Environmental enrichment and nutritional strategies to reduce tail biting in pig farms

ENTAIL

Keelin O'Driscoll

Teagasc
Agriculture and Food Development Authority

The Irish Agriculture and Food Development Authority

Project context

- 99% of Irish pigs tail docked
  .....but routine docking banned!

- Manipulable material: legal requirement, and reduces biting
  but little knowledge of effective materials for slatted systems

Must be addressed before it becomes a non-compliance issue!

Funding obtained from 2014 Stimulus call

1. Keelin O'Driscoll, Laura Boyle, and Edgar Garcia Manzanilla
2. Amy Haigh has been recruited as a postdoc
3. PhD student to come!

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Aim: Increase knowledge of how to best manage pigs in Irish systems to comply with EU legislation

Officially started 1 April 2015

<u>2 year study focusing on natural material</u>

1. Straw and/or fibre increase
   - Compressed straw for slatted systems

2. Use of wood – hard v's soft
   - Concern over splinters and rate of use

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Study 1: Straw and fibre

- Deep straw bedding = gold standard
- Provision method, length, amount, of straw affects effectiveness

However

- Irish systems constrained by slats
- Straw blocks could reduce wastage
  - Anecdotal evidence that increasing fibre can reduce use
- Tail health, salivary cortisol (stress), production performance

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Study 2: Types of wood

- Alternatives to straw need investigation (EFSA, 2007)
- Wood: odorous, ingestible, deformable, destructible

However

- Little research into best type – species, hardness etc., age of pig
- Could be less expensive in Ireland than straw?
- Control, and two wood types
  - Previous measures, plus mouth damage
  - 1st PhD project

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Study 3: Long tailed pigs

- Effective strategies from S1 and S2 combined *v's* control
  - Long *v* short tails
- Second PhD project
- Testing 'mood' of pigs as well as previous measures

Project will provide detailed information on effectiveness of organic substrates at an applied level on farm

Top up funding for PhD....

- Teagasc providing 2 years top up stipend
- FareWellDock
  - University of Edinbugh for PhD supervison
  - Consulted with group to identify novel research questions
  - Attended consortium meeting in April to update on European research

Third PhD project

- Allowance of material also affects effectiveness
- Optimum amount needs to be id'd
  - Above this no biological benefit, but costly
  - Positive and negative control, and effective material id'd from previous studies at various allowances
  - Rate of use and financial cost also assessed

Fourth PhD project

- Effectiveness of non-organic devices
  - Straw and/or rubber toy
  - Toy may reduce replacement rate of straw

Pilot study – 2 toys provided by Easyfix

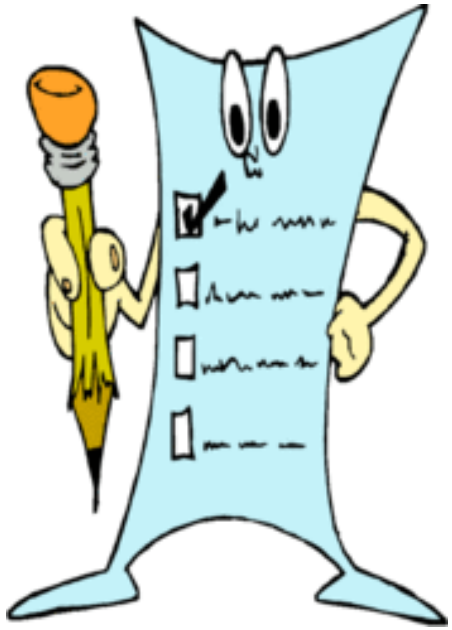
- 2 × designs of rubber device at 2 allowances investigated
  - ↑ interactions with floor than hanging device
  - ↑ duration of interaction with floor than hanging device
  - ↑ displacements when only 1 floor present
  - ↓ ear damage when 3 than 1 device present

We need your help!!!!

- Next step: investigate current practises

- <u>Short</u> survey on your seat ☺
  - General
  - Feeding
  - Tail-biting
  - Enrichment

  } 3 pages



- Can be returned today, or posted in *(envelopes available)*

Optimising Output per Sow

OPTIPIG

Keelin O’Driscoll and Peadar Lawlor

Teagasc
Agriculture and Food Development Authority
The Irish Agriculture and Food Development Authority

Project context

- Increasing output per sow - priority research area
- Funding obtained from 2013 Research Stimulus call
  - Started 1 June 2014
- Peadar Lawlor, Laura Boyle, Donagh Berry, Elizabeth Magowan, Keelin O'Driscoll
  - Sow work: Kathryn Reid
  - Piglet work: Oceane Schmitt
  - Data analysis: Anna Lavery
  - Technician

OPTIPIG

Aim: Increase numbers born alive AND viability…

…so that the number of pigs sold/sow/year approaches levels achieved in the most efficient pig producing countries

Theme 1: Sow work

- **Nutritional management of the sow**

Theme 2: Piglet work

- **Management strategies to keep young piglets alive**

…….spread across 8 tasks

Task 1: Information gathering and planning

- What I've been doing!
- Licences and ethical approval
- Literature review
- Benchmarking exercise
- Survey on farrowing house management *(Oceane)*
- Danish pig welfare conference

PhD1: Working with the sows (Tasks 2 +3)

- University College Dublin

- Supplementation to improve vitality as well as no. born
  1. Arginine *(born heavier, + early weight gain)*
  2. Carnitine *(+ fetal and pre-weaning growth, muscle fibre, suckling)*
  3. Vitamin D *(improves innate and adaptive immunity)*
  4. Lactose *(↑birth weight,↓ birth weight variation,↓pre-weaning mortality in the next litter)*
  5. Dextrose *(lowers weight variation at birth)*
  6. Fish oil *(reduces mortality)*

- Increasing feed allowance during gestation

Treatments

1. Control
2. Arginine
3. Carnitine
4. Arginine | Carnitine

150 sows/ treatment

Supplementation period: d28 gestation – farrowing

32 sows go on trial every 2nd week

Trial has begun! - 6 reps being supplemented

Start farrowing - June 2015

Litter measurements

Born alive

Stillborn - Type I or II

Mummified

Total born

Birth weight

Pre-weaning deaths

Number weaned and weight (4 weeks)

Number transferred (when & where to/from)

Sow measurements

Lactation feed intake

Weaning to oestrus interval

Subsequent farrowing rate

Changes in sow weight and back fat

Colostrum Quality

Vitality scoring (first minute of life)

Birth order

Interval between births - farrowing duration

Timing of stillborn/mummified.

Skin staining with meconium

Latency to breathe/stand/reach udder/suckling

Heart rate

Muscle tone

Colour of the snout

Skin temperature

Crown-rump length

Abdominal circumference

Body mass index (birth weight (kg) / crown to rump length^2)

Ponderal index (birth weight (kg) / (crown–rump length (m)^3)

Colostrum quality & intake

PhD2: Working with the piglets

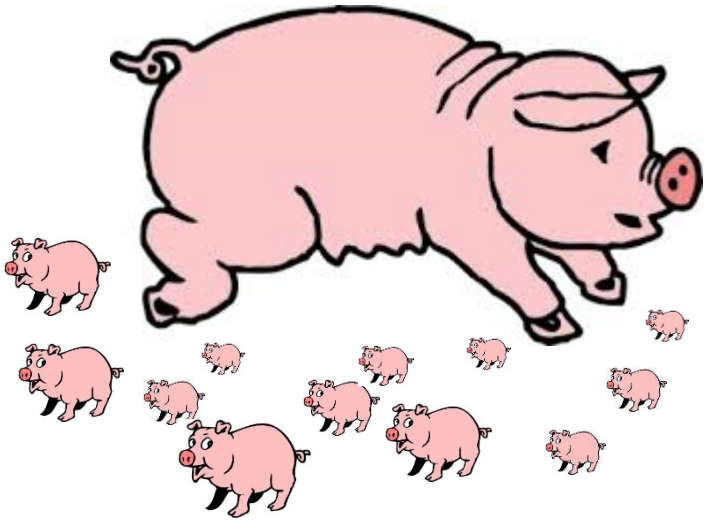
- University of Edinburgh
- 3 main strategies

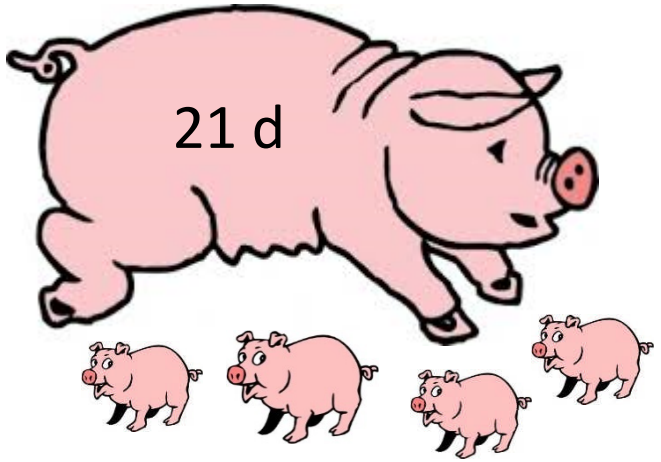
1. Nurse sows *(Task 4)*
2. Rescue decks *(Task 5)*
3. Energy supplements *(Task 6)*

Task 4: 1 v's 2 step nurse sows

One step nurse sow

… weaning piglets at 21d from a nurse sow, then fostering on surplus piglets from newly farrowed sows





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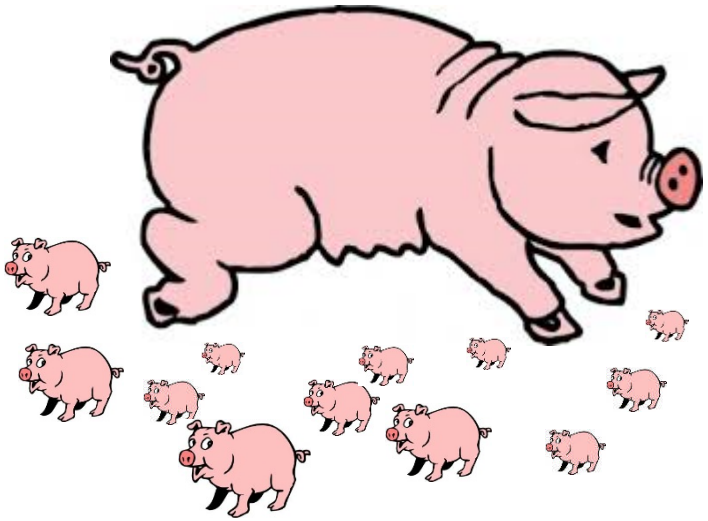

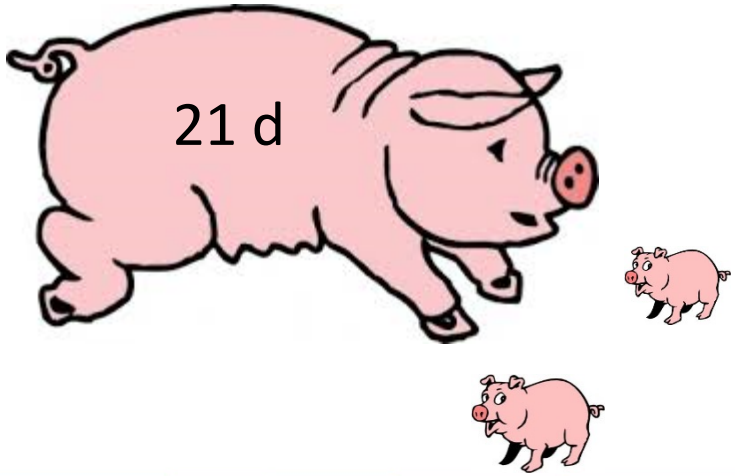

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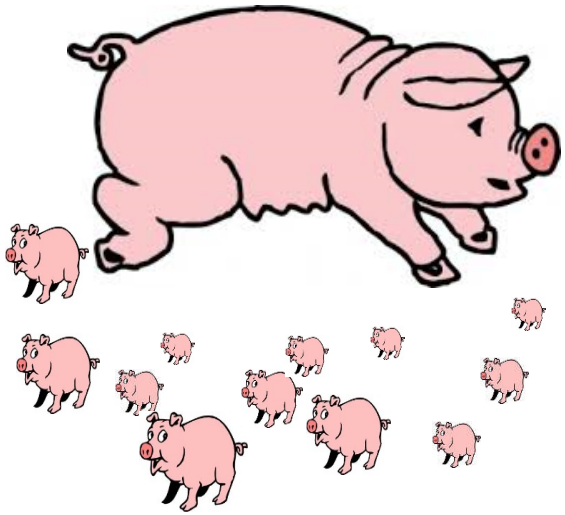
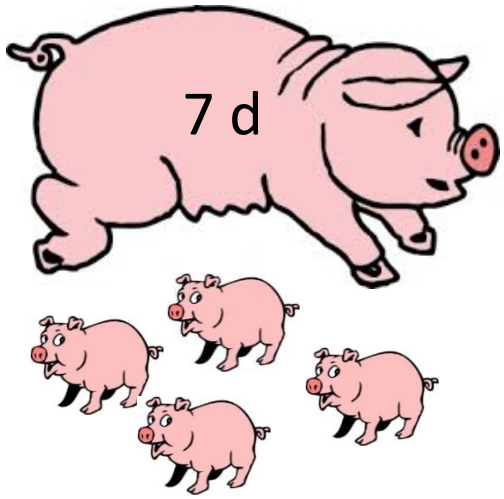
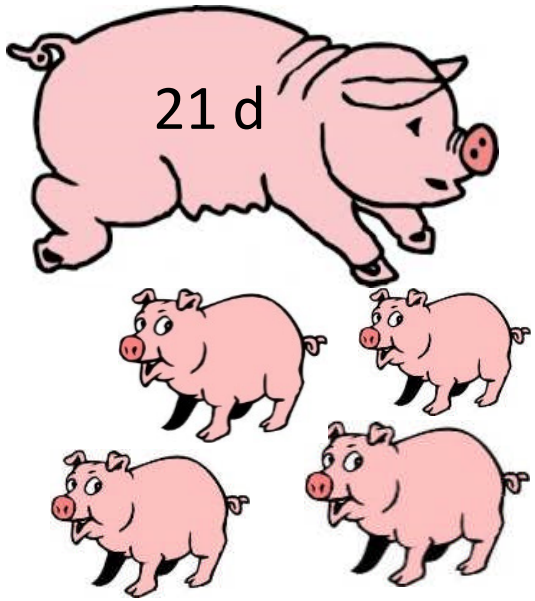
Two step nurse sow

… taking piglets at 7d from a nurse sow (to a sow that has weaned her piglets), then fostering on surplus piglets from newly farrowed sows







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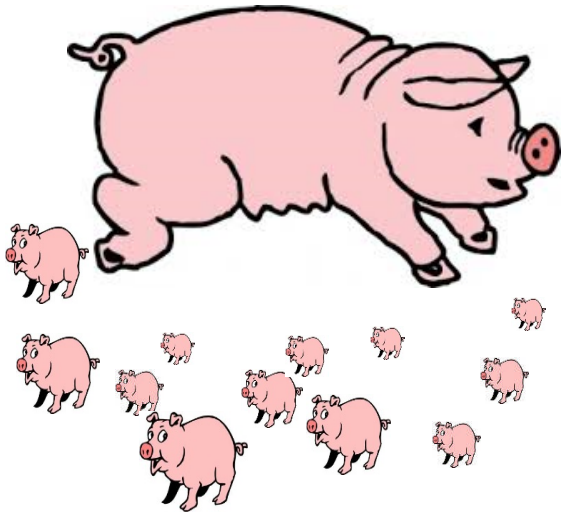
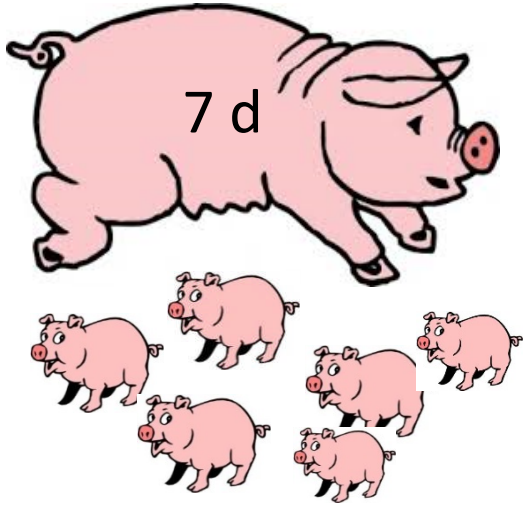
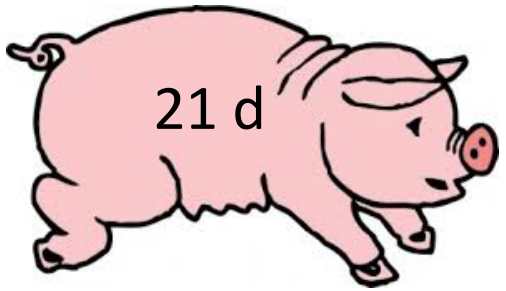






Task 4: Nurse sows

Piglets

1. Physical measures
    - Vitality scoring at fostering
    - Weight at fostering
    - Temperature (rectal and thermography)
    - Limb lesions and lameness
    - % survival and growth rate to slaughter

2. Behaviour
    - At fostering: vocalisation, time to reach udder/teat, aggression etc.
    - Teat order stabilisation
    - Nursing behaviour: aggression, vocalisation, duration

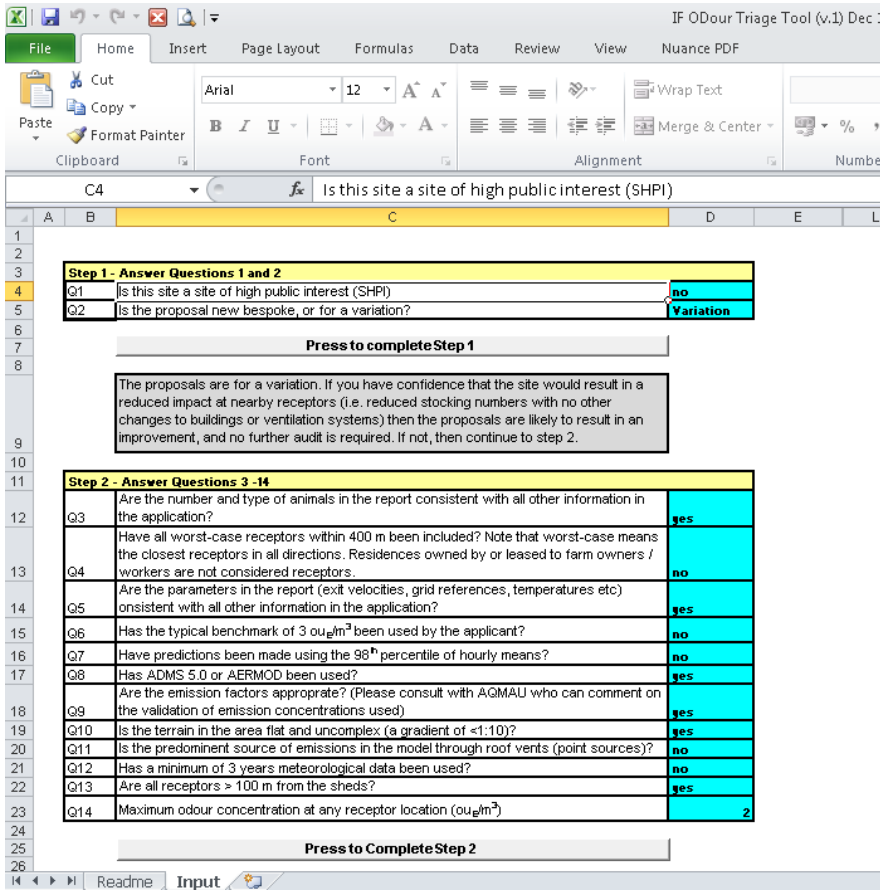
Task 4: Nurse sows

Sows

1. Physical measures
   - Backfat + locomotion
2. Salivary cortisol (stress hormone)
3. Udder heat
4. Hoof health (Calderon-Diaz scoring system)
5. Body lesions
6. Colostrum – measurement of piglet intake
7. Maternal behaviour
8. Return to breeding herd

Practical Management Tool

- Data from experimental work
- Excel based
  - data entered from specific units
- Areas for intervention identified
- Action lists included in output



Thanks!

- To all the farmers who are helping with the trials
- Teagasc advisory, technical and farm staff

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(Optipig, 2013; Entail, 2014)