



Poultry Production Guide for a 500 Layer Operation

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This revised guide is for individuals interested in raising poultry for egg production, whether on a commercial scale (full or part time basis) or as a hobby, with some financial benefits. The guide provides basic information to raise a poultry flock of 500 birds. The information could be adapted for any number of layers one wants to raise.

The content of the guide includes a brief description of the different stages of poultry production and suggested cultural practices in the

management of poultry as well as record-keeping and marketing tips. As mentioned, the guide should be viewed as a source of basic information. Efforts should be made by poultry producers to obtain more information regarding recommended production practices, environmental concerns and issues, and the marketing of poultry products. For information and assistance on poultry, contact the College of Natural & Applied Sciences' Extension and Outreach (CNAS E&O).

Many thanks to Dr. Hauhouot Diambra-Odi and Dr. Thomas Poole for lending their expertise for the 2016 revised version of this publication.

The following lists some government agencies and their services that may be of benefit/concern to poultry producers:

Department of Agriculture Government of Guam	<i>Import requirements, financial (loan) and marketing assistance</i>
Guam Environmental Protection Agency (GEPA)	<i>Waste/manure handling requirements</i>
Guam Economic Development Authority (GEDA)	<i>Financial (loan) assistance</i>
Farmers Home Administration (FmHA) U.S. Department of Agriculture	<i>Financial (loan) assistance</i>
Natural Resources Conservation Center (NCRS) U.S. Department of Agriculture	<i>Waste management and windbreak assistance</i>
U.S. Small Business Administration (SEA)	<i>Financial (loan) assistance</i>

Introduction

In food production, the poultry industry is generally distinguished by two major enterprises; egg production and meat production. In egg production, the most common shell eggs are from chickens and ducks. In meat production, the most common birds are frying and stewing chickens, turkeys, ducks and geese. The terms “broiler” and “fryer” in poultry meat production refer to young and tender meat-type birds. This publication, however, is for layer or chicken for egg production. Except when otherwise noted, the use of the term “poultry farming” in this publication refers to egg production.

Poultry farming on Guam can be an exciting and profitable enterprise. As a business venture, the success and profitability of poultry farming depends on several major factors including proper cultural practices, dependable source of healthy stocks, a balanced nutrition program, dependable infrastructure, sound financial management practice, and a good marketing strategy.

In the early 1970s, Guam reached a 95 percent self-sufficiency level and even exported fresh eggs to islands within Micronesia. Since the mid-1980s, the island's poultry industry has declined in production levels due to the closure of some fairly large poultry operations. In the 1990s, the situation changed significantly with production trends shifting from large commercial operations to small backyard-type poultry production units. The average small production unit ranged from 100-500 birds. At present, UOG's College of Natural & Applied Sciences Triton Farm is the only existing poultry operation on Guam. There have been lots of inquiries on egg production over the years but none of these have materialized. High cost of commercial feeds and environmental policies on waste management could be some of the reasons why the egg industry has not developed at this time.

Fresh eggs are in heavy demand on Guam. Consumers on Guam have a preference for locally-produced fresh eggs over imported

fresh eggs. In addition, many consumers are willing to pay a higher price for local fresh eggs.

Because of the demand for local fresh eggs, one can often make a profitable operation even on a 500 layer farm. Poultry farming could be treated either as a hobby after a workday or a part-time activity after retirement. For the hobbyist and backyard farmer, it is a source of fun and fulfillment as well as a source of extra income. For the full-time poultry producer, it is an agri-business activity that provides farm and family income. Overall, poultry farming provides opportunities for everyone from a hobbyist to a commercial poultry farmer. Opportunities include the sale of eggs, manure for fertilizer, and hens for stewing after their productive egg cycle.

The sale of eggs could generate significant farm income. After the chickens' laying capacity decreases, usually after two years of egg production, the chickens could be sold as fresh meat for stewing or for “kadon pika” (a Chamorro delicacy). Chicken manure contains essential plant nutrients and can be used or sold to crop farmers and plant nurseries as fertilizer or soil conditioner.

Poultry farming is not highly labor intensive. The time needed to brood, grow and feed 500 birds or to collect an average of 280 eggs a day at production can be managed easily. It normally takes one to two hours to feed, clean, and collect eggs daily. Depending on the objectives of the producer, the pleasures of working with poultry, seeing the chicks grow to produce eggs often cannot only be measured in dollars and cents.

Stages of Poultry Production

Poultry operators generally categorize their operation into five major stages (Table 1). These stages signify the age of the birds in relation to their 1) growth, 2) space requirement, and 3) recommended type of feed. Table 1 lists the five stages of poultry production with corresponding bird ages, while the discussion that follows provides information on essential management practices. Additional information on types of feed for each corresponding growth stage can be found on the “Feeds and Feeding” section of this publication.

Table 1. Five Stages of Layer Operation.

Stage	Age
Brooding	1 to 6 weeks
Growing	6 to 12 weeks
Pullet	12 to 20 weeks
Laying	20 to 120 weeks
Replacement Process	80th week

The Brooding Stage

Brooding refers to the early growing period of chicks. The brooding period extends from day-old to six weeks of age. The recommended feed for brooding layer chicks is “layer starter.” Brooding facilities range from litter brooding to battery brooding.

In litter brooding, chicks are placed on the floor that is covered with litter materials such as sawdust, rice hulls, shredded newspaper, or any absorbent material. The chicks are maintained with very few problems. At least 550 square feet would be needed to brood and grow 500 chicks.

Dry litter needs to be maintained throughout the brooding period. Litter should be at least 4-6" thick. Litter materials recommended for Guam's conditions include sawdust, shredded newspaper, and

shredded cardboard boxes. Wet and caked litter must be replaced with fresh litter periodically.

It is recommended that the chicks be brooded in groups of 100. The grouping makes observation easier as well as prevents “piling-up” (chicks stepping on each other) which can lead to deaths.

Another option for the poultry producer is the use of a battery brooder. The battery brooder could either be constructed or purchased from commercial livestock outlets or catalogs. A battery brooder is made up of wire cages, supported by either wooden or steel legs. The battery brooders could be stacked up to three to four compartments (see Fig. 1). However, a plywood or similar material must be placed underneath each compartment to catch the manure. The recommended compartment size is 3' wide, 4' long and 14" high. The distance between compartments should approximately be 14". You can request a special order for commercial brooders through your local feed stores.

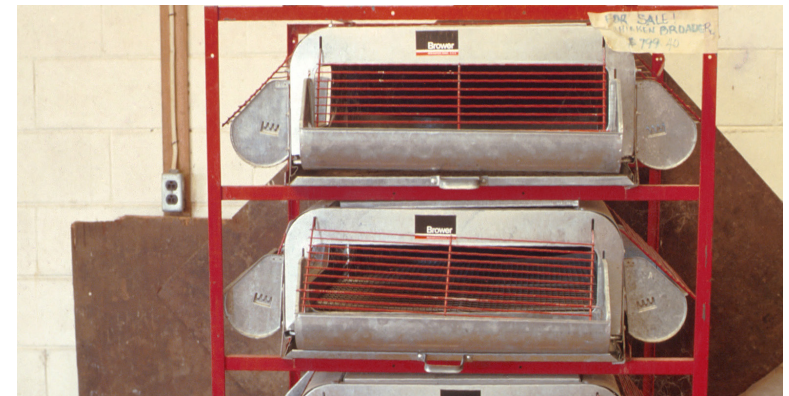


Fig. 1. Battery Brooder.

It is recommended that newspapers be placed on the wire floor during the first week of brooding so the toes of the chicks won't go through the holes and to prevent draft from below the brooder. The newspaper bedding should be replaced each time it gets too wet. Cardboard materials may be used in place of newspaper.

Recommended Brooding Practices

The following recommended management practices are provided to ensure a good head start.

1. Two weeks prior to chick arrival, the brooder, waterer, feeder, litter, and other materials for brooding should be cleaned and sanitized. Use a one-gallon capacity waterer for every 50 chicks. The use of a narrow lid base waterer will help prevent chicks from getting into the water. Chicks are very thirsty upon arrival and tend to dive into the water. Once they get too wet, they chill and die. Wet chicks must be put under heat until they are dried. Start feeding 1-2 hours after arrival. Use the chick carton as feeders for the first three days. Provide a small amount of feed each time to avoid wastage. Use galvanized feeders when chicks are consuming a greater volume of feed.
2. Effort needs to be made to protect chicks from predators such as the brown tree snake, rats, cats, and dogs. Chicks are especially susceptible to the attack of the brown tree snake. Brown tree snakes are the predator credited with the reduction and/or extinction of Guam's native bird population. To ensure greater protection from snakes as well as rats it is recommended to use 1/4" x 1/4" wire mesh enclosed brooders/coops. Also, seal off any openings in the brooder.
3. Two days before chicks arrive, the brooder must be set up properly. Preparation of the brooder for chick arrival is most important. It becomes the key to the success of a poultry operation. The chicks' health and environmental conditions becomes a major concern during the preparation of the brooding facility. If utilizing a used brooder, clean with ammonia and water solution. Also, ensure that the water in feed troughs (containers) is from potable sources.
4. Starter feeds and water soluble antibiotics should be available and stored (per label instructions) for use during the growing period. Use layer starter feed. Starter feeds are normally medicated to prevent common baby chick diseases like coccidiosis and bacteria that can cause wet droppings. Treat water with soluble antibiotic for at least five days. Antibiotics can be purchased at local feed stores. It is also advisable to make advance orders for starter feeds and antibiotics from these suppliers when anticipating to brood chicks. Note: If an automatic watering system is used, be sure that a backflow (anti-siphon) device is installed to prevent antibiotics from entering the main water line.
5. Heating elements, whether light bulbs or gas heaters, must be tested. Three hours before chicks arrive, turn on heating elements to get the brooder to the recommended temperature of 95°F. Keeping this temperature could be accomplished by hanging a 50-watt light bulb approximately 4" from the floor for every 50 chicks. As the birds grow older, the light bulbs should be elevated. When litter brooding, galvanized sheets can be used as guards/partitions to confine chicks within the heated area. When using a light bulb, the temperature may be regulated by raising or lowering the bulb. Heating elements can be removed when birds are fully feathered.
6. Trim chicks' beaks after the third or fourth day of arrival. Beak trimming involves the clipping of the upper beak. The use of a debeaker machine will facilitate the debeaking of chicks. Debeaking the birds will minimize incidence of feather picking and cannibalism. This also prevents feed wastage as the birds cannot select the ingredients in the feed.
7. While maintaining adequate ventilation, eliminate or reduce wind drafts for consistent brooder temperature and comfort of chicks. A cold brooder predisposes the chicks to "vent pasting." Vent pasting is the situation when chicks may have watery discharges from their anuses which dries up and eventually plugs up the opening. Feeders and waterers must be close to the source of heat so the chicks are continually warmed. The chicks should be evenly distributed in the brooder. Non-stop chirping or piling-up of chicks in one corner is generally a sign of a drafty or cold brooder. On the other hand, panting chicks generally indicate that the

temperature in the brooder is too high, and needs to be turned down immediately.

8. Monitor, on a regular basis, the conditions in the brooding facility. By the second day, look for vent pasting. Manually remove dried discharge to lessen chick mortality. Increase the source of heat to help prevent vent pasting incidence by adding 50-watt light bulbs for additional heat (one 50-watt bulb per 100 chicks). Lower the brooder temperature at least 5°F every week until birds are fully feathered. Observe the chicks regularly during feeding. Dead birds should be removed right away and disposed of properly.

Growing Stage

The growing stage, age 6-12 weeks, is primarily an important stage for producers utilizing battery brooders or similar small cage-type enclosures. After six weeks of age, birds must be removed from the battery brooders and transferred into slightly larger confinements. While feed, water and certain vaccines/medications are essential during the growing stage, the need for ample space to accommodate the body expansion of birds is very essential. Litter type houses or large coops are suitable for the growing stage. It is not recommended to place birds in laying cages during this stage.

Another important distinguishing aspect of the growing stage from the brooding stage is the recommended type of feed. During the growing stage, the recommended feed to use is called “layer grower.” Mortality rate from brooding to growing should not exceed 5% during the entire brooding-growing period.

Pullet Stage

The term pullet refers to young hens between 12-20 weeks old. This is the period when the birds feed on “pullet developer” and gradually grow into young laying hens. During this growing period, the demand for feed, water, and floor space increases as the birds mature. The type and amount of feed as well as the

adequacy of water during this period will determine the ultimate egg-laying productivity of hens. In addition, overcrowding of birds should be avoided by providing adequate floor space.

Start monitoring the birds weight by random weighing. Random weighing could be done by lifting the bird with two hands and feeling the weight of the pullet. The pullet weight should be at least within the standard. Refer to Table 2 for some standard weights. By weighing, one knows how the birds are performing and whether to increase or decrease the daily feed ration. It is at the ages depicted on Table 2 that weight deficiency can be corrected. The weight of the bird has a direct relationship to its level of productivity at time of egg production. The birds should attain and maintain the right body weight for better egg production.

Table 2. Standard Weights for Leghorn and Rhode Island Crosses From Age 6 through 20 weeks.

Age of Bird (weeks)	Leghorns (pounds)	Rhode Island Crosses (pounds)
6	1.01	1.24
8	1.39	1.7
12	2.13	2.5
16	2.49	3.15
20	2.87	3.6

Laying Stage

The egg laying stage generally begins at approximately 20 weeks of age. The use of “layer” feed begins at this age. However, birds should be transferred to their laying quarters when they are 18 weeks of age. Be sure to cull sickly and obviously slow-growing birds. Culling is the removal of unproductive birds from the flock. The productive egg-laying period of layers is approximately two years.

For an existing poultry farm, as egg production becomes normalized, serious considerations should be given to replacing old birds with a new flock. Maintaining old flocks can be costly in terms of high feed cost and low egg production.

Layer Requirements

1. Poultry feed, containing at least 18% protein, and potable water should be made available at all times. Avoid sudden changes in rations for the layers. Feeders and waterers can be installed outside the pen for easier feeding and cleaning.
2. Layers need at least 14 hours of daylight during the laying cycle. Depending on the season of the year, an additional 2-4 hours of artificial light must be supplemented to ensure 14 hours of daylight. The use of 50-watt light bulbs, one per 100 birds, may be provided. In addition, a timer can be installed for the lights to be turned on and off automatically. Lights are needed to stimulate egg production and allow more time for the birds to feed even during night time.
3. It is recommended that the laying house be located in a quiet section of the property. Efforts should be made to avoid too much noise because excessive noise can affect the birds' egg production.
4. An adequate nesting area for layers to lay their eggs should be made available if layers are located in a litter bed. A community nest measuring 2' x 6' for every 100 layers should be sufficient. An egg roll-out can also be attached to the nests so egg collection can be done outside the layer pen. Collect eggs at least twice a day, once in the morning and again in the afternoon. Eggs should be stored in a cool place if not sold (or used) the next day after collection. Manure and blood stains on the egg shells can be washed with water. It is recommended that cleaned eggs be refrigerated immediately to protect from any bacterial contamination such as *Salmonella*.

5. Floor space of approximately 1.75 square feet per bird is recommended. For 500 layers, the minimum space requirement is approximately 875 square feet. Walls can be made of chicken or mesh wire material. When using cages, a floor dimension of 12" x 18" can accommodate at least three birds and a maximum of five birds. Curtains or some covering on the outside need to be made to prevent drafts and rain from entering the living space during inclement weather.

Free-ranging or pasture type of layer management has become popular due to increasing awareness of providing humane treatment, best welfare conditions, and a more natural environment for the layers. Layers spend most of their time in an open area, but need to be safeguarded from predators.

6. Layers can be culled anytime during the production stage. Unproductive hens should be culled (removed) from the flock as they will continually consume feed while not producing eggs. Signs of an unproductive hen include pale and shrunken combs/wattles, thin and emaciated bodies, inactive and dull appearance. Daily monitoring for the culling of birds should be done. Note: a high rate of culled birds is a sign of some management problem that needs to be addressed immediately.

Replacement Stage

The replacement stage involves two phases: pre-replacement and replacement phases. The pre-replacement phase involves the ordering of baby chicks (replacement stocks) in a timely manner to replace existing layers by the time they reach low productivity levels. Refer to Fig. 2 which illustrates the egg production chart as based on the time period and percentage of production. This phase is part of the brooding stage and it is an important farm management practice if the objective is to maintain a consistent level of egg production. Replacement stocks (baby chicks) should be ordered when existing layers are 80 weeks old. This

will allow for hatching and shipment preparation, and for the brooding-growing-pullet stages.

The second phase involves the actual replacement or culling of layers that are 120 weeks old. Arrangements for the culling of the old birds should also be done in a timely manner so as to avoid unnecessary feed expense. In culling old hens, some producers sell the hens as "live stewing chickens" at flea markets, or advertised for sale at the farm-site. If old layers are kept for a few weeks after replacement stocks are in place, a switch to a less costly feed is advisable.

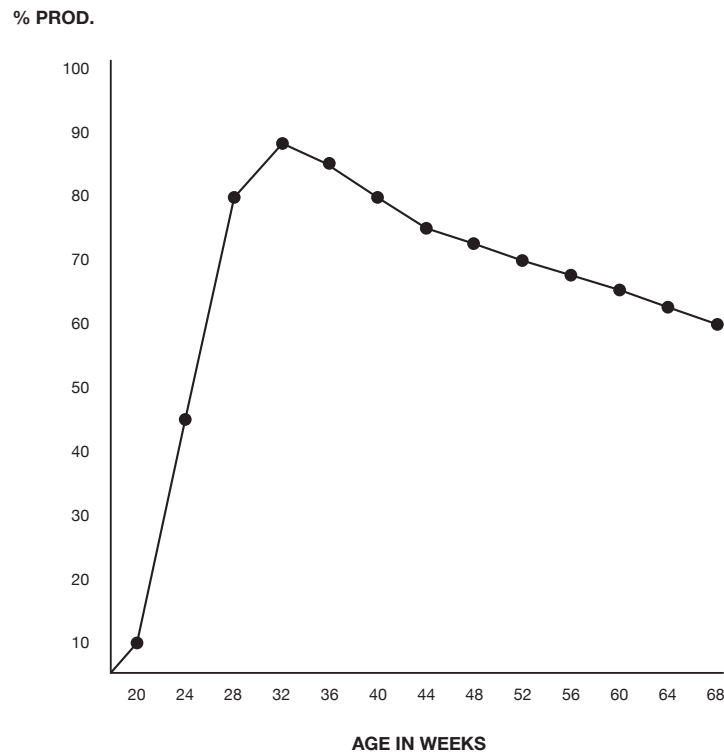


Fig. 2. Egg Production Chart. Time Period and Percentage of Expected Production.

Related Poultry Production Information

Source of Chicks

As of the printing of this publication, Guam does not have a certified poultry broodstock (chick) hatchery facility. Unfortunately, local poultry producers are required to purchase reliable replacement stock from off-island sources. Replacement chicks are usually ordered from Hawaii or the mainland US. The chicks are air shipped via the U.S. Postal Service and are generally picked up at the main postal facility in Barrigada. The chicks are shipped on the day of hatching. Because hatching is handled on a scheduled basis, the ordering of chicks must be placed well in advance, at least 30 days prior to anticipated time of arrival. CNAS E&O can assist in locating various sources of broodstocks (baby chicks).

Sources of baby chicks:

1. Asagi Hatchery
1830 Kananui St.
Honolulu, HI 96819
Phone: 808-845-4522
Web: asagihatchery.com

2. Ideal Poultry Breeding Farms, Inc.
POB 591
Cameron, TX 76520-0591
Phone: 254-697-6677
Web: idealpoultry.com

From previous experience, chicks shipped from Hawaii have higher survival rates as compared to shipment from the US mainland, largely due to travel distance. Mortality and morbidity rates can reach as high as 30-60 percent upon arrival from US mainland shipments. The Hawaii shipments generally arrive with no morbidity and mortality. The day-old chicks can survive

for 24 hours without feed and water. However, chicks start to dehydrate and weaken beyond the 24-hour period. Note: Hawaii hatcheries supply mostly H&N White Leghorns and H&N Brown Nicks (Rhode Island Cross) breeds.

Note: The importation of live birds (poultry and fowl) from foreign countries is restricted via animal quarantine regulations. Satisfying quarantine regulations will be costly and economically unfeasible.

Infrastructure

Guam's tropical conditions require that poultry producers take into consideration several factors in the design and construction of facilities for proper sanitation and flock health. An underlying concern in all structural facilities is that they are typhoon resistant.

During wet and windy days, brooders, cages, and pen houses should be designed to keep wind-draft and whipping rain from affecting the birds. Also, for extremely cool and wet days, the use of heat lamps may be required. On the other hand, during hot and humid days, the structures should allow for adequate air circulation and ventilation. The design of feed storage facilities should also take into consideration the weather conditions mentioned above. Of utmost importance is that feed be kept in a dry, cool, well-ventilated place. Adjustable curtains or shades can be installed in the facility to control draft or heat from the sun.

Feeds and Feeding

Sufficient amount of fresh feed and water should always be available during the brooding, growing, pullet and laying periods. Feeding must be on a continuous basis. Feed should be available to the birds on a 24-hour basis. However, it is not a good practice to simply fill feeders to the brim once a day. This is because of the bird's "pecking" behavior while eating, a good amount of feed is generally wasted when feeders are extremely full. In addition, extremely full feeders tend to

promote spoiled feed at the bottom of the feeder. Spoiled feed can affect a bird's health and ultimate egg-laying performance.

Providing adequate amounts of feed more often, perhaps once in the morning and again in the afternoon, is a better and highly recommended practice. In addition, specific poultry rations must be fed at certain growth stages. Table 3 indicates appropriate feed types on a growth stage basis.

Pullet developer is recommended for the 13-20 weeks of age to delay sexual maturity of the birds. Early start of egg production can result in smaller eggs and shorter period of production. Egg production should commence by 20-21 weeks of age. Eggs laid in the first three weeks of production are in the peewee and small sizes. Egg size increases to medium, large and extra-large as the birds mature. Dried oyster shells can be crushed to fine particles or to powdery form and applied as side dressing to layer feeds.

Table 3. Appropriate Feeds to Growth Stages

Type of Poultry Feed	Recommended Protein Content (%)	Age of Bird
Layer Starter	20	Day Old-6 weeks
Layer Grower	18	7-12 weeks
Pullet Developer	14	13-20 weeks
Layer	18	21 weeks-Laying

Spent layers are sold as stewing chickens and sold by the pound or by head. Hens that are in production for almost two years are considered "spent" layers. Although layers can lay eggs longer than two years, the quality and quantity of the eggs produced are generally considered poor and uneconomical.

Molting Period

Birds go through a molting, or feather dropping period. Molting is a natural process where birds renew their feathers. For layers, natural molting normally occurs towards the end of their laying

cycle. However, natural molting can take place during the laying cycle due to hot and humid weather. If natural molting occurs during the laying cycle, a decrease in egg production will be experienced during this period.

Layers can also be “forced” to molt. Forced molting is a cultural practice principally used in cooler, more temperate areas. Studies have shown that forced molting can improve the egg laying capacity of layers in these areas. Forced molting can also be used as a means to stop egg production, for a brief period, when egg supplies are over abundant.

The need to force-molt is dictated by the economics of production (cost of feed vs. cost of eggs). Egg production can drop down to zero during forced molting. Once feed is restored, egg laying resumes at a higher production rate than pre-forced molting period. However, extreme caution must be practiced as forced molting can be detrimental to the flock’s health and high death rates can occur. One needs to seek the advice of the livestock extension agent or other poultry specialist when considering the implementation of forced molting.

Removal of Dead Birds

Dead birds should be collected every day and properly disposed of by burning, burying, composting, or by other appropriate means. They should be disposed of immediately to prevent disease transmission to other birds. *They should never be eaten or sold.*

Manure and Litter Disposal

Collected manure and litter (feathers, etc.) can be composted for soil conditioning. These can be either sold or used for crop fertilizer. It should be kept dry to minimize odor, fly problems and for easier handling.

The Guam Environmental Protection Agency (Guam EPA) has policies that govern the proper disposal of animal waste. Currently, any poultry operation that has more than 500 birds per site is required to construct, via Guam EPA specifications,

a manure disposal system. It is highly recommended that Guam EPA be consulted during the planning phase of the farm concerning the requirements of proper animal waste disposal.

If you are proposing a poultry farm in Northern Guam, there are concerns for the potential contamination of the aquifer (water lens) which is the primary source of local potable water. In Southern Guam, the concerns lie with the potential contamination of rivers, streams and ocean due to runoff. Therefore, one needs to pay particular attention and be well informed with local environmental concerns.

Health Management

There are common diseases and health problems which poultry producers need to be aware of in managing a successful operation. Below is a list of the most common poultry diseases and their symptoms. The ability to identify these health problems during their early stages of development can help prevent losses.

Diseases and Their Symptoms

1. Newcastle Disease - This problem is sudden and the observed symptoms include: high morbidity and mortality rate; cold-coughing, sneezing and rattling; twisting of head and neck; uncoordinated movement and paralysis. Egg production drops to zero in a matter of days.
2. Fowl Pox - The observed symptoms can either be dry or wet. Dry poxes can be seen as pimple-like growths in the legs, wattles, and combs. These growths eventually form scabs on the surface. When growths are inside the mouth cavity, it is considered wet pox and it is more fatal since the birds cannot eat or drink.
3. Parasites - The observed symptoms of this problem include: stunted growth; ruffled feathers; pale color of face despite good nutrition and management. Dead birds can be routinely checked for worm load by doing an autopsy. The birds’ feathers, skin and body parts should be routinely checked for mites, lice, and fleas.

4. Vent Pasting - The observed symptom of this problem is watery discharge at the vent region. The discharge eventually dries up and plugs up the anal opening. This commonly occurs during the first week of brooding. Baby chicks show discomfort from dehydration.
5. Diarrhea - The incidence of diarrhea can be triggered by different causes. It can be in the form of bloody, yellowish or whitish discharges. If symptoms of this problem appear, call your local extension agent for advice.
6. Respiratory Infections - The observed symptoms of this problem are sneezing, coughing, nasal discharge and swelling of the face. If symptoms of this problem appear, call your veterinarian or local extension service office for advice.

Vaccinations

Vaccinations are available for certain poultry diseases. Most hatcheries administer Marek's and fowl pox vaccines the day chicks are hatched. As birds increase in age, other vaccines and medications may be needed to improve health or prevent problems. The procedures for providing these vaccines and medications can be easily learned and administered by poultry raisers. Table 4 below lists the most commonly recommended vaccinations and medication by age of birds. Always seek the assistance of the Territorial veterinarian or a livestock extension agent for recommendations and advice related to vaccinations.

Table 4. Succeeding Vaccination and Medication Periods.

Age of Birds	Disease Prevented	Type of Application
3-4 days ¹	Newcastle Disease	Intra-nasal/Intra-ocular Vaccine
4 weeks ²	Fowl-pox	Wing Web Vaccine
6 weeks ³	Internal parasites	Medication added in Feed/Water

¹ Repeat treatment on the 6th, 12th and 18th week periods. During these three periods, the vaccine is administered in the drinking water.

² Repeat treatment during the 18th week period.

³ Repeat treatment during the 20th week period.

Biosecurity Measures For Small-Scale and Backyard Poultry Farms

1. Poultry houses should be constructed to withstand super typhoons (150 mph) and located at least 50' away from residential areas.
2. Birds from brooding to laying stages must have no direct contact with other free-ranging poultry and wild birds. Place feeders and waterers inside the poultry house so as not to attract outside birds.
3. Limit visitors and acquaintances to the farm. Do not allow any type of vehicle to come close to or park near the facility.
4. Report any high incidence of sick or dead birds immediately to the Animal Health Section of the GDOA at 300-7965/66 or Office of the director GDOA at 300-7970. You can also inquire at the CNAS E & O at 735-2080.
5. Maintain cleanliness and sanitation both inside the poultry house and the premises. Disinfect poultry houses in between periods of replacement of stocks.

Farm Records

Records should be kept at all times from brooding to the end of each production cycle. Daily recording of activities is highly recommended. In addition, records distinguishing the non-egg versus the egg production periods are recommended. Along with daily activity reports, the maintenance of a monthly expense and sales report is also recommended.

The following reports and their activities are offered as a guide:

1. Non-Egg Production Period Weekly Activity Report (refer to Appendix A for a sample weekly activity report) - Some of the more important activities for the brooding, growing, and pullet stages include:
 - a. Hours spent - Note the approximate number of hours spent in farm activities (feeding, cleaning, egg collection, etc.).
 - b. Daily feed consumption - Generally expressed in pounds.
 - c. Water usage - Give estimated gallons if a meter is not available.
 - d. Bird weights - Random selection of a few birds to determine an average weight.
 - e. Vaccinations and medications - Note type and amount.
 - f. Daily mortality - Note the number of birds dying and probable cause.
 - g. Number of birds taken out from the flock for whatever reasons (sales, gifts, diseases, etc.).
2. Egg Production Period Weekly Activity Report (refer to Appendix B for a sample weekly activity report) - During the laying stage, the following records should be kept:
 - a. In addition to maintaining the records of the activities listed during the non-egg production period, the number of eggs collected and culled layers sold on a daily basis are included.
3. Monthly Expense and Sales Report - An account of all expenses and sales should be kept on a monthly

basis. A sample Monthly Expense and Sales Report is attached and marked Appendix C.

Farm Budget Projection

This section is intended to provide the interested producer an idea of the overall financial activity involved in a 500 layer operation. Table 5 below provides an estimated start-up cost as well as an initial operational cost for the first twenty weeks of brooding. Note: The costs are based on 2016 estimated prices.

Table 5. Estimated Start-up & Initial Operational Costs (500 layers).

Materials	Cost
Cost of chicks @ \$3.97 each (incl. S&H)	\$1,985.00
Battery brooder	\$500.00
Laying house (750 sq. ft.)*	\$2,000.00
Commercial waterers @ \$5.00 each	\$50.00
Commercial feeders @ \$4.85	\$100.00
Beak trimmer	\$390.00
Feeds - 17 lbs/bird @ \$.47/lb	\$3,995.00
Utilities (power)	\$120.00
1/2" x 1/2" x 25' wire mesh	\$39.00
Galvanized plain sheet	\$34.00
Total Start-up Costs	\$9,213.00

*Cost will vary with designs and materials to be used.

Table 6 provides an estimated returns for a given production cycle.

Table 6. Estimated Income and Expenses for 1 Year Period (500 Layers).

Total Estimated Income	
Income source	Amount
Total egg production: 10,645 dz @ \$4.00/dz	\$42,583.00
Sale of 300 cull layers at \$2.50/head	\$750.00
Manure sale as fertilizer	\$400.00
Total Sales	\$43,733.00
Total Estimated Operating Costs and Expenses (52 Weeks of Laying)	
Materials	Costs
Feed costs: 166 lbs./day @ \$.47/lb for 1 year	\$28,477.30
Commercial waterers at \$31.25	\$31.25
Commercial feeders at \$30.50	\$305.00
Utilities (power, water)	\$200.00
Egg trays - 10,645 pcs. @ \$.30 ea.	\$3,193.50
Egg flats - 20 pcs. @ \$16.95 ea.	\$339.00
Miscellaneous (gas and incidental expenses)	\$200.00
Total Expenses	\$32,746.05
Total Returns (Sales Minus Cost/Expenses)	\$10,986.95

Note that Table 6 only reports recurring operational expenses and does not include such expenses as the cost of a building or equipment (Table 5). In financial management costs are treated differently. While all costs incurred in a given financial reporting period affect the income and productivity level of any operation,

some costs can be written off over several financial reporting periods. The cost of buildings, equipment, and vehicles used in a business operation can be amortized (expended) over a period of years. Consult an accountant for this purpose, especially when reporting income and expense for annual farm income tax purposes.

Marketing

The marketing of fresh eggs on Guam is regulated by Public Law 11-205 and Executive Order Number 73-19 or commonly known as the Guam Shell Egg Law. The sale of eggs is also regulated in part by the federal Food, Drug, and Cosmetics Act. The law provides the rules and regulation for the standards for quality of eggs, standards for egg grades, weight classes, sale of eggs in various conditions, labeling and transporting eggs, importation of eggs, and provisions for enforcement of the law. Market as defined by the law means sell, offer for sale, give in the channels of commerce, barter, exchange, or distribute in any manner.

It is recommended that the container in which any eggs are sold need to show prominently on the outside the following information:

1. The grade of eggs and the date when the eggs are graded.
2. The size-weight class of the eggs;
3. The word 'eggs';
4. The numerical count of the contents;
5. The name and address of the origin of the eggs. If it is locally produced, it is recommended that the producer or cooperative include their name and address.

Eggs that are not sold in standard carton containers need to be kept in full view of the consumer or buyer with a displayed sign showing the information usually found on most standard egg containers or carton.

Caution needs to be taken by farmers on the words used in the display of the sale of eggs. The term 'fresh eggs' needs to be given close scrutiny. If the eggs from the time of grading are

stored more than 30 days, the law states that the eggs will be sold to institutional buyers or retailers as ‘cold storage eggs.’ Consumers need to be made aware by retailers that the eggs for sale are ‘cold storage eggs.’

The words ‘Guam,’ ‘locally produced,’ ‘Chada fresco,’ or any description conveying the impression that the eggs are produced on Guam are allowable under the law. If eggs are imported, each egg needs to be stamped with the place of origin. In most cases, cold storage eggs are imported and inspected by the plant protection and quarantine officers of the Department of Agriculture.

Direct Marketing vs. Marketing - The term “direct marketing” means the shift in ownership of a product is directly between the producer/manufacturer and the ultimate consumer (a direct selling transaction between the producer and consumer). Otherwise, the term “marketing” implies that the ownership of a product changes hands. For example, producer sells to a broker/processor/wholesaler who in turn sells to a retailer, who in turn sells to the ultimate customer.

Basically, an egg producer is exempted from the labeling and packaging requirements of the local laws, rules and regulations when the sales transaction of eggs falls under the definition of direct marketing.

Additional information on the sale of fresh eggs may be obtained from the Department of Agriculture and Government of Guam.

Appendix A: Weekly Activity Report (For Brooding, Growing and Pullet Stages)

Week of _____ Date of Initial Operation _____
 Number of Heads _____ Initial Number of Chicks _____
 Average Weight _____

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Labor							
Hours Spent							
Inputs by amount and type where applicable							
Feed Used							
Water Used							
Medication Used							
Vaccination Used							
Pesticides Used							
General Maintenance Notes							
Coop Repair							
Culling/Mortality							
Sanitizing							
Debeaking							
Manure Removal							
Other							
Comments:							

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Labor							
Hours Spent							
Inputs by amount and type where applicable							
Feed Used							
Water Used							
Medication Used							
Pesticides Used							
General Maintenance Notes							
Culling/Mortality							
Manure Removal							
Other							
Comments:							

Week of _____
 Number of Heads _____
 Date of Initial Operation _____
 Initial Number of Chicks _____

Appendix B: Weekly Activity Report (For Layer Stage)

Appendix C: Monthly Expense And Sales Report

Month of _____

Expenses							
Date	Feed (Quantity & Type)	Supplies (Quantity & Type)	Repairs (Quantity & Type)	Cost			
Total:							
Sales							
Date	Egg Sales (Dozs & Price)	Chicken Sales (Heads & Price)	Manure Sales (Lbs. & Price)	Value			
Total:							

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