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Pastured Turkey Production

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Pastured turkey production is based on giving a flock access to outdoor areas where they are free to roam and forage. Due to recent consumer interest in animal welfare issues, nutrition, and taste, there has been a growing demand for turkey products from farms where pasturing is practiced. This publication introduces producers to the concept of raising turkeys on pasture and the many considerations related to breed selection, housing, nutrition, welfare, processing, and marketing.

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Photo: NCAT

Introduction

For a variety of reasons, including animal welfare, environmental concerns, or a growing interest in local food systems, consumers are looking for meat that comes from animals humanely raised on pasture. This includes meat from turkeys, a traditional holiday food. Turkeys are excellent foragers and can help restore fertility to pastures through application of manure.

Although turkeys are similar to meat chickens, or broilers, in how they are raised, their size and personality lead to some key differences. Because turkeys are much larger than broilers, they require a longer period of time to reach market weight. However, turkey meat is often highly sought-after in local food systems because it is a mainstay in many traditional holiday meals. Even though there can be a large initial investment, raising turkeys often becomes a profitable enterprise for small-scale producers.

Breed Selection

In conventional turkey production, the Broad Breasted White is the most commonly used variety. The Broad Breasted White is a fast-growing bird, able to reach a marketable weight in about 12 to 14 weeks. However, they have trouble reproducing naturally without the aid of artificial insemination and may have health problems stemming from rapid growth. Although the Broad Breasted White can thrive in pasture-based systems, many consumers are more interested in purchasing heritage-breed turkeys. Reasons cited

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for this interest include taste differences, genetic conservation, or interest in something different than the perceived norm. Unlike heritage breeds, Broad Breasted Whites can be purchased as poults and produced year-round.

The Livestock Conservancy defines a heritage-breed turkey as one that meets the following criteria:

1. Must be reproduced and maintained through natural mating.
2. Must have a long productive lifespan in outdoor production systems.
3. Must have a slow growth rate, reaching a marketable weight in approximately 28 weeks to allow for healthy growth (American Livestock Breeds Conservancy, 2007).

Heritage-breed turkeys take longer to raise on pasture and will often have a smaller dressed weight than the Broad Breasted White. The Broad Breasted White can reach a live weight of 36 pounds for toms and 24 pounds for hens in 20 weeks (Hulet et al., 2004). Toms and hens of the breeds Black, Bourbon Red, Narragansett, and Slate will reach 23 pounds live weight for toms and 14 pounds for hens after 20 weeks of age (American Livestock Breeds Conservancy, 2007). Conventional broad breasted turkeys are often processed after 14 to 18 weeks, but heritage-breed turkeys will need up to 30 weeks to reach a marketable weight.

Even with the extra time and cost required to produce heritage turkeys, consumer demand still exists. In blind taste tests, consumers often prefer the taste of meat from a heritage-breed bird (Bon Appétit, 2011). However, because of the size and body-composition differences, meat from a heritage bird may cook more quickly. This can lead to dry meat if not prepared correctly, and consumers should be informed of this difference.

Poults may be purchased from a private poultry breeder, hatchery, or may be hatched on-farm from a breeding pair of turkeys. If buying from a hatchery, ensure that it is part of the National Poultry Improvement Program (NPIP). Poults that come from NPIP-certified hatcheries will come from breeding stock proven to be free of pullorum-typhoid, mycoplasma gallisepticum, mycoplasma synoviae, and avian influenza. Starting with a flock of healthy poults not only ensures that your flock will get a good start in the brooder, but will also protect any other poultry on the farm from disease transmission.

Examples of Heritage Breeds

The Livestock Conservancy lists the following turkeys as Heritage Breeds:

- Black
- Bronze
- Narragansett
- White Holland
- Slate
- Bourbon Red
- Beltsville Small White
- Royal Palm
- Jersey Buff
- Midget White

All are recognized breeds under the American Poultry Association's "Standard of Perfection."

When buying from hobby breeders, producers should gather information on different traits such as feed conversion, body composition, feather color, and behavior. Turkeys with black or dark brown pinfeathers will leave marks on the carcass that may be unappealing to potential customers. Producers should check with the breeder to get a better understanding of what the final carcass will look like, and if it is something that their customers will buy. Furthermore, some varieties may thrive in specific climates. Producers should ask about these differences to find the bird that will work best for them.

Poults are often more expensive than chickens from a hatchery. Broiler chicks may cost $1 to $3 each, whereas poults will generally run $6 to $10. Producers should be prepared to pay more upfront and build this cost into their final pricing.

Brooding

Brooding is a critical step in setting up a flock for a healthy, productive life cycle. Conditions in the brooder can have negative effects that will impact the flock for the rest of the birds' lives or can result in unnecessary losses. The brooding period is a time when poults are most susceptible to disease and unfavorable conditions. Before the flock arrives, the brooding area should be cleaned and disinfected. If certified organic, check to make sure that any sanitizer used is approved under

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USDA organic regulations. The area should be round, or at least have rounded corners. Stock water tanks or tubs are adequate for small flocks in terms of space. When planning a brooder, plan for each poult to have at least 1 to 1.5 square feet of space (Hulet et al., 2004).

The brooder should be secure and prevent the entry of pests and predators. Rats, snakes, and small mammals such as opossums or raccoons have been known to kill and eat poults in the brooder. Rats can be a very troublesome vector of disease, spreading it through any vulnerable feed and water sources. Attaching hardware cloth or chicken wire over the top of the brooder and around the perimeter can prevent entrance by many would-be predators.

A typical poultry-brooder arrangement. Photo: NCAT

Temperature

A brooder should be set up 48 hours before a flock arrives. This will allow the producer to ensure that the conditions are correct for the birds and will be able to remain stable for the duration the flock stays in the brooder. Any unexpected drops in temperature or sudden changes can have detrimental effects on the health and welfare of developing poults. Setting up a brooder before a flock arrives makes it possible to monitor the ambient temperature and make adjustments.

For the first 10 days of their lives, poults are unable to regulate their own body temperature properly (Hulet et al., 2004). In order to stay warm, the poults must have access to a main heat source. Examples include electric or gas hovers, heat lamps, or ceramic space heaters. At day one in the brooder, the temperature should be between 90 and 95°F. For each following day that the birds are in the brooder, the range should be dropped one degree. For example, at day two, the temperature range should be 89 to 94°F, at day three it should be 88 to 93°F, and so on. This should be continued until the range matches the ambient temperature outside of the brooder. At this point, the birds will be able to regulate their body temperature more effectively.

The flock will often communicate their comfort level in the brooder through spacing and general behavior. If the temperature is too warm in the brooder, the birds will be spread apart, as far away from the heat source as possible. If too cold, the poults will be clustered together very tightly, usually near or under a heat source. If there is a draft in the brooder, poults will avoid the area of airflow and pile together against walls or under the heat source. When temperatures reach extremes (either hot or cold) poults have a tendency to pile on top of one another in the corners of the brooder. If you use a brooder guard that has rounded corners or secure cardboard inserts in the corners, the flock is less likely to pile up.

Bedding

Like all poultry, turkeys require a bedding material that is absorbent, comfortable, and of appropriate size. Wood shavings work best, but other acceptable materials include peanut hulls, corn cobs, and peat moss. However, wood shavings need to be larger than sawdust to prevent accidental ingestion. When laying down bedding, be sure to remove any large or sharp pieces that may injure the birds as they walk or sit on the floor.

For the first few weeks of brooding, poults need solid ground to walk on to aid in leg development. At this critical juncture, the flock is susceptible to leg deformities due to shifting bedding material. To help reduce the chance of developing leg problems, a layer of burlap or paper towels can be put down over the shavings. This allows the birds to get more traction as they move around the brooder, helping their legs to develop normally. After a week, the extra layer may be removed to expose fresh bedding. As the litter becomes soiled with manure, fresh material may be added on top, or the litter may be turned to move fresh material to the top. Wet litter will often lead to a buildup of ammonia, which can be harmful to a flock. Different bedding materials absorb moisture at different rates, so each material must be

managed differently. Peanut hulls, for example, absorb less moisture than wood shavings and compact quicker. This can lead to wet pockets and anaerobic zones in the bedding, which can proliferate pathogens and disease. Ventilation is key in removing odors, keeping litter dry, and preventing respiratory stress. Litter should be changed routinely between flocks to prevent the spread of disease.

Feed and Water

When the flock arrives, the birds should have immediate access to cool, clean water and feed. When placing poults in the brooder, show them where the water source is by dipping their beaks (if using a tray or bell waterer), or press their beak against the waterer and set them down (if using a nipple waterer). Poults will watch one another and quickly learn how to access water. If using a bell waterer, it's important that the tray line up with the average poult's back so that the bird is comfortable while drinking. If using a nipple waterer, it should be just over the poult's head so that the bird doesn't have to lean down or jump to drink. Water should be provided constantly and never allowed to run out. When there is no water source, it can put considerable stress on a flock. Waterers should be free of any microbial growth and should be scrubbed weekly, if not daily, and must be disinfected before being returned to the brooder.

Plenty of feed should be provided during the brooding stage, as the flock will need enough to start developing. Many producers use pie tins or shallow pans to introduce feed to the flock. Since this will allow poults to walk on top of the feed, the system may need to be changed if there is a buildup of manure. Crumbled feed works best as a ration at this stage. More information on nutritional needs can be found in the nutrition section of this publication. Some producers will put grass clippings in the brooder in order to get the flock acquainted with pasture.

Shade can be provided by constructing a makeshift structure out of shade cloth and two-by-fours. Photo: Kevin Ellis, NCAT

The flock's general behavior should be monitored for the first day. Within a few hours, the poults should be drinking and eating normally or sitting beneath the heat source. Poults should not be crowded into the brooder. They should have enough space to move around to eat, drink, sit, or sleep. Turkeys will start to roost at about two weeks of age. At this point, start providing roosts for the birds to sit on. Roosts should be built to provide roughly six inches of space per poult, at six inches above the floor (American Livestock Breeds Conservancy, 2007). Materials used for roosts should have rounded edges and be a comfortable place for the bird to spend time. The flock should receive at least 14 hours of light daily. This will allow them to eat enough in order to grow (American Livestock Breeds Conservancy, 2007). After four to six weeks, the flock will be ready to transition to pasture.

Pasturing

At this point, some producers will move the entire flock out to a range house where the birds will spend the grow-out phase. Others will simply open a door to outdoor paddocks to let the birds explore on their own. Many birds will not leave the confines of the brooder easily and may need incentives to explore the pasture area. Feed and waterers can be placed in the pasture, away from the house, in order to get the flock to leave the confines of a coop or brooder. Feed and water should be placed under a shade structure, such as a mobile frame with a shade cloth roof.

When moving a flock, special care must be taken to reduce stress. Water and feed should be provided as soon as the birds reach the pasture or range coop. It is best to capture and move a flock while they are sleeping at night or early in the morning to limit stress that comes with catching each bird.

Turkeys can be kept in mobile, secured coops or in day-range systems where they are allowed to roam the pasture during the day, and then return

to roost at night. Each of these systems has advantages and disadvantages that should be considered when designing a range coop.

Day-Range Systems

Day-range systems feature a house or shade structure in the middle of a paddock that is surrounded by mobile or fixed fencing. Electric net fencing is popular among producers because it is easily staked into the ground but can be moved and reorganized easily. Fencing of this type can be charged using a solar-powered charger. The fence is used to keep smaller predators away from the house. Larger predators such as coyotes may be able to jump over the fence easily. However, the fence can serve only as a general border for the flock. If an area is depleted of forages, several birds may find their way over the fence to try and find fresh forages. Electric net fencing 48 inches tall is available and is an appropriate size for containing turkeys. Electric net fencing will usually cost near $200 for approximately 150 feet of fence (without a charger).

Some producers use a fixed house with fixed fencing for a day-range system. This system utilizes a stationary house with several rotating paddocks. Turkeys are only allowed access to one paddock at a time. As pasture in a paddock is depleted, the flock is then allowed access to a new paddock and the original one is closed off. Fenced runs in this system can be completely enclosed using chicken wire or mesh over the top to prevent escape or predator attacks.

Due to their lower body weight, heritage breed turkeys are able to fly, unlike conventional commercial birds. Turkeys prefer to have a place to roost at night and will leave to find a tree if it is not provided for them. Although not all turkeys will leave the confines of a day-range system, some will if their surroundings lack fresh food, pasture access, or roosts at night. Turkeys may also fly off in the case of a traumatic event such as a predator attack. To reduce the likelihood of a turkey escaping a paddock, plenty of fresh feed, clean water, shade, and roost space should be made available at all times.

Some turkeys will make a habit of flying over a fence. If favorable conditions have been provided, but the problem still persists, trimming wings maybe an option. When done correctly, clipping wing feathers is a painless procedure can keep turkeys from flying. To trim the wing feathers properly, hold the turkey securely and slowly expand one wing. Using scissors or shears, gently cut the secondaries one at a time, starting from the feathers closest to the body and moving toward the tip of the wing. The longest 10 feathers, known as the primaries, should be left intact. The feathers that are cut should not be cut shorter than the overlapping feathers, known as the coverts. Producers looking to become certified organic should check with their certifying agency to make sure clipping is allowed.

Electric net fencing is used to change the pasture area that a flock can inhabit. Photo: NCAT

In day-range systems, turkeys should have access to fresh feed and water at all times. Feed and water should be provided in the house and refilled daily. In addition to feeders in the main range house, "range feeders" or troughs may be placed away from the house to lure turkeys out onto pasture. Shade should be provided over feeders placed away from the main range house to keep turkeys cool and give them a sense of security from predators.

Mobile Housing

To combat problems with escaping members of a flock and predators, mobile, enclosed houses have become a popular method of raising turkeys on pasture. Flocks are often broken up into smaller groups and placed in field pens that provide access to the pasture area under the house. Mobile housing should be designed to ensure that the flock has protection from rain or inclement weather. Tarps or tin are often used as roof materials to provide

the flock with shade and cover from rain. Sides may be left open to ventilate the pen properly and provide the flock with fresh air by creating a "wind tunnel" effect. Multiple mobile pens can be grouped together in a line, and then moved in the same direction across the pasture. Pens should not follow one another, and they should allow for the turkeys inside to have access to fresh pasture daily.

Mobile houses should provide adequate feed and water access to the birds inside. Plastic hanging feeders are commonly hung from the ceiling of the pen to avoid the need to pick them up while moving the pen. Feeder height should be adjusted as the turkeys grow, to ensure that they are able to eat comfortably. The lip of the feeder should be even with the birds' backs. Hoppers, tray, or trough feeders should be filled daily with only the amount the flock needs to consume over the course of a day. Any more can result in unnecessary waste. Automatic waterers, including nipple-type drinkers and bell waterers, can also be hung in the pen.

Providing water can be a challenge in a range poultry system. Bell waterers that need to be cleaned and refilled daily can add substantial amounts of time to daily chores. Some producers have developed automatic watering systems in which a hose connected to a water tank or well supplies a mobile house. Gravity or a pump is then used to provide the house with water. A system such as this can be connected to a line of mobile houses; however, a pump would become necessary to provide the entire line with water. Water lines should be checked daily to ensure that there are no leaks or unnecessary spillage.

Hooped houses allow for pasture access, security, and proper ventilation while providing pasture access. Photo: NCAT

Space Requirements

Because turkeys forage at a faster rate and will cover more ground, they will often require more acreage than broilers. Soil type, climate, forage type, and availability will all play key roles in determining stocking density. It is recommended that a producer start with smaller flocks (averaging 200 birds per acre) and then slowly increase with subsequent flocks while noting any major changes in overall health of the flock, native plants, and soil, and then make necessary adjustments.

As the turkeys forage in the pasture area given to them in a mobile house, they will often scratch and defecate, leaving the ground bare and caked with manure. Turkey manure is high in nitrogen, which can help in restoring fertility. However, if allowed to build up, it can create conditions that are often "too hot" for pasture regrowth. It is recommended that mobile houses be moved before the ground is fully exposed to avoid creating "hot spots" or a buildup of nutrients. As they grow older, the rate at which turkeys will forage increases, so pens should be moved more frequently. When moving turkeys, standing water or muddy areas should be avoided, as they can be a potential source of pathogens. Depending on their size and the stocking rate, turkeys in range coops may need to be moved more than once per day. In a range coop, turkeys should have three to four square feet of space per bird, and the coop should be tall enough for the birds to be able to stand upright.

Turkeys on pasture should also have access to perches. These can be within the mobile house or in a separate structure moved along with the day-range house. Perches should be easily accessible and built to hold turkeys weighing up to 25 pounds each. Turkeys should have 15 inches of roost space per bird and perches should have two feet of space between each bar (American Livestock Breeds Conservancy, 2007).

Nutrition

Although turkeys are excellent foragers, they cannot survive on insects and native plants alone.

Turkeys that are provided a correctly formulated feed ration will reach market weight quicker than those fed a diet that is lacking in key nutrients. As a turkey grows, its nutritional requirements will shift. This should be included in planning, whether purchasing feed or mixing on-farm.

Turkeys require much higher levels of protein in their diet than broilers or laying hens. A feeding program should start with a very-high-protein feed while the flock develops in the brooder and then transition to a lower percentage as they mature. A starter feed should be fed up to eight weeks and contain 28% protein. After the initial eight weeks, the protein content can be decreased steadily as the birds enter the "grow out" phase. From 8 to 16 weeks of age, turkeys should be fed a 20% protein diet (Mercia, 1981). For a "finishing" diet, the ration fed up until slaughter, the flock should be provided a ration with at least 16% protein from 16 weeks of age until the time they are processed (Hulet et al., 2004). Protein sources can include fish meal, soybean meal, and peanut meal.

Some producers may feed cracked or whole grains that they may have available on-farm. Cereal grains used in turkey rations include corn, wheat, barley, rye, milo, sorghum, and millet (Heuser, 2003). Alfalfa meal can also be used when feeding turkeys and can constitute up to 35% of the total ration (Alder, 1946). Alfalfa is high in Vitamin A, of which turkeys need more in comparison to chickens (Heuser, 2003). Studies have shown that different grains used on-farm can have effects on meat quality. For example, corn-fed turkeys have been found to have a slight increase in tenderness (North, 1943). Vitamin and mineral premixes can also be added in to prevent deficiencies and developmental problems. Vitamin D is especially important for turkeys. Vitamin D deficiency can result in leg deformities or rickets in the brooder (Heuser, 2003).

Before turkeys can fully digest feed, it will need to be ground to a digestible size. Like all poultry, turkeys possess a gizzard, which is used to macerate feed before it is moved to the stomach. Grit is a rough material such as oyster shell that poultry will consume and then hold in their gizzard in order to grind their food to a digestible size. Grit should be offered free-choice to a flock in a separate trough from feed, where turkeys will consume as needed. In pastured systems, turkeys may consume small stones or grit naturally, but supplemental grit should still be provided to ensure that they have enough for digestion. When feeding a mixed ration that has not been milled, it is especially important to provide grit, as feedstuffs will be coarser and require grit in order to be fully digested.

Temperature Effects on Feed Consumption

Feed consumption will vary due to environmental factors such as temperature. When it is hot, the flock will eat less feed, leading to a reduction in weight gain. When it's cold, turkeys will eat more to keep warm, often reducing the overall feed efficiency of the flock (National Research Council (US) Subcommittee on Environmental Stress, 1981). Producers should keep this in mind when providing a ration to a flock. Some producers will increase protein and vitamins in feed during periods of high temperature because the flock will eat less feed then, but the birds still require a balanced diet. Conversely, during cold temperatures, some producers will increase carbohydrates and decrease protein, to provide more of a holding ration, when less protein is needed in the flock's diet.

Feed can come as a mash, pellet, crumble, or grains, and nutrients can be fed through free choice. Poults should be provided crumbles, as the small particle size is appealing to smaller birds. As the flock grows older, pellets can be used. Pelleted feed results in the least amount of waste from spillage out of the feeder. Some nutrition is lost during the pelletization/crumble process. Freshly cracked (30 days or less) grain mash is the most nutritious form of feed. After 30 days, grains begin to degrade and slowly lose nutritional value and vitamins. Producers must weigh the different options and choose which form of feed is best for their production systems. Feed should be stored in containers that will reduce the chance of spillage or infestation by pests and provide protection from air and water.

Over the course of 20 weeks, toms will consume approximately 100 pounds of feed each, while hens will consume approximately 64 pounds (Hulet et al., 2004). Producers will need to estimate for more than this amount when purchasing feed for each flock, in order to make sure that the flock will have feed over the entire grow-out period.

Turkeys require much higher levels of protein in their diet than broilers or laying hens. A feeding program should start with a very-high-protein feed while the flock develops in the brooder and then transition to a lower percentage as they mature.

Turkeys are known to be excellent and aggressive foragers and will be able to supplement a feed ration with native plants or insects. During the day, they will actively consume insects, seeds, and plants in the area provided to them. Turkeys tend to prefer pasture with plenty of diversity and lots of legumes, but will eat almost anything that they can find, often in competition with other members of the flock. For more information on pastured turkey nutrition, see the ATTRA publication *Pastured Poultry Nutrition and Forages.*

Organic regulations also dictate what may or may not be fed to a flock. Feedstuffs must be certified organic to be fed to a flock that will sell as certified organic. Furthermore, all antibiotics are banned for use in organic livestock rations. Many feeds that are premixed and sold in 50-pound bags are medicated. Synthetic feed additives are also prohibited in organic production, with some exceptions. For instance, the use of synthetic methionine is limited to no more than three pounds per ton of feed. Methionine is an essential amino acid in poultry growth and development. Methionine is often provided through fishmeal once the limit per ton for synthetic methionine is reached. Producers should check with their certifying agencies to make sure all rations fed to turkey flocks adhere to organic regulations.

Predator Control

As with all poultry in a pasture-based system, turkeys are susceptible to predation. Most predators will view a flock as an easy target if it is not properly guarded. Common predators of poultry include coyotes, weasels, skunks, opossum, raccoons, snakes, rodents, hawks, eagles, and owls.

Livestock guardian dogs can help protect a flock from many predators, including coyotes, skunks, raccoons, and opossums. Photo: NCAT

Domestic animals such as cats and dogs can also be of concern. Dogs, especially strays, will chase a flock and become more excited as the flock tries to escape, often killing many in the process.

The first line of defense in protecting a flock from predation is secure housing. Doors should have latches that cannot be shaken open easily. Siding should allow for airflow and ventilation, but should not have gaps large enough for a predator to enter or reach through. Chicken wire can be installed in offset layers to reduce the opening size, or hardware cloth can be used. The material must be strong enough to prevent stretching. If using a mobile range house, the pen should be properly staked down to prevent predators from burrowing under or lifting up the pen. Pieces of rebar fashioned into "U" shapes can be put over corners to help secure the pen to the ground.

Domestic animals used as livestock guardians are a popular choice among pastured poultry producers. Dog breeds such as Great Pyrenees or Anatolian Shepherds have been bred to be around various species of livestock and protect them from predators such as coyotes. Guardian dogs should be introduced to livestock early in life and monitored as they are trained to ensure that they do not chase the flock out of boredom or hunger. Puppies should be bonded to livestock in controlled environments such as smaller paddocks or holding pens. Guardian dogs tend to roam, and the majority of injuries and losses happen as they venture beyond a property. As a dog is introduced to a farm, it should be taught to respect the boundary fence (Redden et al., 2015). Goats and donkeys are also compatible with turkey flocks as guardian animals. Producers need to factor feed, equipment, and veterinary costs for the guardian animal into the overall costs of production for the entire flock. Livestock guardians are especially important in day-range systems that only utilize a shade structure for water and roosting at night. Predators can often be deterred if they feel that they are encroaching on a larger or unknown predator's territory. Devices are available that are meant to mimic light reflecting off of a nocturnal predator's eyes. This will scare away some predators, but if the pattern of use is not randomized, predators may adjust and learn to disregard these devices. Scents can also be deployed to ward off predatory animals. However, scents will wear off quickly and must be reapplied. Pie pans, streamers, CDs, or other reflective materials can be

hung on or around the range coop to ward off nocturnal predators. Light reflecting off of these materials will disorient predators such as owls and will help keep them away from the flock.

Processing

Transportation

When transporting turkeys to the processing plant, special care must be taken to reduce stress as much as possible. The birds must be handled in a way that reduces the chance for bruises or broken wings. Capture and crating should start early in the morning, before sunrise, to reduce stress on the flock. This will also make the process easier. Feed and water must be removed from the turkeys' pen to ensure they arrive at the processing plant with a clean gut. The withdrawal reduces the chances of cross-contamination later in slaughter. In order to have a clean, but strong, intestinal tract, there are two windows for feed removal; eight to 12 hours off of feed or 18 to 24 hours after feed removal (Savage, 1998). This includes the time it takes to transport to the facility and the wait time before the process begins. Water should be removed two hours after feed has been withdrawn to ensure that the gut is cleared out by the time the birds reach the processing plant (Savage, 1998).

A processing plant should be no more than three hours away from the farm. After this point, losses begin to occur more frequently. Turkeys should be transported in a way that allows them to be comfortable and free from unnecessary stress. Plastic or metal transport coops can be stacked on a flatbed trailer and pulled behind a vehicle. Special planning and consideration should be taken to make sure that air can flow through all of the coops and reach birds in the middle of the trailer. Turkeys can also be transported in livestock trailers. A layer of bedding material such as pine shavings should be put down first to avoid leg injuries and keep the birds clean. Turkeys should be separated into groups of toms and hens when they are loaded into coops to prevent stress or fighting (American Livestock Breeds Conservancy, 2007). Contact the manufacturer of the crates to find out how many toms or hens are recommended for loading into each crate. Rain and thunderstorms should be avoided during transportation, but a tarp can be used to cover the trailer and keep the turkeys dry in the case of sudden storms.

Flatbed trailers with plastic coops can be used to transport turkeys to the processing plant. Photo: Kevin Ellis, NCAT

Equipment Requirements

Processing turkeys is done in much the same fashion as it is for broilers. However, the larger body size and weight of turkeys brings with it some extra considerations. For instance when planning how many birds will fit in a scalder, plucker, ice bath, or cooler, the larger size of the birds should be taken into consideration. In most cases, equipment can only handle half as many turkeys as it can chickens. For example, a scalder that can hold six to eight chickens at a time will only be able to scald three to four turkeys at a time. Producers should plan their volumes and workflows accordingly. For more information on the process of slaughter, see the ATTRA publication *Small-Scale Poultry Processing*. If available, processing facilities that offer their services or use of equipment may be best suited to handling large birds.

Regulations

Processing regulations greatly impact how or where meat can be sold. Finding a processor with inspection capabilities can open new markets. Poultry meat inspection is handled by the USDA on a national level, and by various state agencies at the local level. There are also some exemptions that will allow producers to sell on a smaller scale.

USDA Inspection

Turkeys processed in facilities with a USDA inspector on site may be sold anywhere. This includes across state lines, over the Internet, to stores or institutions, and through direct-to-consumer

markets. Obtaining USDA inspection may add to the cost of inspection, but the addition of several markets can help make up for the extra cost to the producer. However, USDA-inspected processing plants, especially those that will handle turkeys, are very rare.

State Inspection

All states provide meat inspection services through their department of agriculture or public health. Depending on the state, a representative will inspect the facility annually or inspect each turkey as it is slaughtered. Packaging will then be stamped with an official logo indicating that the final product meets the correct food safety and sanitary requirements needed in order to enter commerce. However, products bearing this mark may only be sold within the state in which they were produced. Processing regulations may differ from state to state, which is why, in most cases, products that are state-inspected cannot be sold across state lines.

Some states require that the facilities in which poultry are processed must be inspected to ensure that they meet sanitary guidelines. This may require an annual inspection, certification, and fee. Producers should check with their state and local departments of agriculture or public health to learn more about what is required before processing turkeys.

Exemptions

The Food Safety Inspection Service allows for the following exemption from inspection: producers may process up to 1,000 of their own birds per calendar year under the "Producer/Grower 1,000 Bird Limit Exemption." In order to claim this exemption and sell poultry direct to consumers from their farms, producers must ensure sanitary procedures during processing, not buy or sell poultry products from another producer, keep necessary records, and not sell meat outside of the state in which it originated (USDA-FSIS, 2006).

For larger farms, there is another available exemption known as the "Producer/Grower 20,000 Bird Limit Exemption." This exemption allows a producer to slaughter up to 20,000 of his or her own birds per calendar year. If using this exemption, no other exemption for poultry products can be claimed, and birds may only be sold or distributed in the state in which they were produced. In addition to sanitary and record keeping rules similar to the Producer/Grower 1,000 Bird Limit Exemption, the equipment or facility used for processing cannot be used on flocks from other farms. Finally, in order to utilize the Producer/Grower 20,000 Bird Limit Exemption, poultry labels must include the farm's name, address, and the statement "Exempt P.L. 90-492" (USDA-FSIS, 2006).

Additionally, state public health or agriculture departments may have their own rules when it comes to processing exemptions. Producers should check with the appropriate state agencies when planning for turkey processing.

Interstate Cooperative Shipment Program

Even though most state-inspected meat products cannot be exported or sold across state lines, the Food Safety Inspection Service (FSIS) allows interstate commerce for states and processing facilities that meet specific criteria. The Interstate Cooperative Shipment Program recognizes processing plants with inspection standards that are "at least equal to" those of USDA inspection. States that currently meet this standard of inspection with their own regulations include Alabama, Arizona, Delaware, Georgia, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Minnesota, Mississippi, Missouri, Montana, North Carolina, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Texas, Utah, Vermont, Virginia, West Virginia, Wisconsin, and Wyoming (USDA-Food Safety Inspection Service, 2016). Under this program, meat can be sold to states that share a direct border with the state in which processing and inspection occurred. As of the time of publishing, states participating in the program include Indiana, North Dakota, Ohio, and Wisconsin (USDA-FSIS, 2016).

Packed and frozen turkey in a twist tie bag for sale at a farmers market. Photo: Kevin Ellis, NCAT

Marketing

Unlike broilers, turkeys require a lengthy time investment from brooding to processing. With this comes higher production and opportunity costs. Due to the longer grow-out time, the resulting meat is often priced higher than pastured chicken and substantially higher than conventional turkey. This may prevent many people from buying a bird in a relatively short window of time before major holidays. Turkeys are much larger than other poultry and will come with a much higher final price. All of the costs of production, including poults, equipment, feed, and labor should be factored into the final price. Because Broad Breasted White turkeys reach a marketable weight more quickly, they may be priced lower when compared to heritage breeds. To prevent "sticker shock," many farmers have come up with strategies to help spread the cost over a longer period of time.

Sign-Up

Because turkeys require much more in up-front costs, some farmers will do a preliminary survey to gauge the interest of their customers. In early summer, they will ask regular customers if they would be interested in buying a turkey near the holidays. They may also put together a sign-up sheet at this point. If turkeys are being produced to be sold around the holiday season (November and December), this survey and sign-up sheet should start in the late spring or early summer to build interest. A sign-up sheet will give the producer an idea of how many turkey poults they should buy. When buying poults to meet a stated demand, always purchase extras. Producers should plan for a 15 to 25% mortality rate initially and then adjust after more experience (American Livestock Breeds Conservancy, 2007). In the case of unexpected losses, having extra birds will give the producer more flexibility to meet an order. This will also give the producer a chance to sell extra birds to customers who may have missed the sign-up deadline or further process the extra meat into different products such as ground turkey, lunch meats, or drumsticks.

Deposit

When a customer signs up to purchase a turkey, producers will often require a deposit. This deposit is often 25 to 50% of the final price of the dressed turkey. The deposit will help pay for some of the upfront costs, such as poults and feed. This will also encourage customers to keep their promises to pay for and pick up the meat at the end of the season. Some farmers will provide updates to their customers as to how the turkeys are growing. Producers will usually refund the deposit in the event of a catastrophic loss of flock.

Instead of charging a large, up-front deposit, some producers have implemented a monthly schedule for payment. This month-to-month membership starts before the grow-out phase. The customer signs up and provides 5 to 15% of the final cost of the turkey up front. For each following week or month they then pay a small additional fee that goes toward the final cost of the turkey. At the end of the season, after processing, the customer may pick up the turkey without having to pay any other fee. This allows the customer to break up the payments into easier installments, and it gives the producer more cash flow to work with during the grow-out period.

Conclusion

Like other pastured poultry, turkeys can be a profitable enterprise to add to a farm if managed correctly. Special care needs to be taken to work with the larger birds, but they can be excellent foragers, provide extra fertility to fields, and complement a multi-species grazing rotation. Heritage turkey is a highly sought-after meat in local food systems and can provide a niche for some farms to fill. However, producers should be aware of the cost of raising a flock and the problems that can occur due to disease or predation.

Unlike broilers, turkeys require a lengthy time investment from brooding to processing. With this come higher production and opportunity costs. Due to the longer grow-out time, the resulting meat is often priced higher than pastured chicken and substantially higher than conventional turkey.

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Further Resources

Organizations

The Livestock Conservancy
P.O. Box 477, 33 Hillsboro St.
Pittsboro, NC 27312
919-542-5704
www.livestockconservancy.org

This organization promotes the genetic conservation of heritage livestock breeds by providing informational materials and facilitating research into heritage livestock breeds.

American Pastured Poultry Producers Association (APPPA)
P.O. Box 85
Hughesville, PA 17737-0085
888-662-7772
www.apppa.org

APPPA is a membership-based organization that provides education and producer networking opportunities for pastured poultry farmers. APPPA publishes the bi-monthly newsletter Grit.

Websites

Poultry U: Turkey Management
By the University of Minnesota
www.poultryu.umn.edu/publications-resources/turkey-management

A collection of information on turkey production from various extension and education agencies from around the United States and Canada.

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