Fear in turkeys: implications for productivity and well-being

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Possible solutions

• Reducing fear can lead to improved animal welfare and improvements in productivity
• Possible methods of reducing fear in commercial poultry include
  – Regular handling and habituation to humans
  – Providing environmental enrichment
  – Genetic selection
Improving temperament: effects on productivity and meat quality

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Selecting cattle to improve temperament and productivity can have a number of benefits, including shorter calving times and improved animal welfare. Researchers are now studying relationships between certain temperament traits and productivity, with the aim of developing selection criteria that can improve the productivity and health of the entire herd.

The Pig Site

Research Shows Temperament Influences Sow Productivity, Meat Quality

29 October 2013

CANADA - Research conducted by the Prairie Swine Centre shows the temperament of the sow can dramatically impact the productive performance of the breeding herd, Bruce Cochrane writes.
Fear and well-being

• Animal Welfare

• Experience of fear and activation of stress response occur simultaneously

• Individuals differ in fear and stress responses
Testing fearfulness

Agneta Johansson, Linköping University.

Kristina Bjoran, Scientific American.

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Fear and fearfulness applications
Injurious pecking

- Head pecking
- Feather pecking
- Cannibalism
Fear and feather pecking

Fearful chicks in open field test performed more feather pecking as adults
(Rodenburg et al., 2004)

Increased fearfulness (longer tonic immobility duration) associated with greater feather damage
(Blokhuys and Beutler, 1992)

Increased fearfulness toward novel object associated with greater feather damage
(Uitdehaag et al., 2008)
Meat quality

- Attributes of meat that influence consumer acceptance
  - Juiciness
  - Flavor
  - Tenderness
  - Texture
  - Appearance
Meat quality

Juiciness

Tenderness

Appearance

pH

Flavor

Texture
Fear and meat quality

“Flighty” cattle produce meat with higher pH (Cafe et al., 2011)

Pigs that are fearful of humans have higher pre-slaughter stress reactivity and meat with higher pH (Terlouw, 2005)

Quail selected for increased fearfulness have meat with higher pH (Remignon et al., 1998)
Research objectives

• Examine whether open field behavior is related to
  – Feather pecking
  – Meat quality
Research objectives

• Examine differences in feather pecking and meat quality in two genetic strains of turkeys
Fear testing

- Open field (OF) test (11 weeks of age)

  - Tested for 10 min
  - Behavior
    - Latency to walk
    - Number of steps
  - Classified as active or inactive
Feather pecking behavior

• Recorded behavior
  – 74, 75, 81, 82 days
  – Between wk 10 and 12
• Identified birds that feather pecked and birds that were pecked
Processing

• Processed in 3 groups of 20
  – COMM processed at 15, 16, and 17 wk
    • 14.52 ± 0.29 kg
  – RB processed at 20 and 21 wk
    • 11.04 ± 0.10 kg
Meat quality

Appearance
pH
Cluster analysis: COMM turkeys

- Semi-partial R squared

Cluster 1: Low Responders (Inactive)
Cluster 2: High Responders (Active)
Cluster analysis: RB turkeys

Cluster 2
Cluster 1

Low Responders (Inactive)
High Responders (Active)
Feather pecking

Mean (± SE) percentage of turkeys observed to perform feather pecking

![Bar chart showing the percentage of turkeys performing feather pecking for different strains]

- **COMM**: 42% (± SE)
- **RB**: 38% (± SE)
Feather pecking

Median (25-75%) number of feather pecks given and received per bird per day
Feather pecking

Median (25-75%) number of feather pecks given per bird per day

Pecking events given per bird per day

COMM inactive | COMM active | RB inactive | RB active

Turkey strain and cluster
Feather pecking

Median (25-75%) number of feather pecks received per bird per day

Pecks received per bird per day

Turkey strain and cluster

COMM inactive
COMM active
RB inactive
RB active
Meat quality

COMM

pH = 6.04 ± 0.03

RB

pH = 5.97 ± 0.03
Meat quality

Inactive

$$pH = 5.99 \pm 0.03$$

Active

$$pH = 6.02 \pm 0.03$$
Summary

- Feather pecking
  - No differences in percentages of birds that peck
  - COMM birds that are pecked receive more pecks compared to RB birds that are pecked
Summary

• Feather pecking appears to be associated with inactivity
  – Birds that are less active (or more fearful) receive more pecks but are not more likely to peck
Summary

• No strain differences in meat pH
• In contrast to studies with pigs and cattle, no association between fear responses and meat quality
  – Meat quality is not associated with fear responses measured during rearing
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