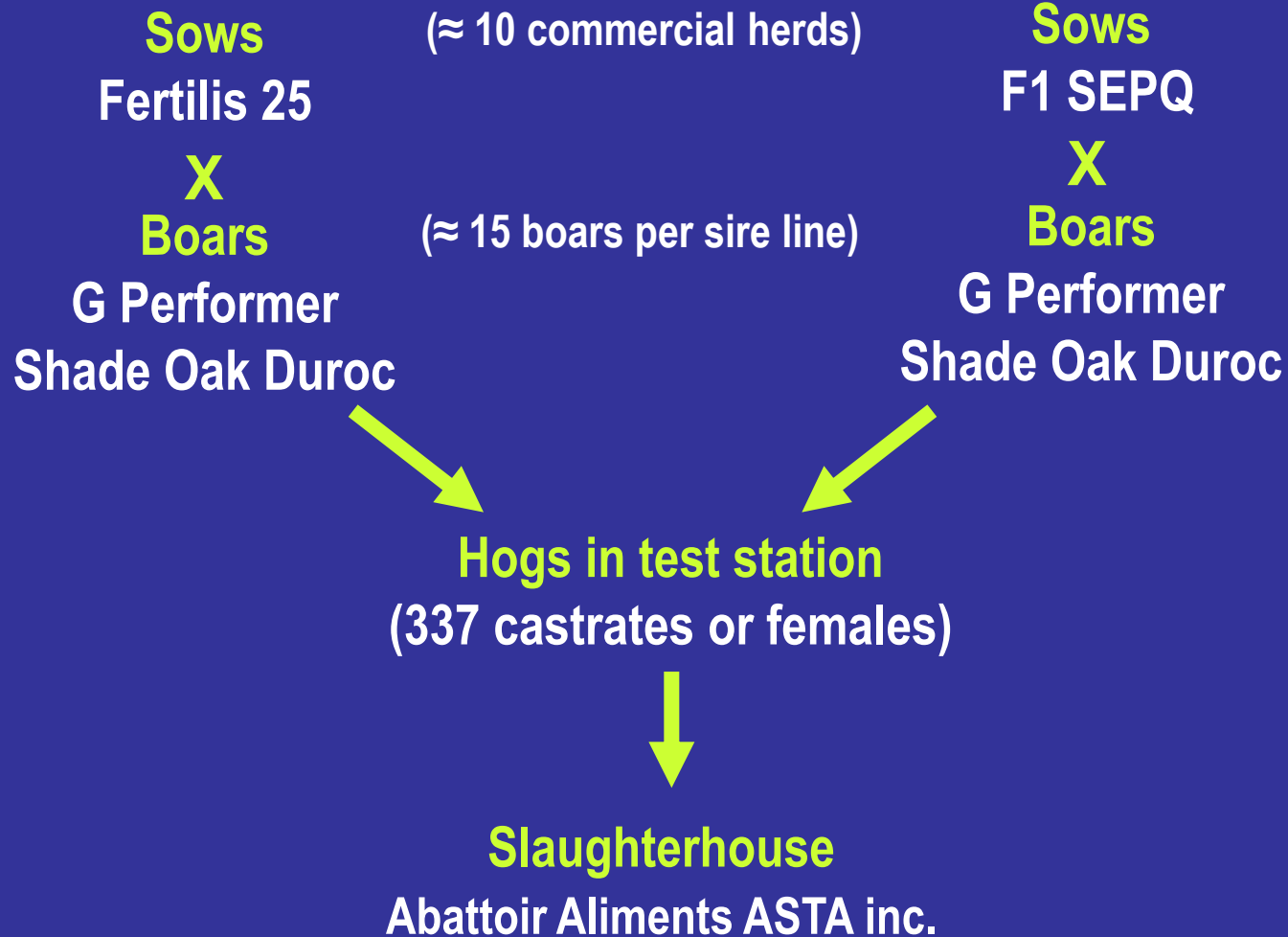
Hypor inc.

SEPQ

Génétiporc inc.



Description of the test





Description of the test

Deschambault test station



Nursery – finishing for 360 pigs





Description of the test

Specificities of the test:

- Individual feeding system
- Carcass and meat quality measurements at the slaughterhouse
- Experienced team and thorough measurements





Interpretation of the results for lines

Sire lines

Dam lines

Line A

Line B

Line 1

Line 2

Traits



LS Mean

w

x

y

z



1st position



2nd position

Growth Performances





Description of growth traits

- Test period
 - On test weight: 31,1 kg
 - Off test weight: 121,6 kg

Growth Performances	Sire lines		Dam lines	
	G Performer	Shade Oak Duroc	F1 SEPQ	Fertilis 25
On test weight* (kg)	30.3 ^A	31.8 ^B	30.9 ^A	31.3 ^A
Off test weight* (kg)	120.4 ^A	122.7 ^B	121.8 ^A	121.3 ^A

* Significant difference between lines

- The initial and final weight different between lines was taken into account in data analysis



Description of growth traits

- Off-test age (days)
 - Age of commercial pigs at the end of the finishing phase
 - Takes into account growth for the nursery and finishing phases
- Average daily gain (g/day)
 - Growth of the finishing phase



Performances of lines for growth traits

Sire lines

Dam lines

Growth Performances

G Performer

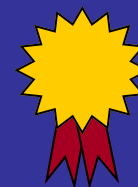
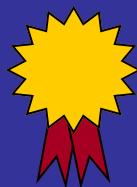
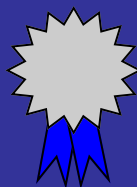
Shade Oak Duroc

F1 SEPQ

Fertilis 25

Desired value

Off test Age



<

LS Mean (day)

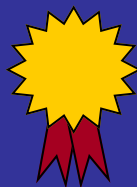
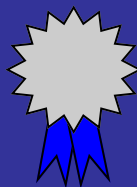
157.11^A

154.52^B

155.42^A

156.22^A

ADG (30 – 120 kg)



>

LS Mean (g/d)

1 027.62^B

1 075.82^A

1 058.23^A

1 045.21^A

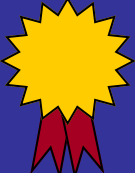
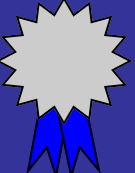
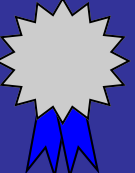

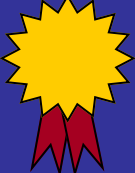
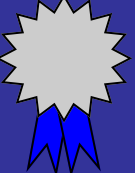




Description of feed intake measurements

- Total feed intake (kg)
 - Total feed intake during the trial
- Feed conversion ratio (kg/kg)
 - Hog feed intake / live weight gain
- Daily feed intake (kg/day)
 - Hog feed intake / duration



Performances of lines for feed intake

Growth Performances	Sire lines		Dam lines		Desired value
	G Performer	Shade Oak Duroc	F1 SEPQ	Fertilis 25	
Total feed intake 30 - 120 kg					<
LS Mean (kg)	210.37 ^B	216.07 ^A	215.25 ^A	211.19 ^B	
Feed conversion ratio 30 – 120 kg					<
LS Mean (kg/kg)	2.33 ^B	2.40 ^A	2.39 ^A	2.34 ^B	
Daily feed intake 30 – 120 kg					
LS Mean (kg/d)	2.37 ^A	2.53 ^B	2.49 ^A	2.42 ^A	



Description of growth traits per period

- Daily feed intake (g/day)
 - Per period:
 - ADG 30 – 50 kg (g/day)
 - ADG 50 – 75 kg (g/day)
 - ADG 75 – 120 kg (g/day)
- Feed conversion ratio (kg/kg)
 - Per period:
 - FCR 30 – 50 kg (kg/kg)
 - FCR 50 – 75 kg (kg/kg)
 - FCR 75 – 120 kg (kg/kg)



Performances of lines for growth traits per period

Growth Performances	Sire lines		Dam lines		Desired Value
	G Performer	Shade Oak Duroc	F1 SE PQ	Fertilis 25	
ADG 30-50 kg (g/day)					>
LS Mean (g/d)	982.36 ^A	1026.77 ^B	1012.63 ^A	996.50 ^A	
ADG 50-75 kg (g/day)					>
LS Mean (g/d)	1032.92 ^A	1086.11 ^A	1054.15 ^A	1064.87 ^A	
ADG 75-120 kg (g/day)					>
LS Mean (g/d)	1057.34 ^A	1115.54 ^B	1096.15 ^A	1076.72 ^A	
FCR 30-50 kg					<
LS Mean	1.77 ^A	1.83 ^B	1.82 ^A	1.78 ^B	
FCR 50-75 kg					<
LS Mean	2.17 ^A	2.28 ^B	2.27 ^A	2.19 ^A	
FCR 75-120 kg					<
LS Mean	2.75 ^A	2.82 ^A	2.81 ^A	2.77 ^A	

Carcass quality





Description of carcass classification measurements

- Destron backfat and muscle depth
- Lean yield (based on backfat and muscle depth)
- Hogs index from 2 carcass pricing grids
 - Including pigs within the desired weighting classes

Rendement	POIDS (kg)								
	0.1 69.9	70.0 74.9	75.0 79.9	80.0 84.9	85.0 91.9	92.0 99.9	100.0 102.9	103.0 107.9	108.0 999.9
1	40	80	100	106	110	110	106	100	80
2	40	80	106	109	114	114	110	104	80
3	40	80	102	106	111	111	110	102	80
4	40	80	98	102	108	108	106	98	80
5	40	80	96	98	106	106	104	96	80
6	40	80	94	96	100	100	98	94	80
7	40	80	90	92	96	96	94	90	80

Grid effective from Sept. 2006 to Sept. 2009
 (http://www.fppq.upa.qc.ca/nsphp/Info_Grille.php)

	Strate de Poids	1	2	3	4	5	6	7	8	9	10
		69,9 et	70	75	80	85	90	97	104,9	110	113 et plus
	Classes de rendement	moins	74,9	79,9	84,9	89,9	96,9	104,9	109,9	112,9	
1	>= 64,3	40	65	80	95	103	110	110	106	99	80
2	61,8 - < 64,3	40	65	85	99	103	110	110	107	100	80
3	59,6 - < 61,8	40	65	85	100	109	115	115	113	104	80
4	57,7 - < 59,6	40	65	85	102	107	112	112	111	102	80
5	56,8 - < 57,7	40	65	85	95	100	107	107	103	96	75
6	56,1 - < 56,8	40	65	80	85	90	102	102	95	90	75
7	54,7 - < 56,1	40	65	80	80	90	95	95	90	85	70
8	< 54,7	40	65	80	65	70	75	75	70	70	50

Grid effective since Sept. 2009
 (http://www.fppq.upa.qc.ca/nsphp/Info_Grille.php)



Performances of lines for carcass classification measurements





Carcass quality	Sire lines		Dam lines		Desired value
	G Performer	Shade Oak Duroc	F1 SEPQ	Fertilis 25	
Backfat Destron					
LS Mean (mm)	16.50A	18.47A	18.52A	16.45B	
Muscle depth Destron					
LS Mean (mm)	72.48A	68.83B	70.61A	70.70A	
Lean yield					
LS Mean (%)	62.26A	61.10B	61.21B	62.15A	
Slaughter grid index (90-104,9 kg)*					>
LS Mean	111.54A	112.73A	112.38A	112.02A	

* Grid effective since Sept. 2009



Performances of lines for carcass classification measurements

Interaction effect between lines

Carcass quality	G	Shade	G	Shade	Desired value
	Performer	Oak Duroc	Performer	Oak Duroc	
	X	X	X	X	
	F1 SEPQ	F1 SEPQ	Fertilis 25	Fertilis 25	
Slaughter grid index (85 - 99,9 kg)*					>
LS Mean	112.09 ^{AB}	110.87 ^B	112.28 ^{AB}	112.48 ^A	

* Grid effective from Sept. 2006 to Sept. 2009



Description of carcass quality measurements

Off-test backfat and muscle depth

Ultrasound measurements (US)



Loin eye area



Description of carcass quality measurements

Carcass yield

Hot carcass weight / Off test weight







Half-carcass length

Foster rule (cm)



Performances of lines for carcass quality measurements

Carcass quality	Sire lines		Dam lines		Desired value
	G Performer	Shade Oak Duroc	F1 SEPQ	Fertilis 25	
Carcass length					
LS Mean (cm)	83.78 ^A	83.53 ^A	53.44 ^A	54.41 ^A	
Off-test backfat					
LS Mean (mm)	13.32 ^A	15.39 ^B	15.09 ^A	13.62 ^A	
Off-test muscle depth					
LS Mean (mm)	70.02 ^A	67.67 ^A	68.96 ^A	68.73 ^A	
Loin eye area					
LS Mean (cm ²)	56.65 ^A	51.20 ^B	53.44 ^A	54.41 ^A	
Carcass yield					
LS Mean (%)	81.20 ^A 	80.45 ^A 	81.00 ^A 	80.65 ^A 	>



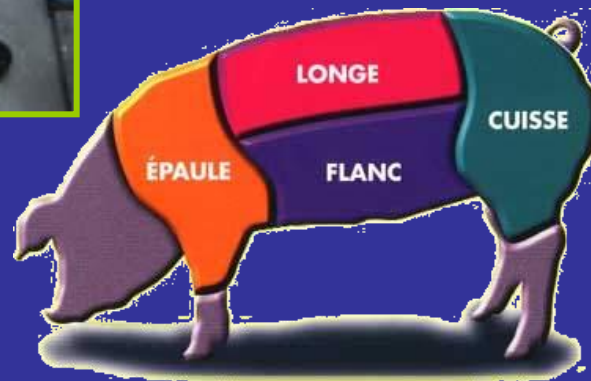
Description of carcass quality measurements

- **Primal cuts yield**

Primal cut weight

/

Reconstituted half carc





Performances of lines for carcass quality measurements

Primal cuts	Sire lines		Dam lines		Desired value
	G Performer	Shade Oak Duroc	F1 SEPQ	Fertilis 25	
Ham yield (%)	27.18 ^A	26.70 ^B	26.94 ^A	26.94 ^A	
Loin yield (%)	26.29 ^A	26.21 ^A	26.18 ^A	26.32 ^A	
Shoulder yield (%)	27.73 ^A	27.72 ^A	27.87 ^A	27.58 ^A	
Belly yield (%)	18.88 ^A	19.46 ^B	19.07 ^A	19.26 ^A	

Meat quality





Description of loin quality measurements



Ultimate pH 24h



Luminosity



Color



Performances of lines for loin quality measurements

Loin quality	Sire lines		Dam lines		Desired value
	G Performer	Shade Oak Duroc	F1 SEPQ	Fertilis 25	
Ultimate pH 24 h					
LS Mean	5.58 ^A	5.61 ^A	5.59 ^A	5.60 ^A	
Luminosity					
LS Mean	53.73 ^A	51.84 ^A	52.94 ^A	52.63 ^A	
Color (Japanese scale)					
LS Mean	3.43 ^B	3.74 ^A	3.58 ^A	3.60 ^A	



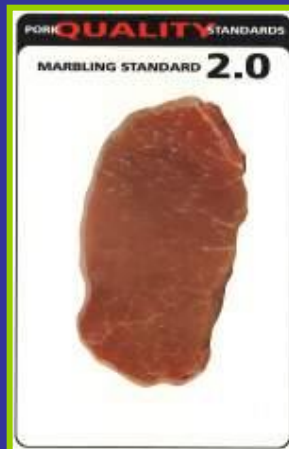
Description of loin quality measurements

Texture



- 1: firm
- 2: medium
- 3: soft

Marbling



Drip loss

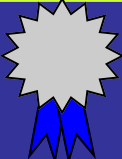





(Desired Value)

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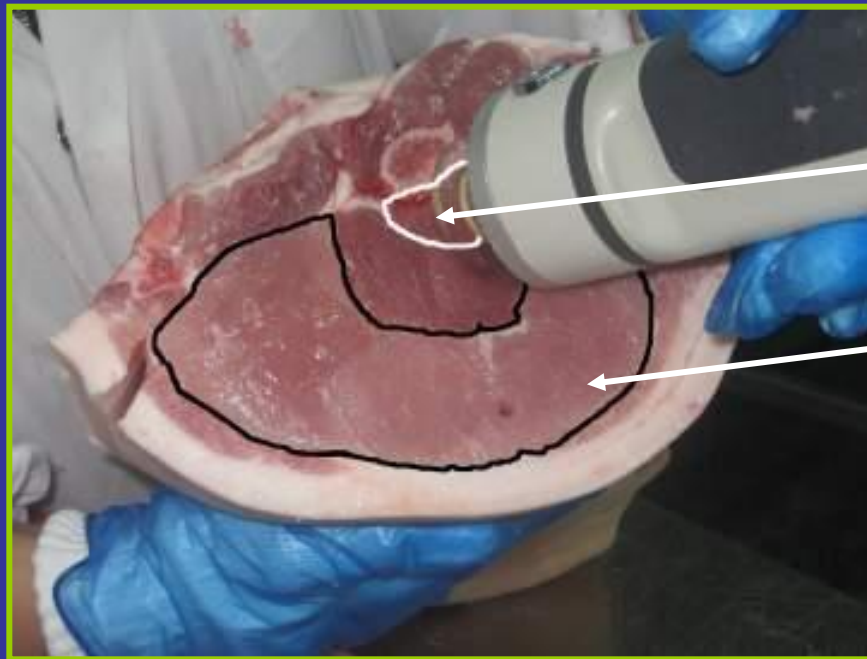


Performances of lines for loin quality measurements

Loin quality	Sire lines		Dam lines		Desired Value
	G Performer	Shade Oak Duroc	F1 SEPQ	Fertilis 25	
Texture					
LS Mean	2.16 ^A	1.37 ^B	1.73 ^A	1.79 ^A	
Marbling (NPPC scale)					
LS Mean	2.08 ^B	2.83 ^A	2.53 ^A	2.33 ^A	
Drip loss					<
LS Mean (%)	6.92 ^A	3.70 ^B	5.19 ^A	5.18 ^A	



Description of ham quality measurements



Gluteus profundus

Gluteus medius

- Ultimate pH 24h
- Luminosity
- Color

Bicoloration:

Color difference between gluteus medius and gluteus profundus

Tech. yield:

Prediction equation from color and reflectance measurements of gluteus medius and profundus (>)







Performances of lines for ham measurements

Ham quality	Sire lines		Dam lines		Desired Value
	G Performer	Shade Oak Duroc	F1 SEPQ	Fertilis 25	
Ultimate pH 24 h					
LS Mean	5.60 ^A	5.59 ^A	5.59 ^A	5.60 ^A	
Luminosity					
LS Mean	51.53 ^A	52.11 ^A	52.15 ^A	51.49 ^B	
Color (Japanese scale)					
LS Mean	3.75 ^A	3.75 ^A	3.75 ^A	3.75 ^A	



Performances of lines for ham quality measurements

Ham quality	Sire lines		Dam lines		Desired Value
	G Performer	Shade Oak Duroc	F1 SEPQ	Fertilis 25	
Bicoloration					
LS Mean	1.72 ^A	1.69 ^A	1.71 ^A	1.71 ^A	
Technological yield					>
LS Mean	129.29 ^B	129.84 ^A	129.66 ^A	129.48 ^A	



Description of belly texture measurement

- Boneless belly draping over a metallic rod for a period of 2 minutes
- Distance at 15 cm from the rod





Performances of lines for belly quality measurement

Belly quality	Sire Lines		Dam lines		Desired Value
	G Performer	Shade Oak Duroc	F1 SEPQ	Fertilis 25	
Belly Texture					
LS Mean (mm)	138.43 ^B	154.69 ^A	150.20 ^A	142.92 ^A	

More results





Gender performances

Growth Performances	Females	Barrows	Sex diff.
Off-test age* (days)	159.5	152.1	7.4
ADG 30-115 kg* (g/day)	1 001	1 102	101
Off-test backfat DESTRON* (mm)	16.43	18.54	2.11
Lean yield* (%)	62.20	61.04	1.04

* Significantly different ($p < 0.05$) between sex



Gender performances

Growth Performances	Females	Barrows	Sex diff.
Total feed intake* (kg)	210.49	215.95	5.45
Daily feed intake* (kg/day)	2.31	2.59	0.28
Feed conversion ratio* (kg/kg)	2.33	2.39	0.06

* Significantly different ($p < 0.05$) between sex



Gender performances

Carcass and meat quality measurements	Females	Barrows	Sex diff.
Carcass yield* (%)	81.03	80.63	0.48
Loin yield* (%)	26.48	26.02	0.46
Shoulder yield* (%)	27.50	27.94	0.44
Belly texture* (mm)	134.31	158.81	24.51
Drip loss (%)	5.14	5.23	0.09

* Significantly different ($p < 0.05$) between sex



Health performances

Mortality reasons

	Trial 25		Trial 26	
	Nursery	Finishing	Nursery	Finishing
Bad condition ¹				
Wasting			2	
Digestive problems		2		
Locomotive problems		2		
Nervous problems	1		1	
Respiratory problems				
Studden death			1	
Meningitis				
Others conditions	2	2		
Total (%)	3/327 (0.92%)	6/324 (1.85%)	4/189 (2.12%)	0/185 (0%)

1 piglets in bad condition in starting up (0-3 days)



Nursery performances

Table of piglets performances during the acclimatization period:

Diet	Age (days)	Weight (kg)	ADG (g/day)	Feed conv.
1	13.7 à 25.1	5.3 à 6.6	115	1.22
2	25.1 à 30.7	6.6 à 8.3	300	1.23
3	30.7 à 42.4	8.3 à 15.1	573	1.18
4	42.4 à 69.1	15.1 à 31.4	613	1.63
Global	13.7 à 69.1	5.3 à 31.4	469	1.47



Warning: not relevant to compare sire lines performances between trials

Traits	Results	Test 19	Test 20	Test 21	Test 22	Test 23	Test 24
ADG (g/d)	By test	1077	1003	1047	1020	1017	1027
	By trial	1038		1030		1022	
Off-test backfat (end) (mm)	By test	15.04	13.57	15.14	16.52	15.03	15.35
	By trial	14.36		15.81		15.19	

More differences of performance within each trial than between trials.



Conclusion

- The 25th and 26th station trials have showed:
 - Differences of performance for the lines:
 - Growth performances
 - Carcass quality
 - Meat quality



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