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Collection

Turkey Production



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TURKEY PRODUCTION

T. T. Milby, R. G. Jaap, and R. B. Thompson

INTRODUCTION

Important changes have occurred in the methods of producing turkeys in the past few years. The growing of turkeys, formerly an unorganized farm crop, has now become a commercialized undertaking on many Oklahoma farms. The federal census of 1930 indicates that in 1929 nearly 35,000 Oklahoma farms produced over 800,000 turkeys having a value of about two million dollars. The number of turkeys reared by an individual producer has increased in the past few years until it is no longer unusual to see flocks of 500 to 2,000 birds.

The practice of buying turkeys on a dressed graded basis is spreading rapidly in Oklahoma. When this method of buying becomes general, the many Oklahoma producers of fine market turkeys will be rewarded for their efforts; but as long as turkeys are purchased on a flat rate basis, regardless of quality, there is little incentive to produce good turkeys. Some eastern buyers have stated that the quality of the turkeys produced in this section of the country is not equal to that of turkeys coming from other sections. As a result the producers of good turkeys have not received the prices that should and could be paid. When the practice of buying turkeys on a dressed graded basis becomes general in Oklahoma, the production of tough, stringy, poorly fleshed turkeys will no longer be profitable. With the reduction in numbers of these poor quality birds and the sale of turkeys strictly on their merits, discrimination against Oklahoma turkeys in the terminal markets will disappear.

To consistently produce quality market turkeys (1) the breeding stock must be good, (2) the young turkeys must be kept growing at a rapid rate from hatching time until marketed, and (3) losses from disease and accidents must be held to a minimum. It is no longer possible to produce turkeys profitably by the older "natural" methods still used by some producers. In this older method, the eggs are hatched under hens, the poults are fed after a poor fashion for several weeks, and then turned loose to forage in the fields. In the fall the birds are rounded up, fed for a few weeks on grain, and then sold. By this method, if the farmer is "lucky," he will raise six or eight turkeys for each breeding hen kept, and he is indeed fortunate if any birds are well enough finished to make the

prime grade. Natural methods of production still have their place, however, and may be profitable when combined with proper feeding and skillful management, or when practiced on a small scale.

SELECTION OF BREEDERS

The success of any livestock enterprise depends a great deal on the quality of the foundation stock. Most farmers know that scrubs are never profitable, and this is especially true in turkey production. A single tom may easily sire 200 or more poults in a single season, and a good hen should produce 25 to 35 offspring. Since turkeys are so prolific, the cost of a few good breeders is spread over a large number of poults. A well bred tom costing \$10 would represent an investment of only three or four cents per poult more than just any old bird.

“What breed is best?” is a question that has probably been asked as many times as there are growers of turkeys. There is no “best” breed, for there is a greater difference between the different flocks of various breeds than there is between the breeds. In purchasing foundation stock, one should if possible visit the breeder at market time and see if the birds are of the type desired.

Good livestock of any kind will not be reproduced if all the best individuals are sold and only the scrubs and runts kept as breeders. Too many farmers sell all the turkeys that are ready for market at Thanksgiving and pick their breeders from those that are left. The job of selecting breeders should be done before a single bird is sold. When the young turkeys are about ready for market is a good time to pick the breeding flock.

Producers who are practicing pedigree breeding often keep exceptionally good individuals for two or three years to advantage. It is desirable to use as long as possible those birds that have proved to be producers of superior offspring.

There is a distinct difference between a turkey breeder and a turkey grower. The breeder is interested in stock developed to produce definite quality birds for many generations to come. The grower is interested only in the present crop of growing turkeys from the standpoint of their market value.

Most turkey growers will find it more profitable to keep a breeding flock consisting of young, well matured turkeys than to keep one consisting partly of older birds. Pullets lay earlier and lay more eggs than do yearlings and older hens. They also lay eggs that hatch better. Young toms are generally lighter in weight, more vigorous, and have higher fertility than old toms.

It is reasonable to expect 25 or more poults from a hen in a season if careful selection and feeding have been practiced. Knowing how many turkeys one would like to raise, it is easy to figure how many pullets should be selected for breeders. Mark as prospective breeders several more pullets than will be needed, so that birds that develop unsatisfactorily can be discarded. One tom should be provided for every ten or twelve hens in the flock. It is wise to keep as extras a third more toms than needed, so that emergency replacements can be made in cases of low fertility, death, or other circumstances.

In order to make the selection of breeders consistent and efficient, a table of weights and measurements (Table I) has been prepared by the Oklahoma Agricultural Experiment Station. The use of definite weights and measurements removes much of the guesswork from the selection of breeders. The best possible conformation is not represented by the figures in Table I. These figures are to be used merely as a guide in selecting the superior specimens. The best birds at these ages should have a shorter shank, a longer keel, and no greater depth for their weight than that given in the table.

TABLE I.—MEASUREMENTS TO BE USED AS A GUIDE IN SELECTING FOR DESIRABLE CONFORMATION IN LIVE TURKEYS.

*MALES, 28 WEEKS OF AGE				*FEMALES, 24 WEEKS OF AGE			
Weight (lbs.)	Maximum Shank (inches)	Minimum Keel (inches)	Maximum Depth (inches)	Weight (lbs.)	Maximum Shank (inches)	Minimum Keel (inches)	Maximum Depth (inches)
15	7.0	6.7	8.2	8	5.4	5.3	6.1
16	7.1	6.8	8.4				
17	7.3	7.0	8.5	9	5.7	5.5	6.4
18	7.4	7.1	8.7				
19	7.5	7.2	8.9	10	5.9	5.7	6.6
20	7.7	7.3	9.0	11	6.0	5.9	6.8
21	7.8	7.5	9.2				
22	7.9	7.6	9.3	12	6.2	6.0	7.0
23	8.1	7.7	9.4	13	6.4	6.2	7.2
24	8.2	7.8	9.6				
25	8.3	7.9	9.7	14	6.5	6.3	7.3

*NOTE: These measurements are applicable only to turkeys at or before the ages specified.

In applying this table the first thing to do is to weigh the bird. Then measure the depth from the front point of the keel to the shoulders just behind the wings. This measurement is best recorded while the bird is hanging as illustrated in Figure 1. To measure the length of the shank, lay the bird on its left side. Bend the shank at right angles to the thigh

and bend the toes to the position they are in when the bird is standing. The length of shank is the distance from outside the hock joint to the bottom of the foot beside the sole pad. This measurement is illustrated in Figure 2. The location of the

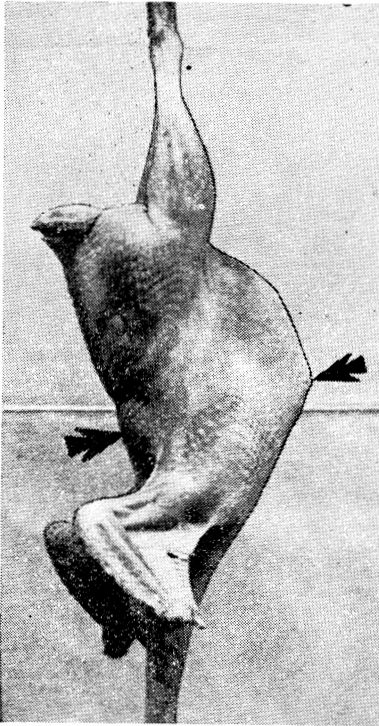


Figure 1. Location of the depth measurement.

measurement is illustrated on dressed carcasses to show clearly how they are to be made on the live bird. The length of the keel is measured while the turkey is lying on its side. Any sliding caliper with about a four- or five-inch jaw and recording up to 12 inches is satisfactory.

The table of measurements should be used in the following manner: when the young turkeys are about 24 weeks old, weigh and measure them. If a young hen weighs 10 lbs., she should have a shank length of less than 5.9 inches, a body less than 6.6 inches deep and a keel more than 5.7 inches long. Similarly, a 20-lb. male should have a shank that measures less than 7.7 inches, a body that is less than 9.0 inches deep and a keel more than 7.3 inches long. The length of the keel is the least important of these measurements from the standpoint of the appearance of the dressed carcass.

Table I is so arranged that birds of different sizes can be compared one with another. Birds that conform to the measurements given have the same relative body shape, regardless of size. The table can be used equally well with small and large strains of turkeys. It is so arranged that males and females of the same proportional size are opposite one another. For example, a tom weighing 19 lbs. at 28 weeks of age corresponds to a female weighing 10 lbs. at 24 weeks of age. This feature of the table should be useful in selecting toward a definite size standard.

The shank of turkeys has reached its mature length at the ages given in Table I. Weight, depth and keel length continue to increase after these ages. Table I-A illustrates how the measurements may be applied to birds of various ages, if it is not possible to measure at the ages specified. The 20 pound tom and 11 pound pullet are used as examples. For smaller birds the gains will be slightly less, and for larger birds slightly greater than those given.

TABLE I-A.—AVERAGE CHANGES IN WEIGHTS AND MEASUREMENTS WITH INCREASE IN AGE.

Age in Weeks	MALES			FEMALES		
	Weight (pounds)	Keel (inches)	Depth (inches)	Weight (pounds)	Keel (inches)	Depth (inches)
24	16	6.7	8.3	11	5.9	6.8
26	18	7.0	8.7	12	6.1	6.9
28	20	7.3	9.0	13	6.2	7.0
30	22	7.6	9.3	14	6.3	7.1

Breeding stock must be healthy and vigorous. Reject all birds that show the slightest indication of illness or poor constitution. The turkey with bright eyes, well groomed plumage, and a strong, sturdy step is most certainly a healthy bird.

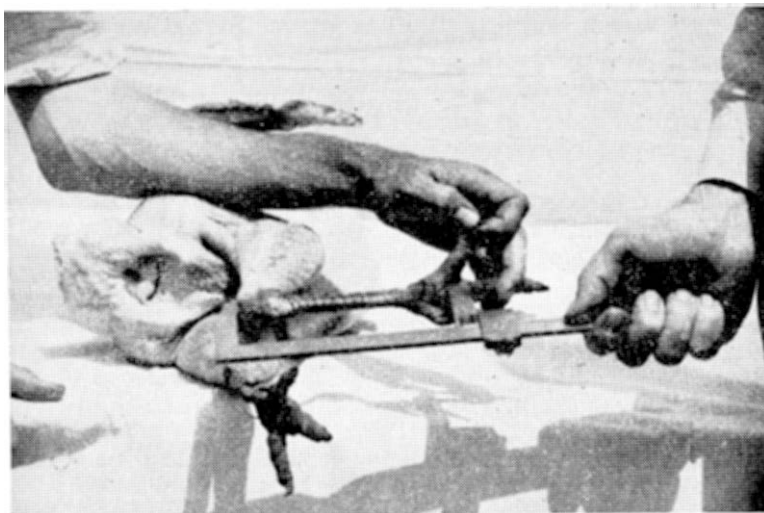


Figure 2. Method of measuring the shank of turkeys.
The machinist caliper used is convenient and accurate.

Rapid growth is paramount for profits with turkeys. Extremely large size is not necessary and possibly not desirable. The largest mature birds are seldom the best breeders or the largest at market age.

The characteristic of quick growth can be intensified in the flock by selecting the rapid growing, well fleshed, plump bodied, early developing young turkeys for breeders. Weak characters, such as hunched backs, split or open wings, and crooked toes, beaks and breasts can be eliminated eventually by selecting as breeders turkeys that do not have them.

If income from the sale of breeding stock is expected, a flock reasonably true to the standards of the breed for type and color is essential. Such a flock is a constant source of satisfaction to the owner and makes a more uniform and desirable appearance than a mixed flock. Flocks of mixed breeds are found in some sections, the claim being that hybrids grow better. Much has been said about the advantages of hybrid corn and crossbred hogs, and the idea seems to be common that if any two pure breeds of anything are crossed there is an immediate improvement. Do not forget, however, that crossbreeding may be a two-edged sword; the poor qualities of the two breeds might be combined as easily as the good. Crossbred birds are fit only for market. If used as breeders, they frequently produce offspring poorer than the parents. For uniform results year after year, it is safest to stick to a good strain of a single breed. A cross that is good one year may give poor results the next.

Some farmers use mixed or cross breeds in order to keep them from being lost by joining the neighbors' flocks. A better practice would be to use purebred turkeys and tattoo them in the web of the wing before liberating them in the fields. It should also be recognized that turkeys frequently wander from home in search of feed, and that occasionally they wander for no apparent reason.

Producers often feel that they must avoid inbreeding at any cost, so they discard all the tom turkeys each year and go to a different flock for a new supply. But when this practice is followed it is impossible to maintain a uniform type from year to year. If the breeding flock is large enough to use two or more toms there is little danger of close inbreeding from using toms from the same flock for several years. Line breeding of this kind, combined with constant selection toward an ideal type, will do much to insure a uniform flock of poults. If foundation stock from a certain breeder has given good re-

sults, new blood should be obtained from the same breeder rather than from another. By going to the same source for new stock there is a better chance of obtaining the type that is desired.

CARE OF THE BREEDERS

Breeding turkeys should be separated from chickens. It is common to see turkeys running with chickens on general farms, and in most cases the owners of these farms market fewer than eight turkeys for each turkey breeding hen used. If the number of turkeys on a farm is small, the birds have a greater chance to survive than if the number is increased. There will always be a few turkeys in any flock that will refuse to die, even when kept under the most undesirable conditions. The important question is not the survival of a few of the strongest, but the profitable growth of the greatest number of market turkeys from each breeding hen.

Carefully selected breeders, well fed and properly managed through the fall and winter, will produce eggs as early as December or January. Hens laying 20 to 25 eggs in January or February are not uncommon when the flock is properly managed. There is a big demand for quality early turkey eggs every year, and Oklahoma is in a favorable position to furnish northern, eastern, mountain and Pacific states with these eggs. A limited number of farmers, inclined to do what is necessary to produce eggs suitable for hatching, can add materially to their income by selling turkey eggs.

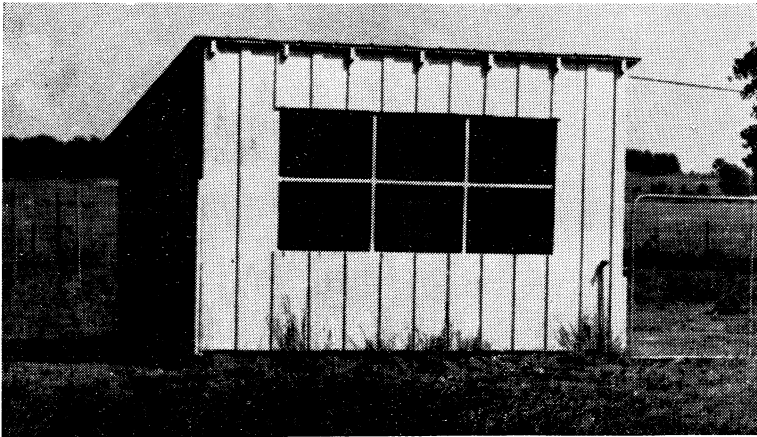


Figure 3. A 12x12 foot house used for single tom matings with 10 to 14 hens.

Matings may be made and birds placed in the laying quarters immediately after the market turkeys are sold. This should always be done not later than a month before egg production is desired. Breeders do not need a great deal of protection from adverse weather in Oklahoma, but they must have a dry, well ventilated shelter to protect them from storms. A house for the turkey hens need not be as warm as a laying house for chickens. If early eggs are expected, the house must be clean and dry, well ventilated, and free from drafts. Birds in a damp, drafty house will frequently contract colds and roup. A house 20x20 feet is adequate for 35 to 40 turkey hens, even when they must be confined for some time.



Figure 4. A straw-loft house on the Experiment Station Turkey Farm.

This house is used for breeding turkeys and for young turkeys on nutrition experiments.

For a flock of 15 to 25 turkey hens it is necessary to have two toms. Frequently they will spend most of their time fighting, causing serious injury to one or both. In order to avoid fighting, one of the toms is confined each day, putting them out on alternate days. The fertility is frequently improved when this practice is followed even with fewer than 15 hens. Two breeding flocks should not run in adjoining yards, or the toms may spend all their time challenging one another and fighting through the fence. A vacant pen or yard should separate the two flocks, or better yet they should be so located that the toms cannot see one another.

Injury to the backs of the hens is a problem which is frequently encountered. Such injuries always result in lowered egg production and poor hatchability of the eggs on the part of the affected hens. These injuries may be lessened or avoided

by clipping the toenails of each tom a few weeks before placing him with the hens. The nails should be clipped back even with the pad. Do not be afraid to cut too deep; some bleeding is bound to occur if the operation is properly performed. The nail will grow out again, and should be trimmed every three or four weeks during the breeding season. A blacksmith's small hoof trimmer, kept sharp, is good for this purpose. (See Figure 5.)

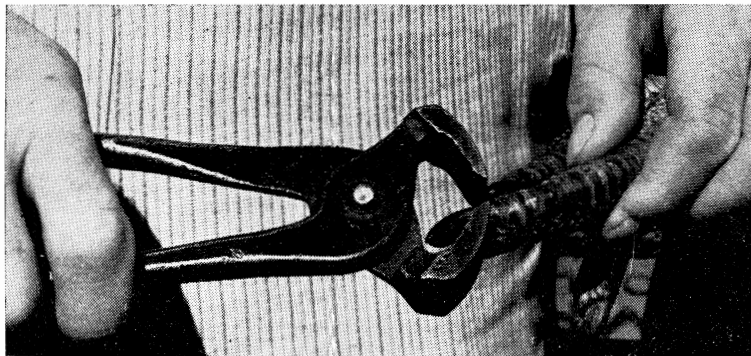


Figure 5. Tom's toe nails being trimmed.

Early egg production can be stimulated by the use of artificial lights. Well matured young turkey hens that are properly fed will usually respond to the lights by coming into production within three or four weeks after the lighting program begins. The use of morning lights is satisfactory and usually most convenient. The lights are at first turned on a few minutes before dawn and then turned off after daylight. They are turned on five to ten minutes earlier each day until the total amount of artificial and natural light equals about 12 to 13 hours. Electric time switches that turn on the lights at a definite time each day may be obtained. Gasoline or kerosene lanterns may be used if care is taken to prevent fire hazards.

A good laying mash, fresh clean water, oyster shell and grit should be available at all times. The following turkey laying mash has been used with good results by the Oklahoma Agricultural Experiment Station:

- 14 lbs. Yellow corn
- 14 lbs. Barley
- 14 lbs. Shorts
- 30 lbs. Bran
- 11 lbs. Meat Scraps
- 7 lbs. Alfalfa leaf meal

- 6 lbs. Cottonseed meal
- 2 lbs. Dried buttermilk
- 1 lb. Ground oyster shell or limestone
- 1 lb. Salt
- 1 lb. Good quality standard poultry cod liver oil, or its equivalent in the form of a cod liver oil concentrate.

A good mash without yellow corn and dried buttermilk which has also given satisfactory results when ample fresh green feed is available consists of:

- 18 lbs. Ground wheat
- 18 lbs. Ground barley
- 18 lbs. Bran
- 18 lbs. Shorts
- 9 lbs. Soybean oil meal
- 9 lbs. Cottonseed meal
- 7 lbs. Alfalfa leaf meal
- 1 lb. Ground oyster shell or limestone
- 1 lb. Salt
- 1 lb. Cod liver oil

Green feed is desirable for good egg production and hatchability. It should be made available during the laying season by planting the yards to some good winter crop, such as wheat, oats or vetch. It may also be supplied by planting an area outside the turkey yards with wheat, oats, rye or barley in the fall. This area should be smoothed with a float, so the small grain can be clipped with a lawn mower equipped with a grass catcher. Freshly cut greens or leafy alfalfa hay with a good green color may be fed in racks in the pens. A rack for alfalfa hay or green feed may be easily constructed by nailing poultry netting to two studs in the house, extending from the floor up about two feet.

The scratch grain may be fed in the evening or may be fed in hoppers and kept before the birds at all times. Slowly and carefully restricting the amount of grain fed so that more mash is eaten is an aid in securing egg production. Turkey hens in heavy egg production eat slightly more mash than grain. Corn, kafir, oats, wheat and barley make a good grain mixture, but any combination of two or more available grains will be satisfactory. Feeding the grain in hoppers or troughs is much more sanitary than feeding it in the litter or on the ground.

TURKEY TRAP NESTS

Progress can be made in breeding any kind of animal only when there is some method of identifying the offspring of each individual parent. By using a reliable trapnest it is possible to positively identify the eggs laid by each hen, and thus keep a system of pedigree records. Turkey hens can readily be taught to use trapnests, and many of them seem to prefer the trapnests to open nests.

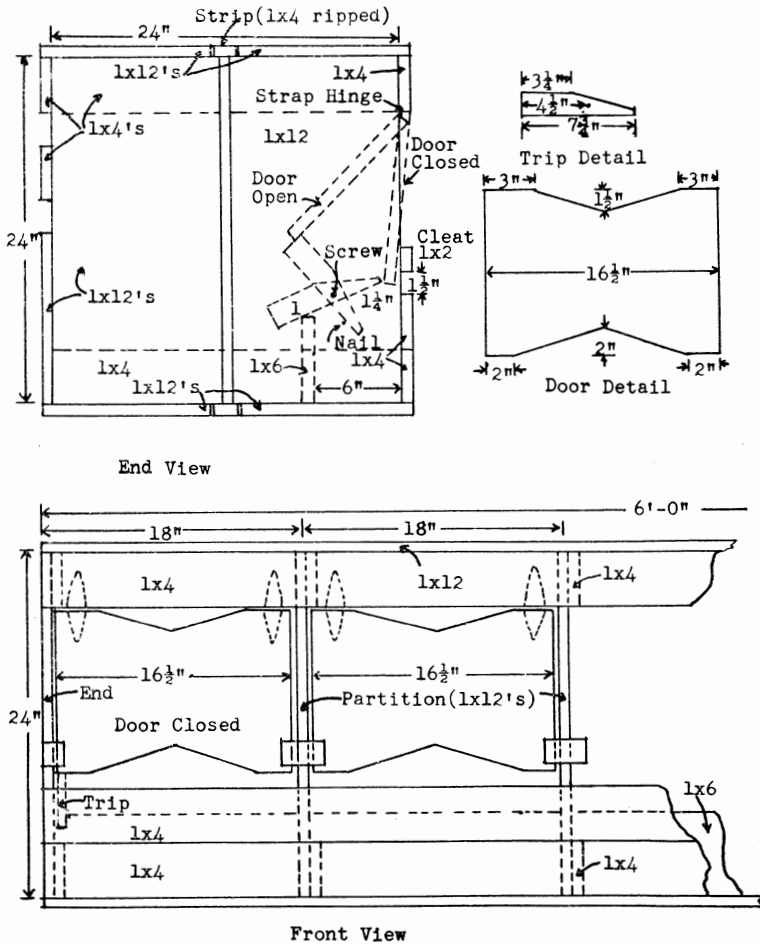


Figure 6. Details for constructing a turkey trapnest.

The nests are built in sections of four to six. They are located along the side or front wall of the house or in some other place that is protected and convenient for the operator and turkeys. At least one nest should be provided for every three hens.

The lumber required for one battery of four nests is as follows:

- 6—1x12x6' for top (2), bottom (2), back (1), doors (1).
- 2—1x12x10' for 2 ends and 3 partitions.
- 1—1x6x6' for six-inch partition in each nest.
- 6—1x4x6' for front (3), rear (2), top and bottom (1 ripped to make 2 1"x2").
- 2—1x4x10' for ends and partitions.
- 1—1x4x2' ripped in half for door cleats and trips.

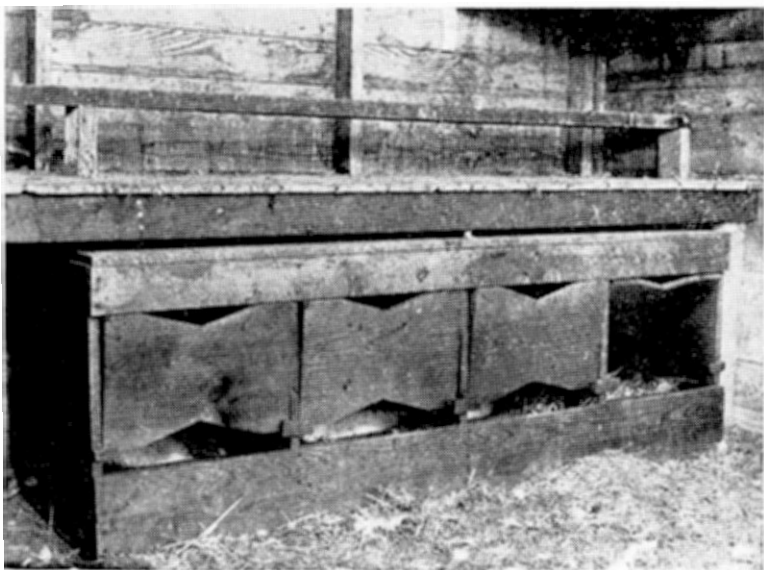


Figure 7. A turkey trapnest installed.

The trapnest is located in the corner of the house beneath the dropping board. The dropping board beneath the single roost is just wide enough to cover the nest sections.

First the ends and partitions are cut and nailed together. The front and bottom are nailed on next. Doors are cut, fitted and fastened on with three-inch strap hinges. The 1x6 pieces are nailed in place, and the rear and top nailed on. The trip is

screwed into place with the door closed as shown by the (1) position in the diagram. Number 12 one-and-three-quarter-inch round-head screws are satisfactory. The trip should turn freely on the screw; to insure this washers are used between the trip and the side wall and under the head of the screw.

For details and a picture of some completed nests see Figures 6 and 7.

INCUBATING TURKEY EGGS

Poults hatched at any time can be successfully reared if properly fed and managed. Poults which are hatched early require a longer brooding season, but they seem to live and grow better than late-hatched poults. It is not advisable to hatch poults later than the first of June in Oklahoma. The hot weather in June, July and August retards the growth of the poults.

Turkeys that are to be sold on the Thanksgiving market should be hatched between the middle and last of April. Where a special market can be obtained for earlier turkeys, they should be hatched accordingly. The early market is desirable because turkeys hatched in March or earlier grow much better than those hatched later. Properly fed turkeys are usually ready for market at the age of 24 to 28 weeks. It is not economical to hold them longer on account of heavy feed consumption at this age.

A successful hatch of turkey eggs depends upon the proper selection of the eggs to be incubated. Eggs with thin, rough, porous shells do not hatch well and are easily broken in handling. Cracked eggs should be discarded. Valuable eggs with small checks or cracks can sometimes be hatched if the cracked area is sealed with mucilage or a small piece of adhesive tape. Eggs of normal size and shape should be selected. Turkey eggs average about 3 ounces in weight. Eggs weighing less than 2½ ounces should not be set. If trapnesting is being practiced, hens laying small, misshapen eggs or eggs with poor shells can be identified and removed from the flock.

Hatching eggs should be collected daily. In extremely cold or hot weather they should be collected even oftener. When the eggs are collected frequently, there are not so many broken eggs, fewer stolen and deserted nests, and fewer soiled and smeared shells. This practice prevents turkey hens sitting very long on the eggs, and consequently very little development of the embryo takes place before the eggs are placed in the incubator. The hatching results are in turn much more satisfactory.

For best hatching results, turkey eggs should be held not more than 10 days before setting. If the eggs are to be held 10 days or longer it is desirable to turn the eggs once daily, because when eggs remain in the same position for long periods the yolk tends to rise and frequently sticks to the shell membrane. When the eggs are kept in egg cases, they may be turned by tilting the case at an angle of 45 degrees and reversing ends daily.

The most desirable conditions for eggs during the holding period are provided by a clean room which may be kept well ventilated. The air should be moist to prevent excessive evaporation from the eggs. The temperature should be maintained between 45 and 60 degrees Fahrenheit in the egg room for best results.

The temperature requirements for turkey eggs during the incubation period are about the same as for chicken eggs. In general the incubator manufacturer's directions regarding temperature, humidity, ventilation, etc., should be carefully followed, especially with the small, lamp-heated incubators. No adjustments in incubators are necessary where the machines are equipped with devices (such as electric fans or reels) for agitating the air and keeping the temperature uniform throughout the incubator. With small, lamp-heated incubators, a slight alteration is necessary. The egg tray should be lowered so that the top of the turkey egg will rest on the same level in the incubator as the top of the chicken egg before the tray was lowered. This will average $\frac{3}{16}$ to $\frac{1}{4}$ of an inch. The bulb of the thermometer should rest level with the top of the egg. It is necessary that the tray be carefully leveled when the alteration is made.

Moisture must be provided in the incubator throughout the 28 days of incubation. Shallow, flat-bottomed pans with vertical sides should be kept filled with water to provide moisture to increase the humidity in the incubator. Coarse sand extending above the water level is often used to fill the pan, thus providing more surface for evaporation. Ventilation must not be decreased to provide humidity. The humid air must be fresh and clean. The incubator room should be kept at a temperature of about 70 degrees in order to pre-warm the air going into the incubators and as an aid in maintaining uniform temperature in the incubator.

Eggs should be turned at least three times daily, early morning, noon and late at night, till the twenty-fourth day, when turning should be stopped. The eggs should be candled at the end of the first week to remove the infertile eggs and

again on the twenty-fourth day to remove the dead germs. They should then be left undisturbed until the hatch is complete. During the hatching period the incubator should be opened only when it is necessary to check the temperature.

BROODING POULTS

When more than 50 turkeys are to be produced each year, the poults can be brooded more economically by artificial means than with either turkey or chicken hens. The advantages of artificial brooding are readily apparent: (1) The danger of spreading disease from old birds to the poults is eliminated. (2) Feeding can be more easily controlled. (3) All the poults are of the same age and have equal opportunity to obtain feed and water. (4) Fewer runts will be found. (5) At market time the flock will be more uniform, most of the birds being finished and ready to sell at the same time.

Brooding turkey poults artificially is no more difficult than brooding baby chicks. Any brooder that is satisfactory for brooding baby chicks is satisfactory for poults. Poults require considerably more room than chicks because of their faster growth. Brooder house capacity is estimated at the rate of one square foot of floor space for each poult. A 10x12 foot brooder house will be suitable for 100 to 120 poults, and this is the maximum number that should be brooded together.

Battery brooders have been used successfully to start turkey poults. Poults seem to get a more uniform start, learn to eat sooner, and suffer less mortality than when floor brooded. Battery brooding requires more equipment. The battery is suitable for poults for only three or four weeks at most. It will still be necessary to have some kind of brooder house and stove when the poults are taken from the battery. Feeding must be more exact and the poults must be watched carefully to prevent crowding when put on the floor. Battery brooders are useful where many hatches are obtained, thus economizing on equipment. Farmers normally should use floor brooding for small flocks.

The temperature of the brooder should be 90 to 95 degrees at a point two inches from the floor at the edge of the hover. The brooder stove should be operated for two days before the poults arrive to be sure the stove is in proper working order and is running correctly. The temperature should be reduced 2 or 3 degrees each week. With a little experience one can tell when poults are comfortable, and comfort is more important than a fixed temperature schedule. The temperature should be constant and uniform. Sudden and extreme changes in

range of temperature cause trouble. Chilling and over-heating must be avoided. Good growth and feathering will be obtained if the temperature is kept slightly on the cool side and reduced as rapidly as possible as the poults become older, but at all times the poults must be comfortable.

If fewer than 50 poults are to be started they can be brooded by turkey hens with less trouble and expense. Many producers use chicken hens to brood part or all of the poults. The use of chicken hens is not advisable, because chickens are frequently carriers of blackhead and may transmit it to the poults. Gentle turkey hens with good dispositions should be

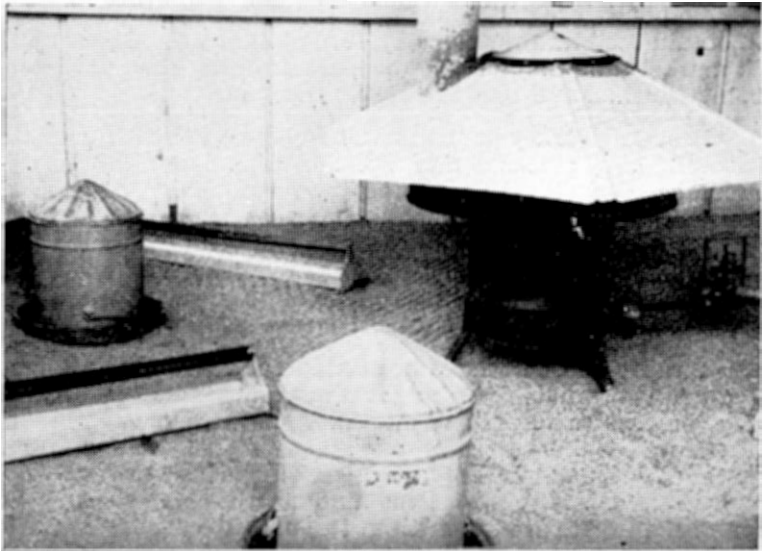


Figure 8. Brooder house ready for poults.

selected. The hens must be in good health and free from lice. Never use hens for brooding that have gone through an attack of blackhead or suffered from worms.

A comfortable coop with a waterproof roof and three tight sides is best to house the hen and poults. The common A-type coop is good, as is also the box type with roof sloping toward the rear. A satisfactory size is three by five or four by four feet. The floor of the coop should be loose or removable to make frequent cleanings easy.

The coop should be located on high ground so that water will readily drain away from it without danger of wetting the floor. It is best to move the coop daily except when the weather is so wet the poults must be confined to the coop. This moving need not be more than the width or length of the coop. The poults must not be permitted to run in wet grass or be out in the rain. The hen and the poults should be confined in the morning until the grass is dried off. Confinement at night also protects the poults from rats and other predators. At all times when the sun is shining the poults should be allowed outside if possible.

No matter what method of brooding is used it is safest to brood the poults on ground that has not been used by chickens. When possible keep the turkeys and chickens separate. Chickens, without showing any sickness themselves, carry that fatal disease of turkeys, blackhead. It is recognized that many farmers grow chickens and turkeys together and sometimes have good success, but better growth and lower death loss will be secured if they are separated.

FEEDING PROBLEMS

Oklahoma producers are facing the necessity of improving their methods of feeding and growing turkeys if good prices are to be obtained. Methods of growing better turkeys are being adopted by progressive turkey growers in all sections of the United States. More and more turkeys of excellent quality are being raised each year. The individual who depends on the turkeys to hustle their own living can expect many low-quality turkeys at market time. This is especially true when compared with the turkeys produced by the individual who feeds them adequately. In territory where the vast majority of turkeys are of poor quality it is common for high quality turkeys to receive no recognition in price difference. This fact should urge producers of good turkeys to encourage the production of good turkeys by all the growers in their community and to encourage every step toward graded buying of market turkeys.

The best quality market turkeys are those that are kept growing rapidly and continuously from the time they are hatched until they are sold. Continuous and rapid growth can only be obtained by keeping the poults on full feed and using a good ration. Full feed consists of mash before the turkeys at all times, and a heavy feeding of grain in the evening as the poults become older, or grain in feeders the same as the mash feeders. Turkeys that are full fed in this way will use to advantage supplementary foods they find in the fields, such as

tender green feed, insects, and waste grain. Full-fed turkeys make more economical gains than those which are required to range all day over barren fields and then are given a limited amount of feed at night.

The rate of growth of turkeys depends upon the breeding, management and general environment of the flock, as well as on the feeding. In Table II, the rate of growth and feed consumption of 1546 Bronze turkeys are given. Small groups of these turkeys were given various experimental treatments with respect to feeding and management. None of these treatments reduced the growth of the turkeys materially, though there

TABLE II.—AVERAGE WEIGHTS AND FEED CONSUMPTION OF BRONZE TURKEYS, 1937 AND 1938.

Age (weeks)	AVERAGE WEIGHT (LBS.)		Lbs. of feed per turkey	Lbs. of feed per turkey to date	Lbs. of feed per lb. of gain	Lbs. of feed per lb. of turkey to date
	809 toms	737 hens				
One day	0.12	0.11				
4	0.65	0.58	1.22	1.22	2.43	1.98
8	2.21	1.84	4.01	5.23	2.83	2.57
12	4.47	3.54	7.46	12.69	3.74	3.15
16	7.16	5.42	10.25	22.94	4.45	3.62
20	10.55	7.63	13.43	36.37	4.75	3.97
24	13.95	9.35	16.46	52.78	6.31	4.49
28	17.39	10.94	18.60	71.38	7.27	4.99

were differences between some of the groups. Of the total number, 497 were reared in 1937 and the remainder in 1938. The hatching dates varied from early March to the latter part of April. All turkeys alive at 28 weeks of age were included in the averages. Good toms of this strain of Bronze turkeys will weigh 20 to 24 lbs. at this age, and good females 11 to 13 lbs.

Feeding Young Poults

Turkey poults should be fed as soon as they are dry and able to walk well. This is when they are 24 to 30 hours old. Poults may be shipped just as are baby chicks. It is not necessary to feed them before they are 48 to 72 hours old, but it is best to feed them sooner if possible. Some broods of poults are quite difficult to teach to eat, while others give no more trouble than chicks. If difficulty is encountered, scattering a mixture of the yolks of a few hard-boiled eggs and finely chopped tender greens on top of the mash will help and the mixture is an excellent food. Clear eggs candled out of the incubator may be used.

Clean, coarse sand is a desirable material for litter for the first two weeks, but drift or blow sand is not desirable. Sometimes poults form a habit of eating litter other than sand. Chopped alfalfa hay is desirable, since the poults are not harmed if they do eat some of it. Straw, peat moss, crushed corn cobs, cottonseed hulls, and dried sugar cane pulp are used for litter in sections where they are available, and all are satisfactory. The feeders and water fountains should be constructed so poults cannot get into them. One hundred poults should have four feet of feeder space until they are two weeks old. Each poult requires four inches of feeder space from two weeks to four months, and six inches thereafter.

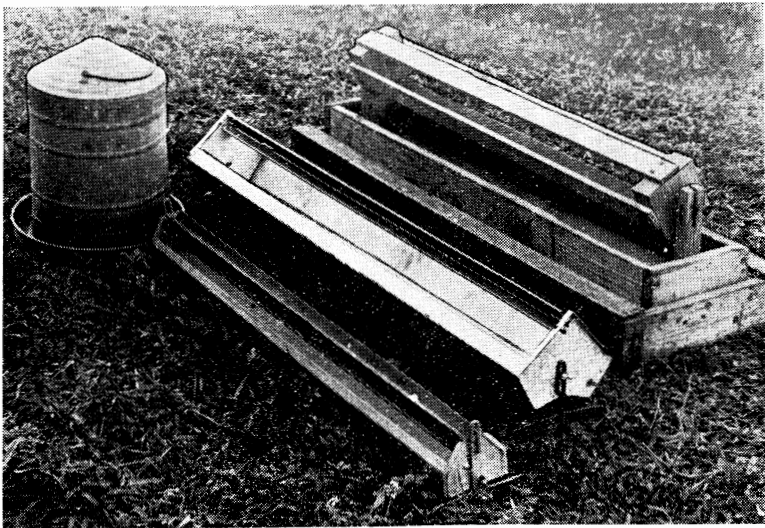


Figure 9. Types of feeders and water fountain used for young poults.

The feed requirements of young turkeys are somewhat similar to those of baby chicks, but there are several important differences. Poults grow much more rapidly than chicks and therefore their requirements for proteins, minerals and vitamins are higher. Just how much more protein is needed by poults is not definitely known, but mashes containing 22 to 24 percent of protein have given better growth and lower mortality than similar rations analyzing only 16 to 18 percent protein.

The effect of various levels of protein in the ration on the growth of Bronze turkeys was studied by the Oklahoma Agricultural Experiment Station in 1937. The same basal ration was used for all pens. The amount of protein was increased by adding various amounts of a special, high-protein, low-ash meat scraps. This special product analyzed 11 percent ash, 64.5 percent protein. Previous investigations (unpublished) had indicated that large additions of ordinary meat scraps to the basal ration caused poor growth and excessive mortality. Ordinary meat scraps usually analyze about 50 percent protein and 30 percent ash. The unfavorable results in the earlier investigations were thought to be due to the excessive mineral content of the high-protein rations.

The experiment summarized in Table III indicates that high levels of protein can be fed successfully if the mineral content of the ration is not abnormally high. Fifty poult were started on each ration. Careful records of growth and feed consumption were kept.

TABLE III.—AVERAGE WEIGHTS AND FEED CONSUMPTION OF BRONZE TURKEYS FED VARIOUS LEVELS OF PROTEIN.

	Pen 1	Pen 2	Pen 3	Pen 4
Percent of crude protein in ration.....	15.6	19.8	22.4	26.3
No. of toms (28 weeks of age).....	3	20	17	26
Average (mean) weight, lbs.....	9.6	13.7	17.6	18.7
No. of hens (28 weeks of age).....	4	16	23	18
Average (mean) weight, lbs.....	5.6	9.2	11.3	11.3
Lbs. of feed required to produce a pound of turkey.....	9.4	4.3	4.3	4.3

It can be observed from the figures in Table III that the higher levels of protein caused a progressive increase in the growth of the toms. In the case of the hens the 22 percent level was equal to the 26 percent level of protein. The difference between the average weight of the toms on the 22 percent level and the average of those on the 26 percent level was not great enough to be significant, when tested statistically. The mortality was very high in Pen 1, which received 15.6 percent protein, and was higher in Pen 2 than in Pens 3 and 4.

The pounds of feed required to produce a pound of turkey was the same in Pens 2, 3 and 4. Since meat scraps was the most expensive part of the ration, the 26 percent level (Pen 4) did not produce turkey meat as economically as the 22 percent protein level (Pen 3) under the conditions of the experiment. The birds in Pen 4 were finished and ready for market at 24

weeks of age, while those in Pen 3 were not. If both pens had been marketed at 24 weeks instead of 28 the results would have decidedly favored Pen 4. *These results must be accepted with caution.* Different levels of protein may prove most desirable with other combinations of protein supplement and under other conditions. These investigations are being continued.

Though the mineral requirements of poults are higher than those of chicks, too much mineral matter may be just as bad as not enough. If as much as 10 percent of the mash consists of 50 percent protein poultry meat and bone scraps, no additional mineral except $\frac{1}{2}$ percent of salt should be added. An addition of 1 percent of steamed bone meal is advisable when a vegetable protein supplement is used in place of a majority or all of the meat scraps. Never add additional mineral to a ration that has been tested and found satisfactory. Commercial or ready mixed feeds should not be added to, supplemented, or diluted.

The vitamin requirements of poults are about twice those of chicks. Twice the amount of cod liver oil recommended for chicks and an abundance of fresh green feed will satisfy the vitamin requirements of poults.

The following turkey starting mashes are being used and recommended by the Oklahoma Experiment Station:

	No. 1	No. 2
Yellow cornmeal or ground kafir	18 lbs.	20 lbs.
Wheat shorts	18 lbs.	10 lbs.
Wheat bran		10 lbs.
Ground barley or oats	18 lbs.	10 lbs.
Alfalfa leaf meal	10 lbs.	10 lbs.
Meat and bone scraps	10 lbs.	10 lbs.
Cottonseed meal	10 lbs.	10 lbs.
Soybean oil meal	10 lbs.	10 lbs.
Dried buttermilk	5 lbs.	9 lbs.
Salt	0.5 lbs.	0.5 lbs.
Cod liver oil concentrate	0.5 lbs.	0.5 lbs.
	100	100

When ordinary cod liver oil is used, 1 percent is the correct level. The cod liver oil should be a good grade of poultry feeding oil, carrying a guarantee that it has been tested by feeding trials. The cod liver oil can be reduced to one-half the recommended level when the poults are eight weeks of age, and discontinued when the poults are settled on the range. The above ration should be fed during the brooding period or until

the poults are about 8 weeks old. When the poults are six to eight weeks old a small amount of coarse cracked yellow corn or other grain may be fed, on top of the mash. Kafir, wheat, barley and oats are all good grains and can be fed whole. It is advisable to feed some clean, sharp grit in the form of coarse sand, crushed granite or marble. Limestone is too soft to make good grit. Zinc or lead tailings should be avoided since they may be poisonous. Grit may be kept before the turkeys in small boxes.

If liquid milk is fed daily, all that the poults will eat, one-third of the meat scraps and the dried milk may be left out of this mash. While liquid milk is a very valuable feed, the feeding of it creates dangers in the case of turkeys. In warm weather it must not be spilled or splattered on the ground, for each such spot is a breeding place for flies. Turkeys are very susceptible to limberneck caused by food poisoning, which can result from insanitary conditions around the milk feeders. Flies carry filth and disease germs, and are in addition carriers of tape worms. If the down and feathers of the poults become wet with milk they tend to mat together, along with bits of clabbered milk. This condition will attract the attention of other poults, cause them to start picking at one another, and may result in feather pulling and cannibalism. It is especially important, when milk is fed, that all equipment be scrubbed and disinfected daily. If two sets of milk feeding equipment are available, one may be cleaned and sunned while the other is in use. To lessen the danger of picking, the milk feeding appliances should be constructed so poults cannot get into them.

Feeding Growing Turkeys on the Range

Green feed is essential for maximum success in feeding turkeys. Daily feeding of finely chopped fresh greens should begin when the poults are started on feed and continue until they are turned outside. Older poults should be grown on ground containing well started crops such as alfalfa, rape or sudan grass.

The following rations are less expensive than the turkey starter and have been found to be quite suitable for the growing period:

	No. 1	No. 2
Yellow cornmeal or ground kafir	17 lbs.	17 lbs.
Ground barley or oats	17 lbs.	17 lbs.
Wheat shorts	17 lbs.	17 lbs.
Wheat bran	17 lbs.	16 lbs.
Alfalfa leaf meal	9 lbs.	8 lbs.
Meat and bone scraps	9 lbs.	8 lbs.
Soybean oil meal	6 lbs.	5 lbs.
Cottonseed meal	6 lbs.	5 lbs.
Dried buttermilk	--	5 lbs.
Ground oyster shell or limestone	1.5 lbs.	1.5 lbs.
Salt	0.5 lbs.	0.5 lbs.
	100	100

Mash No. 2 above is preferred when dried milk can be obtained at a reasonable cost. The A. and M. turkey growing mashes have been developed from the A. and M. laying mash. Many turkey producers have used a regular chicken laying mash as a turkey growing mash with good results. Grain may be a mixture of whatever grains are available. It is desirable to use at least 25 percent wheat in the mixture. Feed the grain in troughs and never on the ground.

Water is especially important. There should be two water containers for each mash feeder. Twelve- to 16-quart pails are easy to handle, fill and clean. Troughs may be used. One pail should be used for a maximum of 30 turkeys. Locate the water within 10 feet of each mash feeder and also in a shady place if possible. Put the pail in a hole about half the depth of the pail. Keep turkeys away from pools of standing and stagnant water.

A desirable type of shaded range water stand is illustrated in Fig. 10, with the floor plan and dimensions shown in Fig. 11. The frame is made of 1"x4" material and covered with 1"x2" mesh welded wire. Uprights and roof supports are 2"x2" material and roof is covered with lath spaced $\frac{3}{4}$ inch apart to provide shade for the turkeys. Water containers consist of 12-quart pails, resting on the ground. The wire-covered platform prevents the turkeys from overturning the water pails and keeps them from coming in contact with the filth which accumulates around the waterers. The entire unit is light and easily moved.

When the poults are old enough to range outside, the feed and water containers should be moved a short distance at least once each week and more often if the weather is wet. The



Figure 10. A range water stand that also provides shade. The top is of lath spaced the width of a lath apart. The stand occupies ground space 4x6 feet.

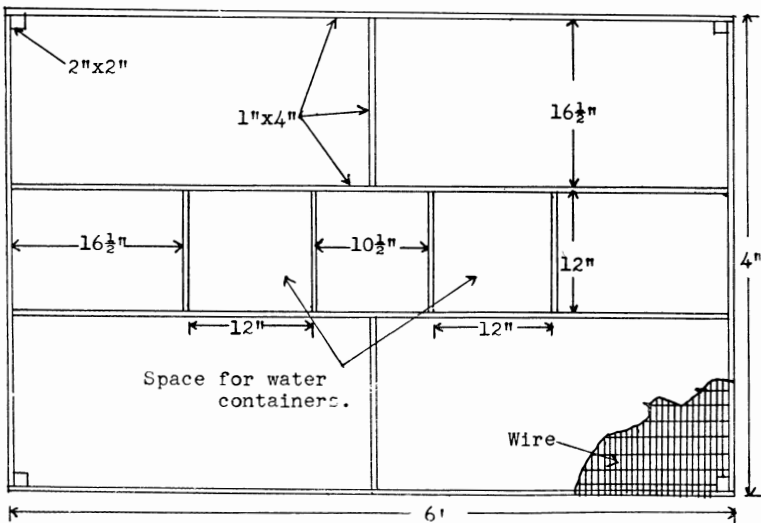


Figure 11. Floor plan of range water stand.

feeders should never be empty during the growing season. The addition of fresh feed each day will stimulate the appetite of the birds. Turkeys raised on full feed will eat an average of 70 pounds of feed each in 24 weeks.

MANAGEMENT OF GROWING TURKEYS

Turkeys six to ten weeks old are ready to go into the field or on the range. The age at which the move can be made will depend on the state of the weather. Late-hatched turkeys can be moved at an earlier age than early poults. For the younger turkeys, a shelter to protect them against heavy or driving rain and hail is essential. Unless the range is fenced dog- and coyote-tight the roosting quarters must be fenced. The poults may be confined to this small corral for a few days and then the feed gradually moved away from it. The turkeys will return to the roosting quarters regularly at night and may be confined to protect them from predators. Lanterns hung near the roosts at night help to keep predators away and also help prevent theft.

Perches should be high enough to protect the birds from dogs and coyotes. Peeled poles not less than 2½ inches in diameter are good. Two by fours with rounded corners are also satisfactory when laid flat. The type of range roost illustrated in Fig. 12 is not expensive and is much more sanitary than open

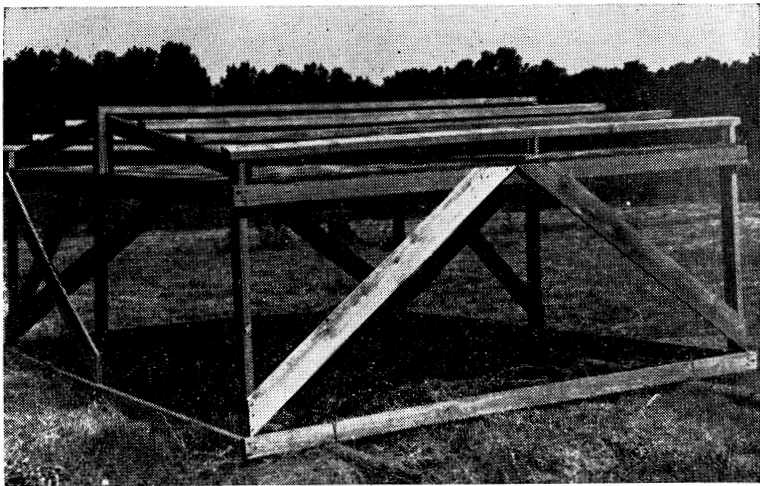


Figure 12. Combination range shelter and roost for growing poults. It is 10x12 feet in size.

perches. The solid platform below the perches catches the droppings so they may be removed to ground not used by the turkeys. It also acts as a roof for the young turkeys in case of storms and furnishes shade in hot weather. The entire perch frame and perches except the top of the perches should be painted with carbolineum before being used and again during the season if infested with mites or ticks.

The best turkey range is a cultivated field planted to a crop. Alfalfa, rape, sudan, soybeans, sweet clover, and lespedeza are crops that are excellent to grow with and for turkeys. Sunflowers, corn, and castor beans are good to plant for shade. Alternate strips planted with field crops and cultivated row crops is a desirable range planting system. A cotton field in which several strips of sudan or other green crops have been planted is a good turkey range. Such an arrangement is also a good soil conserving plan when used on rolling land.

Locate the roosts near the center of the field. (See Figs. 13 and 14.) Move them three or four times during the season and more often if the weather is wet or the ground becomes fouled with droppings. Locate the feed and water containers near the edge of the field and move them at weekly intervals around the field. At first the feed and water must be placed within a few yards of the roosts, but may be moved away from the roosts each day or two until they are near the edge of the field. Each move should be about the distance of the space occupied by all the feeders and water containers. By using this method the turkeys will be kept on clean ground, away from the roosts during the day, and at about equal distance from the roosts at all times. It is desirable not to use the same field in successive years.

Shade is essential and the row crops serve this purpose very well. Where row crops or other natural shade are not available, burlap- or brush-covered frames or other artificial shade should be provided. Locate the feed and water in or near the shade.

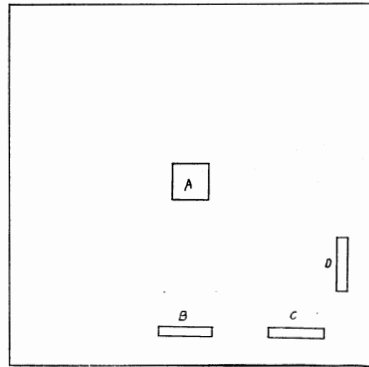


Figure 13. A suggested range layout for a square field.

"A" indicates the location of the roost, "B," "C," and "D" indicate the locations of the feed and water containers in successive weeks.

If the amount of range available is limited the turkeys may be confined to a relatively small yard, provided they are moved frequently. (See Fig. 15.) Four or more yards should be provided. Each yard should supply about 75 square feet per

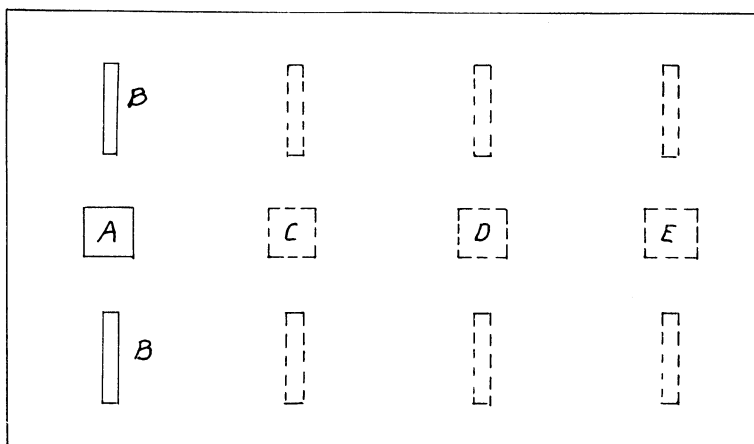


Figure 14. A suggested range layout for a long, narrow field.

“A” represents the location of the roost and “B” the location of feed and water containers. “C,” “D,” and “E” indicate the locations of the equipment in successive weeks.

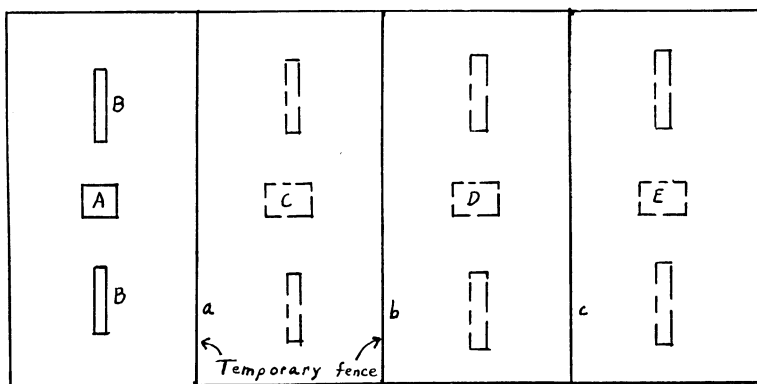


Figure 15. A yard rotation system.

Yard 1 is used the first week, yard 2 the second, etc., returning to yard 1 for the fifth week. “A” and “B” represent the location of the roost and feeding equipment, respectively. The cross fences, “a,” “b,” and “c” are temporary panels wired to steel posts.

turkey or about 575 turkeys per acre. The turkeys are allowed to remain one week on each yard, resting the yards three or more weeks before the birds are returned to repeat the rotation. The green feed on the yards may appear to be nearly destroyed at the end of a week's grazing but it will come back if moisture is available; or a new, quick growing crop can be planted.

Experiments conducted in 1937 and 1938 indicate that turkeys may be successfully confined to a much smaller yard than is usually considered necessary. Three groups of Bronze turkeys were confined to yards providing 10 to 15 square feet, 50 to 75 square feet, and 300 or more square feet per turkey, respectively. The yards were moved to a new location each week in the same manner as described above. Feeding and management were as nearly uniform as possible in all yards.

The preliminary experiment in 1937 indicated that the turkeys in Yard 3 were slightly heavier than those in the smaller yards. The birds were graded for fleshing at 28 weeks of age and those in Yard 1 appeared to be thinner than the others. The accuracy of grading live birds for finish can be questioned, however. Death losses, mostly from accidents, reduced the number so that the turkeys all had about twice as much room as the experiment called for.

In 1938 a much larger number of turkeys was started on this experiment. All birds made better growth from the beginning and were much heavier at 28 weeks of age than the 1937 turkeys. The better growth in 1938 may be partly due to changes in feeding, to breeding, and to weather conditions. This time the turkeys in Yard 2 were the heaviest, with those in Yard 3 close behind; and again the birds in the small yard were lighter. It was also noticed that feather picking was becoming prevalent in the small yard toward the end of the experiment and many birds were almost barebacked. Mortality was low in all lots.

The relative size of the three yards is shown in Fig. 16 together with the number and average weights in pounds of the turkeys in each yard.

FINISHING TURKEYS

To put the very best turkeys on the market it is necessary to begin the fattening period with the first feed given the baby poults. Good finish on a turkey is more than a showing of fat under or in the skin. Finishing is a better term than fattening, for it is the production of soft and tender muscle or meat as

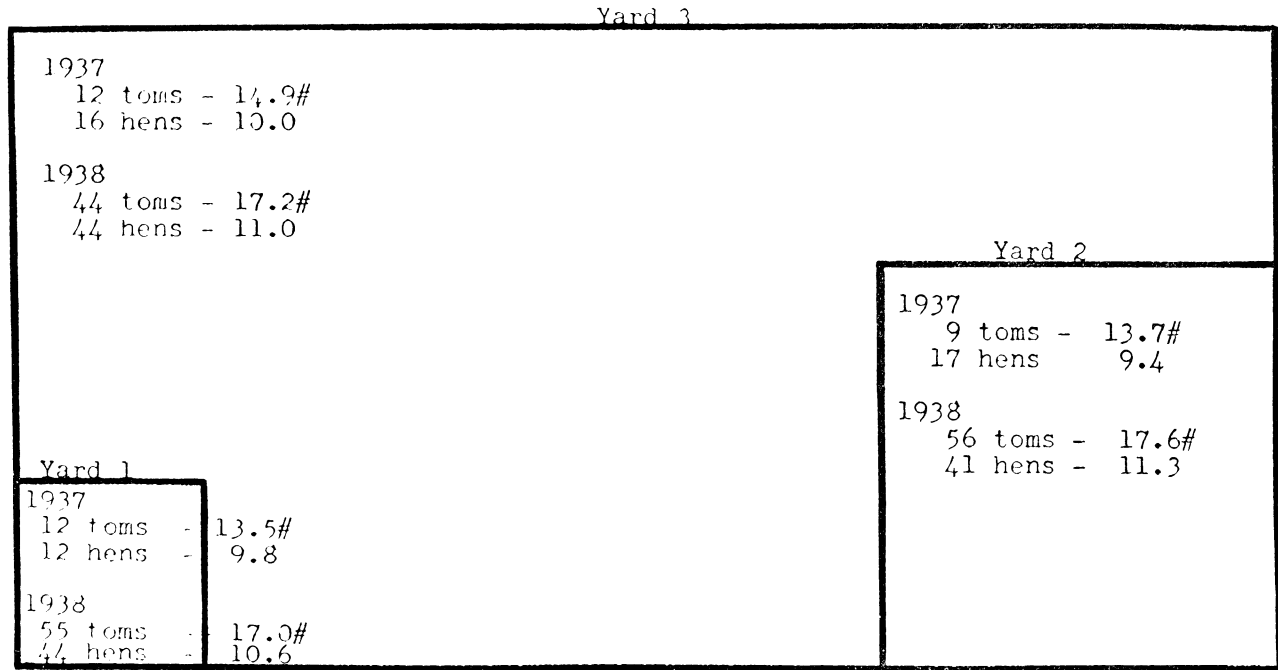


Figure 16. The relative size of yards 1, 2 and 3.
 The number of birds raised to market age, and average weights of toms and hens at that age, are shown for each yard by years.

well as the complete covering of the frame with fat. The very best quality can be produced only by feeding the birds so they will make the maximum growth during the first 24 to 30 weeks of their life. Turkeys fed in this manner should be finished when they are 26 to 28 weeks of age.

Two conditions must be met before turkeys are finished and ready to be killed. The carcass must be covered with a good layer of fat, and the feathers must be mature enough to pick without leaving pin feathers. Observe the feathers on the breast, back and thigh, then open the feathers beside the breast and see if a layer of fat can be detected beneath the skin on the bare area between the breast and thigh. This is the last place to be covered with fat, and if it is covered and the body reasonably free from pin feathers the bird is ready for market.

Turkeys which while growing have been ranged or herded for most of their feed should be put on full feed not less than six weeks before market time. Though they will never make the very best quality turkeys, fattening of such range-reared birds is well worth while. Range turkeys should not be confined to small yards for fattening. To do so is likely to cause them to be restless and actually lose weight for a time. The best procedure is to take the feed and water to the natural congregating places for the turkeys on the range.

Yellow corn is the most desirable grain for finishing; but if the turkeys have not previously been fed yellow corn it should be added to the ration gradually. The grain should be in troughs kept before the birds all of the time. Barley is a fairly satisfactory finishing grain; but unless the turkeys have been accustomed to barley it will be some time before they gain sufficient appetite for it to be of value as a finisher. Oats and kafir are suitable to be included in the grain ration.

Turkeys that have been on a wheat diet and range and have not had a mash with a protein concentrate should be given the opportunity to eat mash if they want it. Any good laying mash of about 18 percent or more protein that is used for chickens is suitable for turkeys. Both of the mashes listed in this bulletin for laying turkey hens have proved successful as a mash in the finishing ration, and regular A. and M. turkey grower is also recommended. For the sake of appearance of the dressed carcass and also the eating quality, a mixture of grains along with an 18 to 20 percent protein mash seems to be the logical feed to use. Grain alone will not produce the best looking carcass. The principal factor in fattening is to induce the turkeys to eat a large amount of feed, drink a large quantity of water, and to be contented. They should not be frightened.

One hundred turkeys being fattened should have at least eight feed boxes, 6 feet long, 12 inches wide, and 6 inches deep. There should be mash in four of these and grain in the other four. The feed boxes should be on legs about 10 inches high. The range feeder pictured in Fig. 17 is very good for this pur-

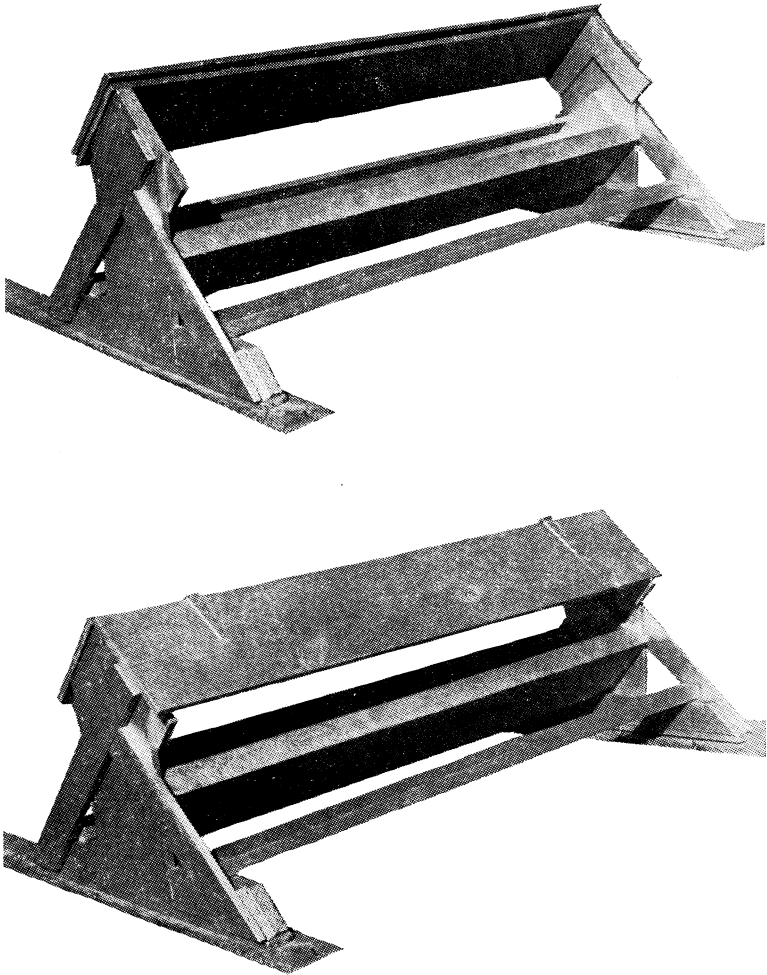


Figure 17. A good range feeder.
Above, the feeder with lid open. Below, with lid closed.
The feeder is six feet long.

pose. The above feeding plan is advisable in the event the turkeys have had mash and grain during their entire growing period. If they have had grain alone, perhaps two boxes of mash will be enough at the start of the fattening period. If they seem to show a good appetite for mash, which they will usually do as soon as they are accustomed to it, the amount should be increased to three or four boxes. The number of grain boxes should be reduced to leave a total of eight. The feed boxes should be separated from one another so that the "bossy" turkeys will not cause the more timid ones to stay away from the feed.

DISEASE PREVENTION AND TREATMENT

The axiom that an ounce of prevention is worth more than a pound of cure is especially true in the case of turkey diseases. Cleanliness is the most effective means of disease and pest prevention. Clean quarters, clean utensils for feed and water, and clean ground are very important when rearing turkeys.

While it is a common farm practice to run chickens and turkeys together, it is a dangerous one. Small flocks of turkeys may be able to segregate themselves and thus resist infection when there is plenty of room on the farm. With a larger flock of turkeys, on full feed for rapid growth, the situation is entirely different. Many flocks of chickens harbor the deadly disease of blackhead without being in the least affected, but the turkeys are almost sure to contract it eventually. It is much safer to run the turkeys entirely separate from the chickens on ground that chickens have not used in any way for at least two years. Young turkeys are more susceptible to diseases than mature breeding stock, so clean ground is especially important for the poults.

Even with strictly clean practices there are four diseases that may cause trouble and losses. Birds affected with blackhead, colds, worms, and fowl pox frequently need treatment, though segregation from other poultry on clean ground will usually prevent losses from blackhead and worms.

Blackhead is frequently harbored by the cecum worm, and control of the disease is associated with cecum worm control. Treatment is usually not very effective in saving birds that are already infected, but should be given immediately upon notice of the disease in order to stop its spread to birds not yet infected. The following methods are suggested:

1. Individually dose each bird with a reliable cecum or roundworm remedy, now handled by many feed stores and

hatcheries. Follow carefully directions given on each bottle or package. A half-strength dose may be used on poults 10 to 12 weeks old as a preventive measure against a blackhead outbreak, since cecum worms are eliminated by it. This treatment expels roundworms, and aids in the control of tapeworms and blackhead.

2. Add four pounds of fresh 1½ percent nicotine tobacco dust to each 100 lbs. of mash and feed for at least three weeks. Follow with an epsom salts purge and carefully clean up the premises. One pound of salts dissolved in four or five gallons of water is the proper dose for 80 mature turkeys. Reduce the dose for younger birds according to their size. This treatment is effective against roundworms. Nicotine sulphate capsules may also be used.

3. Feed all the sour milk the turkeys will drink. It must be clean and fed in scalded and clean containers on clean ground. If liquid milk is not available, 20 lbs. of dried buttermilk may be mixed with 80 lbs. of the mash being used and fed for five to seven days. Use no other feed during the period and give only clean water to drink. Milk improves the nutrition of the birds so they are better enabled to withstand the infection.

Colds and roup are usually resisted by the turkeys if they have an abundance of green feed. Anything in feeding, housing or management which tends to lower the vitality of the birds must be avoided or remedied. Wash out the eyes and head with a solution of one teaspoonful of baking soda or salt to one cup of water. Follow this with a few drops of a 10 percent solution of argyrol. Cankers may be painted with tincture of iodine.

Fowl pox is the same disease that attacks chickens, and the same vaccination used for chickens is effective for turkeys. The poults should be vaccinated when put on the range at 6 to 12 weeks of age. Vaccination within four weeks of market age will leave undesirable scabs on the turkeys. Do not vaccinate unless pox has been present in years past among the birds or those of the neighbors. When the disease breaks out it is too late to vaccinate. The scabs should be painted daily with tincture of iodine. Watch for cankers in the mouth; most turkeys that die from pox starve to death because they cannot eat.

Pullorum disease has recently been recognized as a problem among young poults. Poults are very susceptible to the disease and losses are often high. Some of the turkeys which survive an attack are carriers and react to the same blood test that is used to detect the disease in chickens. However, it has been proved

that except in rare instances the disease is not transmitted through the eggs. To control pullorum disease in the poults at the present time it is more important to hatch the poults in separate incubators from chicks than it is to blood test the breeders. It is also necessary to keep young poults from coming in contact with diseased chicks after hatching.

During and after any treatment it is highly advisable to clean up the litter and droppings more frequently than is regularly practiced. Making this job a daily or every-other-day routine will aid greatly in combating parasites and diseases. When the turkeys appear to be out of condition without symptoms of any specific disease it may be advisable to dose with epsom salts and follow with a clean-up. Sick birds should be promptly isolated from the rest of the flock when it is possible to do so, even though no treatment is attempted.

MARKETING TURKEYS

When the grower has raised a flock of turkeys there remains the problem of selling them. Naturally the grower is interested in obtaining the best possible price for his birds. It was pointed out in the beginning that Oklahoma turkey growers in some cases are able to sell their turkeys on a graded basis. This method of marketing turkeys is fair to both buyer and seller, while older methods that are still quite prevalent discriminate against the grower of good turkeys. Progressive turkey growers can aid the development of better market facilities for Oklahoma turkeys by refusing to sell to those who will not buy on a graded basis.

The traditional method of marketing turkeys is to sell them either to a local produce dealer or to a traveling huckster. There is seldom any system of grading except a discount for deformed birds. Occasionally the turkeys may be graded on a weight or sex basis. The dealer must make a profit on his operations, so he is forced to keep the price low enough to cover losses on the poor-quality birds he buys. In striking an average price that will give him a profit, he pays less for good birds than they are worth. When patronizing the traveling huckster, the producer is also exposed to the dangers of short weights and bad checks.

Cooperative marketing of turkeys on a dressed graded basis is beginning in a few localities in Oklahoma. A large volume of turkeys coming from a limited area seems to be essential for the successful operation of a large cooperative. With the cooperation of a local packing plant, however, a group of producers having as few as a thousand turkeys may be able to operate a dressed turkey pool.

The Oklahoma A. and M. College Poultry Department used a method of marketing turkeys in 1937 that might well be adapted to small cooperatives. The necessary requirements are several hundred turkeys in the pool, a local packing plant that is willing to cooperate, and willingness on the part of the producers to wait a short time for their money.

The College sold 914 head of turkeys, weighing 13,461 lbs., through a local packing plant in the fall of 1937. The packing plant sent trucks for the turkeys and killed and dressed them. The birds were graded, packed and sold for the best price obtainable, then the net proceeds were returned. Transportation charges to the plant were $\frac{1}{4}$ cent per pound, and 5 cents per pound was deducted to cover killing, dressing and selling costs.

One group of turkeys was sold November 2, a second group on the Thanksgiving market, and a third on the Christmas market. The combined receipts from the three sales are summarized in Table IV.

TABLE IV.—SUMMARY OF TURKEYS MARKETED IN 1937.

Live weight of 914 turkeys delivered			13,461 lbs.
Receipts: Dressed birds	Lbs.	Price, lb	Total
Fancy (No. 1) turkeys	10,148	25.07¢	\$2543.81
Choice (No. 2) turkeys	1,288	23.54¢	303.23
Commercial (No. 3) turkeys	326	18.97¢	61.85
Total - - - - -	11,762		\$2908.89
Marketing costs			634.75
Net return			\$2274.14
Average return per lb. dressed weight ..			19.33¢
Average return per lb. live weight			16.89¢

If several producers pooled their turkeys it would only be necessary to identify the birds of each grower in some way in order that the flocks could be graded separately after being dressed. In the above case the packer used his own system of grading. For the sake of uniformity it probably would be advisable to use the U. S. grades for dressed turkeys.

For the past several years the highest price for dressed turkeys on the New York market has been reached in September or October, and not at Thanksgiving or Christmas. Most

turkey producers in Oklahoma are not able to take advantage of this fact, because there is no one willing to buy turkeys until shortly before Thanksgiving. An early market would be very desirable for four reasons: 1. A higher price can usually be obtained on the eastern markets. 2. Early hatched turkeys are easier to raise successfully in this region. 3. Packing plant facilities are more fully utilized by spreading out the killing and dressing season and avoiding a big rush just before the holidays. 4. Turkeys hatched before the middle of April are ready for market in October or by the first of November.

The method of marketing described above is suitable for reaching the early market if the packing plant is able to move the turkeys promptly to the central market. For example, 3,594 pounds of dressed turkeys from the November 2 shipment were sold promptly for an average of 26.54 cents per pound, while on the Thanksgiving market, two weeks later, the price realized was only 24.31 cents per pound, and 1,531 pounds of fancy turkeys that were held until the first of January brought 22 cents. The birds sold on November 2 did not reach the central market early enough to bring the highest prices. They should have been sold two weeks earlier at least.

Some farmers are able to market part or all of their turkeys direct to the consumer. Direct marketing is frequently the most profitable method to the producer who is willing and able to please his customers. Most consumers prefer to buy their turkeys dressed rather than alive. A few packers are offering to the public fully dressed and drawn turkeys, neatly wrapped, individually boxed and ready for the oven. Consumers are demanding high quality and service, and progressive turkey producers will give them what they want.

Only the very best quality turkeys should be chosen for direct marketing. The birds should be in good health, well fleshed, well fattened, and practically free from small pinfeathers. The dressing job must be neat and clean. Last but not least, the producer should ask a fair price equal or above local retail prices for his birds. He should not forget that his labor in preparing and selling the birds is worth something, and that he is selling a select, superior product.

