WORLD OSTRICH ASSOCIATION

Factors Influencing Skin Quality

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INTRODUCTION

The objective of this document is to provide guidelines on understanding the different factors that influence the quality of Ostrich Skins. Every stage of the production process has an influence on the product quality and all stages are of equal importance. A failure at any stage will influence the revenue received at the end of the production process.

The costs for skin removal, curing, tanning and marketing a skin are the same regardless of grade. The higher the grade achieved, the greater the margin over these costs the greater the revenue available to contribute to the costs of rearing the birds.

FARM MANAGEMENT

Good skin quality starts on farm and the following aspects are key management issues that influence grading. The differential in value from Grade 1 to reject is very significant and can be equal to the total feed bill of the Ostrich at this time. Ostrich skins therefore provide excellent revenue as a secondary product to Meat production.

Nutrition

Nutrition has an influence on a number of factors relating to skin quality. Quality of skin at age of slaughter depends on:

- Bird maturity at slaughter
- Feather development
  - Influences Age of Follicle Maturity
- Thickness and Density of Skin
- Texture
- Elasticity
- Wound Healing
- Ability to handle stress
- Feather Pecking
- Grading
  - Early slaughter age more Grade 1 Skins
- Consistency
- Fat
  - Quantity and Quality

Farm Management

The following aspects of farm management will have an influence on minimising damage to the skins

- Pen design
- Type of fencing
  - never use barbed wire
- Feeding systems
- Handling systems
- Stress Management

Genetics

Over the years there have been statements made about which breed produces a better skin than others – i.e. African Black rather than Blue. There are at least 10 different sub species of ostrich identified and the African Black is a hybrid with variations within the breed. There is every evidence to date that suggest it is method of rearing, handling and tanning that have the greatest influence on quality.

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There is evidence that genetics influence the shape and size of the crown and shape and size of follicle.

The way to achieve answers on genetic influences on issues that affect skin quality and price is through full records to observe traits carried through different bloodlines. Clearly, it will take a number of years and generations to achieve meaningful data to answer some questions.

TRANSPORT

Transporting Ostriches creates unique challenges, as they are large animals with only two legs. The aim when transporting the birds is to ensure they do not fall, as this results not only in bruising from the fall, but also being trampled by other birds, with serious damage to the skins. Minimise the risks of the birds rubbing their backs as they use the sides of the truck as support. Care during transport influences the meat quality as well as skin quality. The following are some of the key areas that influence the skin quality during transportation.

- Handling and Loading
- Stress Management
- Truck floor – non-slip
- Smooth sides to truck and partitions
- Size of compartments
- Experienced drivers and staff
- Prevent birds falling
- Do not allow fallen birds to remain on floor
- Suitability of transport for all climatic conditions

ABATTOIR

The areas of influence in the abattoir can be split into pre-slaughter handling live birds and post slaughter, the skin removal and storage.

Live Birds

The following are all areas that require care to minimize risks of skin scaring or bruising.

- Unloading area non-slip and encourages easy movement
- Raceways
  - non-slip
  - free of any sharp objects or rough edges
- Holding pens
  - non-slip floors
  - smooth sides
  - no sharp corners, sharp objects or rough edges
- Stress Management at all stages

Post Slaughter

The following are areas of the slaughter process and skin after care that influence the quality of the skin, both from risks of damage while still on the bird and the manner it is handled during removal and after care.

- Stunning
  - Procedures must eliminate risk of damage by the bird falling on ground

- Plucking
  - Systems must ensure no damage to quill shaft
- De-skinning
  - Eliminate any risk of damage
    - Only one person at any one time working on bird
    - Correct knives
    - Watch Muscles not damaged as well as skin
- Cutting Lines
  - Ensure cutting lines according to standard set by buyer
  - Ensure skin cut low around the tail to include all the Crown area

Handling and Treatment post removal

Cleaning and curing skins correctly ensures the skins arrive at the tannery in good condition, and can be stored for some time, should it be necessary. The following are areas that need to be considered:

- Avoid use of any utensils that can cause possible staining of skins, including rust.
- Facilities to ensure skins are washed and cleaned
- Procedures in place to minimize risk of bacteria attack
- Skins salted quickly and efficiently, ensure total coverage, with special attention to the edges
- Correct salt is used and sufficient
- Storage
  - Temperature below 20degrees
  - Off the ground
  - Good Ventilation
  - Storage facilities are dry
  - Skins never dry out
- Transport
  - Suitable transport for distance and time in transit.
    - e.g. Chilled transport for long distance transport

TANNERY

The tannery is the last stage in the chain. Many tanneries report tremendous variability in the texture of skins delivered. This creates additional challenges to the tanneries in achieving consistency of colour and finish.

Tanning leather is an art and a specialised procedure. Many factors influence the final product, the tanning process chosen and the market serviced by the particular tannery will influence the methods and procedures in place.

FUTURE RESEARCH

There are a number of studies and research projects required with several needed to overcome many myths that have so far blocked development of a commercial industry.

The following are some areas:

Studies:

- The influences of follicle size
  - Nutrition
  - Age
  - Genetics
    - within breed
    - breed comparisons[1]
  - Understanding the interdependence on all the above

- The influences that affect skin grade
  - Nutrition
  - Age of slaughter
  - Genetics
    - within breed
    - breed comparisons
  - Understanding the interdependence of all of the above
  - Management systems
    - Farm Management
    - Handling systems
    - Transport
    - Slaughter
    - Curing
    - Storage

- Presence or absence of filoplumes and pin holes
  - Genetic
  - Nutrition
  - Management

- Variations in skin colour
  - Genetic
  - Nutrition
  - Management

The more production units and tanneries prepared to contribute to these studies the faster the industry can build a large enough database to make the above assessments. From those studies we can also develop recommendations on systems that work and advice on those that do not work. It is only possible to carry out such studies effectively if full traceability is available from breeder to finished skin.

Such studies will also enable development of classifications that provide an additional marketing tool and recognition that there are many market opportunities out there with different needs. The following are some areas that require classification.

- Skin classifications based on:
  - Follicle size and shape
  - Distance between follicles
  - Diamond Size
  - Thickness

[1] It will be necessary to take great care when comparing different breeds to ensure there is no doubt regarding breed, in all such studies, as there are few accurate bird records currently available.

The first documented study[2] that proved beyond question age is not the criteria to be used for evaluating follicle development and skin quality was carried out in 2002. This study demonstrated that maturity of development is the critical factor and birds produced to optimize feed conversion for fast growth, and high meat yields also produce mature feather development at a much younger age than is currently the industry norm. The study also identified there may be a genetic influence in follicle size requiring further data to confirm if this is so and how significant that influence may be.

[2] "Influences of Ostrich Skin Quality – Age or Nutrition" - F.V. Benson and D.H Holle, Blue Mountain Nutritional Bulletin No. 79