

# Blue Mountain Ostrich Nutrition E-Bulletin #92

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## The Road Map of the New Ostrich Industry

In order to discuss the 'road map' to the New Ostrich Industry, we first need to define what is 'The New Ostrich Industry'.

The Ostrich industry has a history of Boom or Bust, first based on Feathers, then Skins, and most recently meat has become a valuable product also. Today the industry has expanded to many countries, with very limited success in making the transition from Breeder market to full commercialisation. The New Ostrich Industry is an industry that has:

- Production Standards and Goals
- Professional Livestock Production Methods
- Grading Systems and Standards for All Products
- Maximises Revenue from the Whole of the Bird
- Rewards on Quality
- Market Driven

The New Ostrich Industry takes the industry from 1950's style farming to utilising modern livestock production technology.

### Production Standards and Goals

ITEM	CURRENT INDUSTRY	NEW OSTRICH INDUSTRY
Start Breeder Egg Laying	3-4 Years of Age	2 –3 Years of age
Eggs per Annum	1-100+ Inconsistent year to year	100+ Consistently
Fertility	10% - 95%	>95%
Hatchability	>50%	>90%
Survival	0-100% Typically 50%	>90%
Liveweight at 12 Months	+/-95kgs	>120kgs
Feed/Live Weight Conversion – 12 Months of Age	+/-10:1	<4:1
Feed/Liveweight Conversion – 7 months of Age	>4:1	<2.5:1
Carcass Weight – 12mths of Age	36-50kgs	>65kgs
Meat Yield – 7mths of Age	15-25kgs	>25kgs
Meat Yield – 9mths of Age	20-30kgs	>35kgs
Meat Yield – 12mths of Age	20-32kgs	>45kg

Table 1 Comparative Production Levels

Table 1 provides a comparison between current levels of performance and professional and achievable goals. The tremendous variations in current levels of production are a key indicator that current methods of production require changing. The Goals of The New Ostrich Industry are very achievable and the fact that they have been achieved by a few is evidence they can become herd averages and in time will be improved upon even more. This statement is backed up by looking at the history of other livestock species that have over the decades improved production performance through the implementation of improved production systems:

- Dairy Cattle have gone from less than 4,500litres/annum to 14,000litres/annum in the very top herds and at the same time achieved
  - 80% Reduction in Mastitis
  - Many other metabolic problems virtually eliminated
  - Controlled protein and butter fat levels
- Broiler Chickens have reduced the growing period from 60 days to 42 days.
- Egg laying in poultry now in excess of 310/hen/annum
- Hogs now finished in 92 days with controlled fat
- Livestock with carcass shape and size all controllable.

The New Ostrich Industry will adapt similar principles, as they apply to Ostrich Production, that have enabled these mainstream livestock production groups to make such progress in the last few decades. What is clear in this discussion is there is clearly significant room for improvement and the technology and knowledge on how to achieve this is available to Ostrich production today. To develop as an industry, the Ostrich industry now has to apply these principles on an industrial scale.

### **Professional Livestock Production Methods**

The true science of livestock production covers 4 phases:

- a. Production Nutrition
- b. Production Feed Management
- c. Production Farm Management
- d. Production Genetics

**Production Nutrition** is extremely precise. Production nutrition is based on:

Optimising Health and Optimising Performance through rations of high nutrient value and effectiveness factors. In Ostrich such performance factors as:

- Egg Laying
- Quality of Eggs
- Fertility
- Hatchability
- Quality of Chicks
- Feed Conversion
- Quality of Finished Products such as:
  - Meat Colour
  - Meat Reaction on Oxidation
  - Skin Density

- Age of Maturity of Feathers
- Feather Quality
- Nutrient Content of Meat and Fat
- Fat Colour

To provide an example of the precision taken these days when formulating rations, a formulation for a Dairy Cow will not only be formulated for the best yields possible and taking into account stage of lactation, but also such things as:

- Genetic Production Potential
- Average Body Weight
- Butter Fat Required
- Protein Level Required in the Milk
- Ambient Temperature
- Average Humidity
- Type of Exercise

There have been some large start up Ostrich Operations in different regions that have intended to be run treating the birds as 'production units', but when examining their feed program, these are treating the birds as 'feed cost units'. The difference is measurement of feed cost by 'cost per tonne of feed' as opposed to 'cost per unit of production'.

The New Ostrich Industry looks at 'cost per UNIT of production'. The units will be not only be the number of eggs laid, but also the viability of those eggs, the number of chicks raised from those eggs, the grow rate of those chicks to slaughter, the cost per kilo of meat yield and the age breeders become productive.

**Production Feed Management** In order to achieve accuracy in results, the Feed Management has to be accurate also. The way to achieve consistency is to eliminate the variables as best one can. This starts with quality feed ingredients, proper feed formulation expertise and ensuring absolute accuracy when manufacturing feed.

The attention to detail must include such things as:

- Weighing feed accurately each feeding
- Feeding the same time every feeding
- Feeding several times a day
- Removing feed that has not been eaten

All these factors, and many more, are essential components in modern agriculture technology to ensure correct intake of 'high tech' production rations and optimising production.

**Production Farm Management** includes such things as:

- Biosecurity
- Accurate Records
- Correct Pen Design

- Handling and Movement of Birds
- Breeder Bird Management

The majority of breeder birds are currently kept in colonies. This is more than one breeder group (1 male and 1 or more females) per pen. It is only possible to maintain correct records if full traceability is achievable and that can only be achieved with single breeder groups.

### **Production Genetics**

In the history of the South African industry there was a move to introduce new genetic strains at the turn of the 20<sup>th</sup> Century to improve feather quality. At that time that was the only product industry.

With the opening up of the industry on a global scale, anything that had two legs, feathers and was in excess of 2m tall at maturity has been sold as breeder stock. Very few meaningful records have ever been kept. At the height of the breeder phase, birds were exported from South Africa, Namibia, Zimbabwe, Tanzania and Kenya. For those familiar with breeds of cattle, the diversity of genetics can be likened to working with Dexter, Aberdeen Angus, Guernsey, Jersey, Limousine, Simmental, Hereford, etc and crosses between any one or more of these breeds. Those familiar with cattle will understand the huge variations between these different breeds. With Ostrich, this has been aggravated further by the stunted growth achieved as a result of the widespread malnutrition currently prevalent in the industry.

With the introduction of records, combined with the first 3 phases of Scientific Livestock production in place, the better performing genetics can be identified along with those that need to be culled from the breeder herd.

The early years will have an added component that has to be understood when evaluating the stronger genetics. That component is the 'Nutritional History'. There is clear evidence of stunted growth as a result of malnutrition throughout the current Ostrich Breeder base. This is a direct result of the inexperience and mass trading over the past decade. It is normal, when animals are suffering from malnutrition, they put the nutrients they have available first into body maintenance for survival and the reproductive organs will be the last to receive the required nutrients for proper development. Figure 1 is the influence of Nutritional history on the production potential of breeders.

Remembering that the aim is to achieve the best nutrient transfer from Hen to egg to chick. When breeders go onto production nutrition for the first time, it takes 6 months for the effects of the increased nutrient levels to start to take effect. At this point, they achieve Class 6 Nutritional Classification.

# Genetic Influence of Nutritional History

## NO PRODUCTION NUTRITION (PN) HERITAGE

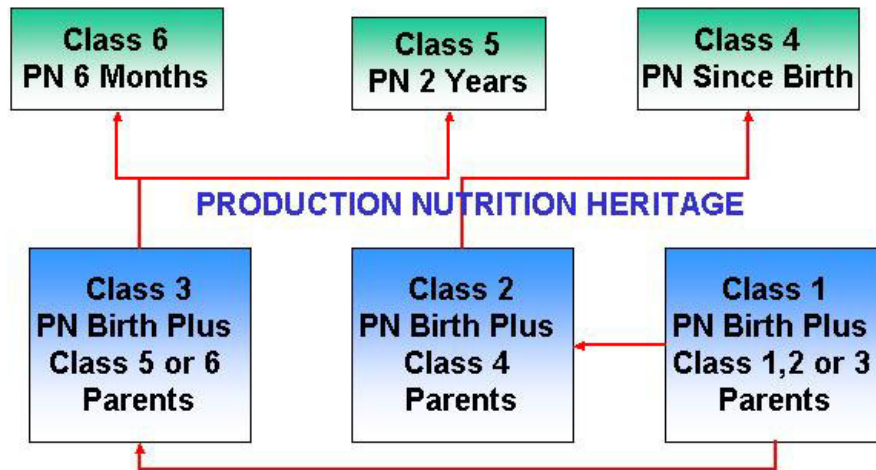


Figure 1 - Nutritional History

Two years on the program will see the maximum benefit – but some Nutritional deficiency damage from the past is irreversible. Some breeders will never respond and need to be culled. After two years they achieve Class 5.

Chicks raised on Production Nutrition from Day 1 achieve Nutritional Classification 4. Classes 3, 2 and 1 are birds hatched from eggs produced by breeders already nutritionally classified. The actual classification of chicks is dependent as shown in Figure 1 according to the Nutritional Classification of Hen.

The higher the nutritional classification of the hen, the stronger the chicks at hatch and the greater the opportunity to achieve the optimum potential of the underlying genetics, provided the progeny are also on Production Nutrition rations. This is how livestock production has progressed over the years and the basis of the New Ostrich Industry.

As a footnote, the same principals also work in reverse. This is a major cause of the tremendously variable breeder and chick production currently experienced.

### Grading Systems and Standards for All Products

To date the only market related grading systems has been those set by NOPSAs for finished Ostrich Leather. The New Ostrich Industry recognises the need for grading systems for all products.

<b>Traits</b>	<b>Current Industry</b>	<b>New Ostrich Industry</b>
Fat – Type	Yellow	White
Fat – Quantity	Nil – 20% + of Liveweight	+/- 6% Liveweight
Liver	Many different colours – extreme variability	Mid Red Brown, even colouration
Muscles	Variable from Very Dark to Pale Pink and White. Blackening On oxidation	Even Red Colour throughout, Colour improving on Oxidation
Meat Yield	25-30kgs, 9-14mths of age	40-55kgs, 9-14mths of age
Organs	Small	Well formed and good Growth
Hides	20%-30% First Grade	+70% First Grade

**Table 2 - Carcass Comparisons**

Table 2 is an indication of the current variability between current meat and fat production and potential meat and fat production. In 1999, the International Ostrich Association held an Industry Strategic Analysis session. One of the conclusions was the need for Grading and Classifications for products as markets were confused. Standards are required to enable buyers to have guidelines to evaluate information sellers are providing.

The World Ostrich Association, formed in 2002 has started to address this situation in their support of the principals of The New Ostrich Industry. Currently in place are Meat and Carcass Grading and Meat Yield systems. Grading systems for all products will be continually reviewed and updated.

### **Maximises Revenue from the Whole of the Bird**

It took more than 100 years, following domestication, for the skins to be recognised as an additional revenue earner from the Ostrich. Previously only the feathers had been considered of commercial value. In the early 1990's, the Israeli's developed a commercial industry recognising the potential of the meat and were the first to develop reasonable revenues from meat production. The ostrich has minimal muscle fat marbling but instead carries a large fat pan that covers the body cavity. This fat has early indications of potential value when produced to the standards of the New Ostrich Industry.

### **Rewards on Quality**

Following the principals of mainstream livestock industries, farmer payment will be based on quality and yield. This follows on from the introduction of grading systems and yield classification systems recently developed.

### **Market Driven**

Prior to deregulation of the South African Industry in 1993, the industry had strictly controlled production, following the principle of controlled production to maintain high prices for a very limited few. New entrants from farm production, manufacturing and sales were all very strictly controlled. In order for new entrants to enter the production and marketing, it is essential that the industry becomes market driven.

## Making the Transition

How do we move from the Old Industry to The New Ostrich Industry?

### Farm Program:

#### Step 1:

Put in Place:

Production Nutrition  
Production Feed Management  
Production Farm Management  
Genetic Improvement Program

Learn all that is required to identify Production Rations (Figure 2) and ensure absolute accuracy of manufacture.

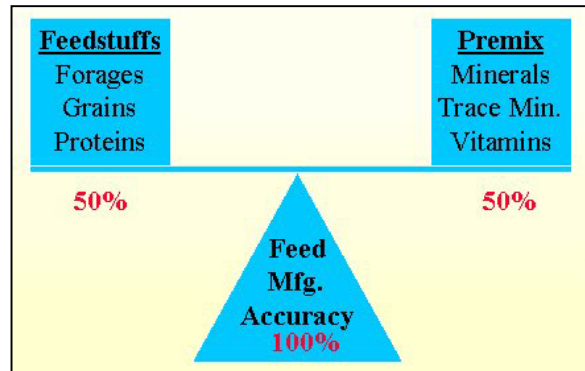


Figure 2 - Manufacturing Accuracy

Minimise any risks of failures such as, water deprivation, bad batch of feed or poor feed ingredient, mixing errors or missed feeding times. Minimise stress situations that can have an impact on production.

#### Step 2:

Put in place identification systems for all birds and all pens

Put in place extensive recording systems to know such things as egg laying, fertility, hatchability, progeny growth rates and progeny feed conversion. Build the database.

#### Step 3:

At the end of Year 1, from the database, identify all poor producing males and hens. Cull the poorest producing hens and low fertility males. The boarder line performers may be suffering the effects of poor nutritional history and respond in the second year.

#### Step 4:

Identify the quality chicks from the Slaughter Birds and hold them back to become replacement Breeders. Work closely with other farms to exchange the better genetic birds to ensure a diversity of genetics in the breeder herd.

Only buy or exchange birds with a nutritional history classification. During the transitional phase be wary of buying mature breeders. Always look for good records.

#### Step 5:

At the end of Year 2 examine all records

Cull all birds still not performing that were boarder line at end of Year 1

Cull any of the new birds that performed badly unless purchased during the season

Retain Borderline birds for one more season

### Step 6

Continuously:

Examine Chick records by parentage

Understand Growth Traits and how they are coming through the genetics in the offspring

Build database to handle the information

### Step 7

At End of Year 4

Following the above steps each year will result in stock of a standard to Challenge the Progeny with higher nutritional challenges.

### Step 8

At End of Year 5

Year 1	Introduce Professional Levels of Nutrition. Introduce Intensive Levels of Feed and Farm Management Introduce Extensive Record Keeping
End Yr 1	Cull Stock Introduce Fresh Genetics Utilise Records
End Yr 2	Cull Stock Introduce Fresh Genetics Utilise Records
Year 3&4	Continue same policy Utilise Records Start Grouping Offspring on Genetic Performance Basis
Year 5	Commence Challenge Feeding Continue above policy
End Yr 5	Breeding Flock and Offspring will achieve close to New Ostrich Industry Target Averages
End Yr 8	The Offspring should far surpass current targets
Year 10	<b>Extremely Cost Effective Meat Production with High Profit Potential</b>

Figure 3 - New Ostrich Industry Farm Program of Development

The Breeding Flock should be performing close to the targets in The New Ostrich Industry Tables as an Average and not only the top 10%.

The Progeny should be achieving the weight gains, feed conversions and meat yields as average performance of The New Ostrich Industry targets as laid out in Table 1 and not only the top 10%.

### Step 9

At End of Year 8

Provided the above program has been followed:

Breeders should be well exceeding the targets as 'average' production as set out in Table 1

Progeny should be well exceeding the targets of Growth Rates, Feed Conversion and Meat Yields.

### **Step 10**

At Year 10

Extremely Cost Effective Meat production

In many instances halving feed conversion of The New Ostrich Industry Targets in Table 1.

### **Slaughter Program**

It is important that there is good liaison between farm production and processor to enable accurate progeny records to be maintained of meat yield, fat yield, muscle sizes, skin quality, follicle size and other measurable factors that influence the end products.

As the program develops, greater uniformity of carcass will be achieved. This in turn facilitates the processing and production of end products and will overcome many of the current difficulties experienced with marketing end products.

To encourage good farm practices and discourage the poorer type of birds, the processor payment program will be based on yield and grading of meat, skins, feathers and fat. The New Ostrich Industry recognises that Ostrich must produce a certain level of fat in order to produce well-grown muscles producing consistent quality meat.

The greater uniformity of birds will have an impact on tanning. The introduction of bird records, and genetic improvement program, will also enable identification of different genetic characteristics in the skins such as:

- Follicle Size
- Diamond Size
- Neck Line

Records will also be able to identify if genetics, management, or a combination of both, causes pinholes and/or hair follicles. There is currently no database of information on which to form judgements on many things of this nature causing the result of many myths passed through the industry concerning difficulties with skins.

Increased information, as a result of full traceability from accurate farm records, will produce many benefits in product development and marketing campaigns.

### **World Ostrich Association**

The World Ostrich Association has been formed to develop Industry standards, among other things, which will provide an infrastructure to support The New Ostrich Industry. It has an ongoing program of developing Grading and Classification

Systems that set the standards for the Industry. This supports producers, processors, marketers and consumers.

## **Summary**

As can be seen, The New Ostrich Industry is simply bringing Ostrich Production in line with mainstream livestock specie. The principals of The New Ostrich Industry are an essential component to overall commercial success for producers, processors and marketers involved in Ostrich Production today.