Blue Mountain Ostrich Nutrition E-Bulletin #79

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Influences of Ostrich Skin Quality . . . Age or Nutrition?

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Introduction

A major factor that has held back development of our industry has been statements such as:

"**Farmers are daily told by animal nutritionists that they can reach slaughter weight at the age of 9 months. A 9 month old bird does not produce an acceptable leather. The recommended age for slaughtering is 13 months at least. I would like to state that in the recent times, nutritionists had short-term goals over-emphasizing weight as a factor and cause substantial damage to the quality of raw materials, especially skin substance and quill development. I would like to say Mr Chairman, they have pushed too far, the tanneries will change the rules to ensure good quality ostrich leather**." [1]

These statements may be made in good faith from the evidence those making these statements have been presented with in skins. What has been missed is taking time to understand exactly what the different nutritionists are doing and how this is being adopted on farm. To achieve good weight gains in fact requires a healthier diet, which results in improved quality of skin substance and quill development.

Figure 1 - 21 Week Old African Black

Figure 2 - 40 and 44 Week Old Chicks

This paper aims to discuss some of these variables to demonstrate why it is now proven that young slaughter birds can produce skins that are very acceptable to the market and to demonstrate that age is not the criteria but rather maturity and feather development that is controlled through the nutritional and feed management programs on farm.

Materials and Methods

A number of birds have been raised to observe responses to the Blue Mountain Feed rations in South Africa. The first chicks from my own production were retained from November 2000. Chicks were artificially hatched from eggs from our own breeders. These breeders were raised from day old chicks that were originally taken in for contract rearing to 50kgs. Chicks were tagged at hatch and maintained in batches. No specific genetic bird material was used for the study.

36 chicks have been slaughtered ranging from 8months through to 14months (35 weeks to 60 weeks of age). 2 of these Chicks were slaughtered in November 2001 and the balance slaughtered in January 2002. Each skin was uniquely electronically tagged at slaughter and punched with a unique number.

A second study consisted of 10 birds hatched in the middle of last winter…July and August 2001 were the wettest recorded for 44 years. As we are operating from temporary facilities the conditions in which the chicks have been reared have been far from ideal and were totally inadequate for our wet winter conditions. This particular batch had to spend a great deal of their time shut up in a very dark and cramped area on and off for the first 8 weeks as a result of extended wet conditions. The stress was such that their feed consumption was 50% of normal for that age group and they also started “feather pecking”. This resulted in the chicks being very slow to get going and always behind what we consider 'normal' for age. At 3 months they stopped the feather pecking and settled down well but obviously well behind target weights for age.

At 7 months the feather pecking very suddenly started once more. As I do not work with them on a day to day basis, I cannot tell you if there was some stressor that brought back that old habit, but it is my guess this was the cause. Since these birds would not be held back as potential breeder stock these chicks were sent for slaughter at the beginning of February 2002. So not only were these chicks only just 8 months of age, they had also suffered a very slow start in life as a result of poor environmental conditions.

Photographs have been taken at specific stages of bird development and skins assessed after slaughter of test batches. The majority of birds have been retained as future breeder stock. A study of birds raised under different management conditions demonstrates extremely variable feather development that cannot be attributed to age alone.

Results

The birds raised on the Blue Mountain Feed rations clearly demonstrate feather development that is well advanced. There are variations within similar age groups from batch to batch that can be directly attributed to certain management factors that will be discussed later.

When grading the skins at the Crust stage, the tanner was asked to provide Classifications for each skin based on follicle development. He chose 4 classes, Class 1 representing optimum and Class 4 follicles that are too small and of a size downgraded on payment to the farmer. He reported that most skins they receive from batches of 9 month and 10 month birds are class 4 skins.

Batch 1

Class	Number of Skins	Percentage of Total
1	18	50%
2	12	33%
3	6	17%
4	0	0%
TOTAL	**36**	**100%**

Table 1 – Classification of Ostrich Skins based on Follicle Development Batch 1

Average classification achieved was Class 1.6 and average classification for chicks 10mths and under was Class 1.7.

The Class 3 skins were 1 x 9mth, 2 x 10mth, 1 x 11mth, 1 x 12mth, 1 x 14mth. This clearly indicates that age is not the determining factor. All skins were of acceptable quill size/follicle development. One point of interest was a comment on 1 x 14 month skin. The quills were flatter and less prominent, a factor usually only observed in cull breeders or birds that are very much older than 14 months.

Skin size is often a problem with slaughtering birds at a younger age. The birds in these batches 10 months and younger achieved an average of 15.54 sq. ft. All skins achieving well above the minimum size for Grade A skins (greater than 14sq ft).

Batch 2

Class	Number of Skins	Percentage of Total
1	4	40%
2	3	30%
3	2	20%
4	1	1%
TOTAL	**10**	**100%**

Table 2 – Classification of Ostrich Skins based on Follicle Development Batch 2

Average classification achieved was Class 2. One skin in this batch failed to achieve an acceptable standard of follicle development. Skin sizes averaged 14.27sq ft and one skin failed to achieve Grade A (greater than 14sq ft).

Worthy of note with this batch is that despite their slow start at the optimum time for good feed conversion, the average carcass weight of this batch was low at 40.18kgs (88lbs) and that this is the **average** for South African slaughter birds normally 5 – 6 months older.

Discussion

It is known that a number of producers are successfully producing younger birds at slaughter with acceptable skins when measured by follicle development. The economics of raising 9 and 10 month slaughter birds rather than holding them for 12 –14 months are very significant, since the birds consume 50% - 90% more feed during these additional months. Additional infrastructure and farmer financing is also required to hold birds for a further 4 – 6 months. With birds also producing increased meat yields under these rearing conditions, the revenue from meat production is also increased along with reduction in meat processing costs as a result of the increased meat yields.

The reason for statements relating to age alone being the key factor to skin maturity is that there remains too little understanding of the reasons for the variations in development of birds throughout the industry. The primary reason at the time of writing is the level of nutrition throughout the industry remains at near starvation levels, compared to the proven Nutritional Requirements of Ostrich. Even when farmers may be feeding the same rations, a 2% difference in protein content of the Lucerne (for example) will yield very different results. Lucerne from a 'clean' crop compared to Lucerne with grasses and weeds intermingled will yield different results. Ostrich are highly sensitive to what may appear to be minor changes…the changes as described above are very significant. As was illustrated in Batch 2 of this study discussion, environmental factors can have a significant impact on growth and development, yet when the basic nutrition is correct, follicle development remained advanced compared to current industry average.

This information on working to age to ensure skin quality emanates from South Africa. Some farmers mix their own rations and many purchase commercial feeds. The South African feed laws are such that there are few controls. A farmer may believe he/she is purchasing the same formulations from batch to batch and year to year, but this is not always the case. The use of different ingredients, from batch to batch to achieve the same basic nutrient levels, will result in very different bird performance and the impact of this is misunderstood by most at this time.

One farmer putting out feed 3 times a day compared to another putting that same feed out only once a day will yield very different results. The chicks in Figures 1, 2 and 5 were raised on what should be the same rations…the differences in their feather development are due to management factors that include:

- Management as Baby Chicks that influenced growth rate in the early weeks
- Environment
- Variability in Quality of Lucerne used in the rations
- Experience of Chick Rearers

Figure 3 - 4 Month Old Chicks

Figure 4 - 11 Week Old Chicks

The chicks in Figure 3 are 4 months old. The chicks in Figure 4 are 11 weeks old. It is very clear that provided the Figure 4 chicks continue to be maintained correctly they will mature very much earlier than those in Figure 3, where there is already a very clear difference in growth rate. The chicks in Figure 3 are very typical of many 3 - 4 month chicks seen today.

When the detail of the nutritional factors that make the difference between acceptable skin quality at younger ages and unacceptable skins are understood, it

becomes very clear why it is possible to raise Ostrich for early slaughter with very acceptable skins that will be of a higher standard than currently produced from 14mth old birds. Daryl Holle of Blue Mountain Feeds has steadily worked for years to develop feed formulas and nutritional guidelines that bring about faster bird maturity at a younger age. He has done this through careful study and use of proper feedstuffs, proteins, minerals, trace minerals, vitamins and natural additives. The Blue Mountain formulations are designed for earlier follicle and feather development with skins that are more "elastic" causing them to be more resistant to skin damage. All of these things put together result in higher quality skins in much less time.

Conclusion

The evidence is clear that the skin evaluation done with birds fed Blue Mountain formulas on our farm certainly proved that good nutrition affects more things than simply egg production or chick survival. This study proves that Proper Nutrition influences the age of follicle development and quality of the skins.

With proper nutrition, there are additional economic benefits. Birds raised in this manner produce greater meat yields. The meat from faster grown muscles is more tender, even in colour and has a good aroma. It is also possible to inventory a lower number of Breeder birds as their egg production, fertility and hatchability is much higher per bird. Increasing income from skins, meat and from increased numbers of birds slaughtered, while lowering the expense per unit produced with earlier slaughter ages and less Breeder birds is most certainly "the path to profitability" for the future of the industry.

It is now time that the majority of the industry recognize this fact and move forward towards those goals as they have clearly been established as achievable.

Figure 5 - 32 Week Old African Black Chicks (small chick is 10 weeks younger – jumped the fence!!) Note the dense feather growth on all the birds.

Reference:

[1] Kriek, F Japan's Economy, IOA Leather Conference, Hong Kong, March 2001