Raising Standard Turkeys for the Holiday Market

Compiled By
Marjorie Bender
Research & Technical Program Manager
American Livestock Breeds Conservancy

Contributors

Frank R. Reese, Jr.
Good Shepherd Turkey Ranch
Lindsborg, Kansas

William Yockey
Townline Farm Poultry Reserve
Linesville, Pennsylvania

Alex Hitt
Peregrine Farm
Graham, North Carolina

Mike Walters
Walters Hatchery
Stilwell, Oklahoma

Raising Standard Turkeys for the Holiday Market

Table of Contents

Range Rearing Standard Varieties of Turkeys

1. **Beginning: Start small and slow**

   As with any new enterprise it is important to do your homework, and begin with a small pilot project. This will allow you to learn by making mistakes on a small scale that won't hurt you badly, and won't ruin your market. Consider starting with 20 poults the first year to gain experience.

2. **First things First**
   a. **Identify processing plant before obtaining poults**

      Your market will determine the type of processor required. If you are selling in limited quantities to your neighbor you may be able to process the birds yourself. Selling to area restaurants and grocers require the processor to be state inspected, at minimum. If your marketing plans have you selling across state lines, the processor must be federally inspected. The number of independent processing plants has diminished greatly in the past ten years. Locating one that within your reach is critical to your success. Additionally, processors vary in the services they provide. Learn how they package, chill and store the birds. Do they charge to pack the giblets back in the bird? Don't be afraid of great distances if you have a lot of birds. Some processors will provide transportation of the birds from your farm to the plant. Last, but not least, lock in a processing date well in advance. Plan production based on that date.

   b. **Identify feed source before obtaining poults**.

      Is it locally produced? Is it affordable? Will the mill mix a custom ration? What are the minimum purchase requirements? Can you accept bulk or do you need your feed bagged? What do they charge to deliver?

3. **Ordering Poults**
   a. Day-old poults can be acquired from many hatcheries by mail. See hatchery listing in *Heritage Turkeys in North America*
   b. Order poults early! November / December is not too early as these birds are rare and therefore quantities are limited.
   c. Allow a minimum of 6 months to harvest date. That means you should be starting your poults in April or May. Planning for 8 months of growth is not unreasonable.
   d. Plan for a 15 – 25% mortality rate. Adjust purchase quantity accordingly.
   e. Request that the hatchery call you the day your poults are to be shipped to confirm the order and shipment, if possible.
   f. Alert your post office the week you expect your poults to arrive.
      i. Ask that the post office call you as soon as the birds arrive.
      ii. Make arrangements to pick up the poults ASAP.
   g. Prepare to receive the poults
      i. Make or clean and prepare a brooder. Clean/disinfect previously used brooder with a 10% bleach solution.
      ii. Obtain or clean/disinfect and set-up waterers and feeders
      iii. Obtain feed. Purchase in 2 week quantities. Larger supplies may go rancid or become bug infested in warm summer weather.

h. The table below gives a brief description of the turkeys currently on the ALBC Conservation Priority List. Most available strains of standard turkeys will result in young toms that reach 18 – 20 pounds live weight; and young hens at 12 – 14 pounds, Most strains of standard turkeys have not recently been selected for uniformity so expect a range of final live weights. Dressed weight is approximately 75% of live weight. More information about individual breeds is available on the ALBC website, in *Birds of a Feather* (see Resources), and as breed profiles provided on request.

Turkey Breed	***Young Tom Weight***	***Young Hen Weight***	***Plumage***	***Status***
Beltsville White	17 pounds	10 pounds	White	Critical
Black	23 pounds	14 pounds	Black	Critical
Bourbon Red	23 pounds	14 pounds	White and red	Watch
Standard Bronze	25 pounds	16 pounds	Copper bronze, brown/black	Critical
Jersey Buff	21 pounds	12 pounds	Reddish-buff and white	Critical
Narragansett	23 Pounds	14 pounds	Black, gray, tan, white	Critical
Royal Palm	16 pounds	10 pounds	White with black edging	Rare
Slate	23 pounds	14 pounds	Ashy blue	Critical
White Holland	25 pounds	16 pounds	White	Critical
White Midget	13.8 pounds	8.2 pounds	White	Critical

4. Brooding

a. Introducing food & water
   i. Add 3 tablespoons of sugar per quart of water for the first 2-3 days.
   ii. Dip beaks in water.
   iii. Show them the feed

b. Types, size, height of feeders & waterers
   i. Use small shallow waterers and small, open, shallow feed pans that the poults can climb into.
   ii. As the poults age, raise feeders and waterers to the be level with their backs.

c. Types of brooders / batteries
   i. Purchase brooder equipment from poultry mail order catalogues like Murray McMurray (800.456.3280, www.mcmurrayhatchery.com), Cutler Supply (810-633-9450, www.cutlersupply.com), Metzer Farms, (800 424-7755, www.metzerfarms.com)
   ii. Make your own brooder. Descriptions of brooders can be found in *Storey's Guide to Raising Turkeys*, and other books on poultry production. Here are a few websites that provide plans and give ideas.
      1. http://www.utm.edu/departments/ed/cece/idea/brood.shtml
      2. http://ianrpubs.unl.edu/poultry/g530.htm (for chickens)

d. Heat / light / drafts
   i. Heat. For small flock, warmth can be provided using a red heat lamp suspended 12-18" above the litter. Temperature under the heat lamp, 2 – 3" above the floor should be 95 – 100^{o}F. White feathered birds seem to prefer slightly warmer temperatures. The brooder is warm enough if the poults are roaming all around and not just snuggled under the lamp or just

scattered to the edges of the brooder. Use one heat lamp per 50 poults. Red bulbs are recommended as they reduce stress and pecking on each other. Raise the height of the lamp a little each week, decreasing the temperature in the brooder by about 5^{o}F each week. Monitor the poults and the weather to find an optimal temperature. The poults will need the heat for only 4-5 weeks. Other heating systems are available and may be more appropriate for your farm and production system.

ii. Ventilation and drafts. Provide ventilation, allowing fresh air to circulate through the brooding area. However, protect the poults from drafts. Reduce drafts by using surrounding the young flock with short walls. Cardboard works nicely for this. Rounded the corners or the enclosure to protect the poults from piling up on, and suffocating one another.

e. Bedding
   i. Use non-slippery bedding to prevent spraddling legs. Some options include old rag rugs, course wood shavings 3 – 4" deep. Do not use fine shavings as birds will eat and get a compacted crop. May cover wood chips with newspaper or paper towel for the first couple of days.

f. Sanitation / Cleanliness
   i. Change water 2 times per day. Clean thoroughly. Add 2 tablespoons cider vinegar per gallon water to inhibit algae growth.
   ii. Clean away soiled and wet litter daily to prevent growth of fungus and bacteria harmful to young birds.

g. Biosecurity
   i. Protect your birds from disease by taking care not to carry disease onto your farm and into your facilities. For detailed suggestions see appendix.

h. Roosts
   i. Provide roosts in the brooder as standard turkeys birds will start to use roosts after 2 weeks.
   ii. Poles or branches about 2 inches in diameter are ideal.
   iii. Allow about 6" of roost per bird,

i. Feed
   i. Standard turkeys require a high protein diet throughout their growth and development. A free choice ration containing 28% protein, in addition to daily access to quality forage is recommended.
   ii. Pre-made feeds and Custom recipes. Purina game bird starter can be used and is readily available. For examples of custom recipes, feed mills, and supplement suppliers see the appendix. *Turkey Management* by Marsden & Martin (out of print) contains a number of recipes that can be used as models and modified based on locally available feed stuffs.

j. Supplements
   i. Supplemental vitamins and minerals are added to feed mixes. These supplements may or may not include medications. Your feed mill may have a regular supplier of supplement mixes. If not, additional sources are listed in the appendix.

k. Protecting from predation.
   i. Make the brooding area rodent and snake proof.

l. Space
    i. Provide ¾- 1 square foot per bird in the brooder. Most social problems are due to too many birds in too small a space.
    ii. Outdoor access may be provided as early as 2-3 weeks. It is good to get them used to going outdoors when they are young, and to introduce them to the electric fences, if these are used. Fresh air, sunshine and activity promotes better health.
m. Developing immunity from natural exposure to pathogens vs. vaccinations
    i. Birds can develop immunity through natural exposure to pathogens or through vaccination. Usually individuals raising turkeys in large numbers choose to vaccinate.
    ii. Cost: ~ $50 for 1000 dose vial + cost of syringes or vaccination gun and needles.
    iii. May wish to vaccinate for bronchitis, New Castle, M.g. (*Mycoplasma gallisepticum*)
n. Brooding time: 6 weeks total
o. Potential problems and their indicators
    i. Check birds 2 x per day, at minimum. Frequently checking your flock enables you to identify and address problems early, and familiarizes you with your flock's normal behavior. Monitor activity, eyes, nostrils, manure, and respiration. Watch for:
        1. Brooder pneumonia
        2. Coccidiosis

5. Transition to pasture

a. Age: Transition to pasture is dependent on the weather and your production system.
    i. At minimum birds should be 6 – 7 weeks old and well feathered to protect from rain and sun. Move the birds early in the day.
    ii. If using sunporches, birds are generally moved to pasture at 10 – 12 weeks of age
b. Sunporches
    i. Sunporches are raised, wire floored, outdoor enclosures. Sunporches keep birds off the ground for a few extra weeks, protecting them from soil borne diseases until their immune systems are more developed. Sunporches may reduce mortalities but are also a significant capital investment. You will need to assess your system needs and capabilities, the size of your market, long term commitment to turkey production, and the economics of your turkey enterprise in your decision whether or not to build sunporches
c. Transitioning to pasture
    i. Move early in the day
    ii. Introduce to water, feed and roosting area
d. Pasture quality
    i. A mixed forage pasture will provide many vitamins and minerals, as well as supplementing the protein and carbohydrates provided in the ration. Include both grasses and legumes.

ii. Don't overgraze
iii. Turkeys won't eat bindweed, musk thistle, Russian thistle, curley dock, plantain.

e. Fencing
   i. Portable electric netting. Keeps predators out and birds in. E.g. Kencove (www.kencove.com, 800-536-2683) makes a 48" high electric poultry netting that is supported with rigid nylon stays every 3 ½' to keep it from sagging. It is very easy to move and set up. Be sure to have a large enough charger to maintain the electrical charge to the fencing. Keep it the area under the fence mowed so you don't short circuit the fence: do it before setting it up – it is easier. To get in and out, simply walk/bend over the fence.
   ii. Permanent fencing. 4 – 6 foot. High tensile electric fencing will help keep larger unwanted predators out.

f. Roosts
   i. In the wild turkeys roost/sleep in trees. Standard turkeys need to roost, as well. Roosts also help in the birds stay clean. Providing roosts where you want the birds to spend the night discourages them from flying out of the fence in search of roosting spots.
   ii. Provide 10-12" of roost length per bird. Use 2-4 inch poles or 2X4's on their side with eased edges, space 24" apart, either flat or slightly angled. You may put chicken wire 6" under the roosts to keep the birds from getting into the droppings.

g. Rate of growth / Feed consumption

Feed Consumption per Bird
Pounds of feed consumed during a two week period

Age in Weeks	Heritage	Broad-Breasted
1-2	.6	.6
3-4	1.75	1.75
5-6	1.9	3.6
7-8	2.84	5.5
9-10	3.54	7.75
11-12	4.32	9.8
13-14	5.48	11.9
15-16	5.68	12.5
17-18	6.65	15
19-20	6.92	15
21-22	7.93	
23-24	8.24	
25-26	8.37	
27-28	8.71	

h. Feed
   i. High quality fresh feed free-choice, through out the day. Turkeys will only forage for 20-30% of their food.

ii. Provide 6 linear inches of feeder per bird. If using trough feeders count both sides (5 foot feeder can serve 20 birds).
iii. Use high protein from start to finish. 28% protein is recommended for standard turkeys
iv. Buy approximately a 2 week supply to prevent loss of nutrient value, and oils becoming rancid.
v. Recipes – see appendix

i. Water
    i. Clean waterers daily and give fresh water. Depending on weather, a 5 gallon waterer will provide adequate daily water for 20-25 birds.

j. Stocking Rate
    i. depends on soil type, quality of forage, age of birds and amount of manure you want deposited.
        1. On sandy soils up to 1000 birds per acre, clay soils up to 300 birds. The poorer the forage and the larger the bird the fewer per acre because they begin to have social problems. The Hitts were working on a theoretical manure deposition rate of 2 tons per acre per year. This works out to about 900 mature standard turkeys or 500 mature Broad-Breasted turkeys per acre if you move them weekly. The amount of manure deposited is basically the same as the feed you put in (see above).
    ii. Clean ground/pasture is essential to flock health, it is best to be on a piece of ground only once a year.

k. Moving from pasture to pasture
    i. Disease management
        1. Generally, it takes 21 days for viruses to die
    ii. Timing, food,
    iii. Move the shelters within the fenced pasture area daily or every other day as a large amount of manure is deposited under the roosts. If you use a moveable coop, move it only 20 feet at a time so the birds will continue to consider it “home”. If you move it more than that you will need to lock the turkeys in to make them stay.

l. Flying
    i. Hens fly more than toms. They can easily clear 6-foot fences.
    ii. If they are happy inside the fence they will stay there - mostly.
    iii. When excited they tend to fly.
    iv. If they get out they will spend all day trying to get back in, from the ground.
    v. Wing clipping
        1. Who to clip – rogues
        2. What to clip – clip the outside wing flight feathers on one wing only. Repeat every 2-4 weeks, when they are young, starting at about 6 weeks of age.
    vi. Place roosts far from fences so they don’t soar over in the morning

m. Provide shelters for weather protection, shade, and nighttime predator protection.
    i. Allow 2 square foot per bird

ii. Mobile model example: 10'X 12' shelters with 2"X 6" base board, 3 hoops of 1" electrical conduit, covered over the top with a white tarp and ends and side wall covered with chicken wire. Roosts inside.

n. Health issues
   i. Pullorum
   ii. Mg (*Mycoplasma gallisepticum*)or Infectious sinusitus
   iii. Ms (*Mycoplasma synoviae)* or Infectious Synovitis
   iv. Typhoid
   v. Paratyphoid
   vi. Histomoniasis or Blackhead
   vii. Avian Influenza
   viii. Coccidiosis
   ix. Fowl Cholera
   x. Fowl Pox
   xi. New Castle Disease
o. Predation protection
   i. Keep fence lines clean, eliminating hiding places
   ii. Use guard animals: donkeys, llamas, guardian dogs
   iii. Confine at night. Put the birds up before dusk using food to bring them in.
p. Biosecurity – see appendix
q. Other potential problems and their indicators

6. Harvesting / Distribution

a. Processing facilities:

Your market will determine the type of processor required. If you are selling in limited quantities to your neighbor you may be able to process the birds yourself. Selling to area restaurants and grocers require the processor to be state inspected, at minimum. If your marketing plans have you selling across state lines, the processor must be federally inspected. The number of independent processing plants has diminished greatly in the past ten years. Locating one that within your reach is critical to your success. Additionally, processors vary in the services they provide. Learn how they package, chill and store the birds. Do they charge to pack the giblets back in the bird? Don't be afraid of great distances if you have a lot of birds. Some processors will provide transportation of the birds from your farm to the plant. Last, but not least, lock in a processing date well in advance. Plan production based on that date.

   i. USDA or Federally inspected – enables the broadest distribution of product. Allows shipment of products across state lines and sales to wholesale buyers, retail outlets, and restaurants.
   ii. State inspected – product can only be distributed within the state in which bird was processed. There may be some restrictions on sales to restaurants or grocers.
   iii. On-farm processing – product can be distributed directly to consumers.

b. Access / Scheduling

i. Contact the processing facility before you have poults. Describe your needs. Confirm that you can get your birds processed before you order poults.
ii. Schedule your processing date at the beginning of the season. If necessary, arrange for locker space if birds will need to be held for any length of time prior to distribution.

c. Regulations
d. Meat handling license. The state of North Carolina requires producers to have a meat handling license if they will be handling the processed birds, i.e. delivering to buyers and consumers. You may need to provide a copy of this license to your processor. Check with your state department of agriculture to learn the rules specific to your state.

7. Marketing

To whom will you be selling? What do they want to buy? How do they want it packaged? Do they want a whole bird or parts. Do they want turkeys that are organically fed? Free range? Certified organic? (You must verify your claim. Organic certification is a multi-year process implemented by local or regional certification agencies.) What are your customers willing to spend: are they aware of the price differential?

a. Identify your market. Who and where are they?
i. Will you be selling retail or wholesale?
ii. What will be required of you to secure the sale?
b. Educate your customers**.** The carcass will look different because of the longer leg and keel. Provide recipes and tips for cooking to assure an excellent outcome and a positive experience.
c. Fresh or Frozen - know the difference (see appendix)
i. FRESH POULTRY:

"In August 1996, before the final rule was to become effective, Congress directed FSIS to revise some definitions contained in the final rule. Congress let stand the USDA definitions for *"fresh"* poultry as any raw product that had never been held at a temperature below 26 degrees F, and "frozen" as any poultry product that has been held at a temperature below 0 degrees F. But Congress directed FSIS to drop the required use of the descriptive terms *"hard chilled"* or *"previously hard chilled"* and prohibited USDA from requiring any specific similar terms for poultry that has been held at a temperature between 0 and 26 degrees F and thus is hard to the touch.

"As a result, FSIS has revised its August 25, 1995 final rule on labeling requirements for raw poultry products to meet new definitions set by Congress. The revised final rule was published in the December 17, 1996, *Federal Register* and becomes effective 12 months after publication. Under the revised final rule, the term *"fresh"* may only be used on raw poultry products whose internal temperature has never fallen below 26 degrees F. To be in compliance with the revised rule, raw poultry products that are labeled as *"fresh"* but have ever had an internal temperature below 26 degrees F will have to have the *"fresh"* designation deleted or removed from labeling on the package. The word *"fresh"* may be deleted by any approved method, including the use of pressure-sensitive stickers.

"Consistent with Congress, the final rule also sets a temperature tolerance for raw poultry products. The temperature of individual packages of raw poultry products labeled *"fresh"* can vary as much as 1 degree below 26 degrees F within inspected establishments or 2 degrees below 26 degrees F in commerce, i.e., outside the inspected establishment."

ii. FROZEN POULTRY: Temperature of raw poultry is 0 °F or below.

(Source: USDA FSIS http://www.fsis.usda.gov/oa/background/freshbkg.htm)

d. Packaging
   i. Bagged
   ii. Vacuum pack
   iii. Cryopack
e. Labeling
   i. Develop labels**,** including your logo, a USDA seal. Consider developing a co-op for purchasing feed, processing, etc., to reduce costs.
   ii. Requirements
   iii. Examples
f. Identify alternative markets**.**
   i. Turkeys are a seasonal premium product. The whole carcass has to be a fine, marketable product, worthy of the Thanksgiving presentation and the premium price.
   ii. For those birds that won't sell in the Thanksgiving market, alternative markets will need to be developed. Selling parts or ground turkey will recapture potential losses. Identify these customers and processors, too.
g. Product evaluation
h. Challenges & pitfalls
i. Product liability
j. Shipping product
   i. How will you get your birds from the processor to their destination? How will you collect the money for each purchase? Do you need to collect sales tax?
k. Follow-through
   i. Regardless of how you sell your turkeys, above all be good to your word. If you can't deliver what you have promised, notify your customers early. Be honest, sincere, and fair. Your reputation – and therefore your livelihood – is at stake.
l. Pricing
   i. Price fairly. In the 2004 season "heritage" standard turkeys appear to be selling at $2.50 - $6.00 per pound depending on the market.
m. Feedback
   i. set up a method of obtaining feedback from your customers so you can learn what they think of the product and how you might enhance produce for the future.

Appendix A: Feed Ration Recipes and other Feed Resources

Feed Mills

- A listing of feed mills has been created by the US Food and Drug Administration's Center for Veterinary Medicine. The document is entitled "Listing of Approved Medicated Feed Mill Licenses" April 13, 2004. It can be obtained by calling 301-827-3800 or can be found at http://www.fda.gov/cvm/index/feedmill/feedmilltoc.htm
- For additional mills not listed, contact your county extension office or your state department of agriculture.

Pennsylvania
Conneautville Farmers Exchange
301 Mulberry Street
Conneautville, PA. 16406-0270

North Carolina
Blount Feeds
Bethel, NC
252-825-4491

Feed Consultants & Supplement Suppliers
Dawe's Laboratories,
3355 North Arlington Heights Rd
Arlington Heights, Illinois 60004

Akey Company
P.O. Box 5002,
Lewisberg, Ohio 45338
800-392-8324

Walters Hatchery Feed

Grower feed 28% protein per 2000lbs.

775.58	Ground corn
701.00	Soybean meal Hi-pro-B
150.00	Wheat Middling
47.00	Dist. Grains (corn)
27.00	Calcium Co3
185.00	Gluten meal 50#
2.00	Chorine Chloride 60%
41.00	Dical Phos 21%
29.00	Fat. C.W.
20.00	M&B Meal-Cert
10.00	Lignin, Dried 2X 50#
5.00	Salt Mixing #50
5.00	Poultry MFG V/TM Fort

Optional but Walters recommends

1.67	Bacitrasin MD 30 G 50
.75	Histostat 50% 50#

Good Shepherd Turkey Ranch

Product Name...TURKEY STARTER I VEG

Today's Date...02-16-2004
Date/Time.....02-16-2004 08:41:09 # 9007

Rounded Amount	Ing Code	Ing Name
885.00	625	SOYBEAN MEAL 47%
877.00	129	CORN 8.5
100.00	484	CORN GLUTEN ML-60
71.00	923	DICAL 21 CA/18.5
27.00	906	CALCIUM CARBONATE
20.00	382	SOYBEAN OIL
8.00	1868	DQ TURKEY STARTER
5.00	999	SALT
4.60	552	LYSINE MONO,98
3.10	547	DL-METHIONINE,98
1.00	914	COPPER SULFATE
2001.70		

Nutrient	Analysis	Units
WEIGHT	1.00	LBS
PROTEIN	27.81	PCT
FAT	3.33	PCT
FIBER	2.51	PCT
CALCIUM	1.40	PCT
PHOS TOTAL	1.07	PCT
PHOS AVAIL	0.80	PCT
IODINE	1.15	PPM
SALT	0.25	PCT
MET. ENERGY	1281.01	CAL/L
METHIONINE	0.64	PCT
METH & CYSTINE	1.07	PCT
LYSINE	1.70	PCT
DRY MATTER	89.32	PCT
SELENIUM	0.12	MG/LB

Product No.....16-320
Product Name...TURKEY STARTER II VEG

Today's Date...02-16-2004
Date/Time.....02-16-2004 09:34:42 # 8999

Rounded Amount	Ing Code	Ing Name
957.00	129	CORN 8.5
865.00	625	SOYBEAN MEAL 47%
66.00	923	DICAL 21 CA/18.5
50.00	484	CORN GLUTEN ML-60
22.00	906	CALCIUM CARBONATE
20.00	382	SOYBEAN OIL
7.50	1888	DQ TURKEY STARTER
6.60	999	SALT
3.30	547	DL-METHIONINE,98
2.10	552	LYSINE,MONO,98
1.00	914	COPPER SULFATE
2000.50		

Nutrient	Analysis	Units
WEIGHT	1.00	LBS
PROTEIN	26.10	PCT
FAT	3.42	PCT
FIBER	2.55	PCT
CALCIUM	1.25	PCT
PHOS TOTAL	1.02	PCT
PHOS AVAIL	0.75	PCT
IODINE	1.08	PPM
SALT	0.33	PCT
MET. ENERGY	1296.45	CAL/L
METHIONINE	0.60	PCT
METH & CYSTINE	1.00	PCT
LYSINE	1.55	PCT
DRY MATTER	89.13	PCT
SELENIUM	0.11	MG/LB

Product Name...TURKEY GROWER I VEG

Today's Date...02-16-2004
Date/Time.....02-16-2004 08:36:01 # 9000

Rounded Amount	Ing Code	Ing Name
994.00	129	CORN 8.5
840.00	625	SOYBEAN MEAL 47%
70.00	382	SOYBEAN OIL
56.00	923	DICAL 21 CA/18.5
23.00	906	CALCIUM CARBONATE
6.60	999	SALT
6.50	1889	DQ TURKEY GF 9610
3.30	547	DL-METHIONINE,98
1.00	914	COPPER SULFATE
2000.40		

~~552 LYSINE MONO,98 8.98~~

Nutrient	Analysis	Units
WEIGHT	1.00	LBS
PROTEIN	24.08	PCT
FAT	5.76	PCT
FIBER	2.53	PCT
CALCIUM	1.16	PCT
PHOS TOTAL	0.91	PCT
PHOS AVAIL	0.65	PCT
IODINE	0.94	PPM
SALT	0.33	PCT
MET. ENERGY	1379.57	CAL/L
METHIONINE	0.55	PCT
METH & CYSTINE	0.92	PCT
LYSINE	1.41	PCT
DRY MATTER	89.22	PCT
SELENIUM	0.14	MG/LB

Product Name...TURKEY GROWER II VEG

Today's Date...02-16-2004
Date/Time.....02-16-2004 08:36:48 # 9001

Rounded Amount	Ing Code	Ing Name
1158.00	129	CORN 8.5
680.00	625	SOYBEAN MEAL 47%
70.00	362	SOYBEAN OIL
50.00	923	DICAL 21 CA/18.5
24.00	906	CALCIUM CARBONATE
6.50	999	SALT
6.50	1889	DQ TURKEY GF 9610
2.90	547	DL-METHIONINE,98
1.20	552	LYSINE MONO,98
1.00	914	COPPER SULFATE
2000.20		

Nutrient	Analysis	Units
WEIGHT	1.00	LBS
PROTEIN	21.05	PCT
FAT	5.99	PCT
FIBER	2.50	PCT
CALCIUM	1.10	PCT
PHOS TOTAL	0.82	PCT
PHOS AVAIL	0.59	PCT
IODINE	0.94	PPM
SALT	0.33	PCT
MET. ENERGY	1418.81	CAL/L
METHIONINE	0.49	PCT
METH & CYSTINE	0.81	PCT
LYSINE	1.23	PCT
DRY MATTER	88.96	PCT
SELENIUM	0.14	MG/LB

Product Name...TURKEY FINISHER I VEG

Today's Date...02-16-2004
Date/Time.....02-16-2004 08:39:08 # 9004

Rounded Amount	Ing Code	Ing Name
1297.00	129	CORN 8.5
545.00	625	SOYBEAN MEAL 47%
70.00	382	SOYBEAN OIL
46.00	923	DICAL 21 CA/18.5
24.00	906	CALCIUM CARBONATE
6.60	999	SALT
6.00	1889	DQ TURKEY GF 9610
3.10	547	DL-METHIONINE,98
1.50	552	LYSINE MONO,98
1.00	914	COPPER SULFATE
2000.20		

Nutrient	Analysis	Units
WEIGHT	1.00	LBS
PROTEIN	18.49	PCT
FAT	6.20	PCT
FIBER	2.46	PCT
CALCIUM	1.04	PCT
PHOS TOTAL	0.76	PCT
PHOS AVAIL	0.54	PCT
IODINE	0.87	PPM
SALT	0.33	PCT
MET. ENERGY	1452.24	CAL/L
METHIONINE	0.46	PCT
METH & CYSTINE	0.75	PCT
LYSINE	1.05	PCT
DRY MATTER	88.73	PCT
SELENIUM	0.13	MG/LB

Product Name...TURKEY FINISHER III VEG

Today's Date...02-16-2004
Date/Time.....02-16-2004 08:40:26 # 9006

Rounded Amount	Ing Code	Ing Name
1520.00	129	CORN 8.5
330.00	625	SOYBEAN MEAL 47%
80.00	382	SOYBEAN OIL
35.00	923	DICAL 21 CA/18.5
22.00	906	CALCIUM CARBONATE
6.60	999	SALT
5.00	1889	DQ TURKEY GF 9610
1.00	547	DL-METHIONINE,98
1.00	914	COPPER SULFATE
2000.60		

~~532 LYSINE-MONO,98 6.95~~

Nutrient	Analysis	Units
WEIGHT	1.00	LBS
PROTEIN	14.25	PCT
FAT	6.99	PCT
FIBER	2.42	PCT
CALCIUM	0.86	PCT
PHOS TOTAL	0.62	PCT
PHOS AVAIL	0.42	PCT
IODINE	0.72	PPM
SALT	0.33	PCT
MET. ENERGY	1527.42	CAL/L
METHIONINE	0.31	PCT
METH & CYSTINE	0.53	PCT
LYSINE	0.69	PCT
DRY MATTER	88.37	PCT
SELENIUM	0.10	MG/LB

Townline Farm Poultry Reserve

SEP-10-2004 12:17 FROM:CONNEAUTVILLEFARMERS 814 587 3716 TO:814 333 2163 P.003/004

CUSTOMER MIX REPORT

Page... 1
Date... 03-28-2003
Time... 7:41 AM

Farm : CFE
Address :

Company : Conneautville Farmers Exchange
Rep : Todd Thompson

Date Created : 08/25/1998
Rep. Phone No. : 587-6177 2145

MIX FORMULA: 1020 Turkey Breeder

INGREDIENTS

Code	Name	AS FED (Lbs) Amount	Scale
10	CORN-GROUND	1137.00	1137
53	SBM 48%	581.00	1718
105	LIME 38%	127.00	1845
40	DISTILLERS	50.00	1895
825	Ratite Premx	50.00	1945
101	BIOFOS	29.00	1974
70	FAT (ANIMAL)	20.00	1994
111	SALT	6.00	2000
	TOTAL	2000.00	2000

NUTRIENT ANALYSIS

No.	Name	Unit	As Fed	Dry Matter
2	Dry Matter	% of Wt	89.50	89.50
9	CP	%	20.40	22.80
12	Sol. CP	% of CP	16.42	16.42
13	Undeg Prot	% of CP	36.82	36.82
6	NEL	Mcal/lb	.75	.84
17	Fat	%	3.68	4.12
22	ADF	%	3.77	4.21
23	NDF	%	8.20	9.16
27	Effect NDF	%	.26	.30
26	NFC	%	46.86	52.36
28	NFC (CALC)	%	48.23	53.89
125	Sugar	%	5.33	5.95
126	Starch	%	34.00	37.99
127	Sol Fiber	%	7.40	8.27
30	Ca	%	2.80	3.13
32	Absorb Ca	%	2.08	2.32
33	P	%	.67	.75
35	Absorb P	%	.47	.53
36	Salt	%	.30	.33
37	Na	%	.14	.15
38	Cl	%	.26	.29
40	Mg	%	.15	.17
39	Potassium	%	.76	.85
41	S	%	.20	.22
42	Elect Bal.	Meq/100g	5.6	6.3

No warranty of results is made. Results can be affected by factors other than brand of feed used or feeding program followed.

Appendix B: Biosecurity

Health Promotion & Bio-security Recommendations for Poultry Conservationists
By Don Schrider, ALBC Communication Director

Avian Influenza has appeared in several flocks this year in Delaware, New Jersey, Pennsylvania and Texas. Other infectious diseases, like Exotic Newcastle Disease, have threatened flocks in previous years. Poultry raisers can protect their valuable flocks by establishing biosecurity procedures and promoting flock health. Here are some suggestions for keeping your poultry healthy and preventing the introduction of disease into your flock.

Health Promotion

1. Observe your flock. Preventing disease starts by noticing a change in the behavior or health of your stock. Signs of ill health may include: watery eyes; nasal discharge; paleness of face, comb and wattles; swelling around eyes; odor; runny or off-colored manure; lack of normal activity; slowness of movement; walking backwards; shivering or hunchiness; irregular shape or color of iris; and loss of appetite and weight.
2. Provide an environment conducive to supporting the health of your poultry. Dust and ammonia from old manure can damage the health of lungs, making your poultry prone to infection. The rule of thumb is if you find the smell offensive or it burns your eyes, or the dust makes you sneeze, then it is past time to clean your facilities.
3. Encourage healthy levels of activity. Exercise is important for muscle tone, good circulation and health, particularly in active breeds. Providing your poultry room to move around, as well as an environment tailored to their needs (i.e. roosts, nest boxes or pools, etc.), will greatly increase their level of activity.
4. Provide adequate quality feed. Proper nutrition can support the health of your poultry and help stave off diseases. A bird that has been poorly fed is under stress and will be more prone to infection. Feed should be fresh, free of molds or fungi, unspoiled, and in sufficient quantities to satisfy the needs of your poultry.
5. Provide clean, fresh water. Water should be changed daily for optimum health, and the containers cleaned weekly or more often if necessary. Allowing a film to form on the water container exposes your poultry to small doses of toxins released from this algae-like material. While this exposure rarely affects healthy stock, individuals whose immune systems are already challenged may be at greater risk of becoming ill. Chicks who drink from water containers with slime buildup, and that have infrequent water changes, show a greater mortality to coccidious.
6. Prevent parasite infestations. Common infestations, like lice, mites, and worms, should be treated before they affect the health of your poultry. Parasites not only make poultry uncomfortable, but they also lower the health by robbing them of blood nutrients – leading to anemia, mal-nutrition and even death.
7. Reduce stress. Stress opens the doors to disease outbreak. While it is true that exposure to unclean environments can help develop an immune system, this type of exposure challenges the immune system at the same time, as do poor feeding habits, lack of fresh water, and lack of exercise. An already challenged immune system is less effective at warding off disease. This is why it is advisable to enhance your husbandry practices during times of disease outbreaks and potential exposure.

8. Vaccinate to help prevent disease. Vaccination is an excellent tool for protecting your flock. Vaccines cause the natural development of antibodies. The American Poultry Association has some excellent advice on which types of vaccines can be used. Visit their site at http://www.ampltya.com/vaccination_guide.htm. As an example, there is some evidence that Newcastle vaccine may provide at least partial immunity to Exotic Newcastle disease. It is always a good idea to vaccinate for diseases that are prevalent in your part of the country.
9. Build the health of your poultry by feeding them more than just the necessities. Supplements can be used to build the health of your poultry. Vitamin-mineral supplements, probiotics, greens such as kale, and even yogurt can be used to build the health of your poultry.

Bio-security Protocols

1. Stop spreading disease to your poultry. Bio-security is often overlooked for the prevention of disease. Use only a designated pair of boots when walking in your pens. Do not allow this pair of boots to be used off of the property. This simple step will greatly lower the possibility of tracking disease in from other flocks. Enhance this by designating a jacket or other clothing to be worn only when tending your stock.
2. Control visitation. Prevent disease introduction from offsite by controlling access to your poultry, especially during times of outbreaks. Visitors should, at the very least, wear boots that have not been worn at other poultry facilities. Disposable plastic covers for boots can be purchased economically from your local dairy supply. The soles of your visitor's boots can be disinfected by using a footbath, a disinfectant mat, or by spraying. Disinfectants can include: Oxine or Textrol administered from a proper misting sprayer, and household disinfectants such as Lysol, and chlorine bleach mixed with water (1 part bleach to 9 parts water).
3. Limit exposure of your flock to potentially infectious animals and infected material. Wild birds and rodents can spread disease. Sparrows and starlings will often make use of available food and water supplies, bringing with them any diseases they may be carrying. Positioning feeders and water containers where they are less likely to be soiled will help prevent direct contact with infected waste. Rodent control can also help prevent the introduction and spread of disease.
4. Quarantine new or returning poultry. Isolation is a good first step in preventing disease spread. Most contagious poultry diseases have an incubation period of less than three weeks. By penning poultry that have been off property away from the main flock for three or more weeks, disease transmission can be reduced and maybe avoided. If you show your poultry, have a separate facility away from the main flock specifically for quarantining returning poultry.
5. Isolate unhealthy poultry. Sick birds should be removed from the flock as soon as signs of disease are noticed. Transmission of disease to the entire flock can sometimes be prevented by isolating sick individual birds. For minor illnesses, recovery can be facilitated by using draft free, warm, quarantine facilities.
6. Handle healthy poultry first, quarantined poultry last. Feed and water sick or quarantined birds last. This will help prevent accidental exposure of possible disease to the rest of your flock.

7. Seek help. State diagnostic laboratories can help identify disease. Most states have diagnostic laboratories associated with their department of agriculture, which can be consulted to help determine the disease present in your flock. Keep in mind they will need a recently deceased or live specimen upon which to perform autopsy. While this may mean the loss of a few individuals, it can be of great benefit in saving the flock.
8. Report outbreaks. Sudden death may be an indicator of a potential problem. Diseases that cause multiple sudden deaths usually require reporting to the proper authorities (such as your Department of Agriculture). Cooperation with authorities may require depopulation of one flock to save many others. This is why rare breeds and bloodlines should be shared amongst many breeders in different geographic locations.
9. Know what to expect. Avian Influenza (AI) tests comes in two basic forms: blood sampling and cloacal swabs. Blood samples are usually the first level of testing, and are used to isolate antibodies. Antibodies are good indicators of exposure to disease, but are not indicators of live virus or transmissibility. Cloacal swabs gather live virus for isolation. This test will reveal actual presence of virus and will usually indicate the strain and pathology as well. In most cases, depopulation decisions should only be made based on actual presence of disease and not antibodies.
10. Do not bring birds from slaughter channels, especially live-bird markets, back to your farm. Auctions are often used to dispose of unwanted stock. Because stock from many locations are moving in and out of auctions, it is hard to know what they have been exposed to. In some cases the stock may have disease or other health problems. For the protection of your poultry, it is advisable to wear non-farm boots and clothes to the auctions, and to clean them thoroughly upon return. Quarantine any stock purchased from an auction for at least three weeks before integrating it with the rest of the flock. During times of disease outbreak it is advised to avoid auctions altogether.

Appendix C: Press Release on ALBC / Virginia Tech Turkey Research

Ground-Breaking Results from Research on Standard Turkeys
By Marjorie Bender, Research & Technical Program Manager
American Livestock Breeds Conservancy

New research confirms that several standard varieties of naturally mating turkeys are more disease resistant than industrial strains. These findings show that standard turkeys, popularly known as "heritage" turkeys, are better suited for range production than their industrial Broad Breasted White counterparts.

What is a Standard Turkey?
The American Poultry Association (APA) has recognized standards for poultry, just as the American Kennel Club has standards for dogs. The APA recognizes eight varieties of turkeys. These varieties are naturally mating, not requiring artificial insemination, have a specific body conformation and feather pattern, and have names like Narragansett, Bronze, Black, Slate, and Bourbon Red. There are other color variations of naturally mating turkeys that have not been standardized.

Nearly extinct
As recently as 1997, standard varieties of turkeys were nearly extinct. A census conducted by the American Livestock Breeds Conservancy found only 1335 breeding birds remained. (Breeding stock produces the next generation, passing their genes on to their offspring.) Once common on the American agricultural landscape, these turkeys had nearly vanished. These colorful, inquisitive, and hardy birds seemed destined to become forgotten relics of the past. Fortunately, their fate has been turned through some powerful partnerships.

The Study
The American Livestock Breeds Conservancy (ALBC), Virginia Polytechnic Institute & State University in Blacksburg (Virginia Tech), and eight breeders and producers of standard turkeys collaborated to compare standard turkey varieties and an industrial strain for immune function and in range-based production systems. The hypothesis:

> Standard varieties of turkeys have superior immuno-competence and perform better in range-based production systems than industrial strains.

Field Trials
The project began with field trials conducted on eight farms situated across the country. Each raised two flocks of thirty birds: a mixed flock of males and females of the standard variety known as the Bourbon Red obtained from Privett Hatchery in Portales, New Mexico, and males only of medium sized industrial line of broad-breasted white turkeys. Birds had daily access to outdoor range, forage, shelter, and roosting locations. The participants collected data on weather, health, feed consumption, morbidity, mortality, weekly weight gain, harvest weight, and dressed weight, behavioral observations and sales.

The farm participants reported some expected results – faster weight gain and improved feed conversion in the industrial line when compared with the Bourbon Red. The broad-breasted

whites attained market weight in an average of 131 days, compared to an average of 185 days for the Bourbon Reds. Correspondingly, the commercial birds consumed an average of 5 pounds of feed per pound of weight gain, while the Bourbon Reds consumed 6.08 pounds. Both flocks dressed out at about 75% of live weight. The average dressed weight of the Bourbon Red hens was 7.4 pounds; Bourbon Red toms 11.3 pounds; and commercial toms 17.5 pounds.

The industrial line, however, experienced greater mortalities from shipping stress, heat, and disease. Mortalities for the industrial line ranged from 13 – 93%, averaging 46%. The Bourbon Red mortality rate ranged from 15 – 31%, averaging 21%. (Loss from predation is not included in these mortality calculations since it can be argued that such a death is not related to a bird's immune response.)

The more active standard turkeys needed slightly different management techniques to keep them in their pastures and closer to home. Lighter weight Bourbon Red hens were well equipped to fly, often escaping the confines of the pens. Both Bourbon Red hens and toms began roosting from an early age, while the industrial toms were not as inclined to roost, if at all. The Bourbon Reds were active foragers, covering the pasture and readily eating offered treats of melon and vegetables. The industrial birds were more sedentary, especially as they got heavier, primarily seeking the feed ration. The industrial birds suffered in the heat, panting and seeking relief in the cool soil in the shade of the barn. While the Bourbon Reds sought shade, they did not exhibit the same degree of discomfort and physical stress from the heat.

Laboratory Evaluation

Dr. Robert Gogal, Jr., a veterinarian, immunotoxicologist at Virginia Tech, conducted a series of laboratory tests to assess immune function on five varieties of standard turkeys (Black, Bourbon Red, Narragansett, Royal Palm and Slate) and an industrial line. Results from laboratory tests confirmed what the farmers witnessed.

Two measures of hematologic function were taken. Packed cell volume measures red blood cells, which carry oxygen to the cells of the body. Total protein measure globulins and albumin, both of which are critical to immune response. In both tests the higher the measure, the healthier the bird. In all instances the standard varieties had higher packed cell volume and total protein, and the industrial line had the lowest.

Two tests of immune response were conducted: non-specific T-cell stimulation and pan-lymphocyte stimulation. In each instance the standard turkeys' immune response was superior to that of the industrial line. Royal Palms performed best, followed by Bourbon Reds, and Slates.

The standard varieties had significantly higher survivability when directly exposed to disease. Royal Palm, Narragansett, Bourbon Red, Slate, and Black turkeys, and a commercial line of turkeys were challenged with Hemorrhagic Enteritis Virus when they were six weeks old. They were then exposed to *E. coli* seven days later. All but two of the industrial strain died the first day after infection with *E. coli*. The remaining two died within three days. In contrast, a majority of the standard turkeys survived past three days of bacterial infection, and lived to the study's termination. None of the Black, Slate or Bourbon Red turkeys died. The Narragansett and Royal

Palm did not perform as well: most of them died during the course of the study. (A paper is being prepared for submission to the journal ***Avian Diseases***.)

Unlike humans, most mammals and birds are able to synthesize ascorbic acid, commonly known as vitamin C. Ascorbic acid has been shown to enhance immune function, modulate gene expression, act as a co-factor in enzymatic reactions, and protect organisms from free radical damage during oxidative stress. An assay measuring endogenous ascorbic acid levels in tissue and plasma samples showed that the Black turkeys had the highest average plasma ascorbic acid concentration overall. Bourbon Reds were a close second, followed by Slates and Royal Palms. The Narragansett turkeys had the lowest average ascorbic acid concentration - approximately half that of the Blacks. (Submission of a manuscript of this work to a poultry nutrition journal is planned for June 2004.)

Virginia Tech's physical evaluation confirmed weight change, with the industrial line being three times heavier than the standard varieties at nine weeks of age. Hatchability of all of the standard varieties was excellent at 75 – 88%. The industrial line was not evaluated since only males were available.

Dr. Ed Smith of the Comparative Genomics Lab, Department of Animal and Poultry Sciences at Virginia Tech, found DNA evidence indicating that the Royal Palm is genetically distinct from the other four varieties analyzed. It is most closely related to the Narragansett. The Bourbon Red, Slate and Black are more closely related to one another.

Conservation justified

Each of these studies is interesting and valuable on its own. As a group, they are stunning. They clearly indicate that the Slate, Black, and Bourbon Red turkeys, by virtue of their genetics, have more vigorous immune systems, making them obvious choices for free range production. The only parameters on which the industrial lines excel are feed conversion and rate of gain.

Standard turkey varieties offer a robust immune system and with it a lower mortality rate, the ability to mate naturally, excellent hatchability, active foraging, increased levels of endogenous vitamin C, intelligence and overall attractiveness.

These are very exciting findings. They demonstrate the value and importance of the genetic resources embodied in standard varieties of turkeys, supporting claims long made by breeders, and justifying turkey conservation.

Turkeys on the rise

Since 1997, standard turkeys are making a comeback. The powerful combination of ALBC's research and census work, the Slow Food USA's Thanksgiving promotion in 2002 and 2003, and an increasing number of breeders, has moved standard turkeys back from the brink of extinction. Pasture-raised standard turkeys are a superb treat worthy of the place of honor on America's Thanksgiving tables.

While still endangered, the future of standard turkeys looks promising. ALBC conducted a census during the winter of 2002-2003. A population of 4275 breeding birds was reported, a

three-fold increase since 1997. Hundreds of people have asked ALBC for more information about how to raise standard turkeys. This increased interest is translating into demand for turkeys that, in turn, supports turkey breeders.

Next steps
ALBC and Virginia Tech will continue their collaboration over the next year, evaluating several additional varieties not included in the initial study. Breeders can select for production attributes in breeding flocks of standard turkeys, but care must be taken to retain their ability to mate naturally and promote the health and hardiness that come with immuno-competence. Thoughtful stewardship of these agricultural treasures by today's breeders will ensure their availability for generations to come.

For more information about the conservation of standard turkeys contact the American Livestock Breeds Conservancy, PO Box 477, Pittsboro, NC 27312 919-542-5704, albc@albc-usa.org, www.albc-usa.org

Note: Special thanks to the farm participants: Gerry Cohn of Snow Camp, North Carolina; Glenn & Linda Drowns of Calamus, Iowa; Harry & Gail Groot of Hiwassee, Virginia; Paula Johnson of Las Cruces, New Mexico; Pam Marshall of Amenia, New York; Frank Reese, Jr., of Lindsborg, Kansas; Heather Bean Ware of New England Heritage Breeds Conservancy in Pittsfield, Massachusetts; and Brad Smith and Dr. Paul Mueller of North Carolina State University, Center for Environmental Farming Systems in Goldsboro, North Carolina. Thanks also to Drs. Phil Sponenberg, William Pierson, and Cal Larsen of Virginia Tech in Blacksburg and to Lance Gegner of ATTRA in Fayetteville, Arkansas for their participation and support.

Established in 1977, The American Livestock Breeds Conservancy is a national, non-profit, membership organization based in Pittsboro, North Carolina, dedicated to the conservation and promotion of endangered breeds of livestock and poultry. ALBC's conservation efforts include research on breed status and characteristics; developing breed specific strategies for conservation; maintaining a gene bank of rare breeds; strengthening the stewardship skills of breeders through various educational venues; and educating the public through workshops, conferences and publications. ALBC is the only organization in the United States that does this important work.

If you are not already a member, but would like to help save rare, endangered breeds of livestock and poultry, consider joining! Membership is only $30. To become a member, for information about breed conservation, or to contribute to ALBC's efforts, contact us at: PO Box 477, Pittsboro, NC 27312, (919) 542-5704 or on the web at www.albc-usa.org.

Appendix D: What is Fresh? USDA's Definition

Food Safety and Inspection Service
United States Department of Agriculture
Washington, D.C. 20250-3700

Food Safety

Features October

1999

The Poultry Label Says "Fresh"

"/ am shopping for a fresh turkey because I do not want the hassle of defrosting a frozen one. When should I buy it and how do I know if it is fresh? What does 'fresh' on the label really mean?"

Prior to 1997, poultry could be sold as "fresh" even if it was frozen "as solid as a block of ice". However, consumer concerns about "rock" frozen poultry being sold as "fresh" led USDA to reconsider the term "fresh" as it applies to raw whole poultry and cuts of poultry. Furthermore, national press coverage and testimonies at public hearings indicated strong interest in the term "fresh" being re-defined,

After lengthy hearings, surveys and reviews of science-based information, USDA published a new "fresh labeling rule that went into effect in December 1997. Today the definition of "fresh" is intended to meet the expectations of consumers buying poultry. Below are questions and answers about the new "fresh" labeling rule and the terms "fresh" and "frozen."

Why is 26 °F the lowest temperature at which poultry remains fresh?
Below 26 °F, raw poultry products become firm to the touch because much of the free water is changing ice. At 26 °F, the product surface is still pliable and yields to the thumb when pressed. Most consumers consider a product to be fresh, as opposed to frozen, when it is pliable or when it is not hard to the touch.

What are the labeling requirements for frozen, raw poultry?

Raw poultry held at a temperature of 0 °F or below must be labeled "frozen" or "previously frozen."

What does the new "fresh" rule mean to consumers?

For consumers, "fresh" means whole poultry and cuts have never been below 26 °F. This is consistent with consumer expectations of "fresh" poultry, i.e., not hard to the touch or frozen solid.

Is there an increased microbiological safety risk associated with raw poultry that is maintained at 26 °F?

No. The National Advisory Committee **on** the Microbiological Criteria for Foods, as well as several scientific organizations, agreed that there is **no** increased microbiological risk associated with raw product maintained at 40 °F or below.

How should consumers handle fresh or frozen raw poultry products?
Fresh or frozen raw poultry **will** remain safe with proper handling and storage. Fresh, raw poultry is kept cold during distribution to retail stores to prevent the growth of harmful bacteria and to increase its shelf life. It should be selected from a refrigerated cooler which maintains a temperature of 40 ° F. Select fresh poultry just before checking out at the store register. Put packages in disposable plastic bags (if available) to contain any leakage that could cross-contaminate cooked foods or fresh products.

At home, immediately place fresh raw poultry in a refrigerator that maintains 40 °F and use it within 1 to 2 days, or freeze the poultry at 0 °F. Frozen poultry will be safe indefinitely. For best quality, use frozen, raw whole poultry within 1 year, poultry parts within 9 months, and giblets within 4 months.

Poultry may be frozen in its original packaging or repackaged. If you are freezing poultry longer than 2 months, you should wrap the porous store plastic packages with airtight heavy-duty foil, freezer plastic wrap or freezer bags, or freezer paper. Use freezer packaging materials or airtight freezer containers to repackage family-sized packages into smaller units.
Proper wrapping prevents "freezer bum" (drying of the surface that appears as grayish brown leathery spots on the surface of the poultry). It is caused by air reaching the surface of the food. You may cut freezer-burned portions away either before or after cooking the poultry. Heavily freezer-burned products may have to be discarded because they might be too dry or tasteless.

What is the difference in quality between fresh and frozen poultry?
Both fresh and frozen poultry are inspected by USDA's Food Safety and Inspection Service. The quality the same. It is personal preference that determines whether you purchase fresh or frozen poultry.

What does the date on the package mean?
"Open Dating" (use of a calendar date as opposed to a code) on a food product is a date stamped on the package of a product to help the store management determine how long to display the product for sale. It is a quality date, not a safety date. "Open Dating" is found primarily on perishable foods such as meal, poultry eggs, and dairy products. If a calendar date is used, it must express both the month and day of the month (and the year, in the case of shelf-stable and frozen products). If a calendar date is shown, immediately adjacent to the date must be a phrase explaining the meaning of that date such as "Sell By" or "Use Before.” A "Sell-By" date tells the store how long to display the product for sale. You should buy the product before the date expires. A "Use-By" date is the last date recommended for the use of the product while at peak quality. In both cases, the date has been determined by the food processor.

There is no uniform or universally accepted system used for "Open Dating" of food in the United States. Although dating of some foods is required by more than 20 states, there are areas of the country where m of the food supply has almost no dating.

What should you do if you find poultry that is frozen, but labeled "fresh"?
You can call the USDA Meat and Poultry Hotline and file a complaint.

For additional food safety information about meat, poultry, or egg products, call the toll-free USDA, Meat and Poultry Hotline at 1-888-MPHotline (1-888-674-6854); for the hearing-impaired (TTY) 1 800-256-7072. The Hotline is staffed by food safety experts weekdays from 10 a.m. to 4 p.m. Eastern time.

Appendix E: Resources

Heritage Turkey Resources
Compiled by:
American Livestock Breeds Conservancy
PO Box 477
Pittsboro, NC 27517
919-542-5704
albc@albc-usa.org
www.albc-usa.org

Birds of a Feather: Saving Rare Turkeys from Extinction, by Carolyn J. Christman and Robert O. Hawes. *Birds of a Feather* tells the story of turkeys over the past 2000 years. This book includes a history of the turkey, tracing its movement from the wild to domestication to industrialization. Color photos and descriptions of each of the eight standard varieties. Resources lists. Available from ALBC for $21.95 + s/h

Heritage Turkeys in North America: ALBC's 2003 Heritage Turkey Census, by Marjorie E. F. Bender. *Heritage Turkeys* contains an analysis of the most recent turkey census and the progress being made toward their recovery from near extinction. Appendices provide contact information of hatcheries selling turkey poults, and the varieties carried. Available from ALBC for $5 + s/h

Storey's Guide to Raising Turkeys, by Leonard Mercia. *Raising Turkeys* covers selection, housing, management systems, equipment, brooding, managing a production flocks, managing a breeding flock, flock health, killing and processing, and more. This book is an excellent resource but is geared a bit more toward producing Broad Breasted turkeys. Available from ALBC for $18.95 + s/h

Report of the ***Pastured Turkey Project*** conducted at the North Carolina State University's Center for Environmental Farming Systems available at www.cefs.ncsu.edu/frsu

May Safely Graze: Protecting Livestock Against Predators, by Eugene L. Fytche. Includes information on defining and assessing predator risk followed by sections on enclosures, guardian animals, management approaches that minimize predation, and predator reduction techniques. Available from ALBC for $12.95 + s/h

The Snood News, a semi-annual newsletter dedicated to heritage turkeys and published by ALBC. It covers a range of topics including variety genetics, current research, and management tips. Annual subscription is $5 for ALBC members; $10 for non-members.

Turkey Management, by Stanley J. Marsden and J. Holmes Martin. Published by Interstate Press, Danville, Illinois. Multiple editions published from 1930s – 1950s. This is one of the best texts written for the production and management of heritage turkeys, if you can find it. In addition to a wealth of information on husbandry, it contains a number of recipes for high protein rations required by heritage turkeys. Out of print. You may be able to find it on eBay. The 1936 version available on-line from Cornell Library ,http://historical.library.cornell.edu/neh/>

American Livestock Breeds Conservancy. A membership organization dedicated to the conservation and promotion on rare and endangered breeds of livestock and poultry. Publishes a bi-monthly newsletter, breeders directory, and other related information to help the breed steward. Hosts an annual conference. Technical staff is available to field questions and direct inquirers toward appropriate resources. Annual membership is $30. www.albc-usa.org 919-542-5704. albc@albc-usa.org

ATTRA. ATTRA is a clearinghouse of information on sustainable agricultural production. Publications topics are wide-ranging. Technical staff is available to field questions and direct inquirers toward appropriate resources. www.attra.ncat.org 800-346-9140.

All American Turkey Growers Association is a membership organization dedicated to the production and promotion of heritage turkeys that meet the rigors of both APA standards and productivity. Publishes a newsletter. Danny Williamson, Secretary, 785-965-2628, brahmabrahma@hotmail.com

Standard Turkey Preservation Association is a membership organization dedicated to sharing production information about heritage turkeys and promoting the networking of breeders. Bonnie Meikle, 403-783-6632, standard_turkey@hotmail.com. STPA also manages an online discussion group of management issues. For more information on how to subscribe contact renpoult@teusplanet.net

Slow Food USA is a membership organization with regional chapters, called Convivia. Working to develop market opportunities for heritage turkeys. “Recognizing that the enjoyment of wholesome food is essential to the pursuit of happiness, Slow Food U.S.A. is an educational organization dedicated to stewardship of the land and ecologically sound food production; to the revival of the kitchen and the table as centers of pleasure, culture, and community; to the invigoration and proliferation of regional, seasonal culinary traditions; and to living a slower and more harmonious rhythm of life.” 212-965-5640.

Rare Heritage Turkey online discussion group
www.groups.yahoo.com/group/RareHeritageTurkey

Pastured Poultry online discussion group
www.groups.yahoo.com/group/PasturePoultry