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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>VARIETIES</td>
<td>1</td>
</tr>
<tr>
<td>BREEDERS</td>
<td>1</td>
</tr>
<tr>
<td>NATIONAL TURKEY IMPROVEMENT PLAN</td>
<td>2</td>
</tr>
<tr>
<td>EQUIPMENT</td>
<td>2</td>
</tr>
<tr>
<td>FEEDING THE BREEDERS</td>
<td>3</td>
</tr>
<tr>
<td>MATING</td>
<td>3</td>
</tr>
<tr>
<td>BLOOD TESTING</td>
<td>4</td>
</tr>
<tr>
<td>HANDLING THE EGGS</td>
<td>4</td>
</tr>
<tr>
<td>SECURING THE POULTS</td>
<td>5</td>
</tr>
<tr>
<td>BREEDING THE POULTS</td>
<td>6</td>
</tr>
<tr>
<td>CAPONIZING</td>
<td>8</td>
</tr>
<tr>
<td>STARTING, GROWING AND FATTENING MASHES</td>
<td>8</td>
</tr>
<tr>
<td>FEEDING INSTRUCTIONS</td>
<td>9</td>
</tr>
<tr>
<td>GROWTH AND FEED CONSUMPTION</td>
<td>9</td>
</tr>
<tr>
<td>DISEASES</td>
<td>10</td>
</tr>
<tr>
<td>Pullorum Disease</td>
<td>11</td>
</tr>
<tr>
<td>Fowl Typhoid</td>
<td>11</td>
</tr>
<tr>
<td>Pendulous Crop</td>
<td>12</td>
</tr>
<tr>
<td>Blackhead</td>
<td>12</td>
</tr>
<tr>
<td>Fowl Pox</td>
<td>13</td>
</tr>
<tr>
<td>Sinusitis</td>
<td>14</td>
</tr>
<tr>
<td>Trichomoniasis</td>
<td>14</td>
</tr>
<tr>
<td>Dietary Disturbances</td>
<td>14</td>
</tr>
<tr>
<td>MARKETING</td>
<td>15</td>
</tr>
<tr>
<td>KILLING</td>
<td>15</td>
</tr>
<tr>
<td>DRY PICKING</td>
<td>15</td>
</tr>
<tr>
<td>SEMI-SCALD</td>
<td>16</td>
</tr>
<tr>
<td>FULL SCALDING</td>
<td>16</td>
</tr>
<tr>
<td>WAX PICKING</td>
<td>16</td>
</tr>
<tr>
<td>SMOKING</td>
<td>17</td>
</tr>
<tr>
<td>MISCELLANEOUS</td>
<td>17</td>
</tr>
</tbody>
</table>

Photography by John Craft

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**University of Arizona**

College of Agriculture, Agricultural Extension Service

Chas. U. Pickrell, Director

Co-operative extension work in agriculture and home economics, the University of Arizona College of Agriculture and the United States Department of Agriculture co-operating. Distributed in furtherance of the act of Congress of May 8 and June 30, 1914.
TURKEYS IN ARIZONA

Turkeys can be profitably raised in all parts of the state. Climatic conditions, however, may necessitate securing the poults at different seasons of the year in different localities, if maximum results are to be secured. Improved methods of management have done much to disprove the contention that poults are difficult to raise. Also, turkeys are coming to be more in demand at all seasons of the year, rather than at Thanksgiving and Christmas only. This has a tendency toward higher prices and to assist in financing an otherwise one season crop.

VARIETIES

The American Standard of Perfection recognizes the following varieties: Bronze, Bourbon Red, White Holland, Narragansett, Slate, and Black. In addition, several others have recently made their appearance, namely: Royal Palms, Nittany, and a variety developed by the United States Department of Agriculture. These latter varieties are the result of a demand for a small sized, rapid developing turkey to supply the small family.

The Bronze leads in popularity in Arizona. With the advent of the broad-breast type the demand has greatly increased. This bird attains great size and supplies a very large quantity of white meat. The principal objection is that the bird is often too large for the oven in the average home and represents a substantial outlay of cash at the time of purchase.

All the other varieties are smaller than the Bronze. Generally speaking they mature a little more rapidly and are in favor with small families.

BREEDERS

Selection of breeding stock is of primary importance. The kind of turkey that will be marketed next fall is determined by the type of bird selected for the breeding pens.

Since the primary purpose in raising turkeys is to produce a desirable dressed carcass, considerable attention must be given to the breeders. This should start with the poults and end with the final selection made before any birds are marketed. Poults that show early feathering, rapid development, and make economical gains should be banded as potential breeders.

The birds finally selected should be vigorous, alert, and have smooth plumage. They should have low compact
bodies, which are broad and well covered with flesh. The length and straightness of the keel bone should be noted, especially since it determines, to a great extent, the appearance of the dressed carcass. The breast should be rounded and full fleshed.

Birds showing abnormalities, such as pendulous crop, crooked back, crippled feet, deformed beak, grey eyes, or rumplessness should never be used in the breeding pen.

NATIONAL TURKEY IMPROVEMENT PLAN

The National Turkey Improvement Plan became operative in September 1943, with the approval of the Secretary of Agriculture and under authority of an appropriation made by Congress for the Bureau of Animal Industry, United States Department of Agriculture. These funds were to be used in cooperation with State authorities in the administration of regulations for the improvement of poultry, poultry products, and hatcheries.

The primary objectives of the National Turkey Improvement Plan are to improve the production and market quality of turkeys, and to reduce losses from disease. Through it turkey breeding, hatching eggs, and poults may be identified with respect to breeding quality, and freedom from pullorum disease. The application of the provisions of the plan should cause turkey production to be more efficient and thus make the enterprise more profitable.

Acceptance of the turkey plan is optional with States and individuals within the State. It is administered in each State by an official State Agency cooperating with the Bureau of Animal Industry, United States Department of Agriculture.

EQUIPMENT

The requirements for equipment are probably less for turkeys than for any other class of livestock. Most essential equipment can be secured from around the ranch. Houses are usually open sheds which cover the perches. In many sections the perches as in the open and consist of poles about 3 inches in diameter and placed 2 feet apart. Mash hoppers, water fountains, nests, and corrals complete the equipment requirements for breeders. It is advantageous to supply green feed and a limited range. Some provision may be made to divide the group of breeders into smaller lots in order to reduce fighting
among the toms and thereby increase fertility.

If the pens are arranged side by side and separated only by a wire fence there is a tendency for the toms to strut along the fence trying to fight. Hanging feed sacks or other such material along the fence to obstruct the view will generally suffice.

**FEEDING THE BREEDERS**

Corn and wheat are good grains to feed breeding turkeys, but alone they do not constitute a complete ration. A breeder mash that contains liberal quantities of animal protein, high quality alfalfa leaf meal, and properly balanced mineral mixture should be used with the grains. Such mashes should be fortified with cod-liver oil, since high hatchability is secured only by a diet that is rich in vitamins. For this reason it is strongly urged that a high grade turkey breeding mash be fed to birds from which hatching eggs are to be secured.

Since a high protein diet will stimulate production it may be advisable to feed heavily on grain until two or three weeks before production is desired.

Artificial lights also act as a stimulus to production. Experimental data has indicated that subjecting the males to artificial light two or three weeks before mating will greatly assist in securing higher fertility. Fertility and hatchability decline rapidly as the season progresses.

**MATING**

Two methods are in common practice, the single pen and flock mating. The single pen system is where one tom is mated to eight to twelve females. The number of females will depend on the vigor of the tom. Usually an old tom is mated with young pullets and a young tom with hens. In the former case eight to ten pullets to one tom, while ten to twelve hens may be placed with one vigorous young tom. It should always be understood that immature birds have no place in any breeding pen.

Flock mating is the most popular system. This method consists of placing several males in a group of females. Such flocks may contain any number of hens provided a male is supplied for each ten females. Several advantages
are apparent in this type of mating. Two that should be mentioned are: labor saving, and preventing preferential mating. Less labor is necessary to handle a large number of birds when run together than when the same number of birds is divided into smaller units. Furthermore, large units will prevent the preference mating of a male to certain females, thereby increasing the possibility of all females laying fertile eggs.

A newer method of mating is known as artificial insemination. This practice may be defined as an artificial process of breeding, in which semen is collected from the toms and placed in the oviduct of the hen. Several advantages are claimed by adherents of the method, the most important of which are: 1. faulty mechanics of breeding are eliminated, 2. semen from all toms are mixed together, thereby eliminating infertility due to sterile toms, 3. late season fertility may be maintained, 4. valuable toms may be used on more females and 5. stops fighting during the mating process. This method requires considerable skill and for the present is limited to those so equipped and unable to secure proper results by natural mating.

All breeding females should be fitted with a turkey saddle. This is a canvas that fits over the hen’s back and prevents skin from being torn by the toenails of the tom during copulation. The cost of saddles is very nominal. Hens that have had their backs injured often avoid the toms, thereby increasing the number of infertile eggs.

If the hens fly out of their enclosure one wing may be clipped. This applies to hens only, as clipping a tom’s wing may interfere with the mating process.

BLOOD TESTING

Pullorum disease has become economically important in raising poults in Arizona. All turkey breeders should be blood tested before any eggs are incubated. The tube test is the recognized method of identifying birds carrying the pullorum organism. Antigen used in testing chickens has not been satisfactory, and turkeys so tested are not recognized by the Arizona Poultry Improvement Association.

HANDLING THE EGGS

Gather eggs frequently, handle them carefully. Each egg is a potential turkey and represents a substantial amount of cash. Normally each breeding hen will lay forty to fifty eggs per season and
will divide them between three or four clutches.

Eggs held for incubation should be placed in cases in a well ventilated moist room where the temperature is between fifty and sixty degrees Fahrenheit. Above sixty-eight degrees incubation processes begin, and below twenty-nine degrees freezing will occur.

It is advisable to turn the eggs once each day during the holding period, which should in no case be over fourteen days. If placed in cases, the large end of the egg must be up. All thin shelled, cracked and mis-shapen eggs should be discarded.

SECURING THE POULTS

Poults may be obtained in any one of several ways. The most common are:

1. Natural method of incubation, which consists of placing turkey eggs under either chicken or turkey hens. The method, while entirely successful, limits production and would be very costly on a commercial scale. The ordinary chicken hen could cover eight to ten eggs, while the turkey hen could handle fourteen to sixteen eggs. In either case it is necessary to watch the nest to see that the sitters are not disturbed and that moisture is supplied for the eggs. Low flat nests on the ground are to be preferred. 2. Artificial incubation and custom hatching is frequently used as a method of securing poults. If an incubator is available the poults are hatched on the ranch. The same fundamental principles of incubation apply to both chicken and turkey eggs. The time required for hatching is twenty-one days for chicken, and twenty-eight days for turkey eggs. Since the moisture and temperature requirements are different during the stages of embryo development most hatcherymen hatch turkey eggs separate from chicken eggs.

In custom hatching the eggs are taken to a commercial hatchery to be incubated. The poults are returned to the owner of the eggs and a fee per egg is charged for this service. Often this method is more satisfactory than for an inexperienced person to attempt to incubate the eggs at home. 3. The most common practice is to purchase the
poults from a hatchery. In this way the
poultryman can be certain of securing
the number desired and at the time
most suited to his convenience. The
specialized business of incubation should
be left to one skilled and equipped to
handle this exacting operation.

BROODING THE POULTS

Natural brooding is bound by the
same limitations as that encountered in
natural incubation, namely: small units
and excessive labor costs.

Individual coops are needed for the
hen and her brood. The coop should be
large enough to accommodate the group
without crowding. A house five to six
feet long, three feet high and three feet
wide should be sufficient. Protection from
rain and sun is important and it is
necessary that provision be made to as-
ssume sufficient ventilation.

The young poults are confined to the
coop for three or four days, after which
they may run outside. The hen is usual-
ly confined for about a week, then re-
leased to range with her brood. The
entire lot is returned to the coop at
night.

Artificial brooding equipment varies
in type and construction. The require-
ments are about the same as for chicks
and the same equipment may be used.
A brooding summary is given in the fol-
lowing chart:

<table>
<thead>
<tr>
<th>Age</th>
<th>2 to 13 days</th>
<th>2 to 5 weeks</th>
<th>5 to 12 weeks</th>
</tr>
</thead>
</table>
| Type of house           | Any well built house, easily ventilated, thorough-
                         | ly cleaned before poults are put in it.          |                                                  |
| Kind of brooder         | Any kind you prefer—oil, coal, gas, electric. Al-
                         | l are satisfactory.                              |                                                  |
| stove                   |                                                  |                                                  |                                                 |
| Brooding                | Usually 95° to 98° F. Reading 2 in. above floor  | Reduce 5 degrees per week until about 70° is rea-
| temperatures            | at edge of hover. Electrics, take under hover    | ched. Heat may be discontinued at 7 to 8 weeks if
                         |                                                  | weather permits.                                 |
## Poults under brooder
*(Courtesy University Maryland)*

<table>
<thead>
<tr>
<th></th>
<th>2 to 13 days</th>
<th>2 to 5 weeks</th>
<th>5 to 12 week</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of poults per unit</strong></td>
<td>Allow 12 square inches of hover space per poul. Limit number of poults to 150 per unit regardless of size of stove.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Litter</strong></td>
<td>Cover floor with absorbant material, straw, peat moss, cottonseed hulls. Sand is often used, in which case the floor is covered with papers for the first few days to prevent excessive sand eating.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Poul guard</strong></td>
<td>Enclose hover with a guard to keep poults from leaving heat</td>
<td>Round corners to prevent piling and smothering</td>
<td>Small roost poles prevent crowding</td>
</tr>
<tr>
<td><strong>Feed hoppers</strong></td>
<td>Small type feeders. Allow 2½ lineal in. per poul. Have full of starter mash when poults put in. Rolled oats or green marbles on mash help poults start to eat.</td>
<td>Increase size of hoppers as poults grow. Plenty of feeding space may prevent poor uneven growth</td>
<td></td>
</tr>
<tr>
<td><strong>Water fountain</strong></td>
<td>Start with several small jar fountains. Poults require 5 to 6 gals. per day for 150 poults</td>
<td>Double water capacity and use larger fountains</td>
<td></td>
</tr>
<tr>
<td><strong>Important</strong></td>
<td>Operate brooder a couple of days before poults arrive. Keep equipment clean. Keep chicks and poults apart. Night lights help prevent piling and keep poults quiet. If house is portable move often. Keep poults off ground used by chickens. Be regular in caring for the poults.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CAPONIZING TURKEYS

The question often arises as to the advisability of caponizing young tom turkeys. The opinion prevails among some growers that birds so operated upon will be heavier than uncaponized toms, that they will have a better quality of flesh and that danger of injury from fighting will be eliminated.

Experimental data does not substantiate these assumptions. Tests on the other hand, show that: 1. caponizing is difficult and mortality high, 2. weight is not increased by caponizing, 3. it is impossible to distinguish a capon from a tom or a 'slip', and 4. food consumption is about the same for capons as for toms.

Since young toms are not 'staggy' at the usual age for marketing the practice of caponizing is not generally practiced or desirable.

FEEDING

Starting mashess Poults require a high protein, high vitamin content mash for the first few weeks of their lives, as rapid growth requires muscle, tissue and feather forming foods. The quantity requirements are small so the best mashes obtainable should be fed.

Growing mashess After the poults are eight to ten weeks of age the protein requirements are less so the amount fed may be reduced by feeding either a lower protein mash supplemented with grain or by hopper feeding of grain with the original starting mash.

Fattening mashess Usually supplemented with milk. The fish oils are removed from the mash about two months before time to market.

Most turkey growers in Arizona purchase prepared mashess. The grain may be secured from farmers or in some cases are produced on the ranch. These growers should use such materials since most grains are interchangeable.

For those who prefer to mix their own rations there is reproduced a formula for an 'All Purpose Mash'. This formula and instructions for feeding are taken from Kansas State College and Applied Science, Extension Circular M 45.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Percent or pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground Yellow Corn</td>
<td>20</td>
</tr>
<tr>
<td>Ground Oats</td>
<td>20</td>
</tr>
<tr>
<td>Shorts</td>
<td>20</td>
</tr>
<tr>
<td>Bran</td>
<td>11</td>
</tr>
<tr>
<td>Alfalfa Meal</td>
<td>10</td>
</tr>
<tr>
<td>Meat and Bone Scraps</td>
<td>5</td>
</tr>
<tr>
<td>Fish Meal</td>
<td>5</td>
</tr>
</tbody>
</table>
Soybean Oil Meal 5
Calcium Carbonate 2
Salt 1
Fish Oil\(^a\) 1

100

\(^a\) Or amount equivalent to 38,500 USP vitamin D units. The above recommendation is based on 85 units per gram of oil.

**Instructions for feeding the All-purpose mash:**

1. Starting poults—Feed as an all-mash ration to eight or ten weeks. Hoppers should be kept filled.

2. Growing poults—Feed as a grain and mash ration after eight to ten weeks. Keep both grain and mash hoppers filled. Oyster shell or limestone should also be fed.

3. Fattening turkeys—Continue the mash feeding plus an abundance of whole grain. Liquid or semi-solid milk may also be used to advantage.

4. Breeding turkeys—Feed as a grain and mash ration, using about two-thirds grain and one-third mash.

Some ingredients which might be used for substitutes in the all-purpose mash formula listed are: ground kafir or milo for the ground corn, ground barley for the ground oats, and ground wheat for shorts. The soybean oil meal may be substituted by two and one-half pounds each of fish meal and meat scraps. The fish meal may be substituted with an equal amount of meat and bone scraps. The fish oil can be eliminated when the birds are running in direct sunshine daily. Liquid milk feeding may replace the soybean oil meal. If an abundance of green feed, such as Sudan Grass or Alfalfa pasture, is available to birds, the alfalfa meal can be eliminated, but elimination is not necessary. A good quality of alfalfa hay may be fed in racks to replace the meal in the mash.

**GROWTH AND FEED CONSUMPTION**

Turkey producers are interested in the length of time it will take their birds to reach maturity and the amount of feed consumed during this period. Data on these questions may be found in the following table, which was taken from United States Department of Agriculture (Farmers' Bulletin No. 1409). These figures are for Bronze turkeys and give data on 333 birds. They were confined to two acres of non-irrigated land. Grain and mash were before the birds at all times.
Roosting sheds

<table>
<thead>
<tr>
<th>Age in weeks</th>
<th>Average live weight, lbs.</th>
<th>Feed consumption, 4 week periods, lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>161 Males</td>
<td>172 Females</td>
</tr>
<tr>
<td>Hatching</td>
<td>.13</td>
<td>.12</td>
</tr>
<tr>
<td>2</td>
<td>.29</td>
<td>.26</td>
</tr>
<tr>
<td>4</td>
<td>.71</td>
<td>.61</td>
</tr>
<tr>
<td>6</td>
<td>1.51</td>
<td>1.21</td>
</tr>
<tr>
<td>8</td>
<td>2.58</td>
<td>2.04</td>
</tr>
<tr>
<td>10</td>
<td>3.88</td>
<td>3.00</td>
</tr>
<tr>
<td>12</td>
<td>5.48</td>
<td>4.16</td>
</tr>
<tr>
<td>14</td>
<td>7.41</td>
<td>5.51</td>
</tr>
<tr>
<td>16</td>
<td>9.56</td>
<td>6.99</td>
</tr>
<tr>
<td>18</td>
<td>11.74</td>
<td>8.38</td>
</tr>
<tr>
<td>20</td>
<td>13.90</td>
<td>9.59</td>
</tr>
<tr>
<td>22</td>
<td>16.09</td>
<td>10.65</td>
</tr>
<tr>
<td>24</td>
<td>17.96</td>
<td>11.48</td>
</tr>
<tr>
<td>26</td>
<td>18.82</td>
<td>11.91</td>
</tr>
<tr>
<td>Total or average to 24 weeks</td>
<td>41.56</td>
<td>13.99</td>
</tr>
</tbody>
</table>

DISEASES

The maintenance of sanitary environmental conditions is of primary importance in rearing turkeys. Such conditions mean that the surroundings are clean and healthful.

The first step in sanitation means a clean house. To provide such a house it is necessary to do the following things:
1. mechanically remove all litter and dirt from the entire house, including the sweeping of the ceiling, 2. scrub the walls, floor and equipment with a hot lye
solution, 1 lb. lye to 20 gallons water, and 3. spray the walls, floor, and equipment with a good disinfectant, following the manufacturer's directions.

Supply clean water in containers that can be kept clean. Stagnant pools from leaking fountains cannot be considered clean and should never be accessible to poult, or mature birds. If possible, rotate the yards and under no condition should poult be reared on yards that have been used for chickens.

Disinfectants—The disinfectant selected from among the large number on the market should, as far as possible, have the following: 1. low cost of killing power per unit, 2. ready availability, 3. ready solubility, 4. ability to kill a number of organisms, and 5. safety in handling. The effectiveness of any disinfectant depends on its killing power, and to that end should be used at the recommended strength.

PULLORUM DISEASE

Records for 1943-44 Arizona Poultry Improvement Association show a higher percentage of reactors in turkeys than in chickens. Probably part of the increase in this disease is due to the commercial hatching of turkey eggs.

The symptoms in chicks and poult are similar. Ruffled feathers, sagging wings, labored breathing, tendency to remain under the hover, usually a diarrhea, accompanied by a 'pasting up' around the vent, together with sudden deaths, are common observations.

The best method of prevention is to blood test the breeders. The tube test method is the only one recognized in Arizona, and no other should be used. Eggs should not be hatched in the same incubator compartment as chicken eggs. Poults should be reared away from chicks.

No medicines or treatment will be effective after the organism is present in a group of poult. Thorough cleaning will assist in keeping the disease from spreading.

FOWL TYPHOID

A disease of both young and mature turkeys, typhoid may appear suddenly
Treating of infectious sinusitis

Method of insertion of the hypodermic needle into the sinus for withdrawal of exudate and inoculation of remedy. (Courtesy of the University of California).

and reappear at intervals during the season. Close confinement and contact with chickens are probably the major causes for outbreaks of this trouble.

Sick birds are inclined to stay in one place, and not move about; have sagging wings, a high temperature, heavy thirst, and a greenish-yellow diarrhea. Birds may die suddenly without apparently showing any symptoms, but usually not.

Control lies in prevention rather than treatment. The first step is to keep chickens and turkeys apart, including the rearing of poults on ground not used by chicks. Testing the breeders for pullorum disease will remove carriers of typhoid. Keep turkeys away from stagnant water. Remove sick birds from the flock as soon as noticed, and if possible, move the flock to new quarters.

Biologics are of little value in the control of this disease.

PENDULOUS CROP

Enlarged pendulous crops are probably due to an inherent weakness toward this condition. The consumption of large amounts of water during hot weather results in an expanded crop and if the weakness is present the organ seldom returns to normal size. The crop does not readily empty and often contains a large amount of sour liquid. Digestion is hindered, although the appetite may not be seriously affected.

Occasionally a pendulous crop will result from impaction. Washing the crop with warm water will sometimes clear the obstruction. If not successful a small incision may be made in the crop wall and the contents removed.

Any bird showing a pendulous crop should be marked and not used in the breeding pen.

BLACKHEAD

A disease which may cause heavy mortality in both old and young stock. It occurs most frequently when turkeys are reared on wet, irrigated areas, and in contact with chickens. Death losses are most serious during the first part of the turkey's life. In this case the death may be sudden and without symptoms, while with older birds there is a tendency to become droopy and linger for several weeks.

The caecal worm is thought to be the host for this parasite. In addition to being a host, the worm causes injury to the caeca which permits the blackhead
Fowl pox lesions
- Pox lesions in mouth and esophagus.
(Courtesy of the University of California)

organism to enter the tissues. It is carried by the blood to the liver. The lesions indicating blackhead are thickened, bloody caeca, and a liver that is enlarged and soft. The liver has sunken dark red, greyish, or yellow spots. A definite diagnosis can only be made by autopsy.

Controlling the caeca worm and raising turkeys on dry soil away from chickens offers the best method of attacking this problem.

FOWL POX

A highly infectious disease caused by a filterable virus. The unfeathered parts of the body are usually attacked, though occasionally other areas are affected. The disease is pathogenic for both chickens and turkeys.

Two types may be found in an outbreak. The first, and probably the best known, is the wart-like growth noted on the dewlap, caruncles, and other head parts. These growths may become quite large and covered with a dark scab. The number of lesions depends on the virulence of the disease. The second type is manifested by the formation of cheesy material in the mouth and eyes.

The disease may appear at any season of the year, although the fall months are the time it is most prevalent. Contact with chickens that have the disease in the incubative stage is a common method of transmission. Birds, such as sparrows, may carry the infection from infected to non-infected flocks. Visitors also may be a source of infection.

The severity of the disease varies. Some flocks have only a few birds infected and little loss occurs, while others have both types with resulting heavy mortality. The mild cases usually clear up in two to four weeks while severely infected birds often require seven or eight weeks.

If pox is prevalent in your neighborhood, or if outbreaks have occurred on your farm, it is advisable to vaccinate all birds. The fowl-pox vaccine should be used when the poult's are ten to twelve weeks of age by the feather follicle method. While immunity is generally provided for life, it is a good practice to revaccinate breeders held over, since in some cases immunity is lost after one year.
SINUSITIS

The sinuses become distended with an exudate. One form results from a Vitamin A deficiency in the ration, while another is apparently infectious. The cause of the latter is not definitely known.

Common symptoms are forming of eye secretions, nasal discharge, and swollen sinuses. Emaciation follows as the bird usually has difficulty in seeing to eat.

Preventive measures, outside of providing proper environmental conditions, cannot be given. If, however, the sinuses are swollen the exudate may be removed with a syringe and one cubic centimeter of four percent silver nitrate injected into the sinuses. A fifteen percent argyrol solution may be substituted for the silver nitrate. If the exudate is caseous an incision should be made in the skin over the distended area and the exudate removed by pressing with the thumb and forefinger. The wound should be closed with a piece of cotton saturated with the solution or sulfathiazole powder may be sprinkled generously into the incision.

Since the old birds remain carriers, it is advisable to keep them separated from growing poults. They should be disposed of at the earliest possible time.

The feeding of diets containing liberal quantities of Vitamin A is to be recommended in any outbreak of sinusitis.

TRICHEMONIASIS

A parasite that causes necrotic ulceration of the crop. Cases of this trouble appear each year, usually in the late summer. In most instances it has been found that the birds have been allowed to range over cut-over grain fields. Irrigated fallen grain, together with stagnant pools of drinking water offer ideal places for the turkeys to pick up this parasite. Necrotic areas in the crop is the most common symptom on autopsy. The bird has a depressed crop area due to a lack of appetite. Death is probably due to starvation.

Control consists of strict sanitation. Keep birds away from stagnant water and feed adequately.

DIETARY DISTURBANCES

Usually caused by a lack of or a deficiency of certain essential substances, generally vitamins or minerals. Present day feeds are usually well fortified with these elements. On the other hand, home mixed rations may be deficient or improperly balanced. In preparing rations it would be advisable to consult
Killing

the Poultry Department of the University or your County Agent so that the correct proportions of the different ingredients are included.

Further information on disease prevention and control can be had by asking your County Agent for University of Arizona Circular No. 112.

MARKETING

Handle all birds before killing. When a bird is putting on flesh slowly, is well feathered and has relatively few pin feathers, it should be marketed at once. Others are not ready and should be withheld from market until they reach this stage.

Birds selected to be killed should have all feed withheld for eighteen (18) to twenty-four (24) hours prior to slaughter. Water should be available since it will assist in emptying the digestive tract.

Care must be exercised in catching so as to prevent undue bruising. The legs should not be pulled from under the bird as this will cause the bird to fall on the breast, resulting in bruises being formed.

KILLING

Suspend the bird by placing each leg in a wire loop, or by a rope, so that the height will be convenient for killing and picking. Prevent the bird from striking the wall or other birds after being suspended.

Secure a good strong sticking knife with a blade four or five inches long and about three-eighths of an inch wide. The point should be curved at the end.

Grasp the back of the head with the left hand and insert the knife in such a way as to make a diagonal cut across the upper part of the throat, severing the jugular vein. Next insert the knife through the cleft in the roof of the mouth into the rear lobe of the brain. If the stick is properly done a squawk will be heard. Twist the knife in a half turn and remove. A weighted blood cup or a weight is hooked to the low jaw. This weight should be heavy enough to keep the neck extended and prevent the turkey from raising his head. A six or seven pound weight is sufficient.

DRY PICKING

If the bird is to be dry picked the feathers should be removed as rapidly as possible. The large wing and tail feathers are to be picked first. The body feathers are then removed by pulling with the feathers, and not against them. This, together with plucking a
small number of feathers at a time, will largely prevent tearing the skin. The foregoing is known as ‘roughing’. The next step is to ‘pin’ the bird. This operation consists of picking the small pin feathers, usually with the aid of a pinning knife. Considerable practice is necessary to dry pick turkeys properly. It is a slower method than scalding or semi-scalding. Birds so dressed keep well in storage and present a good appearance in meat counters.

**SEMI-SCALD**

The bird is killed as before and after bleeding is completed is dipped in water that registers 128 degrees to 130 degrees F. The bird is held by the head and feet and moved up and down several times to permit the water to reach the skin. The length of time the turkey is left in the water is determined by trial. The ease of removing the feathers without tearing is the criteria used. Usually thirty to sixty seconds will suffice.

This method prevents cooking or blistering, a danger of full scalding. Properly semi-scalded birds present a good appearance and keep well in storage.

**FULL SCALDING**

With this method the water will be held at a temperature of 180 to 190 degrees F. The bird is dipped, as in semi-scalding. The feathers are easily and quickly removed without tearing the skin. This method often causes scald spots, resulting in discolored skin. Birds so picked should be used at once and not placed in storage, unless eviscerated. It is not recommended as a practice for high class retail trade.

**WAX PICKING**

The bird is semi-scalded and roughed and then dipped in a warm wax solution. The wax used is a commercial product and is relatively inexpensive. It is in a melted state and held at a temperature of about 125 degrees F. After the bird is dipped in the wax it is dipped in cold water. The process is repeated three or four times and the carcass hung up to cool. When the wax has hardened it is removed in flakes, taking off pin feathers, hair and dirt.

This method results in a very fine dressed carcass but requires considerable equipment.
SMOKING TURKEYS

A method for smoking turkeys that was suggested by the United States Department of Agriculture follows:

Kill, pick and draw the birds in the usual manner. The curing mixture consists of 6 lbs. salt, 3 lbs. sugar, and 3 oz. salt peter dissolved in 4½ gallons of water. About four times this indicated quantity of pickle is required to cover 100 lbs. of turkeys, when carefully packed in a 50-gallon barrel.

The turkeys should be packed carefully and close together in a suitable container, such as a crock or a clean odorless hardwood barrel, and weighted down so that they will not float when the curing solution is added. Then pour the solution over the turkeys until they are covered with a slight excess of liquid. It is important to hold the temperature as near 38 degrees F. as possible. Remove the turkeys once each week, and repack to remix the solution and to make sure that it comes in contact with all parts of the bird.

Depending upon the weight of the turkeys, the meat should be sufficiently cured in two to four weeks to be removed from the pickle and prepared for smoking. It is suggested that the individual turkey remain in the pickle from one and a third to one and one-half days per pound of dressed weight.

The cured turkeys should be washed, hung up to dry, then smoked, using hardwood, at a suggested smokehouse temperature of 100 to 110 degrees F. Several hours in hardwood smoke may give sufficient flavor, although some prefer to smoke the meat longer, even to the extent of having a fire under it eight to ten hours each day for several days.

MISCELLANEOUS

Dressing and drawing losses are given in the following table taken from North Dakota Agricultural College, Circular 36.

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<th>No of</th>
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<tr>
<td>Birds</td>
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<td>Dressed</td>
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<tr>
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<tr>
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<td>80 8</td>
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<tr>
<td>Average</td>
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