REFLEXIONES SOBRE LA CERDA DE REPOSICION

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OBJETIVOS

- Conseguir cubrir el máximo número de cerdas de cada lote entrado
- Obtener el mayor número posible de partos de ellas
- Alcanzar el potencial genético en términos de prolificidad
- Minimizar las pérdidas entre ciclos
- OBTENER EL MAXIMO DE LECHONES EN SU VIDA PRODUCTIVA

Sow Replacement Rates

The annual sow replacement rate on Irish pig farms has been rising steadily and reached 51.6% in 2003

Sow replacement rates on Irish Pig Farms

Year	Sow Culling %	Sow Mortality %	Sow Replacement %
1999	**41.4**	**5.8**	**46.9**
2000	43.5	5.5	49.0
2001	45.3	5.4	50.7
2002	43.5	6.2	49.7
2003	45.5	6.1	51.6

Source: Teagasc Pigsys Reports

Sow condition effects on mortality and reproduction (Williams et al 2000)

Farm	% Sows around perfect condition	% Sow Mortality	Pig weaned/mated sow/year
1	59.3	13.4	20.6
2	61.7	17.7	19.7
3	75.2	5.7	21.1
4	78.8	8.7	22.8
5	79.1	8.4	23.5
6	79.3	6.5	22.2
7	84.4	7.8	24.6

The data shows that the herds with more sows in perfect condition had a lower mortality (R2 = -0.83) and weaned more pigs per mated sow per year (R2 =0.88).

- La longevidad de una cerda estará marcada por la interacción entre el individuo (la cerda) y el medio ambiente (granja), siendo nosotros quienes marcamos el grado de hostilidad en dicha relación

PIC recommendations for proper gilt development include the following. Multiplication herd size should be a minimum 12 % of commercial herd size. There should be a minimum of 60 days isolation and acclimatization. Gilt age at breeding should range from 210 to 230 days. Body weight should be a target of 290 to 330 lbs. Physiological age or number of estrus cycles prior to first service should be a minimum of 2 and preferably 3. Back fat thickness should be a minimum of 14 mm at the P2 region.

Analyse des modalités de mise à la reproduction des cochettes
dans les élevages français

Conséquences sur les carrières des truies

J. DAGORN (1), Sylviane BOULOT (1), Y. LE COZLER (2), J.Y. DOURMAD (3), H. PELLOIS (4)

- Estudio realzado en Francia sobre 976 explotaciones y 35600 cerdas de reposición.
- A partir del tercer ciclo, la prolificidad es independiente de la edad a la cubrición
- Los mejores resultados se obtienen con cerdas que tienen su primer parto entre 330 y 370 días de vida
- Reducir en lo posible el intérvalo entrada cubrición, haciendo una buena cuarentena y gestionando por tanto la edad a la entrada.
- 13,5 % de las cuarentenas duraban menos de 35 días!!!

OBSERVACINES SOBRE P2 EN CUARENTENA

- Incremento de P2: 1,9 +/- 2,4
- 15% pierden grasa en cuarentena
- 19% ganan > 4 mm
- G.M.D media: 633 gr/d.
- 45% cerdas ganan < de 600 gr/d.
- Duración de la cuarentena: 47,2 +/- 10,9 d.
- Edad a la entrada: 175,9
- Peso entrada: 111,2
- Ganancia total (kg): 30 +/- 11,9

OBSERVACIONES SOBRE P2 EN GESTACION

- Incremento medio de P2: 4,4 +/- 3,5
- Kg repuestos: 85 kg
- Duración desde la salida de cuarentena: 132 d.
- 11,3 % de las cerdas han perdido 1,6 mm con respecto a la salida de cuarentena
- Las cerdas que han perdido condición corporal eran aquellas que más ganaron en cuarentena (doble)

OBSERVACIONES SOBRE P2 EN MATERNIDAD

- Perdida de grasa media: 3,8 +/- 3,3
- Pérdida entre 1 y 3 mm: 22%
- Pérdida entre 3,1 y 5 mm: 31%
- Pérdoda entre 5,1 y 9 mm: 19%
- El 15% de las cerdas ganan peso en maternidad
- Duración lactación 27d.
- Pérdida de peso por cerda: 39,5 +/- 16,1
- La perdida de peso neta, sin lechones y placentas es de 15 +/- 16,3 kg.

Évolution des réserves corporelles chez la jeune truie et performances à la première mise-bas

A. CAUGANT (1), H. ROY (2), J.Y. DOURMAD (3)

- El estudio demuestra la extrema variabilidad tanto intra como inter granjas en todas las medidas y en todas las fases.
- No se ha encontrado influencia del peso ni grasa dorsal ni la evolución de las mismas sobre parámetros reproductivos en primer ciclo.
- Todo lo anterior puede deberse a que el estudio se llevó a cabo en explotaciones con buenos resultados y bien manejadas.

Gerard Mc Cutcheon, Teagasc, Bagenalstown: IRISH AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

Further analysis of Pigsys data shows that **about 13% of gilts introduced into the breeding herd for service are culled or die before service**.
It should be noted that **not all of the 87% of gilts that are served will produce a litter**. Allowance must be made for served gilts that are culled or die before farrowing. Analysis of data from 8 herds showed a farrowing rate of 80% in gilts with **6% of gilts served being culled (5.5%) or dying (0.5%) before farrowing**.
The actual number of gilts required will vary from farm to farm. Each unit needs to **establish how many gilts must be purchased/selected to produce 100 gilt litters**.

PUNTOS CRITICOS

- Genética
- Sanidad
- Ambiente:
  - Alimentación
    - Forma de administración
    - Composición
  - Manejo
    - Recela/alojamiento
    - Nº de entradas
    - Planes vacunales
    - Adaptación…
  - Instalaciones
    - Espacio/tiempo
    - Condiciones de suelo y temperatura/ventilación

Genetica

- Edad a la pubertad
- Composición corporal
- Rusticidad
- Peso en edad adulta

Sanidad

- Origen
  - Standard
    - Negativo a Aujeszky
  - HHS
    - Negativo: A.D/PRRS/M.Y/APP…
- Destino
  - Standard
    - Duración cuarentena ??????
    - Espacio necesario: cuarentena +jaulas== edad entrada
  - HHS
    - Solo influye la edad a la cubrición y el plan vacunal

Ambiente: alimentación

- Alimentación durante la recría
  - Hasta los 50 kg cuidado con la calidad de aplomos
- Alimentación cuarentena/gestación
  - Hasta los 100 kg
    - No cortar en demasía el crecimiento de los animales: mal aspecto
    - No sobrepasar el nivel de grasa correcto

Ambiente: manejo

- Duración de la cuarentena
- Tipo de pienso y forma de administración
- Pauta vacunal
- Inicio, frecuencia y calidad de la recela
- Tratamientos hormonales si los hay
- Edad de cubrición
- Condición corporal “objetivo”

Table 2: Least square means based on weight at breeding for first parity C23 gilts

	Weight class				
Trait	**<300**	**300-325**	**325-350**	**350-375**	**>375**
Number of observations	92	136	181	124	157
First parity traits					
Back fat at first service, mm	13.9 ^{a} ± .3	15.1 ^{b} ± .2	16.2 ^{c} ± .2	16.8 ^{cd} ± .2	17.5 ^{d} ± .2
Gilt weight at first service, lb	292 ^{a} ± 2	322 ^{b} ± 1	343 ^{c} ± 1	364 ^{d} ± 1	406 ^{e} ± 1
Age at first service, days	205 ^{a} ± 2	218 ^{b} ± 2	229 ^{c} ± 1	236 ^{d} ± 2	250 ^{e} ± 2
Estrus cycle at first service	2.9 ^{a} ± .1	3.3 ^{b} ± .1	3.6 ^{c} ± .1	3.6 ^{c} ± .1	3.8 ^{c} ± .1
Number born, pigs	11.2 ^{a} ± .3	11.8 ^{ab} ± .3	11.6 ^{ab} ± .2	12.2 ^{b} ± .3	11.7 ^{ab} ± .3
Number born alive, pigs	10.5 ^{ab} ± .3	10.6 ^{ab} ± .3	10.6 ^{a} ± .2	11.3 ^{b} ± .3	10.4 ^{a} ± .3
Farrowing rate, parity one %	98.3 ± 1.9	98.9 ± 1.5	96.9 ± 1.3	95.2 ± 1.6	95.6 ± 1.6
Removal, %	1.6 ± 2.2	1.8 ± 1.8	5.3 ± 1.5	5.6 ± 1.8	5.1 ± 1.8

^{a,b} Means within a row that have differing superscripts are statistically different ($P < .05$).

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Table 1: Least square means based on back fat classification at first parity mating for C23 gilts

	Back fat classification (mm at P2)					
Trait	**Back fat < 12**	**Back fat 12-14**	**Back fat 14-16**	**Back fat 16-18**	**Back fat 18-20**	**Back fat > 20**
Number of observations	124	361	431	364	231	163
First parity traits						
Back fat at first service, mm	11.4 ^{a} ± .1	13.5 ^{b} ± .04	15.5 ^{c} ± .04	17.4 ^{d} ± .04	19.3 ^{e} ± .05	22.6 ^{f} ± .1
Gilt weight at first service, lb	316 ^{a} ± 6	340 ^{b} ± 4	358 ^{c} ± 3	357 ^{c} ± 4	358 ^{c} ± 5	370 ^{c} ± 7
Age at first service, days	222 ^{a} ± 2	225 ^{a} ± 1	233 ^{b} ± 1	231 ^{b} ± 1	234 ^{bc} ± 1	237 ^{c} ± 2
Number born, pigs	11.5 ± .3	11.9 ± .2	11.6 ± .1	11.8 ± .2	11.7 ± .2	12.1 ± .2
Number born alive, pigs	10.3 ^{a} ± .3	10.8 ^{ab} ± .2	10.6 ^{a} ± .1	10.8 ^{ab} ± .2	10.8 ^{ab} ± .2	11.3 ^{b} ± .2
Farrowing rate, %	96.0 ± 1.5	98.6 ± .9	96.5 ± .8	96.4 ± .9	97.0 ± 1.1	98.8 ± 1.3
Removal, %	6.5 ^{a} ± 1.6	2.2 ^{b} ± .9	3.0 ^{ab} ± .9	3.8 ^{ab} ± .9	4.3 ^{ab} ± 1.1	1.8 ^{b} ±1.4

^{a,b} Means within a row that have differing superscripts are statistically different ($P < .05$).

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Proportion of Sows surviving after each Parity by Backfat Class at selection 100kg (Brisbane & Chesnais ‘96)

	<10	10 - 12	12 - 14	14 - 16	16 - 18	>18
No/group	952	3395	5559	4731	2898	1496
Parity	Survival percentages					
1	61	69	76	80	82	83
2	43	50	60	67	70	73
3	30	37	47	55	58	63
4	18	26	36	44	48	54
5	11	17	27	35	40	45
6	7	11	19	27	30	36

Ambiente

- Climatización
  - Ventilación forzada: si/no
  - Entrada de aire controlada: si/no
  - ¿Humedad en suelo? / corrientes
- Alojamiento físico
  - Espacio en la zona de parques
  - Tiempo de alojamiento en jaulas antes de la cubrición
  - ¿Edad de cubrición?

¿Nuevos objetivos?

- Conseguir cerdas de 240 días de edad a la cubrición
- Que paran >13 lechones
- Que no tengan efecto 2º parto

Ventajas de una reposición "madura"

- Cerda bien adaptada a la explotación
  - A las jaulas
  - Al alimento
  - Al microbismo
- Estatus inmunitario asentado
  - Plan vacunal acabado
  - Contacto dilatado con el microbismo de la explotación

Desventajas de la reposición "madura"

- Incremento del coste de las instalaciones
- Incremento del gasto en alimentación
- Incremento de la duración de la vida improductiva de la cerda
- Pérdida de cerdas por el camino
  - No todas las cerdas reciclan
  - Los factores de pérdidas de cerdas están ligados al tiempo de estancia

Puntos críticos en el uso de la reposición “madura”

- Edad de la entrada
  - Si entran con >6 meses tienden a estar engrasadas (ad libitum)
- Duración de la cuarentena
  - Condiciones alojamiento
    - Calidad ambiental
    - SISTEMA DE ALIMENTACION

Evaluación del procedimiento

- Los números técnicos deben mejorar pero… no es suficiente
- El porcentaje de reposición debe bajar de forma significativa
- Consecuentemente la edad media de las cerdas al desvieje debe aumentar, y por tanto el número de lechones destetados por cerda eliminada, que es el criterio definitivo

CONCLUSIONES

- A veces lo fácil no es lo rentable
- Los criterios de manejo deben estar basados en números contrastables
- Debemos adaptar las explotaciones a las necesidades de las cerdas, no las cerdas a las necesidades de las explotaciones
- Recordemos que la normativa de bienestar animal puede hacer tambalearse algunos de nuestros planteamientos actuales

¡¡¡CUIDADO!!!: los genotipos modernos son “ casi “ animales domésticos

Growth rate and age at boar exposure as factors influencing gilt_ puberty

W.S. Amaral Filha[a], M.L. Bernardi[b], I. Wentz[a] and F.P. Bortolozzo[a], ,
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- verify whether pubertal estrus could be influenced by the growth rate and age of _gilts_ at the onset of boar exposure. _Gilts_ (n = 1486) were evaluated according to two groups of age at boar exposure (A = 130-149 d and B = 150-170 d) and three classes of growth rate (Low = 550–649 g/d; intermediate = 650–725 g/d and High = 726–830 g/d).
- Within group A, puberty was attained earlier in High than in Low growth rate gilts_ (159.6 vs. 164.8 days). However, age at puberty was not affected by growth rate, when _gilts_ were exposed to boar in an older age (group B).
- age at puberty was positively associated with the age at the onset of boar exposure (r = 0.38; P < 0.0001)
- successful stimulation of puberty can be obtained through an earlier exposure to boars in high growth rate

The association between growth rate, body weight, backfat thickness and age at first observed oestrus in crossbred Landrace × Yorkshire gilts

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- Neither the BF of the _gilts_ at entry nor the BF that the _gilts_ gained within the _gilt_ pools significantly correlated with age at first observe
- The GRs of the _gilts_ significantly correlated with the BW (r = 0.55, P < 0.001) of the _gilts_ when they were sent to the breeding house and the age at first observed oestrus (r = −0.40, P < 0.001). d oestrus
- replacement _gilts_ with a high GR (both GRe and GRs) tend to show sign of oestrus earlier than _gilts_ with a low GR (both GRe and GRs).

Influence of gilt age and body composition at first breeding on sow reproductive performance and longevity.

Rozeboom DW, Pettigrew JE, Moser RL, Cornelius SG, el Kandelgy SM.

Department of Animal Science, University of Minnesota, St. Paul 55108, USA.

- Age and body composition at first breeding were not related (P > .10) to litter size at birth or weaning in parities 1, 2, 3, or overall.
- Increasing age at first breeding was related to small increases in pig birth weights (P < .001) in parity 1 and average pig weaning weight (P < .001) in parities 1, 2, and overall.
- Body composition of gilts at first breeding was not related (P > .10) to pig birth weights and was inconsistently related to pig weaning weights in parities 2 and 3 (P < .001).
- Females heavier at first breeding remained heavier (P < .01) throughout the experiment.
- Age and body composition at first breeding were not different (P > .10) for gilts completing three parities (n = 53) compared with gilts failing to complete three parities (n = 34).
- Results show no large effects of gilt age or body composition at first breeding on sow productivity and longevity over three parities.

Evaluation of optimal age at first conception in gilts from data collected in commercial swine herds.

Schukken YH, Buurman J, Huirne RB, Willemse AH, Vernooy JC, van den Broek J, Verheijden JH.

Department of Herd Health and Reproduction, College of Veterinary Medicine, Utrecht, The Netherlands.

- The proportion culled for infertility increased linearly from 18% at conception on d 200 to 24.5% at conception on d 300. Combining the effect of litter size and herd life led to the conclusion that the profit per gilt (sow) was not significantly affected by her age at first conception. It is concluded that the optimal economic age at first conception was considered to be approximately 200 to 220 d of age when the cost of housing and feed of the gilt from entry to first conception were taken into account.

Increasing the age of gilts at first boar contact improves the timing and synchrony of the pubertal response but does not affect potential litter size.

van Wettere WH, Revell DK, Mitchell M, Hughes PE.

Discipline of Agricultural and Animal Science, School of Agriculture and Wine, The University of Adelaide, Roseworthy Campus, Roseworthy, SA 5371, Australia.

- Mean days-to-puberty and the synchrony of puberty attainment were similar when boar contact commenced at 182 and 203 days of age. There was no significant effect of mating oestrus or age of gilts at mating on ovulation rate, embryo number or embryo survival. In conclusion, the current data indicate that the timing and synchrony of puberty attainment is significantly improved when first boar exposure of gilts is delayed until 182 days of age. Further, it is evident that within the age range investigated, delaying first mating until the second oestrus does not significantly increase either ovulation rate or embryo number at day 20 post-mating.

Longevity, lifetime pig production and productivity, and age at first conception in a cohort of gilts observed over six years on commercial farms.

Koketsu Y, Takahashi H, Akachi K.

Department of Clinical and Population Sciences, University of Minnesota, St. Paul 55108, USA.

- Increasing the age at first mating was associated with low farrowing rate ($P<0.01$) in parity 0. Older age at first conception was associated with lower parity at removal, shorter reproductive herd life, and fewer lifetime pigs born alive ($P< 0.01$).

Effect of birth litter size, birth parity number, growth rate, backfat thickness and age at first mating of gilts on their reproductive performance as sows.

Tummaruk P, Lundeheim N, Einarsson S, Dalin AM.

Department of Obstetrics and Gynaecology, Faculty of Veterinary Medicine, Swedish University of Agricultural Sciences (SLU), Box 7039, SE-75007, Uppsala, Sweden. padet.tummaruk@og.slu.se

Estudio Sueco

- The present study was performed to evaluate retrospectively the influence of birth litter size, birth parity number, performance test parameters (growth rate from birth to 100kg body weight and backfat thickness at 100kg body weight) and age at first mating (AFM) of gilts on their reproductive performance as sows.

Estudio Sueco 2

- A 10 day increase in AFM resulted in an increase in litter size of about 0.1 piglet for primiparous sows (P<0.001) and a decrease (P<0.05) for sow parities 4 and 5.

Sows having high lifetime efficiency and high longevity associated with herd productivity in commercial herds

Yosuke Sasaki[a], and Yuzo Koketsu[a]

aSchool of Agriculture, Meiji University, Kanagawa, Japan

- Sows aged between 186 and 227 days at first mating were 1.09 to 1.11 times as more likely to become a HE–HL sow as those aged between 249 and 269 days at first mating (*P* < 0.05).

Reproductive performance of high growth rate gilts inseminated at an early age.

Kummer R, Bernardi ML, Wentz I, Bortolozzo FP.
Setor de Suínos, Faculdade de Veterinária, Universidade Federal do Rio Grande do Sul, Av. Bento Gonçalves 9090, CEP 90540 000, Porto Alegre, RS, Brazil.

- In conclusion, gilts, which had a minimum weight of 127 kg can be inseminated at their second or greater estrus, between 185 and <210 d of age, without impairing their productive performance over three parities.

Reproductive performance of gilts with similar age but with different growth rate at the onset of puberty stimulation.

Kummer R, Bernardi ML, Schenkel AC, Amaral Filha WS, Wentz I, Bortolozzo FP.
Setor de Suínos, Faculdade de Veterinária, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brazil.

- Higher growth rate gilts (G2) reached puberty earlier (155.3 vs 164.1 days; p < 0.01). More gilts of G2 group attained puberty by 190 days of age (p = 0.004) than G1 gilts (95%; 55/58 vs 76%; 44/58). The anoestrous rate, until 60 days after the onset of boar exposure was higher (p < 0.01) in G1 (19.0%; 11/58) than in G2 (3.4%; 2/58) group. However, there were no differences in the pregnancy rate (90.7 vs 94.5), ovulation rate (15.9 vs 16.5), total embryos (12.9 vs 11.7), viable embryos (12.0 vs 11.1) and embryo survival (73.7% vs 68.5%), between G1 gilts and G2 gilts, respectively (p > 0.05). High growth rate gilts attain puberty earlier and have a lower anoestrous rate than low growth rate gilts.

Effect of space allowance during rearing and selection criteria on performance of gilts over three parities in a commercial swine production system.

Young MG, Tokach MD, Aherne FX, Dritz SS, Goodband RD, Nelssen JL, Loughin TM.
Department of Animal Sciences and Industry, Kansas State University, Manhattan 66506-0210, USA.

- A total of 1,257 gilts were used to determine the effect of space allowance during rearing and age at puberty on total pigs produced and removal rate over 3 parities.
- space allowance in rearing did not affect total pigs produced or removal rate
- gilts that attained puberty at a younger age produced more pigs over parities 1 to 3.
- Gilts served between 240 to 260 d of age produced more ($P < 0.01$) pigs by the end of parity 3 than those served at >260 d of age, whereas a greater ($P < 0.01$) percentage of gilts served at >280 d of age were removed by the end of parity 3.