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Ostrich Production

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Commercial ostrich farming began in South Africa more than 150 years ago and is now practiced in Israel and the United States as well. Currently there are 40,000 to 60,000 birds in the U.S. Some breeders project that in order to penetrate the existing meat and hide markets, 250,000 breeding pairs would be required, and that a slaughterhouse would have to handle 200,000 ostriches annually to operate economically.

PRODUCTS

Ostrich leather is a popular product for making boots, clothing and upholstery. An adult ostrich will produce 14 square feet of hide. One hide can be made into three pairs of boots. In Texas, several custom leather goods companies and one large boot manufacturer are buying ostrich leather produced in the U.S.

Ostrich meat is being promoted as a low-cholesterol red meat because of its red color, beef-like texture and low fat content. Processing studies conducted at Texas A&M University show that the average carcass dressing percentage is 57.57 percent. Therefore, a 250 pound ostrich would yield about 130 pounds of meat. Private companies in Bowie and Austin, Texas are slaughtering birds. Ostrich meat products are being marketed under the trade name "Table Redit Meats" by a company in Arizona. At least one restaurant in Dallas is serving ostrich meat as an appetizer.

Ostrich feathers can be cropped once a year. Feathers are used for a variety of products including the well known "feather-duster". There are U.S. companies which are potential buyers of American ostrich feathers.

STARTING A BUSINESS

There are several options for getting into the ostrich business, each with its own advantages and disadvantages.

Current prices for eggs or hatched chicks are \$1,000 to \$1,500. This is the least costly method of buying an ostrich, but there are disadvantages. Mortality is highest with eggs and newly hatched chicks, they require incubation equipment and eggs are not insurable. There is the possibility of having too many chicks of one sex. Also, birds don't reproduce until 2 to 3 years of age.

Current prices for sexed chick pairs 3 to 6 months of age are \$6,500 to \$9,500. Chicks of this age can be judged for size and conformation, the sex is known and they are less costly than adults. Disadvantages are that mortality risk is still high until after 6 months, it is still 2 to 3 years until birds reproduce and chicks may or may not be insurable.

Current prices for yearling pairs are \$17,000 to \$25,000. Birds this age can be judged for size and conformation, mortality is not as big a factor and birds are insurable. However, birds are still 1 to 2 years from reproducing and their reproductive potential is unknown.

Current prices for pre-breeders more than 30 months of age are \$35,000 to 40,000. Advantages and disadvantages are about the same as for yearlings, except that the birds are much closer to reproducing.

Current prices for proven breeders are \$45,000 to \$90,000 per pair. These birds are insurable, their reproductive potential is known, and because there is no wait for reproduction there is a faster return on capital. Disadvantages are that adult birds are most costly, incubation and hatching required special equipment and knowledge, and there are mortality risks in raising ostrich chicks to saleable age.

Buying shares in a syndicated pair of proven breeders is also an option.

BIOLOGY

Ostriches are ratites, a group that includes all species of flightless birds: ostrich, emu, rhea, cassowary and kiwi. The name comes from the shape of the keel or breastbone, which resembles a raft and is actually a large, mostly cartilaginous plate. The wings of the ostrich are well developed but are used primarily for expression during courtship or aggressive displays. Ostriches have two toes, are well adapted for running and can attain speeds of up to 40 mph. Kicking is the major means of defense; some birds also are reported to peck and bite when threatened. The gastrointestinal tract of the ostrich is very long (approximately 26 feet in an adult) with large, paired ceca. The large intestine or colon comprises almost 60 percent of the total length.

Ostriches come in several "colors," each representing a different subspecies or group of subspecies. The "African black" is a hybrid produced by selective breeding from blue and red species. The Redneck ostrich is from east Africa (Tanzania and Kenya). The Blueneck ostrich is one of three species native to north, west or south Africa.

The African black is shorter, smaller and has darker feathers than other species. It has little skin color. Redneck males have creamy white skin on the thighs and neck except during breeding season when the skin of the entire leg and neck turns a bright pinkish red. Blueneck males have blue-gray skin on the neck, legs and thighs; only the fronts of the shanks turn red during the breeding season. The adult female Blueneck has blue-gray skin, while the Redneck female is creamy white. The adult male plumage is black with white, while the female plumage is a light grey to grey-brown.

Ostriches live an estimated 20 to 30 years in the wild. Domestic ostriches have been reported to live and reproduce for up to 50 years. An ostrich will reach adult height between 18 and 20 months of age and continue to gain weight for a few months after that. Adult height is 7 to 9 feet tall. Weight varies from 200 to 350 pounds. Birds are slaughtered at 12 to 16 months or older, when they weigh at least 250 pounds.

REPRODUCTION

Ostriches reach sexual maturity between 2 and 3 years of age. Females tend to mature slightly faster than males; different species may mature at different ages. Laying season is

heralded by courtship behavior, as complicated series of displays, dancing, vocalization and synchronous behavior. An example of receptive behavior by the female includes bowing and ruffling her wings at her sides. Male ostriches also get a lot of color during the breeding season. Ostriches will reproduce in monogamous or polygamous situations. Most breeders let the selection of mates occur naturally in a large communal pen and then separate the bonded pairs. The male "builds" (digs) the nest, typically a shallow depression in the earth. A male ostrich can become very aggressive during the breeding season and will guard the female, the nest and his territory. Both males and females sit on the nest. Laying season for ostriches begins in the early spring and continues for 2 to 3 months. Usually an egg is laid every 1 to 2 days. Production estimates vary widely from 30 to 90 eggs per hen. The average range is 35 to 55 eggs per hen.

INCUBATION AND HATCHING

Ostrich eggs have an incubation period of 39 to 59 days, with an average of 42 days. Incubation and hatching techniques are improving rapidly in the ratite industry, which helps reduce early mortality. Inadequate ventilation, improper humidity and ill-fitting egg racks have been major problems in the past. At least five U.S. companies are marketing incubators and hatchers for the ratite industry (i.e., Buckeye, GQF, Humidaire, Natureform, Pureflo). Eggs are turned through a 90-degree rotation four to six times per day and set air cell up. Suggested temperatures for incubation range from 90 to 98 degrees F, but a temperature range of 96 to 98 F is most common. Humidity is also very important. Eggs need to lose a certain amount of water during incubation; 13 to 15 percent is optimal. Humidity and airflow play important roles in the rate of water loss. Humidity settings will vary widely from one geographic region to the next, but usually range between 10 and 30 percent. Egg weight loss is determined by weekly weighing. Based on egg weight loss, humidity adjustments can be made in the incubator. Good record keeping is very important. Computer software has been developed that can help. Candling of eggs is usually done at weekly intervals to identify infertile or dead eggs. It is also performed prior to transferring the eggs to the hatcher.

Eggs are moved to the hatcher when they have internally pipped. Internal pipping usually occurs 24 to 48 hours before hatching. Hatcher temperatures are usually 1 to 2 degrees lower than incubation temperatures and the humidity slightly higher. Percent hatchability, or the number of chicks hatched divided by the number eggs set, is around 70 percent. Some of these eggs will be infertile; some will die during incubation; and some will fail to hatch. Again, it is very important to keep good records because specific problems are often associated with embryonic death at various points in incubation. Hatched chicks are removed from the hatcher when dry. Some producers give each chick a dose of beneficial bacterial flora at hatch. Chicks are unable to thermoregulate at hatch and must have an external source of heat. At hatch, supplemental heat should be 90 to 95 degrees F. The temperature can be dropped 5 degrees every 2 weeks and supplemental heat removed at 16 to 24 weeks. The heat source should be large enough for all the chicks to get around it. Also, the pen area should be large enough that the chicks can get away from the heat to avoid overheating.

NUTRITION

Commercial ostrich rations are available from a number of sources. Most commercial feed companies are producing starter, grower and breeder rations. Rations may be in a mash or pelleted form. Limits on the addition of other sources of roughage or nutrients, such as alfalfa hay, may be recommended by the manufacturer. Protein contents vary from 16 to 22 percent.

Starter rations very high in protein (28 percent) are not recommended because very high protein diets may be associated with leg abnormalities in turkeys. Breeder rations contain additional calcium. These diets are based on limited scientific nutritional research, because few studies have been conducted in ostriches. Therefore, the exact nutritional requirements of the ostrich are unknown.

Another common problem with ostrich nutrition is the chicks' habit of eating anything in sight. Impaction or injury from eating foreign objects is a usual result. One recommendation is to put the chicks on whatever substrate (dirt, grass, etc.) they are going to live on at 3 days of age. Some factors to consider when choosing an indoor flooring include: ease of cleaning; sanitation; footing; initial/relative cost; and consumption of substrate. Ostriches will ingest small stones to provide the grinding action needed for digestion of roughages. It is probably not necessary to provide grit to the birds when feeding a processed commercial diet. Smooth river pebbles may be provided as a source of grit.

FACILITIES AND MANAGEMENT

Recommended pen size for an ostrich pair varies from 1/4 to 1/2 acre. Age groups are usually segregated and young adults may be separated by sexes. Adult ostriches need little shelter, although some shade and protection from high winds would seem reasonable. Shelters are typically used to protect feed pans from rain or snow. Woven wire and pole type fencing are both used with good success. Five foot fences will contain an adult ostrich. Nearly all fencing for ratites has a smooth, rigid topper to prevent the birds from injuring themselves on the wire. Fencing need not be flush with the ground, but fences that are open at the bottom allow unwanted animals to enter the pens. The chick rearing facility usually is a sheltered building with a source of heat that opens to an elongated pen on the outside. In designing a facility, it is important to have a place where sick or new birds can be kept isolated from the others.

It is necessary to restrain and handle bird when administering medication and other veterinary treatment, when loading and shipping, and when moving animals from pen to pen. Ostriches do not drive easily and can inflict major injury on themselves, each other and their handlers if frightened or threatened. Ostriches can kick with tremendous force and accuracy; some also will peck and bite. Remember that an ostrich most often kicks to the front or possibly to the side, but rarely to the back, so a handler's safest position is behind the birds. Hoods are sometimes used to restrain adult ostriches. An opaque, soft stocking is slipped over the eyes and ears and down the neck to obstruct the ostrich's sight and hearing. Alleys between pens make moving birds easy and convenient. A solid or semi-solid panel (sometimes called a bully-board) held between two people often can be used to push an ostrich down an alley or to a gate. Sorting or restraint pens are usually very tall and solid with hinged partitions to further encourage ostriches into the desired area. Some "catch pens" may be covered; darkness or limited light seems to quiet birds and make them easier to handle. Even pastured ratites may be approached safely at night with a flashlight.

IDENTIFICATION

Ostrich identification is important for record keeping and protection against theft. Microchip identification systems are commonly used. At hatch, microchips are inserted in the pipping muscle just behind the head with an implant gun and needle. The code in the microchip is read by a device called a microchip reader, which costs \$1,00 to \$1,250. Each brand of microchip requires its own reader. The chips themselves cost \$8.50 each and come in packs of 50. Some producers insert a second chip in the tail head of older birds to allow "reading" from the rear of the ostrich while the bird is busy eating or drinking. This avoids the difficulty of reading the chip while pointing the reader at the ostrich's face, which is usually a moving target. Leg bands are used for

easy long-distance identification. These are usually placed above the hock or around the ankle. Numbered bands are available in a variety of colors.

HEALTH

A pre-purchase examination by a qualified veterinarian can ensure the purchase of a healthy animal. A good client-veterinarian relationship will be helpful if future veterinary treatment or consultation is needed.

Most mortality occurs in birds less than 6 months old. This is why ostrich producers typically report both hatchability and livability of offspring.

Omphalitis, or infected yolk sac, is a common disease of hatchlings. It has been treated by surgical removal of the yolk sac followed by antibiotic therapy. Infected yolk sacs are a result of bacteria penetrating the egg shell. It should become a less common problem as egg gathering and sanitation practices improve.

The "fading chick syndrome", or malabsorption syndrome, is a usually fatal disease of young ostriches that strikes most often between 1 and 3 months of age but may affect chicks as old as 6 months. Chicks become listless, stop eating and drinking and die. The cause is unknown. Aggressive intravenous fluid and/or oral fluid therapy has been successful in some cases. Impactions occur in birds of all ages. Treatment can be surgical or non-surgical. Preventive measure include acclimation of chicks to a variety of substrates very early in life and avoiding sudden feed changes or sudden additions of high roughage feedstuffs.

Both internal and external parasites affect ostriches. Ivermectin and other drugs given a 1-month intervals beginning at 1 month of age will prevent nematode infestations. Ivermectin also may be affective against quill mites and sucking lice with repeated dosing. Histomoniasis infection can be controlled with furazolidone and treated with metronidazole. Carbaryl (5 percent) dust is being used by the USDA at 14- day intervals to treat tick infestations in chicks and adult ostriches.

FURTHER READING

Jensen, James, James Johnson and Stanley Weiner. 1992. The Husbandry and Medical Management of Ostriches, Emus and Rheas. Wildlife and Exotic Animal Teleconsultants, College Station, Texas.

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