

Southern Regional Aquaculture Center



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Alligator Production

Grow-out and Harvest

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Alligator production in environmentally controlled houses is similar in intensity to production in poultry and swine houses. As with any highly intensified agriculture activity, alligator farming has a high degree of risk and demands special management skills. Management skills in alligator production are particularly critical since these animals have been removed from the wild only recently and are not truly domesticated. Essential management skills for the alligator producer are providing proper physical conditions, adequate nutrition, and a nonstressful environment.

This fact sheet outlines basic management practices for growing alligators from hatchlings to harvest/market size.

Grow-out facilities

Many different designs of grow-out facilities have been built. Grow-out buildings are heavily insulated concrete block, wood or metal buildings with heated foundations. The foundation is a concrete slab laced with hot water piping or, less commonly, electric heating coils. A constant tempera-

ture is maintained in the building by pumping hot water through the pipes. The slab is poured over insulation board to reduce heat loss. Some grow-out houses are earth-bermed to reduce further heat loss. Pools, drains and feeding areas are designed into the foundation before the concrete is poured. Approximately one-third of the pen is above the normal water level and is used as a feeding and basking deck. The remaining two-thirds is a pool usually about one foot deep at the drain. The pool bottom slopes to a central drain to facilitate cleaning. Separate pens are constructed within a building using concrete block walls three feet tall.

Pens can be made almost any size. In general, smaller pens are used for rearing small alligators and as the alligators grow, pens become progressively larger. Many producers stack small fiberglass or metal tanks above the larger floor pens for housing small gators. This greatly increases the utilization of space and heat within the grow-out houses. Pens and tanks must be "climb-proofed" to prevent nimble young gators from escaping. Table 1 gives examples of pen size to alligator size and corresponding densities.

Many producers construct a couple sizes of grow-out pens and simply reduce the density by moving

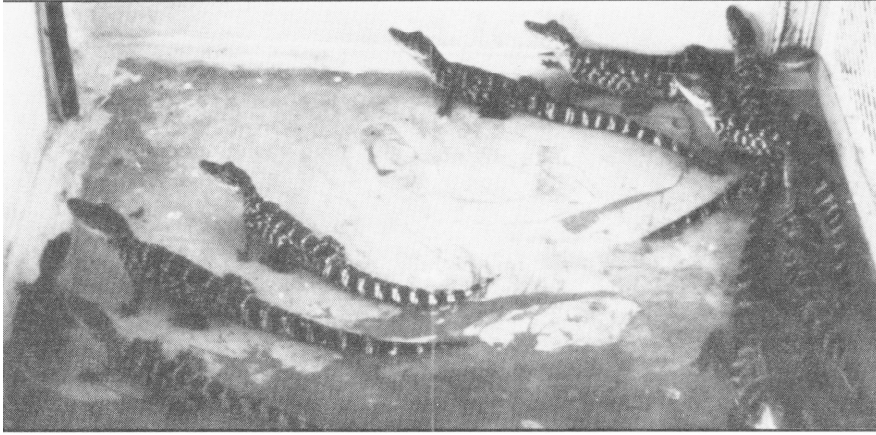
Table 1. Recommended pen sizes for grow-out operations.¹

Gator length	Pen size Sq ft (l x w) ²	Gators/ pen	Sq ft/ gator	Sq ft needed 350 gators
7-15"	9 (3x3)	20	0.45	158
15-30"	120 (10x12)	80	1.50	525
30"-4'	168 (12x14)	50	3.36	1,176
4-5'	192 (12x16)	50	3.84	1,344
5-6'	216 (12x18)	40	5.40	1,890

¹taken from Smith & Cardeilhac, 1981.

²length times width.

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Young alligators in a concrete pen.

the animals as they grow. A commonly used stocking regime is:

- 1 square foot per animal until 2 feet in length.
- 3 square feet per animal until 4 feet in length.
- 6 square feet per animal to 6 feet in length.

A common construction plan includes a building containing approximately 5,000 square feet (e.g., 33 x 150 feet) with an aisle down the middle and pens on either side. A 4-foot aisle leaves pens roughly 14 feet in width. Pen length is usually about 12 feet. Three-foot high concrete block walls separate individual pens and pens from the aisle.

Within the 12- x 14-foot pen is a 5-foot wide deck (i.e., 5 x 12 feet) next to the service aisle and a 9-foot wide pool (i.e., 9 x 12 feet). Food can be placed on the deck and the pen hosed clean from the aisle without entering it. The pool edge slopes rapidly to a depth of 10 inches next to the deck, and the pool bottom slopes from there to a 12-inch depth at the drain. The drain runs the width of the pool.

The pen is easily divided into two pens by the construction of a wall down the center. The large pen can hold around 160 two-foot or 50 four-foot alligators. The small pen can hold about 80 two-foot alligators. Some state laws require that alligators less than 2 feet long be held separately from those over 2 feet in length.

Another popular building design is a single "round house" design. Round house structures are 15 to 25 feet in diameter and are constructed as single pens. Many round houses are constructed from a single section and roof component of a prefab metal silo (used for grain storage). Round houses have also been built from concrete blocks. The round concrete slab on which the house sets is sloped (about 10:1) from the outer edge to a central drain. The round house is filled with water to leave about one-third of the outer floor above the water level. Producers like this single pen design because it does not disturb alligators in other pens during routine feeding, cleaning and handling operations.

Part of any alligator facility design is a room that holds the heating system. The heating system usually consists of water heaters and pumps to circulate warm water through the concrete slab. Warm water is needed to warm the building and to clean the pens. Some heating systems consist of several industrial size water heaters. Other systems consist of a flash-type heater (i.e., the type used in car washes) to heat water for cleaning and standard water heaters to circulate warm water through the slab. Both systems use thermostats to turn on heaters and circulation pumps. The temperature in grow-out buildings must be maintained between 86 and 88°F for optimum growth.

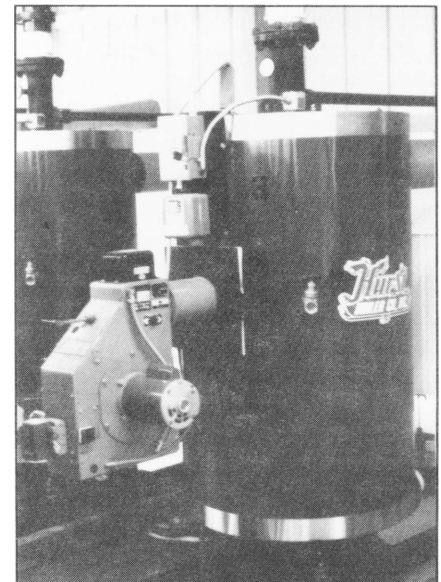
Grow-out buildings rarely contain windows, and many producers prefer no skylights. In fact, most animals are kept in near or total darkness except at feeding and cleaning times.

Feeding and nutrition

Research on the diets of wild alligators show that diets change as animals grow; but, in general, alligators consume a diet high in protein and low in fat. Early alligator producers fed diets high in fish flesh. Research later showed that medium to large alligators eat mostly higher protein prey (i.e., birds and mammals).

Most alligator farms were, therefore, equipped with large walk-in freezers to store large quantities of meat. Meat sources which have been used include: nutria, beef, horse, chicken, muskrat, fish, beaver and deer. Today, however, artificial diets have been developed which provide adequate nutrition. These diets have eliminated much of the need to keep fresh-frozen meat products available.

Burris Pet Food in Franklinton, LA, SF Services of Madison, MS, Goldkist Feeds of Valdosta, GA, and Ralston Purina of St. Louis,



Water heaters and pumps such as these circulate warm water through the concrete slab in the pen.

MO, are currently manufacturing pelleted alligator feeds. Commercial feeds are approximately 45 percent crude protein and 8 percent fat. These feeds are a blend of fish meal, meat and bone meal, blood meal, and some vegetable protein and then fortified with vitamins and minerals.

At present, most producers are feeding only commercially available diets, although some continue to feed a combination of meats and commercial diets. When blended, commercial alligator pellets are combined with approximately 30 to 50 percent raw meat. A vitamin premix is also added to the blended diet at a level of 1/2 to 1 percent. The pellets, meat and vitamins are ground together in a meat grinder to a consistency that is readily palatable to the size alligator being fed. Feed conversion rates decrease or get worse as alligators grow larger, but average about 40 percent or between 2:1 and 3:1, up to a length of 6 feet.

Pen cleaning should be coordinated so that the animals are not disturbed just before, during or soon after feeding. Many producers clean in the morning and feed in the afternoon. Feed should be spread out on the deck in small piles to reduce competition and territoriality. Feeding should be done at least 5 days per week while some producers feed up to 6 or 7 days per week. Alligators are normally fed at rates of 25 percent of body weight per week the first year, then gradually reduced to 18 percent by three years of age or a length of about 6 feet. Overfeeding wastes money and can lead to gout. Gout is fairly common in pen-raised alligators, but can be cured by taking the animals off feed for seven to ten days.

Feed additives

Two antibiotics, Oxytetracycline (OTC) and Virginiamycin (VA), have been added to feed when bacterial problems occur. It should be pointed out, however, that these or any other antibiotics can be

administered to alligators only through a prescription from a veterinarian. One research study showed that females treated with these antibiotics (OTC at 100 grams/ton) and VA at 20 grams/ton) had improved fertility rates of 16 percent and hatching rates of 8 percent. These antibiotics have also improved growth (15 percent) of hatchlings that were stressed.

Growth rates of young alligators can be as much as 3 inches or greater per month when held at a constant temperature of 86 to 89°F fed a quality diet and protected from stress. Many producers are rearing alligators from hatchlings to 4 feet in 14 months. A few producers have grown alligators to 6 feet in 24 months. Farm-raised alligators are generally 10 percent heavier than wild alligators of the same length. Table 2 gives average length and weight of wild and farm-raised alligators.

must be tagged with tags from the state regulatory agency immediately after slaughter. Alligators can be skinned only at approved sites and by using specific skinning instructions issued by the state agency.

Skinning, scraping and curing must be done carefully to assure quality. Hides that are cut, scratched or stretched, particularly the belly scales, have reduced value. Buyers pay less or “down-grade” for damaged hides.

Many producers chill alligators before skinning. Chilling makes the skinning process easier. Hides are scraped carefully to remove all meat and fat and then washed to remove all blood, etc. Fine grain mixing salt, **not** rock salt, is used to preserve the hide. Salt is rubbed thoroughly into the skin, making sure to get salt into all creases and flaps so that curing can begin. Hides are then covered

Table 2. Length-weight relationships for wild and farm-raised alligators.

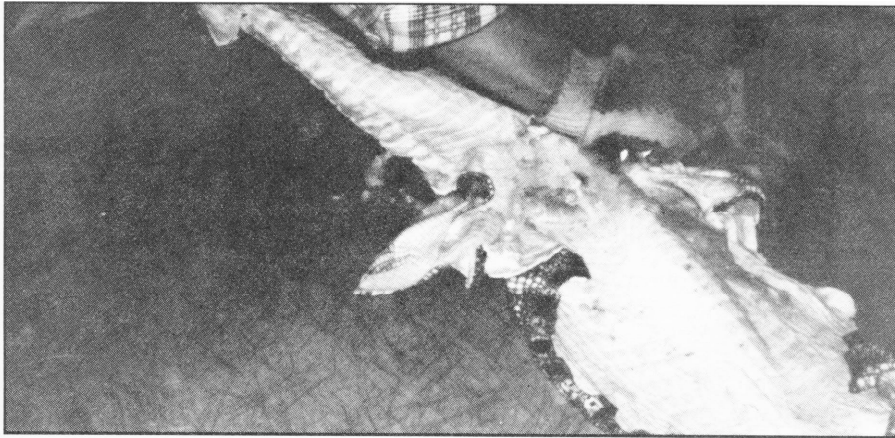
Length/inches	Wild weight pounds/(ounces)	Farm-raised weight pounds/(ounces)
12	0.15/ (2.4)	0.16/ (2.6)
18	0.42/ (6.7)	0.47/ (7.5)
24	0.68/ (10.8)	0.75/ (12.1)
30	3.5	3.9
36	8.6	9.5
42	13.0	14.7
48	17.7	19.8
54	28.0	31.1
60	39.6	44.0
66	45.4	50.4
72	49.6	55.1

Harvest

In most states written approval and tags must be obtained from the state regulatory agency (e.g., Department of Conservation and Natural Resources) before alligators can be harvested. Some states also have a minimum length requirement (e.g., at least 4 feet, unless the animal dies from natural causes) at harvest. All alligators

in 1/2 to 1 inch of salt. Hides are tightly rolled and allowed to drain and dry in a well ventilated, cool place. Hides are checked and re-salted as necessary after three to five days.

Producers processing alligator meat must comply with all sanitation requirements of federal, state and local authorities. County or parish health departments can supply guidelines and assistance in



Fine grain mixing salt is used to preserve the hide after skinning.

complying with sanitation standards. Specific state laws regulate the size of meat cartons (e.g., not larger than 5 pounds), labelling of the cartons with the names of the seller and buyer, date of sale, and tag number that corresponds to the hide. Average deboned dress-out percentages for alligators in the 4- to 6-foot range are given in Table 3.

Table 3. Percent yield of deboned alligator meat on a live-weight basis.

tail	leg	torso	ribs ¹	jaw
16-17	4-5	6-12	7-10	1

¹ribs with bones.

It is interesting to note that while hide prices have fallen, meat prices have remained constant, and the supply of alligator meat is well below market demand.

Stress

Stress and/or poor water management may lead to brown spot disease. Although sores will heal, the spots are detectable and reduce the value of the skin.

Alligators are wild creatures which have been thrust into captivity. In the wild, alligators are rela-

tively shy and reclusive creatures that do not normally congregate together except during the breeding season. Cultural conditions imposed upon them are unnatural and stressful.

Alligators crowded into pens appear to be very sensitive to light and sound. Many producers like to keep alligators in the dark, or with very reduced light conditions. They try to locate and insulate facilities to minimize external noise. Some producers, however, put lights on timers to simulate natural conditions and place radios in the grow-out houses, believing that the animals will grow accustomed to human voices and not be as stressed by daily feeding and cleaning routines. Some producers believe that alligators recognize individual humans and should be fed and cleaned by the same personnel each day to reduce stress.

Signs of stress include piling-up, reduced feeding, stargazing and fighting. Piling-up usually occurs in the corners of the pens and can lead to suffocation of animals on the bottom of the pile. Reduced feed consumption is a certain sign of problematic stress. Stargazing is, as the name suggests, a position the alligator assumes by rising up

on its front feet, arching its back and neck, and pointing its snout into the air. Stargazing has been related to a vitamin B deficiency and may also be a general sign of stress. Fighting among animals that have been penned together but not overcrowded is a definite sign of stress. Fighting can scar the hide, reducing its quality and value.

Each producer must keep good records on environmental conditions and feed consumption. When signs of stress appear, try to identify the cause and remedy it as soon as possible. Overcrowding, excessive disturbance and poor feeding practices are common causes of stress.

Alligators can be aggressive, particularly if under stress. Therefore, handling alligators must be done with care and with the proper equipment. Handlers should always wear heavy leather boots and gloves. Catch sticks or nooses should be used to get animals under control. Once under control the alligator's mouth should be bound, taped or banded shut to prevent biting. The tail can be particularly dangerous and should be held or secured tightly. Claws can also inflict damage. Think safety, take precautions and handle the alligators carefully.

No single publication can provide all the possible information and insights that a prospective producer will need before venturing into a risky alternative agriculture enterprise such as alligator farming. This publication has attempted to give a prospective producer basic information on which he/she can make informed decisions. Before venturing further into alligator farming, visit a few alligator farms and talk to producers. First hand information is imperative to the decision making process.