AGRICULTURAL EXTENSION SERVICE
UNIVERSITY OF MINNESOTA

ANIMAL SCIENCE
FACT SHEET No. 27—Revised 1981
RICHARD J. EPLEY

Consumer Tips for Buying and Serving Ham

Ham comes from the rear leg of the pork carcass. Not all the cured product from the pork carcass is ham. The picnic (cured lower portion of the front leg), bacon (cured belly), and Canadian bacon (cured loin) are not considered ham.

In curing, sodium nitrite, salt, and sugar are mixed with water to form the "brine" or curing solution. This solution is then "pumped" into the ham for uniform distribution of the brine. After several days of curing, the product is washed free of excess brine, cooked, and sometimes smoked. This process is known as a commercial cure.

Processors are inspected continuously by the USDA to make sure the finished product does not contain more than 200 parts per million nitrite. However, processors may, in response to customer desires, vary salt and sugar proportions, length and method of curing, smoking, and other processing techniques to produce a product that is unique to their particular brand.

The nitrites meat processors use to cure hams are approved by the Food and Drug Administration as safe food additives. For more information about nitrite, ask for Animal Science Fact Sheet No. 28, *Nitrite in Meat,* at your local county extension office.

Types

Fresh vs. cured. The "uncured ham" should be labeled "pork leg" (fresh ham) and is hereafter referred to as "fresh ham." If the hind leg is to be cured, it may be a commercial cure as described above or a country cure. Country cured hams are prepared with a dry cure. After a long and expensive curing and aging period, the country ham is sold to consumers who desire the special flavor, dryness, and saltiness of the product. Since very few country hams are sold in Minnesota, the remaining discussion will be concerned with commercially cured hams.

Canned vs. noncanned. Both canned and noncanned hams are sold. If you buy a canned ham, the weight quoted will be the net weight; that is, the ham weight excluding the can.

Bone-in vs. boneless. Hams may be sold intact including all bones. However, some people do not use ham bones, and most people are not proficient in carving and may prefer a boneless ham. Bone-in hams are always noncanned, whereas boneless hams may be canned or noncanned.

Half vs. portion. Some bone-in hams are large and thus are reduced in size. If a ham is cut in half, the resulting products should be sold as a rump half and a shank half. If one or more of the meaty center slices is removed and sold separately, the resulting products should be sold as a rump portion and a shank portion. A shank portion will have more connective tissue than a rump portion.

Regular vs. water-added. The brine used in curing is, of course, mostly water. The large amount of water uniformly distributes the curing ingredients throughout the ham in a short period of time. During the curing, smoking, and cooking processes, all of the added water is normally lost. However, some hams do not lose all of the added water. Such hams must be labeled "water-added" or "moist" if they contain up to 10 percent added water. The foregoing USDA and Minnesota regulations apply to noncanned hams. A canned ham may contain up to 8 percent added water and still be classed as "regular." If a canned ham contains 8 to 16.7 percent added water, it must be labeled "water-added" or "moist."

Perishable vs. nonperishable. All noncanned hams are perishable and must be refrigerated at all times by retailers and consumers. Most canned hams are perishable and also must be kept under refrigeration. They are labeled "Perishable: keep under refrigeration." Some canned hams are pasteurized and do not require refrigeration. Such hams may be stored at room temperature almost indefinitely since the product is sterile and recontamination is not possible unless the can is opened, punctured, or torn. Such products are usually, but not always, labeled "Does not require refrigeration." When in doubt, always refrigerate.

Selection

Fresh hams with a desirable color are characterized as bright grayish-pink. Fresh hams that display a pale, soft, and watery appearance are less desirable. Although these hams appear to contain less fat, they shrink more upon cooking and thus tend to be less juicy. Fresh hams that have been stored too long at 40°F or higher are usually slightly greenish because of the effect growing bacteria have upon the muscle.

Cured hams display a characteristic pink cured color. Improper curing results in a light and/or nonuniform cured color. When the ham surface is exposed to certain lights during retail display, the bright pink cured color changes to a faded color. Upon exposure to light and/or prolonged storage at 40°F or higher, the faded pink surface turns to a faded green. Select bright pink cured hams.

The cut and exposed surface of a ham (or ham slice) often is a rainbow of colors. The reason for this is simple. When the ham is cut (or sliced), the knife spreads fat over the surface of the lean. Since fat is white and white is an accumulation of all colors, one actually is spreading all of the colors from the white fat over the surface of the lean. This produces the "rainbow" appearance.

Marbling is the visible specks of fat within a muscle. Marbling contributes to pork flavor and, to a lesser extent, to juiciness and tenderness. However, hams with excessive marbling tend to taste greasy. Select hams with a small to modest amount of marbling for optimum flavor.

Another important criterion when selecting hams is cost per serving.

$$\text{Cost per serving} = \frac{\text{cost per pound as purchased}}{\text{number of servings per pound you expect}}$$

$$\text{Example, cost per serving} = \frac{\$2.00}{2} = \$1.00$$

The number of servings per pound varies according to the ratio of lean to fat and bone and what you consider an adequate serving. Fat, noncanned hams with all of the bone present may yield only one serving per pound for a family with a hearty appetite. On the other hand, a well-trimmed, boneless ham easily will yield three servings per pound for a family with a not-so-hearty appetite. In spite of the above variations, you

can find hams with the same amount of lean, fat, and bone and yet quoted at different prices per pound. Thus, the calculated cost per serving will vary. Don't forget, however, that some hams are higher priced because of their flavor characteristics or special processing.

Should you buy a "water-added" ham? This decision depends on eating preferences and price. Let's assume that a "water-added," noncanned ham is selling at a certain price per pound. Figure that this ham could contain up to 10 percent water. Take the weight of that ham, say 15 pounds, times 10 percent. This tells you that the ham contains 1.5 pounds of water. Subtract this 1.5 pounds from 15 pounds; the result is 13.5 pounds of "regular" ham. Then take 13.5 pounds of "regular" ham and divide it into the total price that the 15-pound ham is selling for. This gives you a new price per pound on a regular ham basis. Compare this price per pound with the price per pound of a regular ham. If it is less, you save by buying the water-added ham; but if it is more, you would be ahead buying the regular ham. But remember that some consumers prefer water-added hams because of their greater juiciness.

A commonly asked question is, "What type of ham is best to serve company?" Although hams vary considerably among brands, use the following general recommendations as a guide:

1. Boneless, noncanned (using selection criteria previously discussed)
2. Canned, nonpasteurized (perishable)
3. Noncanned, bone-in (if you are handy at carving)
4. Canned, pasteurized (shelf stable)
5. Picnic "ham"

Storage

When in doubt, refrigerate hams at all times. The storage temperature should be 32°F. Only genuine country cured hams and pasteurized canned hams labeled "Does not require refrigeration" can be stored safely without refrigeration.

If the temperature of your refrigerator is set at 32°F, cured ham slices and boneless, noncanned ham can be stored easily for a week. Shank and rump portions and halves can be stored easily for 2 weeks. Intact, bone-in, smoked, whole hams can be stored for a month. In all cases, make sure the product is covered with a moisture-proof wrapping material to prevent dehydration. Consume all ham before a distinct spoiled odor and greenish appearance appear.

Perishable, unopened canned hams can be stored in the refrigerator indefinitely. Once opened and partially used, store the remainders as long as you would a boneless, noncanned ham.

Don't freeze canned hams as purchased. Remove the ham from the can and wrap with a high quality freezer wrap. Noncanned hams may be frozen if wrapped tightly in a high quality freezer wrap. Storage for more than 2 months usually results in a loss of the desirable flavor normally associated with high quality unfrozen ham.

After the meal, always refrigerate any leftovers immediately! You do not need to wait for the leftovers to "cool down," since that is the purpose of refrigeration.

Preparation

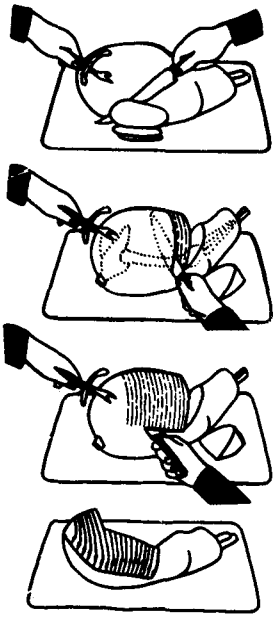
Ham cookery requires an accurate meat thermometer. Place it in the thickest portion, being careful not to insert the tip in a fat pocket or against the bone. Cook hams to the following internal temperatures:

Type	Internal Temperature
Fresh (uncured)	170° F
Cured, "uncooked"	160° F
Cured, "fully cooked"	140° F, or serve cold if you prefer

If you purchase a bone-in ham, you should be fairly proficient in carving, especially if you are serving to company. Figure 1 illustrates the steps to take in carving a bone-in ham. Always cut across the grain (muscle fibers) when possible for best results.

Remove the ham from the oven and allow it to "set-up" for 5 minutes. Place the ham on the carving board with the fat side up and the shank bone to your right. A large fork and sharp carving knife are essential for good carving.

Figure 1. Carving a bone-in ham.



A. Place the fork securely in the end on your left. Cut as many slices as you can parallel to the length of the ham or until you are scraping the bone. This description is for a ham from the left side of pork. With a ham from the right side of pork, these first slices will be made farthest from you.

B. Turn the ham up so that it now is sitting on the surface you just cut. Place the fork securely into the left end. Cut a small wedge out next to the shank end. Then cut thin slices down to the leg bone.

C. Remove the slices by cutting along the leg bone at a right angle to the group of slices.

D. To obtain additional smaller slices, return the ham to its original position and slice at right angles to the bone.

Excess fat can be trimmed off, sliced, and fried like bacon. Left-over bones can be used in making other products such as split-pea soup.

Nutritional Value

The edible portion of ham has the following approximate composition:

Item	%
Moisture	62
Protein	18
Fat	16
Minerals	3
Carbohydrate	1
Vitamins	*
	100

*A 3½ oz. serving of ham also provides the following vitamins:

Vitamin	Approximate percent of recommended dietary allowance
Thiamin	68
Riboflavin	12
Niacin	18
Pantothenic Acid	1
Vitamin B_6	12
Vitamin B_{12}	3

Keep in mind that as the fat content of muscle (notably marbling) increases, the percentage moisture and protein decrease. The reverse is also true.

The two most abundant minerals in ham are sodium and potassium (844 and 238 mg. per 3½ oz. serving, respectively), primarily because of their presence in the curing ingredients. Thus, persons on sodium-restricted diets definitely should limit their ham consumption and consult a registered dietitian. Ham is a good source of phosphorous and also contains some magnesium as well as minute quantities of zinc, iron, and copper.

Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Norman A. Brown, Director of Agricultural Extension Service, University of Minnesota, St. Paul, Minnesota 55108. The University of Minnesota, including the Agricultural Extension Service, is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, creed, color, sex, national origin, or handicap. 5 cents