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Turkey Manual

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TURKEY **Manual**

EXTENSION SERVICE
SOUTH DAKOTA STATE COLLEGE

EXTENSION CIRCULAR 401

MAY, 1943

Turkey Manual

by W. O. WILSON*

S. D. Ranks High In Turkey Growing

Since 1937 the number of turkeys raised in South Dakota has shown a steady increase. In 1941 this state ranked eighth in number of turkeys raised in the United States. The total number of turkeys raised that year was 1,407,000 head and had a total value of \$3,447,000.

Conditions for turkey production in South Dakota are very favorable. Very few other states are situated so advantageously. Some of the many things that we have to brighten the picture here are:

1. Dry climate, which is very essential in helping to prevent disease.
2. Low cost feed, which is about 60 percent of turkey production costs.
3. Relatively low cost land, which makes rotation of yards easy and is so essential in disease prevention.
4. The highest quality turkey meat, which is made possible by cool, fall weather. Turkeys finish out better as they eat more and put on weight and feather rapidly due to cool weather.
5. A general farming practice to which it is easy to adapt turkey production.
6. Lower marketing costs than the heavier producing areas to the south and west of us. With lower costs of production, we need not worry so much about overproduction and low profits or losses.

As a result of these advantages, many farmers in South Dakota have adopted turkey production as a definite part of their

diversified farming system.

In spite of these advantages there are many failures among turkey growers. Given below are nine common reasons for failure:

1. Young poults running with old turkeys or with chickens, resulting in blackhead infection or other diseases.
2. Not cleaning the brooder house regularly, resulting in an outbreak of coccidiosis or other disease.
3. Allowing poults to run on infected ground where other birds have ranged the previous year.
4. Failure to get poults started eating.
5. Permitting the poults to become chilled or overcrowded, and by not teaching the poults to roost, resulting in the piling up of poults and smothering.
6. Exposing the poults or growing birds to stormy cold weather by not providing adequate shelter. This lowers vitality and increases susceptibility to disease.
7. High feed costs resulting from improper feeding.
8. Marketing birds before they are properly finished.
9. High production costs due to excessive mortality.

Bronze Variety Most Popular

From the results of a survey made by the Extension Service of South Dakota State College in 1941, it was found that the growers favored the Bronze variety by a decided margin. Broad-breasted bronze were raised by 54 percent of the growers; Standard-bred bronze, 43 percent; Narragansett, 2 percent and Bourbon Red, 1 percent. All others were less than 1 percent. These varieties include White Hollands, Black and Slate.

It is always a good plan to raise breeds that are most popular in the community. This makes it much easier to obtain breeding stock. Then too, ordinarily it makes a more simple task of securing high quality breeding stock.

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Turkey Breeders

In the past, South Dakota turkey producers relied heavily upon shipped-in eggs as their source of poults. This was primarily due to three factors, (1) the industry was comparatively small and the demand was only moderate, (2) lateness in the season of available eggs to supply poults (3) lack of knowledge on the care of breeders. The tremendous increase in turkey production has brought about a change in this practice. Seventy-five percent of the state's turkey growers secured poults from their own

breeding flock, according to a study made by the South Dakota Agricultural Experiment Station. Some of the contributing factors for this shift were: High cost of shipped-in eggs, irregularity of the supply which did not have definite methods of flock improvement, shipped-in stock not acclimated to South Dakota temperatures and the realization by turkey producers that turkey breeding flocks could be profitable.

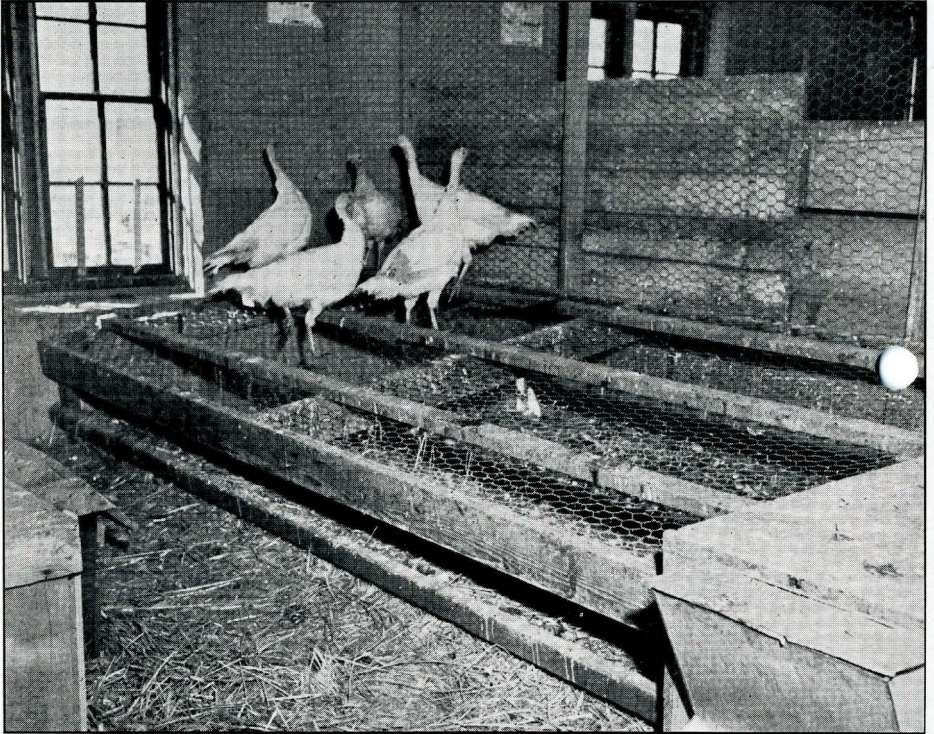


FIGURE 1

Dropping pit for turkey breeders in confinement. The wire used underneath the perches should be 12-14 gauge wire because it must support considerable weight.

Care of the Breeders

Buildings

Type. Either a movable shed roof structure with an opening in the south wall, or a well-insulated farm building with a door on the south may be used with good results. A turkey house in which breeders may be confined and allowed access to clean range in the daytime is a valuable asset. With the use of lights, much earlier egg production can be secured from this type of building.

Floor. Good results may be obtained from almost any kind of floor provided it is free from dampness. A damp floor encourages the spread of disease. Concrete and board floors are easily disinfected. Dirt and gravel floors must be changed each year. Experiments with a soil-cement floor have proven encouraging.

Roosts. Use either 2" x 4" laid on broad-side or poles at least 3" in diameter allowing

15" perch space per bird. The roosts should be two feet apart and well braced.

Dropping Pits. They are essential and practical in a good turkey breeder house. (See Fig. 1.) Put the front roost 20" off the ground and each succeeding roost back to the wall 6" higher. Use either 1½ or 2 inch hexagonal wire mesh at least 14 gauge and put on the frame under the roosts. Block the front of the roosts and the ends to keep the birds from running under the roosts. This helps prevent disease by keeping the birds out of the droppings. When the roosts are built so that each succeeding roost to the back is higher, the birds will go to roost orderly. The first turkeys to roost will go to the back roosts and the rest will fill in accordingly.

Floor Space. Allow at least eight square feet of floor space per breeder.

Equipment Necessary

Number of Nests. One nest to every four hens is sufficient. If trap-nesting is being done, use one nest to every three hens. Seclusion and darkness are preferred by the hen when laying an egg.

Size of Nests. Nests 2 feet high, 2 feet deep and 1½ feet wide are good size to use. Sometimes barrels laid on the side make good nests. These barrel nests should be tied or staked to prevent rolling or rocking.

Waterers. One 12-quart pail for each pen of 15 breeders is usually enough. An ample supply of clean fresh water is necessary for good egg production. Lukewarm water in the winter is advisable.

Saddles. They are widely used. (See Fig. 3.) They are a protection put on the backs of the hens during the mating season to help prevent a "blue-back" condition or torn skin inflicted by the toms' toenails.

A torn back not only lowers vitality and fertility, but also lowers egg production and may even cause the death of the hen. The saddles are necessary if the toms are large. They may be secured commercially, or sometimes sacks can be fitted on the back to work satisfactorily. Another practice that may be used to help prevent this, is to trim the toenails and blunt the spurs of the toms.

Land. Allow one-fourth acre of range for every 15 breeders, during the breeding season. The amount of land isn't as important as its rotation. Rotate the range every two weeks. A recommended system is to provide four separate yards of one-fourth acre each for each pen of breeders. Allow the breeders in each yard for two weeks. Cultivate and seed the yard as soon as the birds are moved from it unless it is alfalfa or grass sod. At the end of the eighth week,



FIGURE 2

A range feeder for turkeys. The wire across the feeder serves as a tooth-pick (beak-cleaner) for turkeys and helps to prevent feather picking.

the rotation may be started again in the original yard. This practice is essential in minimizing disease among the turkey breeders. If no rotation is possible, gravel or cobble-stone yards help to keep down disease.

Hopper Space. Allow at least 5" per bird when on the range and 6" when confined,

or one five-foot hopper for every 20 birds. (See Fig. 2.)

Kind of Range. Use good green crops such as alfalfa, clover, rye, oats and others. If available, good, green, leafy, alfalfa hay may be fed in racks to the birds. It is not only good for the turkeys but saves on feed costs.

Management of Breeders

Number of Toms. One tom or gobbler for each 10 to 15 hens is recommended. It is advisable never to keep less than two toms. One tom may die during the breeding season, or it may be sterile. In small flocks, the toms should be turned out on alternate days with the hens. This may help

to get better fertility and also prevents fighting.

Inbreeding. Little danger of too close inbreeding is experienced in a flock of 30 hens, where three or more toms are used. Toms may be selected from the flock for two or three years without disastrous results.

Poult to Expect From Each Breeder. Hatchability, fertility, management, breeding, feeding, care of hatching eggs and many others might be determining factors in figuring the number of poults to expect from each breeder hen. On the average, when the hens are fed a good breeder ration, one may expect from 15 to 20 poults per hen. If the breeding is good, and the flock is carefully selected and fed and managed properly, 25 to 35 poults per hen may be expected.

Litter. Clean straw 6" deep is recommended. Other litters may be satisfactory, but are probably more expensive.

Lights are necessary if early production and fertility is desired. Successful use of

lights can be secured only when the breeders are housed. Breeders that are housed may be turned out in a yard in the winter time, if the temperature is 15 degrees or above. It is recommended that the lights be turned on at 4:00 a.m. Production may be expected in three or four weeks after the lights are turned on. The toms should be housed separately and given lights two or three weeks prior to the time the hens have lights. When lights are started on the hens, the toms should be with them. A 40-watt bulb for each 200 square feet of floor space is sufficient. Providing there is no fire hazard, a lantern of equivalent candlepower may be substituted successfully.

Length of Fertility. Normally fertile eggs

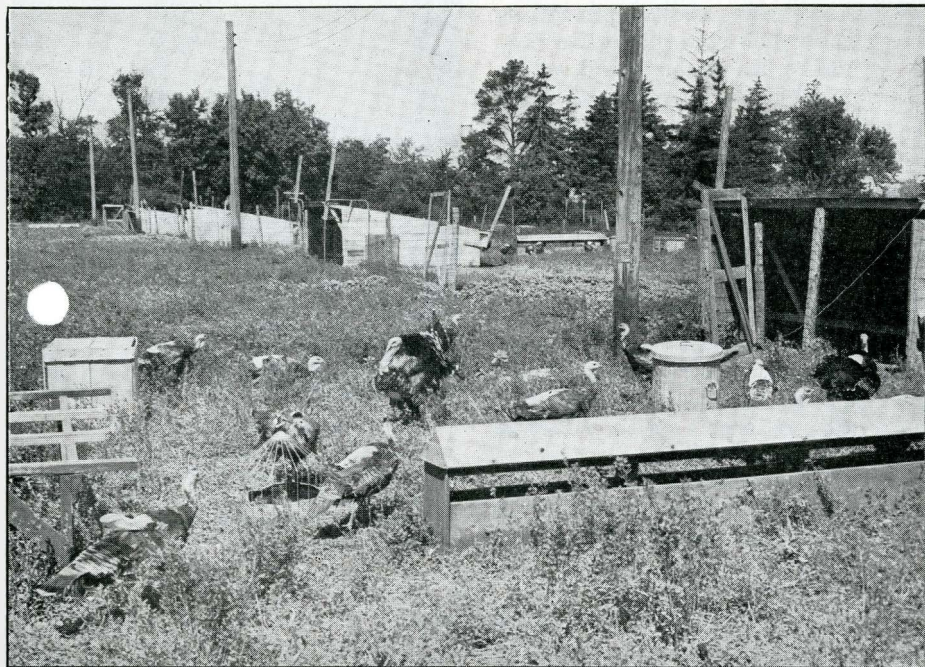


FIGURE 3

Turkey breeders on alfalfa range. There are four pens around each house. The turkeys are changed to a new pen every two weeks.

can be expected for two weeks after the toms are removed from the breeding pens. Usually 10 days are required before fertile eggs can be expected from a previously unmated flock. It is important that the hens are mated three weeks before egg production starts.

Lice and Mites. The flock should be free from parasites at all times. Heavy infestations not only lower egg production, but sometimes lower fertility. A 40 percent solution of nicotine sulphate painted on the roosts in the evening, or a dusting with sodium fluoride may be used to eliminate lice. (Repeat in 10 days to kill those that hatch out later.) For mites, paint sides and bottoms of the roosts with carbolineum. Used crank-case oil is also effective but does not last long.

Heat. Experiments at the South Dakota Experiment Station have shown that heating the turkey breeder house did not increase production. It is doubtful that it is wise economy to heat the breeder house.

Gathering Eggs. The eggs should be gathered from two to four times daily. This helps guard against frozen eggs, dirty eggs and broken eggs.

Holding. If egg cases are available, pack eggs with the small end down. This prevents broken air cells, which lower hatchability. Turkey flats and fillers are larger and a case holds 200 eggs instead of 360 eggs. If eggs are held more than seven days, tilt the egg case once a day or otherwise turn the eggs once a day. The case may be stood against the wall, or have one end raised with a 4" x 4". By switching ends of the case the eggs are turned enough to

prevent the yolks from sticking. High humidity is desired in the holding room. Excessive ventilation is undesirable. Set every two weeks, preferably once a week.

Holding Temperature. Fifty to sixty degrees is the ideal holding temperature. An egg will start to germinate at 68 degrees, and temperatures below 40 degrees sometimes lower hatchability.



HOW TO HOLD A TURKEY

The weight of the bird is supported by the left hand under the breast while the right hand holds the legs. Birds carried upside down may die of strangulation. The numbered saddle on this hen makes identification easier.

Feeding

Amount Required. On the average, adult males will consume about 26 pounds of mash and grain during each of the winter months. Females will consume about 13 pounds of feed per bird per month.

Proteins. Proteins are used to produce muscles, feathers, connective tissue, skin, internal organs and eggs. Largest quantities of protein are found in meat scraps, fish meal, soybean oil meal and milk. They

are very essential in the birds' ration. All grains and green feeds contain some proteins but not enough.

Carbohydrates. Carbohydrates are digested in the bird's body to produce heat. Some are converted into fat and stored in the body. Carbohydrates are broken down into two groups, i.e., nitrogen free extract and crude fiber. Most rations generally satisfy the needs for carbohydrates. The chief sources of these are: Cereal grains and by-products of grain and green feeds.

Fats. Turkey requirements for fat are low. They are supplied by such feedstuffs as: Grains (especially corn, soybean meal and animal products).

Minerals. Bone growth, egg production, hatchability, the prevention of slipped tendons, body maintenance and other factors are provided by minerals. They are provided for in the ration by addition of deficient minerals, such as oyster shells, limestone, bone meal and salt. Manganese is especially essential in preventing slipped tendons.

Vitamins. Usually lacking in the ration are vitamins A, D and G (or riboflavin). Vitamin A is supplied chiefly by green feeds, yellow corn and fish oils. Vitamin D is supplied by sunshine, fish oil and

activated animal sterols. Riboflavin is supplied in largest quantities by green feed and milk. All three are very essential in turkey rations. The cheapest sources of these vitamins are sunshine and green feed. The turkey's requirement for many vitamins are higher than the chicken's requirement.

Method of Feeding

1. An all-mash system is sometimes used. This method entails the extra cost of grinding all the feeds. From an economical point of view, it is doubtful whether this system is justified under South Dakota conditions.

2. The mash and grain free-choice system is quite widely used. If the birds are not housed, excessive consumption of grain during the winter months is likely to result. Therefore, this method is usually not practical because the mash contains the essential ingredients needed by the breeders.

3. Mash free-choice and grain limited is a very popular way of feeding turkey breeders. It is especially good for lower producing strains, since it encourages more mash consumption which is necessary for good egg production.

4. Concentrates fed in hoppers supplemented by grain free-choice provides for

Mash Ration for Turkey Breeders (To be fed with grains)

Ingredient	Pct. or Pounds
Ground yellow corn	25
Wheat bran	15
Wheat middlings	14
Meat and bone scraps	15
Soybean oil meal	10
Dried milk	10
Alfalfa leaf meal	5
Salt mixture*	2
Ground limestone	3.5
Fish oil concentrate	0.5
Total	100.0

* The salt mixture is made by adding 39 parts of salt with 1 part of manganese sulfate or manganese dioxide.

Grains for Turkey Breeders. Turkeys prefer oats to almost any other grains. A hopper full of oats and any other cereal grain may be used. For best results, a like amount of the fish oil should be fed with the grains as with the mash. Keep oyster shells or limestone grit before the birds.

the maximum use of home-grown grains. In low-producing strains and if the birds range out, excessive grain consumption is likely to result. This tends to lower egg production.

5. Pellets are compressed all-mash feed.

Advantages claimed are that they insure against wastage and that the birds are receiving a balanced ration in each pellet consumed. However, their use does not always insure against wastage and there is the added cost of processing the feed.

Incubation in Farm Incubators

Equipment Necessary. An incubator, the temperature of which has regulating mechanism in good working condition, is needed. The room temperature should be kept between 70 and 75 degrees. Some provision should also be made for ventilation of the room. A durable tested thermometer is necessary. It should be tested by a clinical thermometer before the season, to be sure it is accurate.

Temperature. A sectional type or still-air machine should be run at 101 degrees the first week, 101.5 the second week, 102.5 the third week and 103 degrees the fourth week. The thermometer should be placed in the incubator with the bulb on the level with the top of the eggs. Do not let the bulb touch the eggs. Some ventilation is required in all types of incubators. Since there are so many different types of machines, it is best to follow the directions of the manufacturer.

Moisture in the Incubator. It is best to maintain moisture content according to the recommendations of the manufacturer. Shallow flat pans may be used to hold water in the incubator in order to maintain humidity. Ordinarily, pans in the incubator filled with water three successive days each week and from the 24th to 28th day will give sufficient moisture. However, under some conditions it may be necessary to keep moisture in the pans all of the time, and in other rooms where humidity is high, very little or no moisture would have to be provided.

The amount of moisture can be checked

by weighing the eggs. Normally, the range in the rate of evaporation during incubation at 6 days is from 2 to 4 percent; 12 days, 4.1 to 7 percent; 18 days, 6.2 to 10 percent and 24 days, 12 to 16 percent. In order to determine weight loss, 100 ounces of the eggs (usually 33 to 35 eggs) should be marked with a pencil. At the end of 6 days, these same eggs should weigh from 94 to 95 ounces; at 18 days, 91 to 93 ounces and at 24 days, 88 to 91 ounces.

Turning and Hatching. The eggs should be turned at regular intervals, at least three times daily for the first 24 days. The incubator should not be opened during hatching (twenty-fifth to twenty-eighth day) except to check the temperature. The poults should be fed within 24 hours after they are hatched, or they are apt to start picking the droppings. A darkened incubator tends to keep poults quiet.

Ventilation. With most farm incubators, the air vents are kept about one-half open during the first week or two. The last two weeks, the ventilators are usually opened wide.

Sanitation. Strict sanitation is the best known insurance against disease. Before and after each hatch, the incubator should be thoroughly scraped and scrubbed with boiling lye water (1 lb. to 8 gallons of water). Use rubber gloves as the lye water will burn the hands. The incubator should then be sprayed with a 3 to 5 percent solution of compound cresol or some other good disinfectant. Remember it is nearly impossible to sterilize dirt.

Brooding Turkey Poults

Regardless of whether poults are hatched or purchased, start with good meat type (broad-breasted) turkey poults. Practically all of the larger producers brood their turkey poults by artificial means. Artificial brooding methods are recommended on farms where over 50 poults are to be raised. The five main advantages are: Birds are most economically and advantageously marketed when they are all the same age; the feeding is more accurate and easily regulated; much easier to provide sanitary conditions; the danger of spreading disease from the old birds to the poults is eliminated and labor is saved.

An Economical Unit

Present Trends. At the present time large scale commercial turkey production is in-

creasing rapidly. It is also true that the number of small farm flocks in South Dakota has increased tremendously in the past few years. Many more farmers have adopted the practice of raising a few turkeys each year. Often times profits are diminished because maximum use of labor and equipment is not made. Too many times not enough turkeys are raised to justify doing a good job.

Recommended Units. On the average farm in South Dakota, it is recommended to start with not less than 150 poults. Up to 200 may be started in a 10 x 12 ft. brooder house, but no more than this is recommended. On the average farm this sized unit will very nicely fit into the general farming scheme. If commercial production methods are used, the most economical

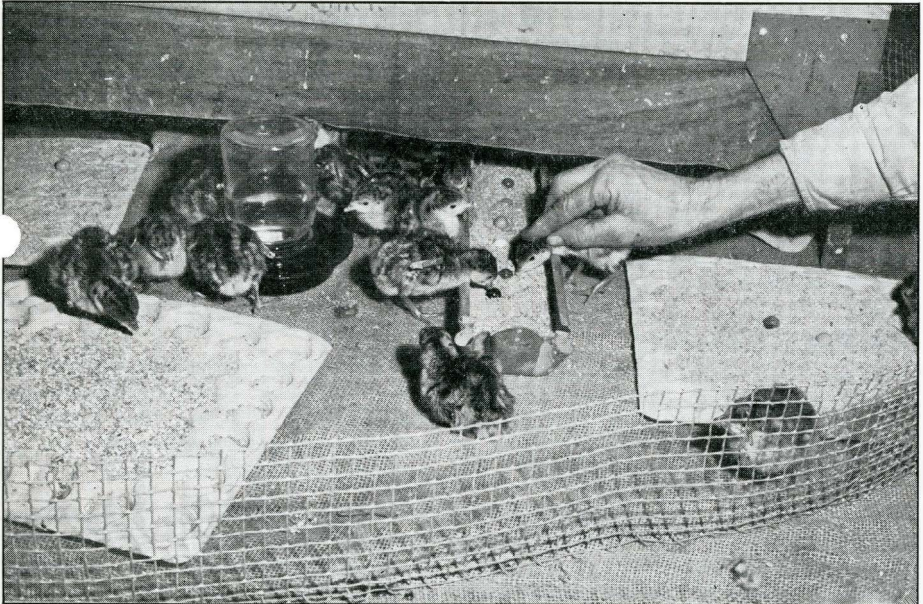


FIGURE 5

Extra time spent in teaching the poults to eat and drink pays good dividends. Each poult's beak may be dipped in the feed. Bright marbles, especially green marbles attract attention. Oatmeal or scratch grains may be spread over the mash. Keep plenty of mash on egg flats.

labor returns may be had when one man can care for 2,000 birds.

Recommended Practices For Brooding

Prevention of Disease

1. Always keep chickens and turkeys separated.
2. Always keep young turkeys away from old turkeys.
3. Raise turkeys on clean ground where no chickens or turkeys have been for at least two years, and where no poultry manure has been spread for at least two years.
4. Move young turkeys to new ground during growing period. (Frequent moving is recommended when the ground is wet.)
5. Sanitation is keeping the poult and everything the poult comes in contact with *clean*.

Feeding of Poults

1. Help the poults learn to eat. Use a strong light near the feeders. Have plenty of feeders. Sprinkle oatmeal or a chopped boiled egg over the feed. Bright green glass marbles in the feeders attract the poults to the feed.
2. Keep feeders and waterers sanitary and place them on wire platforms when the poults are two weeks old.

Management of Poults

1. Turkeys should be hatched not later than June 10 in order to be ready for market before Christmas. Figure it out. It takes at least 26 weeks before a turkey is ready to market.
2. Prevent crowding; check on poults at roosting time to make sure they are using the perches.
3. Keep the turkeys under shelter during stormy or threatening weather.

Building for Brooding

Types. There are many different types of brooder houses. In selecting a type of brooder house to use, it is advisable to select one that will give the most use for the least overhead costs. Durability, cost, size and longevity must all be carefully considered when selecting a brooder house. There are many types of brooder houses used in South Dakota. A movable brooder house built in dimensions of 10 x 12 ft. or 12 x 16 ft. is widely used. It is a very economical type brooder house, and if properly constructed, should remain serviceable for about ten

years. Either a shed or uneven span may be used for these houses.

Stationary brooder houses that are both large and small are frequently used. In any case, the pens should not be longer than 12 x 16 feet and should be well insulated to prevent drafts. Convertible type brooder houses are also very popular. The poults are usually brooded in the houses until eight weeks of age at which time the brooder house is moved to the range. The side walls are raised and roosts inserted. This brooder house then serves in the capacity of a range shelter.

Floors. Wood makes a very satisfactory floor in almost any type of brooder house. It is especially recommended for the movable type houses. Dirt may be successfully used as a brooder house floor. It, however, has the disadvantage of having to be changed each year, and is usually harder to maintain sanitary conditions with dirt floors. In the stationary type houses, concrete or other prepared floors have proved satisfactory if properly constructed.

Floor Space. Allow three-fourths to one square foot of floor space for each poult to be brooded. This floor space is sufficient up to 8 to 10 weeks. Overcrowding is very likely to cause heavier mortality and larger numbers of slow and poorer developed poults. On the other hand, too few poults increases brooding costs.

Window Space. Excessive window space makes the house colder and the temperature harder to regulate. One square foot window space is recommended for each seven square feet of floor space.

Ventilation. Ventilation is very necessary in a brooder house. Drafts must be avoided. It usually takes some regulating to get the proper amount of ventilation. The type of brooder house, the type of ventilator it has, and the terrain it is situated on, are all important in the successful operation of the ventilating system.

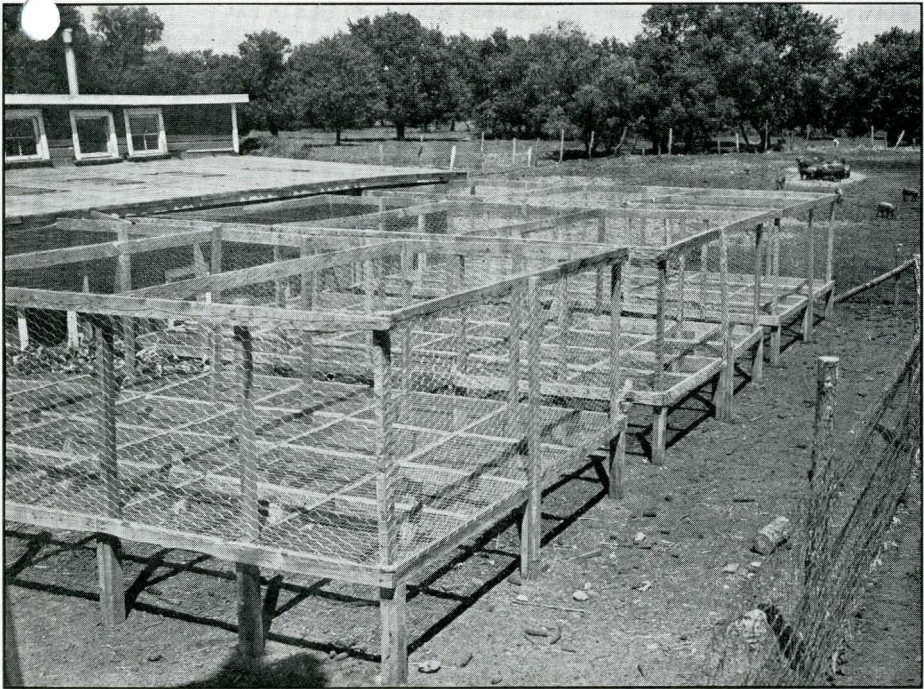


FIGURE 6

Sun porches are essential for raising turkeys on a limited amount of land. Poults are not allowed on the ground until they are 8-10 weeks old. Arrangement for feeding and watering from the outside is desirable.

Sun porches

Popularity. Sun porches have become a "must" for many turkey growers. They are economical and their use constitutes one of the best sanitary practices known today. They are especially popular with commercial producers and are particularly adaptable to stationary houses. They are recommended for use in South Dakota, for their value has been demonstrated. They are essential if one is to obtain the best results.

Size. It is recommended that the floor area of the sunporch equal that of the brooder house.

Wire Floor. The most popular wire is 14 to 16 gauge with one inch square mesh, or one by two inch mesh. Either welded wire fabric, hardware cloth or hexagonal

wire may be used. Usually the porch is not used for the first two or three weeks of brooding, thus enabling the use of a larger mesh.

Feeders and Waterers. Feeders and waterers that can be filled from the outside are great labor savers.

Brooders for Turkeys

Coal. A good many coal stoves are used. They are very excellent for early brooding. They sometimes present a fire hazard and also are often hard to regulate. When buying a stove, consider the coal capacity, sensitiveness and durability of the heat regulator. Most stoves use hard or anthracite coal.

Electric. Many new rural electric light lines have made a definite place for electric

brooders. They are clean, easy to regulate and minimize fire hazards. Disadvantages are that they do not throw sufficient heat in extremely cold weather and may be too expensive to operate. This depends on the power rate. Sometimes poults will stay under the hover and will have to be shoved out to eat. A good reliable source of power is necessary.

Oil. Probably the oil type brooder is still the most popular one used in South Dakota. The drum type stoves throw an abundance of heat and are comparatively easy to regulate. Sometimes they present a fire hazard and sometimes gas fumes form in the brooder house. This is usually caused by faulty operation of the stove. Oftentimes, the fuel costs are high. The drum type is preferred over the wick or wickless types. Keep the burner clean so the stove will not go out. Keep the stove level at all times during operation.

Gas. Recently many gas brooders have been used. Bottled gas is the source of fuel for these stoves. In general, the brooder has proved to be satisfactory.

Size of Stoves. A 50 by 60 inch hover is recommended for an economical unit of 150 poults. The proper size of stove depends upon the brooder house size. For brooders having hovers, allow 10 to 14 square inches of space under the hover for each poult.

Temperature. The stove should be started three or four days prior to the arrival of the poults. A regulated temperature of 90 to 95 degrees should be attained. This reading should be taken at the outer edge of the hover three inches above the floor. The temperature should be reduced from 3 to 5 degrees each week until 70 degrees is reached.

Brooding Equipment

Roosts. The use of properly constructed roosts is necessary for good success in the rearing of poults. The poults should be taught to roost at from three to four weeks of age. Six inches of roosting space per

poult up to 6-8 weeks of age is sufficient. Roosts should be spaced about 8 inches apart and 2 by 2 inch roosts are satisfactory. Beveled or rounded edges on the roosts may prevent some dented breasted birds. Hexagonal wire mesh 1½ inch diameter or 1 x 2 inch welded wire should be placed immediately under the roosts to help prevent disease and smothering. Turkey poults will be easier to train to roost if the perches are placed in front of the house near the light than if the perches are in the rear of the house.

Feeders. Egg case flats, cardboards or papers are recommended for the first few days to get the poults started eating. Place the feed so the poults can not help but find it. Small chick feeders should be provided, allowing one linear foot (one side) of feeder space for every five poults. During the period from four to ten weeks, this should be increased to two linear feet for every five poults. Wire platforms with 1" hardware cloth (14 to 16 gauge wire) should be built to place under feeders. This prevents contamination and spread of disease.

Waterers. Wire platforms to place waterers on are recommended after the poults are two weeks old. For each 200 poults, two three-gallon waterers are sufficient for the first four weeks after which time the capacity should be doubled. Plenty of clean fresh water is very necessary. Fountains need to be cleaned often and the litter around them should be kept dry. The largest source of worm infestation, especially in the summer, is found around the water fountains when conditions are ideal for the spread of worm eggs.

Litter. Gravel or coarse sand is recommended for the first week. Cover with burlap during the first two or three days to prevent poults from eating the litter. Straw, peat moss, shavings or commercial litters may then be used and placed on top of the sand. For best results, it is essential that the litter be kept dry and should be changed often, at least once a week or more. Rake

roughly the sand or gravel floors daily.

Draft Shield. A protecting shield of cardboard, roofing paper, or wire netting should be placed around the brooder stove about 2 feet from the edge of the hover for the first week. This keeps the poults near the source of heat. After the poults learn where to find the heat, the shield may be removed, but the corners should be blocked or rounded off to prevent "piling" up.

Piling Up. Watch out for piling—drafts, sun "spots" and changes in temperature encourages piling. At night, a common farm lantern or a small electric light will prevent piling due to poults not finding the source of heat. Don't forget to have the draft shield!

Lay-out of Equipment. In a brooder house arrange the feeders around the hover so that they resemble a wagon wheel with the stove as the hub and the feeders, the spokes. About one-third of the length of

the feeders should be under the hover and two-thirds pointing away from the hover. This arrangement prevents poults from being blocked away from the source of heat. Set the waterers at least one foot from the edge of the hover.

Feeding Poults. Many poults starve to death because they do not learn to eat. Much of the early mortality can be reduced by teaching the poults to eat. Poults may be stimulated to pick at food by having an older poult or baby chick to show them how. A strong light may be used to attract poults to the feed and other tricks are used in teaching poults to eat. A good chick mash is **not** a good mash for turkey poults. Poults require more vitamins and have different mineral requirements. Poults do best on a 24-25 percent protein starting mash while chicks need only 20 percent protein. This makes considerable difference.

Turkey Starting Mash

(An all-mash ration for first 8 weeks)

Ingredients	Pct. or Pounds
Ground yellow corn, or Sooner milo, or Amber cane, or Feterita, or Proso	18
Pulverized oats	18
Ground wheat	16.5
Soybean oil meal	10
Dehydrated alfalfa leaf meal	5
Fish meal	10
Meat and bone scraps	10
Dried buttermilk	10
Granite grit (chick size)*	1.5
Salt and manganese†	0.5
Fish oil concentrate‡	0.5
Total	100.0

* Limestone or calcite grits should not be used in this ration in place of granite grit as additional calcium will cause slipped tendons or deformed legs.

† Nine grams of manganese dioxide are added to 218 grams of common salt for a 100-pound mix. This would be approximately 5 ounces of manganese dioxide per ton of feed.

‡ The fish oil concentrate contains 400 A.O.A.C. chick units of vitamin D per gram of oil.

Turkeys on the Range

Age to Move. When poults are 8 to 12 weeks old, they are ready to move to the range or field. The exact time depends on weather conditions and time of hatching.

Pastures for Turkeys. When standard feedstuffs are not available, we must grow our own vitamins. Alfalfa range is best for turkeys but can not be used the first year of seeding. Annual crops for turkeys are:

EARLY PASTURE—Rye, barley and oats

MIDSUMMER PASTURE—Rape and sudan
in rows (cut to keep from going to seed)

LATE PASTURE—Rye

South Dakota Experiment Station circular 38 describes experiments with turkeying-off sorghums and proso. This method of turkey management allows turkey growers to save labor. The turkeys are quite efficient in harvesting standing grains.

Land Requirements. Rotation of ranges will decrease the amount of land needed.

About 100-250 birds may be raised per acre. Many have failed with unlimited range. When the ground slopes, start in the low area and move up hill—never move down hill.

Fencing. The fence around the range should be dog, coyote and fox tight. It should be about six feet high. Have the fence so the birds can be moved if trouble starts. When disease strikes, get on the move!

Shelter. Shelter from storms, sun and wind are essential for best results. Green feed and shade afford some protection. The shelters should be securely staked down. Don't take chances—drive the turkeys to shelter in stormy weather!

Roosts. Willow poles are good roosts. If one buys lumber, the roosts should be three to four inches wide. Allow 12 inches per bird and space 18 inches apart. Set the

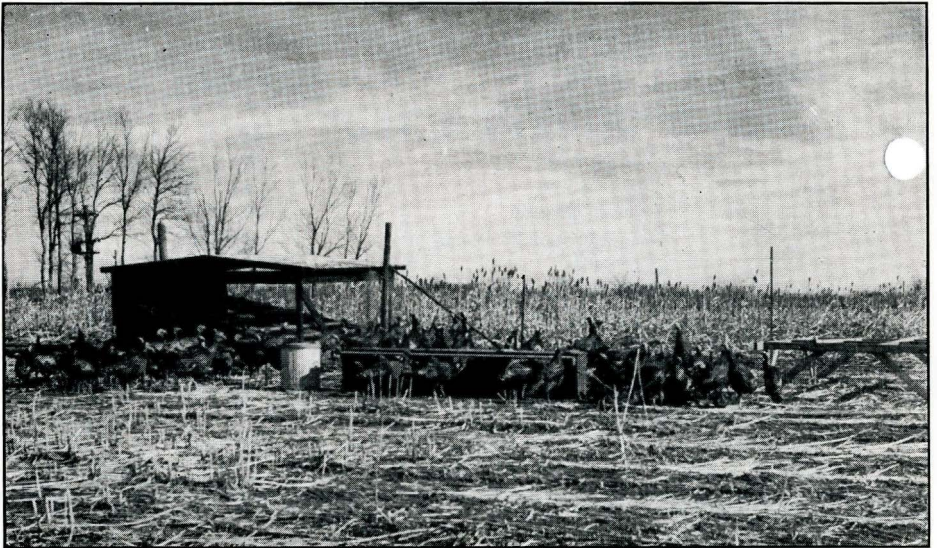


FIGURE 7

This type of shelter, roosts and other equipment shown have been used successfully. Plans for the shelter are shown in Fig. 8.

Home Grown Vitamins for Turkeys

CROP	PLANTING DATE	PASTURE AVAILABLE							
		Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.
RYE	September	½	T	½					½
SUDAN GRASS	May-June			½	T	T	T		
RAPE	Seedlings 2 weeks Apr., May, June, July		½	T	T	T	T		
ALFALFA	Seed previous April	½	T	T	T	T	T		
OATS & BARLEY	Early April		½	T	½				
Crops which may be used for "turkeying-off"									
PROSO MILLET	May, early June				½		T	½	
MILO	May, early June					½	T	½	
AMBER CANE	May, early June						½	T	T

Key "T" indicates pasture or crop available for entire month. "½" indicates pasture or crop available for ½ month.

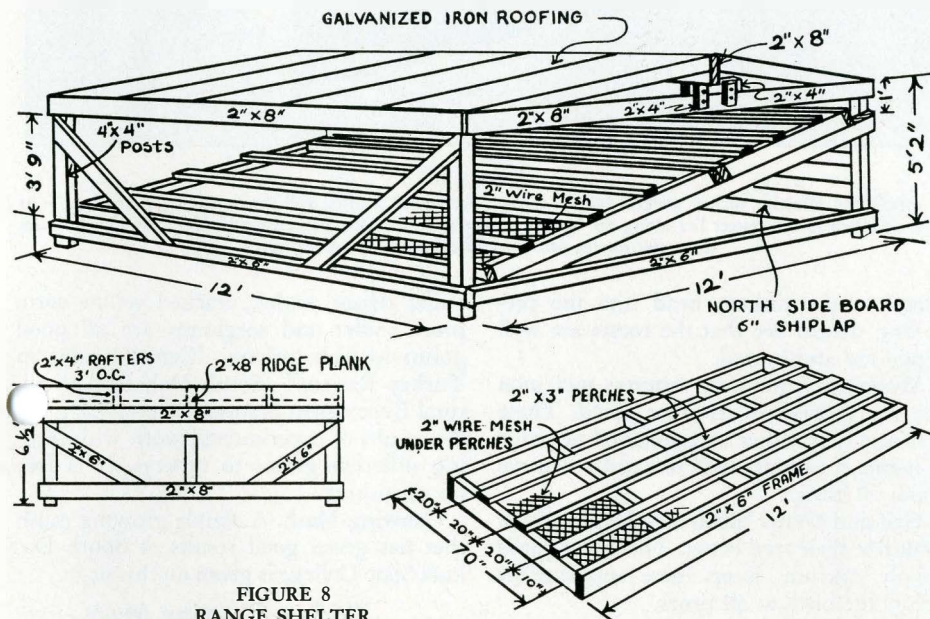


FIGURE 8
RANGE SHELTER

This shelter will provide protection against sun, rain, snow and hail. The east and west sides should be screened or boarded up to prevent birds getting into the droppings and preventing side winds. At least the west should be boarded and the east may be screened. The front or south is left open for entrance. Woven wire attached to front corners and fanned out will make it easier to drive the birds into the shelter. Two-inch by three-inch perches 20 inches apart are recommended.

BILL OF MATERIALS

4 posts 4"x4"x5'2"
4 planks 2"x8"-12'
4 planks 2"x6"-12'
1 ridge plank 2"x8"-12'
10 rafters 2"x4"-6'2"

RANGE SHELTER
3 roost braces 2"x6"-12'
4 end braces 2"x6"-6'
Galvanized roofing 150 sq. ft.
8 pieces shiplap 6"-12'
Nails

ROOSTS FOR RANGE SHELTER (1 section)
12'-2" mesh—6' poultry wire
2 ends 2"x6"x5'6"
2 sides 2"x6"-12'
3 roosts 2"x3"-12'
3 braces 2"x6"x5'6"

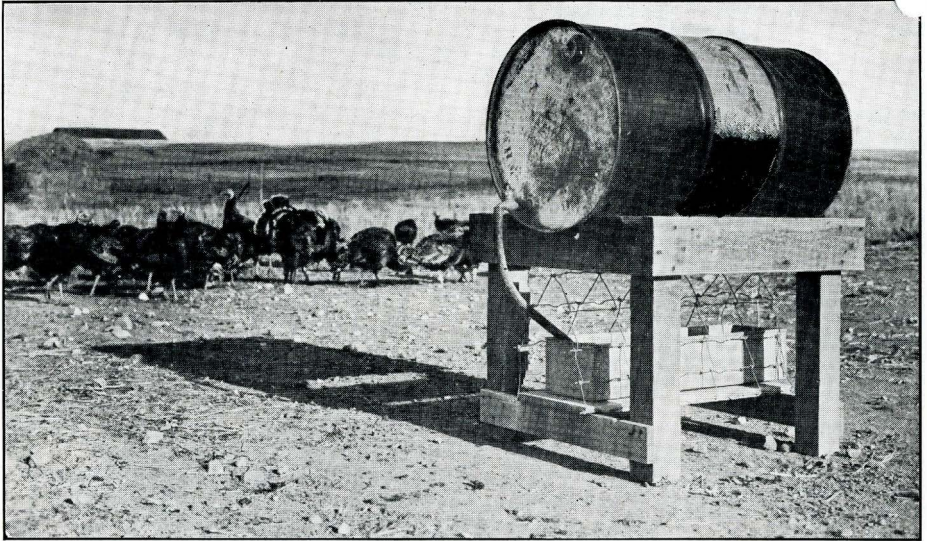


FIGURE 9

A simple but effective turkey waterer for the range. The barrel is filled and the bung closed air-tight. The hose attached to the faucet lies along the bottom of the pan. The pan fills automatically as the birds drink the water down, provided all connections are airtight.

roosts so the turkeys head into the prevailing winds. See that the roosts are well supported and braced.

Waterers. Automatic waterers will soon pay for themselves in labor saved. These waterers may either be purchased or made at home. If pails are used one pail will serve about 50 birds.

Grit and Oyster Shell. Grit helps turkeys to utilize their feed better. The oyster shells supply calcium. Keep these supplements before the birds at all times.

Feeders for the Range. Feeders for turkeys should be deep and afford protection from wind and rain. A bailing wire strung across the feeder serves as a beak cleaner and prevents feather picking and blue backs. If a small spring is used, the wire may be kept from sagging. (See Fig. 2.)

Feeding Grains. Scratch grains should be fed in feeders to turkeys. The poults will consume large quantities of oats but

either wheat, barley, cracked yellow corn, proso millet and sorghums are all good grains to feed turkeys. "Cereal Grains in Turkey Rations"—South Dakota Agricultural Experiment Station Bulletin 330 give the results of experimental work with feeding different grains to turkeys. It is free for the asking.

Growing Mash. A simple growing mash that has given good results at South Dakota State College is given on this page.

Turkey Growing Mash

(For turkeys on range after the age of 8 weeks)	
INGREDIENT	PCT. or LBS.
Ground yellow corn	45
Ground oats	30
Meat and bone scraps	10
Soybean oil meal	9
Dried milk or dried distiller's grain	5
Salt	1
Total	100

The mash should be supplemented with green range, oyster shells, grit and grain.

When to Market

The age at which to market turkeys depends on weather conditions, feed and management the birds have received. Under ordinary circumstances, hens may be marketed after 24 weeks while toms need an additional two weeks to finish out. The birds should be reasonably free from pin

feathers and well fleshed. Birds marketed before they are ready usually bring a lower price. On the other hand when birds are held too long, there is an increase in feed costs and dangers of mortality and losses due to other causes.

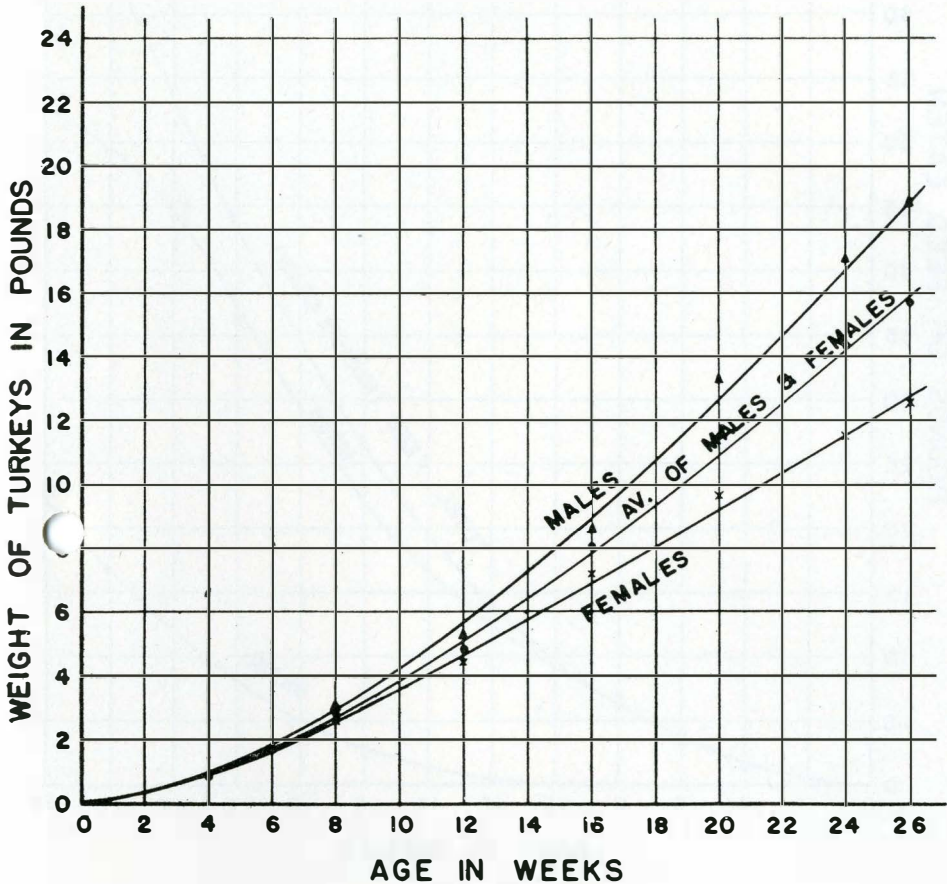


FIGURE 10

Average growth of turkeys on tests conducted at the South Dakota Experiment Station. The growth of turkeys may be estimated by using this graph.

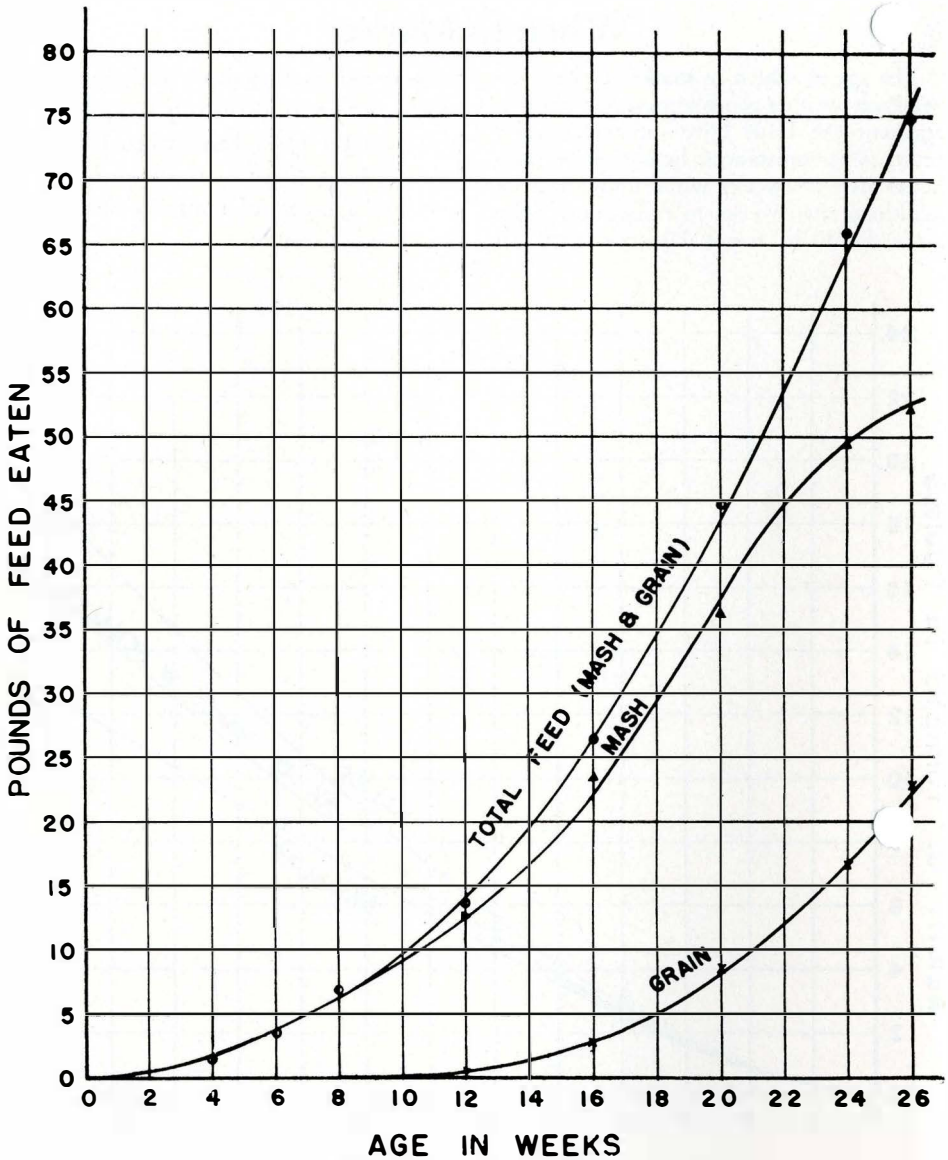


FIGURE 11

Average amounts of feed eaten per turkey from data of South Dakota Agricultural Experiment Station.
The amount of feed turkeys will consume may be estimated from this chart.

Diseases of Turkeys

Disease control is the limiting factor for turkey profits of many growers. Up to 24 weeks of age death losses should be kept below 15 percent. A few of the sources of infection are: Contaminated ground, other poultry, visitors, the water supply and poults. Sanitation is keeping the pout and everything the pout comes in contact with **clean**. Vaccination has been shown to be of value in preventing only **one** turkey disease. That disease is fowl pox. For a more complete discussion of turkey diseases write to the State College Poultry Department for Farmer's Bulletin No. 1652, "Diseases and Parasites of Poultry."

BLACKHEAD

This is probably the most prevalent disease of turkeys in the state. The cecal worms from chickens and turkeys aid in the infection of turkeys with the blackhead organism which, incidentally, is a protozoa.

Symptoms—Sulphur colored droppings; drooping wings and ruffled feathers.

Post Mortem. Liver enlarged and covered with degenerated yellowish or yellow-green circular spots or ulcerations of various sizes. These ulcers are depressed pits and resemble rotten spots on an apple. The ceca may show ulcerations and be filled with cheesy material.

Prevention. Keep poults off the ground for the first 8-10 weeks. Raise on clean, dry

ground away from chickens. Keep birds free from cecal worms. Phenothiazine is effective in the removal of these worms but will not cure blackhead. The dose for each 100 turkeys is 1.6 ounces (five level tablespoons of phenothiazine in 20 pounds of mash). If necessary, the treatment may be repeated at monthly intervals. The individual dose is 0.5 grams for poults 8 to 10 weeks of age and 1.0 grams for adults.

COLDS, ROUP AND SINUSITIS

The exact cause of these diseases are unknown. In some instances, the lack of vitamin A may predispose birds to colds and roup.

Symptoms: Watery discharge from eyes and nostrils. The discharge may soon become sticky. A typical foul odor is characteristic of the discharge. A swelling underneath the eye is caused by the sinus filling with pus.

Treatment. The swellings which may appear beneath the eye can be treated by using a pointed hook to pull out a section of skin covering the swollen area in order that a pointed scissors can be used to cut around the hook, leaving a hole at this point. The content of the swelling is then expelled and the cavity flushed with a 4% solution of silver nitrate from a syringe. Obstinate cases may require two or three such treatments.

Vices

Turkeys may acquire bad habits such as feather picking and cannibalism. Turkeys that are crowded are likely to start feather picking. Control consists in removing the causes. Beak cleaners should be placed on all feeders. Hopper feeding whole oats tends to cut down cannibalism.

Stampeding or Piling Up. Turkeys by nature have a greater flocking instinct

than chickens. Care should be exercised to prevent sudden fright of turkeys. In the brooder house prevent drafts, round off the corners to prevent poults from piling up and encourage early roosting.

Pendulous Crops. This condition, sometimes called sour-crop, is easily recognized. It is not a disease, but sometimes a considerable number of birds may be affected.

There appears to be an inherited weakness to the condition. Excessive water consumption increases the number of cases. While it

is impossible to control the weather, one may keep down water consumption by supplying shade and plenty of cool fresh water.

Selection of Breeders

Be sure to select breeders before the early maturing birds are sold in the fall. Well matured pullets and young toms usually give the best results. Select first for vigor. Other characters desired are short shanks, straight breast bones, small depth from

back to tip of breast bone and weight. The workers at the South Dakota Agricultural Experiment Station have developed a means of selection of breeders based on a total score basis.

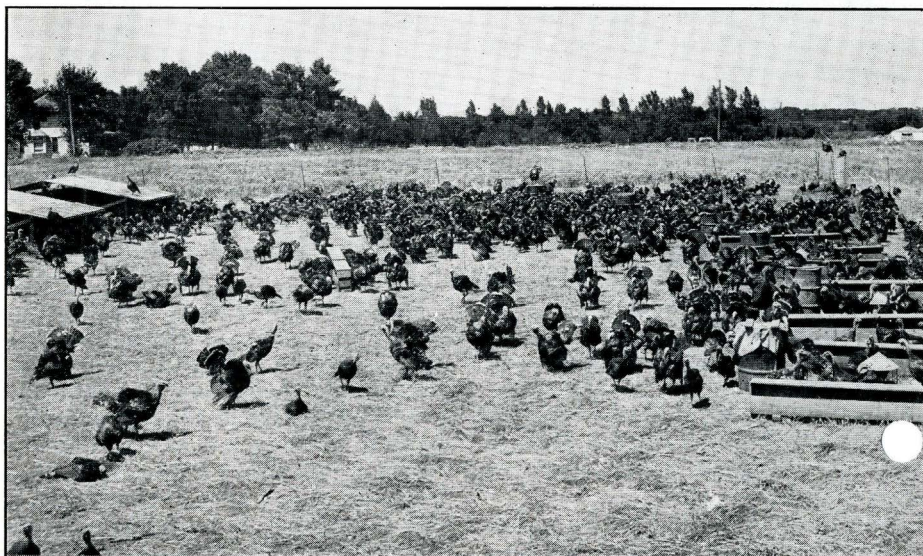


FIGURE 12

A commercial flock of several hundred turkeys. One man can handle two thousand birds with some additional labor at moving time.

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