IMPROVING OSTRICH SKIN QUALITY

Ostrich Information day

Oudtshoorn Research Farm | Anel Engelbrecht | 16 March 2017
Income from ostrich skin

Average R 1100?
Ostrich leather

- Unique

- Exotic & luxury leather
What determines leather quality / price?

**Size**
- determines price/ dm²
- optimal size, highest price: 140 dm² +

**Defects & damage**
- downgraded

**Nodule acceptability**
- unacceptable:
  - different, lower price structure
## Price table: relative unit price (per dm\(^2\))

### Acceptable nodules

<table>
<thead>
<tr>
<th>Size - dm(^2)</th>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
<th>Grade 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>140 +</td>
<td>100</td>
<td>48</td>
<td>37</td>
<td>23</td>
</tr>
<tr>
<td>130 – 139</td>
<td>86</td>
<td>42</td>
<td>33</td>
<td>22</td>
</tr>
<tr>
<td>115 – 129</td>
<td>26</td>
<td>22</td>
<td>19</td>
<td>14</td>
</tr>
</tbody>
</table>

### Not acceptable

<table>
<thead>
<tr>
<th>Size - dm(^2)</th>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
<th>Grade 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>140 +</td>
<td>53</td>
<td>31</td>
<td>23</td>
<td>12</td>
</tr>
<tr>
<td>130 – 139</td>
<td>53</td>
<td>31</td>
<td>23</td>
<td>12</td>
</tr>
<tr>
<td>115 – 129</td>
<td>12</td>
<td>10</td>
<td>8</td>
<td>7</td>
</tr>
</tbody>
</table>
Economic value

The change in profit expected for each unit of improvement in the trait
Economic value / effect

Skin size

- 1 dm²
  - R10 to R 578

Skin damage / defects

- 1 grade
  - R 332 to R 1202

Nodule acceptability

- Acceptable vs. not acceptable
  - ~ R 525
Ostrich skin quality

- size
- visible damage / defects
- nodules
Ostrich skin quality

- Size
- Visible damage / defects
- Nodules
### Skin size

#### Heritability

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Heritability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Live weight</td>
<td>0.48 ± 0.09</td>
</tr>
<tr>
<td>Skin size</td>
<td>0.51 ± 0.09</td>
</tr>
</tbody>
</table>

#### Correlation

- Live weight & skin size
  - Genetic: 0.94
  - Phenotypic: 0.79
Skin size

- Yield increases with age

- **Weight** dependent

- Medium to highly heritable
  - 19% when weight is accounted for

- Optimal size: 140 dm² +
  - live weight of 92.5 kg +
Subjectively assessed ostrich leather quality traits
Ostrich skin quality

- Size
- Visible damage / defects
- Nodules
Nodule size (diameter)
Nodule shape
Subjective skin traits

Heritability (independent from slaughter weight)

<table>
<thead>
<tr>
<th>Trait</th>
<th>$h^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nodule size score</td>
<td>0.34 ± 0.08</td>
</tr>
<tr>
<td>Nodule shape score</td>
<td>0.37 ± 0.08</td>
</tr>
</tbody>
</table>

Source: Engelbrecht 2013
Nodule acceptability: subjective evaluation

Source: Van Schalkwyk et al., 2005
Acceptable nodules

- 10, 11 months of age +

- 95kg+ live weight

Age declares 45% of variation in nodule size
Ostrich skin quality

- Visible damage / defects
- Size
- Nodules
Skin damage

- Increases with increase in weight
- Increases with increase in age
- No genetic variation – determined by environment

- Damage incurred at young age causes permanent lesions that is still visible at slaughter
Damage incurred at:

13 months

10 months

7 months

4 months
Types of damage

Farm damage

- Scratch & kickmarks
- Schafe marks
- Feather pecking & sunburn
- Parasite damage
  - Tick bites
  - Pitting
Skin damage

Prevent on-farm scarring

- Hatch – remove eggshells
- Clipping of toenails
- Chick rearing methods & environment
  - Minimize stress, cold, handling
- Treatment for ectoparasites
- Disturbances at night
  - lights & visibility of fences
General

Prevent on-farm scarring

- Remove thorn trees in camps, corridors
- Space / density
- Placement of feeding troughs
- Inadequate handling and holding facilities, fences
  - Protruding wires etc.
- Experienced people to handle birds
- Minimize transport
- Inadequate transport conditions
Feather pecking

Beak rings
Scratches and kick marks

- Toenails responsible for more than 50% of scratches
- Clipping the toenails decrease skin damage:
  - Behaviour – climbing on top of each other
  - Skins very thin & toenails sharp
  - Toenails grow back - blunt
Toenails

Husbandry practice

- Standardised approved procedure
- Standardised equipment
- Use of anti-inflammatory
- Training
Trial results: toenail clipping

Grading

No clipping

Clipped
Results: toenail clipping

%1st grade skins

No clipping

Clipped
Results: toenail clipping

# of Scratches

- No clipping: 6
- Clipped: 3

© Western Cape Government 2012
Grading of skins

Tannery data

Scratches

0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90%
Position of cut
Pitting
**Pitting**

- Small pits on processed leather
- Codes:
  - SCOT – 18, 28, 52
  - KKI – 24
- Average frequency 11%
- Incurred during lifetime of ostrich
- Specific farmers - repeatability
Pitting

- Damage similar to damage on hides caused by biting stable flies
- Linked to control of ectoparasites and pastures
- Ectoparasitic hypersensitivity
- Visiting or multi-host parasites
- Biting and/or bloodsucking insects
- Linked to rainfall – less in dry season / drought
## Pitting: on-farm trial results

Least-squares means (± SE) depicting the effect of treatment on pitting

<table>
<thead>
<tr>
<th>Treatment</th>
<th>N</th>
<th>Pitting (0/1) Mean ± SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not treated</td>
<td>84</td>
<td>0.76±0.05^c</td>
</tr>
<tr>
<td>Deltamethrin monthly</td>
<td>79</td>
<td>0.34±0.05^a</td>
</tr>
<tr>
<td>Flumethrin monthly</td>
<td>84</td>
<td>0.58±0.06^b</td>
</tr>
</tbody>
</table>

Source: Engelbrecht et al., 2015
Monthly treatment did not prevent all pitting
- not frequent enough to control all insects that visited the birds in between treatments

Off-host/multi-host parasites

Deltamethrin more effective
- known to be potent for control of insects

Biting insects
Use of ectoparasiticides

Pour-on’s:
- Correct application
  - Wings vs. topline / along back

Sprays:
- Properly mixed
- Correct concentration
- Wet properly (5L per bird)
- High pressure

Synthetic pyrethroids – toxic effect via contact
Ectoparasiticides

- **Spray-on’s:**
  - water soluble
  - 1-3 days

- **Pour-on’s:**
  - oil-based
  - 7-14 days

- **Deltemethrin** more effective

Regular application important

Start early (young)!
Skin defects
Hair follicles / pinholes

Filoplumes & hairlike bristles

- Hairlike feathers
- Between feather follicles
- Highly variable among individual birds
- Increase with age
- Breeders: females more hairs
- 50% heritability
- Not correlated with slaughter weight
Filoplumes & bristle hairs
Look at skin grading results

Determine risks on farm & address

Do not slaughter ostriches that are too young or too small

(>95kg, 10-13 months of age)
Thank you
Contact Us

Anel Engelbrecht
Scientist (Pr.Sci.Nat.)

Tel: +27 (0)44 203 9412  Fax: +27 (0)86 508 6299
AnelE@elsenburg.com
www.elsenburg.com