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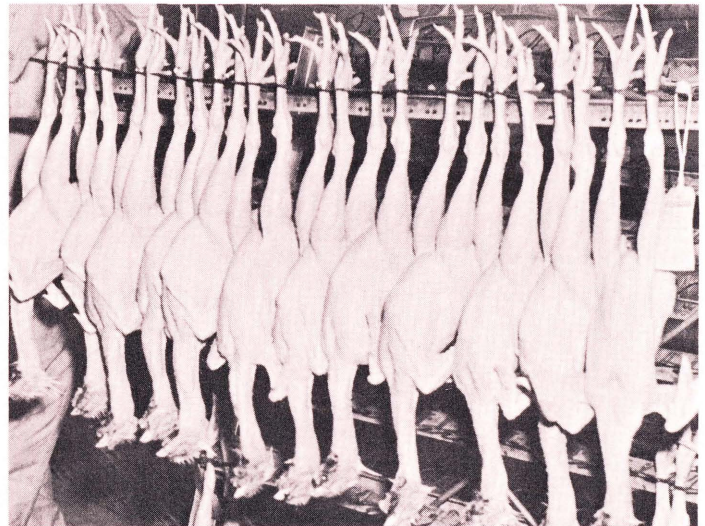
Efficient Meat Production II  
Michigan State University Cooperative Extension Service  
4-H Club Bulletin  
N.A.  
Issued N.D.  
10 pages

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# Efficient Meat Production II

**Suggested  
Experiments  
For  
4-H'ers  
12 - 14**



Michigan State University  
Cooperative Extension Service  
4-H Program  
East Lansing, Michigan

## INTRODUCTION

Chicken is an important food. Its food value and adaptability give it a high rating among the protein foods. Meals planned around chicken provide most of the essential nutrients.

Technological advances in production, processing, storage, packaging and transportation has allowed broilers to become one of our most abundant and cheapest meats.

The modern broiler is more plump, meatier, more compact and requires less feed to produce than the broiler of 15 years ago. It has a larger proportion of breast meat and is available in a wide variety of styles.

Because of competition from other meat animals, poultry meat must continue to be produced efficiently and cheaply. Experiment suggestions in this 4-H Bulletin are designed to better acquaint 4-H members with the factors involved in efficient meat production.

These experiments are designed for members enrolled in Efficient Meat Production II, or ages 12-14. You are free to choose experiments according to your age and likes. 4-H Bulletin 187.4C suggests some experiments that are more difficult and are designed for members 14 and over.

EXPERIMENT #1

CUT UP BROILERS AND PARTS  
Suggested for age group 12-14

OBJECTIVE: With the tremendous increase in the broiler business, merchandising became a problem. A new technique for cutting up broilers has evolved. With this new technique has developed the sale of broiler and chicken parts - - all necks, all backs, all breasts, all thighs, etc.

MATERIALS: Dressed oven ready broiler with giblets (1 broiler, 2-3 lbs.).  
Dressed oven ready hen with giblets (1 hen, 4-5 lbs.);  
Knife  
Scale (giving weight to one-tenth of a pound)  
Procedure A demonstrated in Marketing Bulletin No. 7  
USDA (available from Poultry Science Department, 113  
Anthony Hall, MSU, East Lansing, Michigan).

PROCEDURE: A. Cut up both the broiler and hen into the various parts - thighs, breasts, drumsticks, wings, back, neck and giblets (liver, gizzard, heart).  
B. Weigh each part and record the weights.  
C. Determine what percent each part is of the total weight.

$$\frac{\text{part weight}}{\text{total weight}} \times 100 = \% \text{part weight of total weight}$$

D. Questions

1. What parts have the greatest sales value? Why? \_\_\_\_\_
2. Which would be higher in price, backs or liver? Why? \_\_\_\_\_
3. Are there any differences between hens and broilers in the parts as a percent of total weight? If yes, why? \_\_\_\_\_

PARTS OF A CHICKEN

Name \_\_\_\_\_

Parts	Weight of parts - (Broiler)	% of Total weight (Broiler)	Weight of parts - (Hen)	% of Total weight (Hen)
Drumsticks				
Wings				
Breast				
Back				
Thighs				
Neck				
Giblets				
Total				

PROCESSING POULTRY  
Suggested for age group 12-14

- OBJECTIVE:** Killing and dressing poultry is performed largely in processing plants that are equipped to handle a large number of birds. Constant care must be provided to retain the original quality of the bird during the killing and dressing operations.
- MATERIALS:** Live broilers (5, 2½-3 lbs)  
Knife  
Shackles  
Scalding tank  
Thermometer  
Tap water (128-132° F)  
Procedure given in Marketing Bulletin No. 7 - USDA (available from Poultry Science Department, 113 Anthony Hall, MSU, East Lansing, Michigan).
- PROCEDURE:**
- A. The bird is killed and bled by cutting the veins and arteries which run down each side of the neck. The cut is made at the base of the neck and on the under side of the neck, taking care not to cut the windpipe.
  - B. After bleeding, immerse the bird in water of temperatures from 128° to 132° F. Immerse the bird for one minute by continuously dunking the bird in the water and then removing it from the water.
  - C. Remove all the feathers from the bird after scalding.
  - D. Remove the crop, the neck, intestines, heart, liver, gizzard, lungs and oil sac.
  - E. Save the giblets (heart, liver, gizzard).
  - F. Wash bird thoroughly - - the bird is now ready for chilling, freezing, wrapping and cooking.
  - G. Weigh the bird at the following times and record the weights.
    1. Before bleeding (live weight)
    2. After bleeding and feather removal (dressed weight)
    3. After eviscerating - removal of crop and intestines - leave giblets and neck in the bird while weighing (drawn weight).
  - H. Questions:
    1. What are the disadvantages of hard scalding (160°-180° F)? \_\_\_\_\_
    2. What advantages has dry plucking in so far as storage is concerned? \_\_\_\_\_
    3. Why must poultry be cooled immediately after dressing? \_\_\_\_\_
    4. What percent of the weight is lost during the killing and dressing process? \_\_\_\_\_

PROCESSING POULTRY

Name \_\_\_\_\_

Bird No.	Live Weight	Dressed Weight	Drawn Weight
1			
2			
3			
4			
5			
Average	(A)	(B)	(C)

Average live weight (A) \_\_\_\_\_

Average dressed weight (B) \_\_\_\_\_

Average drawn weight (C) \_\_\_\_\_

Percent loss live to dressed

$$\frac{B \times 100}{A} = \underline{\hspace{2cm}}$$

Percent loss dressed to drawn

$$\frac{C \times 100}{B} = \underline{\hspace{2cm}}$$

Percent loss live to drawn

$$\frac{C \times 100}{A} = \underline{\hspace{2cm}}$$

FEEED WASTAGE

Suggested for age group 12-14

- OBJECTIVE: The major cost item in the production of poultry meat is feed. This single item accounts for 55-65% of the total cost in producing a pound of poultry meat. Therefore, any saving of feed will greatly enhance the profit margin of the broiler operation.
- MATERIALS: Broiler type chicks grown to two weeks of age by the member or purchased at two weeks of age (40-50 chicks)  
Brooding and growing facilities for two groups of chickens.
- PROCEDURE:
- A. When the chicks are two weeks of age divide them into two equal groups, 20-25 chicks in each group (separate pens) and feed for 6 weeks.
  - B. Place the feeders over wire covered boxes; but don't make the wire covered boxes so high that the chicks can't eat.
  - C. Fill the feeders in Pen #1 25% full and in Pen #2 100% full.
  - D. Feed these birds at least 2 times daily.
  - E. Record weekly the feed fed (lbs) and the feed wasted (lbs) for a six-week period (2 to 8 weeks of age).
  - F. Report your results.
    1. Feed fed - Pen #1 & 2
    2. Feed wasted - Pen #1 & 2
    3. Feed consumed - Pen #1 & 2
    4. Pounds of feed wasted due to different feeder management.



FEED WASTAGE

Name \_\_\_\_\_

Week	Feed Fed Pen #1	Feed Wasted Pen # 1	Feed Fed Pen #2	Feed Wasted Pen # 2
1				
2				
3				
4				
5				
6				
Total	(A)	(B)	(C)	(D)

Feed Consumed Pen #1,  $A - B =$  \_\_\_\_\_

Feed Consumed Pen #2,  $C - D =$  \_\_\_\_\_

% Wasted Pen #1,  $\frac{B}{A} \times 100 =$  \_\_\_\_\_

% Wasted Pen #2,  $\frac{D}{C} \times 100 =$  \_\_\_\_\_

## DEBEAKING

Suggested for age group 12-14

- OBJECTIVE:** Cannibalism often results in heavy death losses as well as lowered market value due to unsatisfactory feathering or bare backs when the flock is sold. The causes of cannibalism are not well understood, but faulty breeding, improper nutrition, overcrowding, overheating, and too much light are some of the factors involved. Debeaking is one method of control.
- MATERIALS:** Broiler type chicks - one day of age (40-50 chicks)  
Brooding and growing facilities for two groups of chicks
- PROCEDURE:**
- A. Divide the chicks into two equal groups, debeak one group and place each group in separate pens (20-25 chicks per pen). Place the debeaked group in Pen #1 and the non-debeaked in Pen #2.
  - B. Rear these birds to at least 9 weeks of age and keep records of feed consumption (weekly-lbs), body weight, (9 week) and mortality (daily). Record whether the mortality was due to cannibalism.
  - C. At 9 weeks of age rate the birds as to feathering (1=good, 2=fair, 3=poor).
  - D. Report your results:
    1. Feed fed Pen #1 and #2
    2. Average body weight Pen #1 and #2
    3. Mortality - % for Pen #1 and # 2
    4. Feather score for Pen #1 and #2
    5. Feed efficiency for Pen #1 and #2

DEBEAKING

Name \_\_\_\_\_

Week	Feed Fed Pen # 1	Mortality* Pen #1	Feed Fed Pen #2	Mortality Pen #2
1				
2				
3				
4				
5				
6				
7				
8				
9				
Total	(A)	(B)	(C)	(D)

\*Record what percent of the mortality was due to cannibalism in parenthesis ( ).

Feed Efficiency  
Pen #1  $\frac{A}{E} =$  \_\_\_\_\_

Pen #2  $\frac{C}{G} =$  \_\_\_\_\_

DEBEAKING

Name \_\_\_\_\_

Bird	Body Weight (9 week) Pen #1	Feather Score (9 week) Pen #1	Body Weight (9 week) Pen #2	Feather Score (9week) Pen # 2
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
Total	(E)	(F)	(G)	(H)