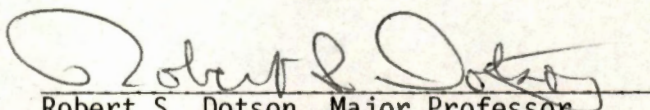
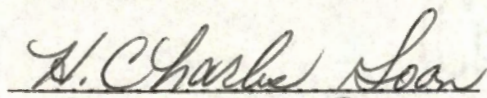
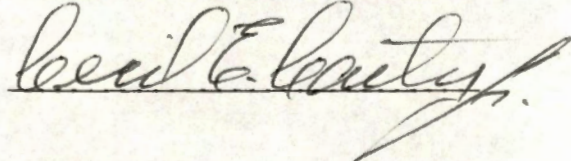


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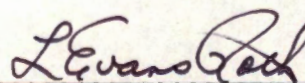
I am submitting herewith a thesis written by Radcliffe Joel Brown entitled "Characteristics and Management Practices of Selected Jamaican Broiler Growers in 1977-78." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Extension.


Robert S. Dotson, Major Professor

We have read this thesis
and recommend its acceptance:

Accepted for the Council:


Vice Chancellor
Graduate Studies and Research

Ag-VetMed

Thesis

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CHARACTERISTICS AND MANAGEMENT PRACTICES OF SELECTED JAMAICAN
BROILER GROWERS IN 1977-78

A Thesis
Presented for the
Master of Science
Degree
The University of Tennessee, Knoxville

Radcliffe Joel Brown

March 1979

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ABSTRACT

The purpose of this survey-type study was to (1) investigate the characteristics of three sizes of broiler operations under contract in Jamaica in 1978, (2) to determine which of 16 recommended broiler management practices were being used and which were not being used by growers, and (3) to consider influences at work as broiler growers decided whether or not to use the recommended practices.

A 10% random sample of 43 Jamaican broiler growers under contract in 1978 was randomly selected and interviewed. House capacity for growers in the study ranged from 6,000 to 42,000 birds. Large growers had "grow-out" capacities ranging from 15,000 to 42,000 birds, medium growers from 10,000 to 12,000, and small growers, 6,000 birds.

All 43 growers in the study were full-time broiler growers, and nearly all, 95%, listed broiler growing as their main source of agricultural income. The average broiler grower had been in operation for 6.4 years and had two broiler houses on their farms, averaging 6.6 years old.

All but one grower used gas brooders, and their broiler houses were ventilated by the sea breeze. Most growers, 86%, used pan feeders and changed litter after every grow-out.

Most growers studied, 91%, used public water supply for their birds and reported little difference in the number of grow-outs per year, the average being 3.6. There was little difference noted also in number of days between grow-outs for all growers, the average being 22.8 days.

All growers studied were found to be using all 16 management practices studied and seemed to have been most influenced by the

broiler growing contract with their company. Most growers, 70%, planned to expand by building new broiler houses, and most, 56%, said they planned to use the Jamaica Development Bank (J.D.B.) as their main credit source. All were interested in learning more about management, housing, and their contract.

Management, housing, and understanding of the contract agreement were work areas identified in this study where growers would like appropriate help from the Jamaica Extension Service.

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CHAPTER I

INTRODUCTION

A. BACKGROUND OF THE STUDY

Broiler production for meat consumption in Jamaica is a relatively new enterprise as compared to its counterparts, cattle, goats, and swine. In 1969, total production of beef was 30.25 million pounds, 3.52 million pounds for goats, and 12.01 pounds for swine compared to 26 million pounds for poultry (2:68).¹

However, in 1970 poultry meat production became the number one contributor to the islands' meat industry with a total production of 32 million pounds, as compared with 27.4, 3.26, and 15.17 million pounds of meat for cattle, goats, and swine, respectively (2:68). This was caused by a fast-growing broiler industry, which system of production ceased to be owner operated, but instead became vertically integrated. That is, instead of growers finding all the inputs necessary and bearing all the risks involved, they were shared with large contracting companies which provided inputs such as day-old chicks, medication, feed, technical advice, as against buildings, equipment, and labor provided by the grower.

This type of production system within the broiler industry in Jamaica has expanded production to the extent where poultry meat has

¹Numbers in parentheses refer to alphabetically listed references in the Bibliography; numbers after the colon are page numbers.

ceased to become a delicacy in the diet of Jamaicans but instead the most widely used meat, as is reflected in a total production of 59.14 million pounds in 1976 (3:110).

Thus, the increasing importance of the broiler industry in Jamaica suggested need for the study in order to determine what management practices growers were using and what the growers were like.

B. PURPOSES OF THE STUDY

The purposes of this study were to investigate the characteristics of three sizes of broiler operations in Jamaica in 1978, to determine which recommended broiler management practices were being used and which were not being used by the growers, and to consider influences at work as broiler growers decided whether or not to use recommended practices.

C. NEED FOR THE STUDY

At the time of the study, the production of broilers for meat in Jamaica was carried out on a vertically integrated system. Information concerning the contracting companies was easily available since there were only two major contracting companies. They were Jamaica Broilers Limited and Caribbean Broilers Limited. At the same time, information concerning the actual growers themselves was not available since no previous studies were found. Furthermore, extensions' role in the islands' broiler business has traditionally been limited to aspects such as assisting present and potential broiler growers at times of planning to go into the business, selecting sites of buildings, securing loans, constructing buildings, selecting and setting up of equipment,

passing on the latest information, and helping growers to understand contract practices and procedures in order to be able to fulfill contractual obligations.

Extensions involvement has been limited because the role of the serviceman representing the different companies overshadows that of the agents, since all broiler production is contracted, and the serviceman must make regular visits ordinarily once per day.

Therefore, the study becomes necessary in order to identify subject matter areas where Jamaican Extension workers may become of greater service to broiler growers through appropriate educational programs. To this end the study was dedicated.

D. DEFINITIONS OF TERMS

Broilers

A young chicken, usually under 13 weeks old, that is tender meat with soft, pliable, smooth-textured skin and flexible breastbone cartilage. They may be identified by handling by a skilled worker.

Broiler House

The building in which broilers are grown. Its design depends upon climate, age of the house, and money the owner can invest.

Broiler Growers

People who have contracted with the contracting companies to grow broilers from one day of age to marketing time, about 7 1/2 to 8 weeks later. Broiler growers usually live on the farm or property.

Integrator or Contractor

A firm, cooperative, or person that controls more than one stage in the production of broilers, usually everything from broiler egg production through processing.

It owns the broilers and contracts with farmers to grow them.

Litter

The blanket of wood chips, sawdust, or other absorbent material upon which the birds walk and rest in the broiler house. It is removed or covered as it becomes caked. When a new batch of broilers enters the broiler house, it is removed and replaced with new litter.

Serviceman

An employee of the contracting firm who visits the broiler growers regularly, perhaps once per day, to see how the broilers are progressing toward market weight. He checks the entire system of growing the chicken on each farm for disease-free, efficient production of high-quality birds.

Full-Time Broiler Grower

A grower spending 85% or more of their time in the broiler operation.



CHAPTER II

REVIEW OF LITERATURE

A. CHARACTERISTICS OF BROILER GROWERS

In a 1978 study on the Analysis of Contract Broiler Production in Tennessee done by Hunter (5), it was found that of 84 growers who reported their age their average age was almost 47 years. Their ages ranged from 23 to 70 years. On the average they had received a ninth grade education, ranging from no formal education to 7 years beyond high school (a Master's degree) (5:6).

The 88 growers in the study had been producing broilers for an average of about 9 years, ranging from 4 months to 32 years, and their experience producing broilers on contract averaged about 9 years. Growers averaged almost 6 years' experience with the company they contracted with at the time (5:6).

The average size farm in the sample was about 110 acres in 1977, a little smaller than the average size of farm in the state which was 131 acres. Overall in 1977, about 97% of the growers surveyed averaged owning about 101 acres. Almost 32% of them rented an average of about 56 acres from others, and about 8% of the growers rented an average of 98.71 acres to others (5:8).

According to Hunter, the 88 broiler growers averaged starting into production 74,666 chicks each; that yielded an average income of about \$6,100. The major crops that broiler growers produced were corn, hay, and tobacco. Corn was produced by about 37% of the broiler growers

on an average of just over 21 acres. Hay was produced by about 47% of the broiler growers on an average of just over 26 acres, and tobacco was produced by almost 14% of the growers on an average of just over 1 acre (5:30).

Beef cattle and hogs were the major livestock enterprises reported on broiler farms. Over one-half of the broiler growers reported beef cattle herds averaging 43 head each. Over 36% of the growers averaged having 10 head of brood sows each, and just over 20% of the growers had an average of 34 head of other types of hogs (5:9).

Another relevant study was carried out by Greene (4) at the University of Florida in 1972. Its purpose was to provide a descriptive analysis of contract broiler production in the Live Oak area.

Findings include the following:

1. The average age of all broiler growers studied was 47.6 years (4:7).
2. Average educational attainment was 9.7 years of schooling (4:7).
3. Most of the growers had much more land than they used for their broiler operation (4:8).
4. Tobacco, corn, beef cattle, and hogs were the main crops and livestock enterprises other than broilers produced by broiler growers (4:32).

B. POULTRY PRACTICES USED

A study was done in 1971 by Waldron (11) to determine production practices used in Management of Selected Egg Producing Flocks in East

Tennessee. He reported the following findings.

Practice Related to Cleaning and Disinfecting of Poultry House Prior to Arrival of Pullets

Categorizing flocks according to size, he found that 100% of the owners of flocks with 3,000 layers and under; 95% of those with 3,000 to 9,999; 93% of those with 10,000 to 19,999; and 100% of those with 10,000 to 21,330 using the cleaning and disinfecting practices studied (11:87).

Practice Related to Keeping Waterers Clean

Regarding keeping water clean, 91% of producers who had flocks of 3,000 and below and 100% with flocks 3,000 to 9,999, 10,000 to 19,999, and 20,000 to 21,330 were found using this practice (11:88).

Practice Related to Prevention of Cannibalism through Debeaking

Only owners of egg producing flocks in the 3,000 and below category did not report a 100% usage of the debeaking practice. Ninety-five percent of producers in this low category reported using this practice (11:88).

Practice Related to Control of Rodents and Wild Birds

Producers in the 20,000 to 21,330 category seemed more interested in controlling rodents and wild birds than did those in any other size category. All reported using this practice.

Fifty-five percent of those with flocks of 3,000 and below, 43% of producers with flocks of 3,000 to 9,999, and 60% of producers with flocks of 10,000 to 19,999 reported using this practice (11:88).

Practice Related to Keeping Visitors Away Except When They
Wear Foot Covering

Forty-five percent of producers in the 3,000 and below category, 43% with 3,000 to 9,999, 53% with 10,000 to 19,999, and all (100%) with 20,000 to 21,330 reported keeping visitors away except when they wear foot coverings (11:88).

C. FACTORS INFLUENCING POULTRY AND BEEF PRODUCERS
TO USE PRACTICES

In the study carried out by Waldron (1971) and mentioned earlier above, ownership was found to influence practice use. Of 27 recommended practices, he found that an average of 90.3% of producers who were contracted carried out recommended practices as against 85% for producers who were owners (11:90). Some other influential factors affecting practice use found in available livestock and poultry studies included: (1) economics, (2) size of operation, and (3) source of information.

Economics

Studies in beef cattle have shown that farmers who used more of the recommended practices had a higher return per head than other farmers who did not use as many of the practices.

A 1964 study done by Raney (8) showed that this difference was as much as \$50 per cow more for farmers who used more recommended practices than it was for farmers who did not use as many practices (7:84).

Size of Operation

The size of a farming enterprise often seems to determine the level of management that must be involved, and, therefore, it may influence the use of more recommended practices.

In a 1966 study of beef producers in Campbell County, Tennessee, Keyes (6) found that producers who were involved in larger operations within the county used more recommended practices than did producers who were involved in smaller operations (6:56). This could be due to the higher economic risk involved in larger operations.

Source of Information

Livestock producers and poultry growers seemed to be more influenced into the use of recommended practices if they sought information concerning their operations from successful counterparts who used more recommended practices. The main reason for this could be due to the fact that their successful counterparts would be better able to prove to them that it is profitable to use the practices without their having to bear the risk.

Carter (1) in a summary of a statewide survey of beef producers in Tennessee disclosed that those having more contacts with extension generally used significantly more recommended practices and apparently sold significantly more pounds of beef.

CHAPTER III

METHODS OF PROCEDURE

A. POPULATION AND SAMPLE

A complete list of 430 broiler growers was obtained from the two broiler contracting companies, Jamaica Broilers Limited and Caribbean Broilers Limited. From this population of growers, a random sample of 43 to be interviewed was selected using the Nth number technique.

B. DEVELOPMENT OF INTERVIEW SCHEDULE

For the purpose of developing the interview schedule, the 1973 Tennessee broiler survey schedule (see Appendix A) developed by Dr. Charles Goan, Section Leader of the Agriculture Extension Poultry Section in Tennessee, was used as a model.

The necessary modifications as applied to Jamaican conditions were made to this schedule, thus developing an interview schedule that was more relevant to Jamaican conditions (see Appendix B).

C. DATA COLLECTION

Permission was sought from the two major broiler companies, Jamaica Broilers Limited and Caribbean Broilers Limited, to interview the 10% sample of their growers.

A copy of the developed interview schedule was taken on the farm of each grower chosen. These schedules were filled out by means of a

personal interview with each of the 43 growers. The length of these interviews ranged from 20 to 90 minutes depending on the willingness of a grower to elaborate on answers to questions and also to get the interviewer's personal opinion on some of these questions.

D. DATA ANALYSIS AND HANDLING

Data collected were arranged in three separate groups according to size of operation: large, medium, and small. At the time of the study, a large grower was considered to have a grow-out capacity of 15,000 to 42,000 broilers; a medium grower, 10,000 to 12,000; and a small grower, a capacity of 6,000.

Interview schedules and data were then hand sorted, tabled, and interpreted. Numbers, percentages, and means were used. No statistical analysis was done. Main comparisons throughout the findings chapter were between large, medium, and small broiler grower groups.

CHAPTER IV

FINDINGS OF THE STUDY

The findings of this study are presented in this section as they relate to the various stated purposes. Thus, headings include data related to Jamaican broiler grower characteristics, management practices, and factors influencing practice use--all by production groups (i.e., large, medium, and small).

House capacity for growers in the study ranged from 6,000 to 42,000 bird capacity. The mean bird capacity for a large grower was 26,000; 11,000 for medium growers; and 6,000 for small growers.

A. GROWER CHARACTERISTICS

Grower Status Whether Full or Part Time

All of the 43 growers interviewed indicated they were full-time broiler growers. This meant that they could devote their complete attention to the carrying out of necessary management practices.

Growers Main Source of Agricultural Income

A study of Table 1 shows that only 2 growers indicated main agricultural income sources other than broiler growing. One, a medium grower, indicated dairying as his main source of income. The other, a small grower, reported sugar cane as his main source of agricultural income.

Table 1. Main Source of Agricultural Income of Selected Jamaican Broiler Growers by Production Groups According to Numbers and Percents

Main source of agricultural income	Total broiler growers 6,000-42,000 (bird capacity)		Large broiler growers 15,000-42,000 (bird capacity)		Medium broiler growers 10,000-12,000 (bird capacity)		Small broiler growers 6,000 (bird capacity)	
	No.	%	No.	%	No.	%	No.	%
Broilers	41	95	12	100	14	93	15	94
Other:								
Dairying	1	2.5	0	--	1	7	0	--
Sugar cane	1	2.5	0	--	0	--	1	6
Total	43	100	12	100	15	100	16	100

Number of Years Growers Have Been in the Broiler Business

A study of data in Table 2 discloses that on the average the broiler growers had been in business for 6.4 years; the large, 9.9 years, having grown broilers longer than either the medium, 7.6 years, or small, 0.6 years, growers. Medians for the groups were similar to means: 6.5 years for all growers, 11.0 years for large, 8.0 years for medium, and 1.5 years for the small growers.

Number of Broiler Houses on Farm

Perusal of Table 3 shows that the largest number of houses on any farm, at the time the study was conducted, was 6. The mean number of houses for the study was 2. Large growers had a mean number of houses of 3.16, 2.2 for medium growers, and 1.6 for small growers.

Age of Oldest Broiler House

The length of time growers had been in the business of growing broilers seemed to have had a direct relationship with the age of their oldest broiler house. Of the total number of houses in the study, the oldest was 18 years as indicated in Table 4.

The mean age of the oldest houses for all groups was 6.6 years. When production groups are compared, it may be seen that the large growers had, on the average, the oldest houses with 11.2 years, medium growers the next oldest with 8.2 years, and small growers the ones most recently constructed with 1.7 years. A large grower had been in the business the longest time with the oldest house of 18 years, next were medium growers whose oldest house was 16 years, with small growers having an oldest house of only 4 years old.

Table 2. Numbers of Years Selected Jamaican Broiler Growers Had Grown Broilers Prior to 1978 by Production Groups According to Numbers, Percents, Means, and Median

Length of time growing broilers	Total broiler growers 6,000-42,000 (bird capacity)		Large broiler growers 15,000-42,000 (bird capacity)		Medium broiler growers 10,000-12,000 (bird capacity)		Small broiler growers 6,000 (bird capacity)	
	No.	%	No.	%	No.	%	No.	%
1-5 years	20	47	0	--	3	20	16	100
6-11 years	14	31	6	50	9	59	0	--
12-18 years	9	22	6	50	3	21	0	--
Total	43	100	12	100	15	100	16	100
Mean	6.4 years		9.9 years		7.6 years		0.6 years	
Median	6.5 years		11.0 years		8.0 years		1.5 years	

Table 3. Numbers of Houses on Selected Jamaican Broiler Growers' Farms, 1977-78, by Production Groups According to Numbers, Percents, and Means

Numbers of broiler houses owned	Total broiler growers 6,000-42,000 (bird capacity)		Large broiler growers 15,000-42,000 (bird capacity)		Medium broiler growers 10,000-12,000 (bird capacity)		Small broiler growers 6,000 (bird capacity)	
	No.	%	No.	%	No.	%	No.	%
1	17	40	0	--	2	13	15	94
2	17	40	5	42	11	73	1	6
3	4	9	3	25	1	7	0	--
4	3	7	2	17	1	7	0	--
5	1	2	1	8	0	--	0	--
6	1	2	1	8	0	--	0	--
Total	43	100	12	100	15	100	16	100
Mean	2.0 houses		3.16 houses		2.2 houses		1.6 houses	

Table 4. Ages of Houses on Selected Jamaican Broiler Growers' Farms, 1977-78, by Production Groups According to Numbers, Percents, and Means

Ages of broiler houses (years)	Total broiler growers 6,000-42,000 (bird capacity)		Large broiler growers 15,000-42,000 (bird capacity)		Medium broiler growers 10,000-12,000 (bird capacity)		Small broiler growers 6,000 (bird capacity)	
	No.	%	No.	%	No.	%	No.	%
1	10	23	0	--	2	13	8	50
2	7	17	0	--	1	7	6	38
3	1	2	0	--	0	--	1	6
4	1	2	0	--	0	--	1	6
5	1	2	0	--	1	7	0	--
6	4	10	2	17	2	13	0	--
7	1	2	0	--	1	7	0	--
8	3	7	3	25	0	--	0	--
9	3	7	0	--	3	20	0	--
10	2	5	1	8	1	7	0	--
11	0	--	0	--	0	--	0	--
12	2	5	1	8	1	7	0	--
13	1	2	1	8	0	--	0	--
14	1	2	1	8	0	--	0	--
15	2	5	1	8	1	6	0	--
16	3	7	1	8	2	13	0	--
17	0	--	0	--	0	--	0	--
18	1	2	1	8	0	--	0	--
Total	43	100	12	100	15	100	16	100
Mean		6.6 years		11.2 years		8.2 years		1.7 years

Type of Heating System

All but one of the 43 growers used gas brooders to start chicks. The other one, a large grower, used electric brooders. Data did not need to be tabled.

Type of Ventilation

Because of the size of Jamaica (4,411 square miles), most broiler growers were located within reasonable distance from the sea coast. Their houses were, therefore, ventilated by the wind that blew from land or sea both night and day. Growers referred to this type of air movement as natural ventilation.

Type of Feeding System

Two types of feeders were used by broiler growers in the sample studies, mainly (1) pan and (2) automatic (see Table 5). Automatic feeders were of two basic types: (1) chain conveyor and (2) auger.

Pan feeders hang from the ceilings so chicks cannot waste feed by scratching it out. With pan feeders, growers have to bring feed with a bucket or wheelbarrow. This system is more time consuming than the automatic. Eighty-six percent of growers indicated they used pan feeders as against 14% who used automatic feeders, of which the chain conveyor was predominant.

When production groups are compared, it is seen that 33% of large growers, 13% of medium growers, and no small growers used any type of automatic feeding system.

Table 5. Types of Feeding Systems Used on Selected Jamaican Broiler Growers' Farms, 1977-78, by Production Groups According to Numbers and Percents

Type of Feeding System	Total broiler growers 6,000-42,000 (bird capacity)		Large broiler growers 15,000-42,000 (bird capacity)		Medium broiler growers 10,000-12,000 (bird capacity)		Small broiler growers 6,000 (bird capacity)	
	No.	%	No.	%	No.	%	No.	%
Pan	37	86	8	67	13	87	16	100
Automatic	6	14	4	33	2	13	0	--
Total	43	100	12	100	15	100	16	100

Number of Grow-Outs on the Same Litter

Eighty-six percent of growers in the sample indicated they had only 1 grow-out on the same litter, see Table 6, while 14% indicated they had 2. No grower indicated more than 2 grow-outs on the same litter. This was the case since the type of litter used was easily available as a by-product of the sugar industry on the island.

Type of Litter Used by Growers

Sugar cane hull was the main type of litter used among broiler growers in the study. The reason being that it was readily available as a by-product of the sugar industry. Ninety-eight percent of growers indicated using sugar cane hull as litter as against 2% (i.e., one large grower) using sawdust. Extensive usage of sugar cane hull for litter might change in the future, because at the time the study was done growers were experiencing increasing competition from the manufacturing industry for the use of sugar cane hull. During the time the study was conducted, sugar cane hull was being extensively used in the making of soft boards, for building low-income houses on the island. There was no need to table data since only one grower varied from the sugar cane hull litter.

Source of Water Supply Used by Growers

Four possible sources of water supply were considered in this study: (1) well for broiler house only, (2) well for broiler house and home, (3) river, and (4) public supply. As seen in Table 7, 91% of growers indicated they used public supply, as against 9% who used a

Table 6. Numbers of Grow-Outs on the Same Litter on Selected Jamaican Broiler Growers' Farms, by Production Groups According to Numbers and Percents

Number of annual grow- outs on same litter	Total broiler growers 6,000-42,000 (bird capacity)		Large broiler growers 15,000-42,000 (bird capacity)		Medium broiler growers 10,000-12,000 (bird capacity)		Small broiler growers 6,000 (bird capacity)	
	No.	%	No.	%	No.	%	No.	%
1	37	86	9	75	12	80	16	100
2	6	14	3	25	3	20	0	--
Total	43	100	12	100	15	100	16	100

Table 7. Sources of Water Supply Used on Selected Jamaican Broiler Growers' Farms, 1977-78,
by Production Groups According to Numbers and Percents

Source of water for broilers	Total broiler growers 6,000-42,000 (bird capacity)		Large broiler growers 15,000-42,000 (bird capacity)		Medium broiler growers 10,000-12,000 (bird capacity)		Small broiler growers 6,000 (bird capacity)	
	No.	%	No.	%	No.	%	No.	%
Public supply	39	91	10	83	14	93	15	94
Well for broiler house and home	4	9	2	17	1	7	1	6
Well for broiler house	0	--	0	--	0	--	0	--
River	0	--	0	--	0	--	0	--
Total	43	100	12	100	15	100	16	100

well serving both broiler house and home. Other categories received no response.

Number of Grow-Outs per Year per House

Thirty-seven percent of growers indicated they had at least 3 grow-outs per year per house, as against 63% who reported 4 (see Table 8). Fifty-eight percent of the large growers, 27% of medium growers, and 31% of small growers stated they had at least 3 grow-outs per year per house, compared to 42% of large growers, 73% of medium growers, and 69% of small growers who indicated have 4 grow-outs per year per house. The mean number of grow-outs per year per house for all growers in the study was 3.6: 3.4 for large growers, compared to 3.7 for both medium and small growers.

Number of Days Between Grow-Outs that Houses Are Vacant

Studying Table 9 reveals that 74% of growers in the study had their houses vacant for at least 21 days between grow-outs, as against 26% whose houses were vacant for 28 days. The mean number of days between grow-outs for all growers was 22.8: 23.3 for large growers, 21.3 for medium growers, and 23.2 for small growers.

On one hand, growers who said their houses were vacant for 28 days blamed the delay on their contracting companies. They said spraying of broiler houses between grow-outs, which was the responsibility of the contracting companies, was the main cause of delay. On the other hand, growers who had their houses vacant for 21 days between grow-outs felt that the 21-day period gave them enough time to prepare their houses for the next grow-out.

Table 8. Numbers of Grow-Outs Per Year Per House, 1977-78, Reported by Selected Jamaican Broiler Growers According to Production Groups in Numbers, Percents, and Means

Number of grow-outs per year per house	Total broiler growers 6,000-42,000 (bird capacity)		Large broiler growers 15,000-42,000 (bird capacity)		Medium broiler growers 10,000-12,000 (bird capacity)		Small broiler growers 6,000 (bird capacity)	
	No.	%	No.	%	No.	%	No.	%
1	0	--	0	--	0	--	0	--
2	0	--	0	--	0	--	0	--
3	16	37	7	58	4	27	5	31
4	27	63	5	42	11	73	11	69
Total	43	100	12	100	15	100	16	100
Mean	3.6 grow-outs		3.4 grow-outs		3.7 grow-outs		3.7 grow-outs	

Table 9. Numbers of Days Between Grow-Outs of Selected Jamaican Broiler Growers, 1977-78,
by Production Groups According to Numbers, Percents, and Means

Days between grow-outs	Total broiler growers 6,000-42,000 (bird capacity)		Large broiler growers 15,000-42,000 (bird capacity)		Medium broiler growers 10,000-12,000 (bird capacity)		Small broiler growers 6,000 (bird capacity)	
	No.	%	No.	%	No.	%	No.	%
21	32	74	8	75	13	87	11	69
28	11	26	4	25	2	13	5	31
Total	43	100	12	100	15	100	16	100
Mean		22.8 days		23.3 days		21.3 days		23.2 days

Average Percent Condemnation for Last Grow-Out

All growers in the study mentioned that they had a less than 1% condemnation for their previous grow-out. This was due mainly to the fact that growers were closely scrutinized by their contracting companies' servicemen mentioned earlier. This ensured that better quality birds left the growers' farms for processing.

Method of Dead Bird Disposal

All growers in the study indicated that they disposed of their dead birds through burning on trash piles. This was caused by lack of adequate disposal systems, such as incinerators, which were unavailable to growers on the island.

Data needed no tabling, since all growers in the study disposed of their birds in the same way.

B. MANAGEMENT PRACTICES USED

Sixteen recommended practices necessary for efficient and economical broiler growing were included in this study. The practices included:

1. The house was cleaned and disinfected at least 1 week before the chicks arrived.
2. The heat was turned on at least 24 hours prior to the arrival of the chicks.
3. Feed trays or box lid was left down at least until chicks reached 4 to 5 days of age.
4. The water jugs were cleaned daily until they were removed.

5. Caked or wet litter was removed from the house.
6. Feeders were raised periodically as the broilers increased in size.
7. During the first week, a curtain was used in the house to keep the chicks and heat in one side of the house.
8. Dead broilers were removed several times per day.
9. Weeds were not allowed to grow along the outer edges of broiler houses.
10. Chicken wire around the house was kept in good condition so that wild birds could not enter broiler house.
11. Daily mortality records were kept.
12. The contractors keep enough feed in the bins so that the broilers have feed at all times.
13. The broilers were debeaked at 1 day of age at the hatchery.
14. Water troughs were kept clean.
15. Visitors were kept away from the broiler house.
16. The servicemen reacted quickly whenever there was a problem.

Surprisingly, all growers in the study were found to be using all 16 practices. The main reason for this as observed in going from farm to farm was the close supervision given to broiler growers by the contracting companies' servicemen. They made regular, sometimes once a day, visits to these farms. This ensured that farmers used recommended practices in order to grow the best possible quantity and quality of birds on their farms.

C. FACTORS INFLUENCING GROWERS TO ADOPT PRACTICES

The single most important factor influencing the growers to adopt practices seemed to be the fact that they were under contract and were closely supervised. Growers noted that it was very easy to lose their contracts, if the contracting company discovered that they were not using recommended practices. Contracting companies also were aware that to find a replacement for a lost grower was relatively easy, since they maintain waiting lists of potential growers.

Another factor that seemed to influence the wide use of recommended practices was the amount growers were paid per grow-out. Most growers seemed to have been satisfied with what they were paid and realized that the more efficient they were, the better their returns per grow-out. A majority of growers also like the resulting low percent mortality per grow-out, which they felt was a reflection of their management ability. Discussion would be incomplete without mention of the ideal climate for broiler production in Jamaica. The need for inexpensive protein on the island is obvious.

D. OTHER INFORMATION

Grower Interest in Expansion

Grower satisfaction with the broiler industry is an important factor in determining how stable the industry is in Jamaica.

Dissatisfaction could cause growers to leave the industry or at least not to expand their operation. This then would limit the growth potential for the industry.

Growers' satisfaction with conditions within the broiler industry at the time of the study can be seen by the percent of growers in the study who stated their intention to build new broiler houses (see Table 10). Seventy percent of all growers in the study indicated that they planned to build new broiler houses.

Fifty-nine percent of large growers, 47% of medium growers, and 100% of small growers said they planned to build new broiler houses.

Growers' Sources of Finance if New Broiler Houses Are Built

Jamaica Development Bank (J.D.B.) seemed to have been the preferred borrowing source of growers in the study who planned to build new broiler houses. Of the 43 growers in the study, 13 indicated they had no intention to build new houses.

Study of data in Table 11 reveals that 80% of all growers planning to build said they would borrow money from the Jamaica Development Bank (J.D.B.), 13% would borrow from the Parish Council Bank (P.C.B.), and 7% said they would borrow from a commercial bank. When production groups are compared, it is seen that consequentially higher percents of small growers, 94%, and medium growers, 100%, than large growers, 29%, mentioned J.D.B. At the same time, consequentially higher percents of large growers reported preference for P.C.B., 43% (i.e., versus 6% for small and none for medium), and commercial banks, 28% (i.e., versus none for either small or medium).

Growers' Intention to Install an Automatic Feeding System

Of the 43 growers in the study, 6 were already using some type of automatic feeding system. Growers who did not have any type of

Table 10. Numbers of Selected Jamaican Broiler Growers Who Planned to Build New Broiler Houses Prior to 1978, by Production Groups According to Numbers and Percents

Future plans regarding new houses	Total broiler growers 6,000-42,000 (bird capacity)	Large broiler growers 15,000-42,000 (bird capacity)	Medium broiler growers 10,000-12,000 (bird capacity)	Small broiler growers 6,000 (bird capacity)
Planned to build new houses	30	7	7	16
Did not plan to build new houses	13	5	8	0
Total	43	12	15	16
		100	100	100

Table 11. Preferred Sources of Finance for Building New Broiler Houses Mentioned by 30 Jamaican Broiler Growers Planning to Build New Houses, by Production Groups According to Numbers and Percents

Finance source for new houses	Total broiler growers 6,000-42,000 (bird capacity)		Large broiler growers 15,000-42,000 (bird capacity)		Medium broiler growers 10,000-12,000 (bird capacity)		Small broiler growers 6,000 (bird capacity)	
	No.	%	No.	%	No.	%	No.	%
Jamaica Development Bank (J.D.B.)	24	80	2	29	7	100	15	94
Parish Council Bank (P.C.B.)	4	13	3	43	0	--	1	6
Commercial Bank	2	7	2	28	0	--	0	--
Total	30 ^a	100	7	100	7	100	16	100

^aThe 13 other growers did not plan to build new houses.

automatic feeding system were asked whether they planned to install one in the near future. Forty-six percent of the growers said they did, as seen in Table 12, as compared to 40% who did not plan to install one, and 14% who already had one. One-third of large growers already had the automatic system compared to 13% of the medium and none of the small growers. Consequentially different percents of small, 63%, medium, 33%, and large, 42%, growers intended to install such systems in the future. Also, it should be noted that consequentially more large growers, 75%, either had the system or were planning to add it than was true for medium, 46%, or small, 63%, growers.

Grower Interest in Learning More About Management, Housing, and Contract

All growers in the study expressed their desires to learn more about management, housing, and understanding of their contracts.



Table 12. Numbers of Selected Jamaican Broiler Growers Who Planned to Install Some Type of Automatic Feeding System by Production Groups According to Numbers and Percents

Future plans regarding feeding system	Total broiler growers 6,000-42,000 (bird capacity)	Large broiler growers 15,000-42,000 (bird capacity)	Medium broiler growers 10,000-12,000 (bird capacity)	Small broiler growers 6,000 (bird capacity)			
Planned to install automatic feeders	20	5	42	5	33	10	63
Did not plan to install automatic feeders	17	3	25	8	54	6	27
Already had automatic feeders	6	4	33	2	13	0	--
Total	43	12	100	15	100	16	100

CHAPTER V

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

A. SUMMARY

The production of broilers for meat consumption in a vertically integrated system over the past 20 years has resulted in broiler meat becoming the main source of meat for people on the island of Jamaica. Ever since the inception of this vertically integrated system within the broiler industry in Jamaica, broiler production for meat consumption has increased year by year.

At the time the study was conducted, there were two broiler contracting companies operating on the island. They were (1) Jamaica Broilers Limited and (2) Caribbean Broilers Limited. Those contracting companies provided inputs, such as day-old chicks, medication, feed, and technical advice, while growers provided buildings, equipment, and labor. Information concerning the two contracting companies was easily available. However, prior information concerning the growers themselves was unavailable since no previous study was found.

Therefore, the purposes of this study were (1) to investigate the characteristics of three size of operation groups of broiler growers in Jamaica in 1978, (2) to determine which recommended broiler practices were being used, and which were not being used by growers, and (3) to consider influences at work as broiler growers decided whether or not to use recommended practices. A random sample of 43 broiler growers on

the island of Jamaica was personally interviewed during the summer of 1978. The data were taken to The University of Tennessee, Knoxville, analyzed, and interpreted. For this study, data were analyzed according to three production groups, namely, large, medium, and small. A large grower was considered to have a grow-out capacity of from 15,000 to 42,000 broilers, a medium grower a capacity of 10,000 to 12,000, and a small grower a capacity of 6,000 broilers.

Main comparisons were made between large, medium, and small grower groups throughout the findings chapter. Consequential differences of 9% or larger were emphasized. Main findings of the study included those listed below.

Characteristics of Growers

1. All 43 growers were full-time broiler growers, spending 85% or more of their time in the broiler operation.
2. Nearly all growers, 95%, listed broiler growing as their main source of agricultural income.
3. The average grower had been in operation 6.4 years, large growers, 9.9 years, had operated on the average longer than either medium, 7.6 years, or small, 0.6 years, growers.
4. The average broiler grower had two broiler houses: large growers, 3.16, averaging more than medium, 2.2 houses, or small, 1.06 houses, growers.
5. Age of broiler houses averaged 6.6 years for all interviewees: large grower, 11.2 years, averaging older houses than medium, 8.2 years, and small, 1.7 years, growers.

6. All but one grower used gas brooders. The exception, a large grower, had electric brooders.

7. Houses were ventilated by the sea breeze.

8. Most growers, 86%, used pan feeders, though one-third of the large growers, 13% of the medium, and none of the small used automatic feeders.

9. Most growers, 86%, changed litter after every grow-out, while one-fourth of the large and none of the small reported two grow-outs per litter.

10. All growers used sugar cane hull for litter excepting one large grower using sawdust.

11. Most growers, 91%, used the public water supply for their birds, though a few used house wells.

12. Little difference was noted among groups in number of grow-outs per year; the average being 3.6 grow-outs.

13. Little difference was noted among groups in numbers of days between grow-outs; the average being 22.8 days.

14. Meat condemnation reported by growers studied was less than 1%; dead birds were destroyed by burning.

Management Practices Used

The following 16 management practices were studied:

1. The house was cleaned and disinfected at least 1 week before chicks arrive.

2. The heat was turned on at least 24 hours prior to arrival of chicks.

3. Feed trays or boxlids were left down at least until chicks reached 4 to 5 days of age.

4. The water jugs were cleaned daily until they were removed.

5. Caked or wet litter was removed from broiler house.

6. Feeders were raised periodically as the broilers increased in size.

7. During the first week, a curtain was used in the house to keep the chicks and heat in one side of the house.

8. Dead broilers were removed several times per day.

9. Weeds were not allowed to grow along the outer edges of the broiler house.

10. Chicken wire around the house was kept in good condition so that wild birds would not enter the broiler house.

11. Daily mortality records were kept.

12. The contractors kept enough feed in the bins so that broilers had feed at all times.

13. The broilers were debeaked at 1 day of age at the hatchery.

14. Water troughs were kept clean.

15. Visitors were kept away from the broiler house.

16. The servicemen reacted quickly whenever there was a problem.

All practices were being used by all 43 growers. Visual observations of the researcher bore this out.

Factors Influencing Practice Use

The growers' contract with the contracting industry and related almost daily supervision by industry servicemen were seen as the major

factors causing growers to use research verified management practices studied.

Other Information

1. Most, 70%, planned to expand by building new broiler houses in the future. This was true for all small growers, 47% of medium, and 59% of large growers.

2. The main source of credit listed by those planning expansion was the Jamaica Development Bank, 80% reporting.

3. Most growers surveyed, 60%, either had automatic feeding systems or were planning to add them soon. One-third of large growers already had such systems compared with none of the small ones.

4. All expressed interest in learning more about management, housing, and contracts.

B. IMPLICATIONS OF THE STUDY

Some of the main implications that can be drawn from the findings are:

1. A careful consideration of the characteristic differences between large, medium, and small growers can be of assistance in planning educational programs for all broiler growers on the island, especially small growers.

2. A very high percentage of all growers on the island can be expected to be receptive to Extension personnel, as can be seen by a 100% interest shown by growers in the study to learn more about management, housing, and their contracts.

3. Carefully planned educational programs of related interest to broiler growers on the island in areas, such as housing, management, and understanding of the broiler contract, can be expected to contribute to a high standard by growers, since all growers in the study grew broilers full time. All except two growers in the study had broiler growing as their main source of agricultural income.

4. Broiler house construction, which includes aspects, such as site selection and positioning of house, would be an appropriate area in which to plan educational programs, since 70% of all growers stated their intention to build new broiler houses. However, special emphasis might be placed on small growers, since all small growers in the study said they planned to build new broiler houses.

5. The broiler industry in Jamaica is expected to become more automated in the near future, since over 50% of all growers in the study said they planned to install some form of automatic feeding system.

Thus, it would seem very appropriate at this time to educate growers in advance on aspects of the automated system, such as operation and maintenance.

6. Further evaluations of these characteristics and individual study of information revealed by the Questionnaire can be helpful in planning and working with broiler growers and other poultry growers on an individual and a group basis.

C. RECOMMENDATIONS

Use of Findings

1. The Extension Service in Jamaica, through the use of its

agents out in the field, should implement and execute educational programs to benefit the needs of broiler growers on the island, since broiler meat is expected to be the main nonfish meat source for a long time in the future.

2. Agents should be encouraged to include broiler growers on their itinerary so that they can make regular visits to growers' farms within their areas, just as they visit other livestock producers in their work area.

3. All broiler contracting companies on the island should try to employ servicemen who possess the skill and technical know-how of broiler production to represent them out in the field. Graduates of the Jamaica School of Agriculture would be ideal persons for such positions.

Further Study

1. Similar studies might be done to determine the factors that cause growers to grow broilers on a contracted basis in preference to other livestock enterprises, such as dairying, beef, or swine production, which they would own.

2. Studies might also be done to determine how satisfied the broiler growers are with their contract and servicemen. It could include aspects such as:

- a. Grower attitudes toward the amount they are paid.
- b. Grower willingness to share market price risk.
- c. Grower attitudes towards servicemen and the frequency of their visits.

d. The contract rating as seen by growers (i.e., desirable, undesirable, etc.):

e. Grower suggestions for improving contracts.

f. Reasons for continuing to grow broilers under present contractual arrangements.

g. Added attention should be given to asking growers how many contacts they had had with Extension the previous year to establish influence.

BIBLIOGRAPHY



BIBLIOGRAPHY

1. Carter, C. E., Jr. Summary Tables II, III and IV, 1977 Tennessee Beef Cow Calf Survey, Tennessee Agricultural Extension Service, January 27, 1978.
2. Economic Survey Jamaica, 1970. Central Planning Unit.
3. Economic and Social Survey Jamaica, 1976. National Planning Agency.
4. Green, R. E. L. Growers' Income, Production Costs and Net Returns in Producing and Marketing Broilers under Contract, Live Oak, Florida Broiler Producing Area, 1970-1971, Agricultural Economic Report 38, Florida Agricultural Experiment Station, University of Florida, Gainesville, September, 1972.
5. Hunter, Gary G. "An Analysis of Contract Broiler Production in Tennessee." Unpublished Master's Thesis, The University of Tennessee, Knoxville, 1978.
6. Keyes, Kenneth G. "Production and Management Practices of Selected Beef Cattle Producers in Campbell County, Tennessee." Unpublished Master's Thesis, The University of Tennessee, Knoxville, 1966.
7. North, Mack O. Commercial Chicken Production Manual, Westport, Conn., Avi Publishing Co., 1972.
8. Raney, W. P. Livestock Numbers and Practices on Farms in the Elk River Watershed Area of Tennessee 1964, Tennessee Agricultural Experiment Station Bulletin 406, Knoxville, 1966.
9. United States Department of Agriculture, Broiler Growers, March 1977.
10. United States Department of Agriculture, The Chicken Broiler Industry, Agricultural Economic Report No. 381, August 1977.
11. Waldron, Jimmy E. "Production Practices Used in the Management of Selected Egg Producing Flocks in East Tennessee." Unpublished Problems in Lieu of Master's Thesis, The University of Tennessee, Knoxville, 1971.

APPENDICES



APPENDIX A

1973 TENNESSEE BROILER SURVEY

			Card Number
		(1)	
			County (Use TEMIS Number)
(2)	(3)	(4)	
			Name of Producer _____
			Address _____
A. General			
			1. Is respondent a full-time broiler grower? (1 = yes; 2 = no)
		(5)	
			2. Respondent's main source of income? (1 = poultry; 2 = dairy; 3 = beef cattle; 4 = row crops; 5 = hort. crops; 6 = other farm; 7 = nonfarm)
		(6)	
			3. Years respondent has been growing broilers (actual number).
	(7)	(8)	
			4. Number of broiler houses on the farm (actual number).
	(9)	(10)	
			5. Total number of broilers that can be grown in all the houses at one time (actual number).
(11)	(12)	(13)	
	(14)	(15)	
			6. Number of broilers on hand today (actual number).
(16)	(17)	(18)	
	(19)	(20)	
			7. Age of oldest broiler house (actual years).
	(21)	(22)	
			8. Source of energy for heat. (1 = coal; 2 = gas; 3 = oil; 4 = electricity).
		(23)	

- (24) 9. Type of heating system (1 = furnace-forced air; 2 = furnace-hot water; 3 = gas brooders; 4 = electric brooders).
- (25) 10. Type of ventilation (1 = natural; 2 = fan; 3 = combination).
- (26) 11. Type of feeders (1 = automatic; 2 = pan; 3 = hog trough).
- (27) 12. Number of grow-outs on the same litter (actual number).
- (28) 13. Type of litter (1 = shavings; 2 = sawdust; 3 = other, specify).
- (29) 14. Source of water (1 = well only for broiler house; 2 = well for broiler house and home; 3 = public supply).
- (30) 15. Number of grow-outs per year per house (actual number).
- (31) (32) 16. Number of days between grow-outs that houses are vacant (actual number).
- (33) 17. Method of dead bird disposal (1 = incinerator; 2 = disposal pits; 3 = hogs; 4 = fence rows; 5 = trash piles; 6 = other).
- (34) (35) 18. Average percent condemnation for the last grow-out (actual percent).

B. Recommended Practices (1 = yes; 2 = no; 3 = does not apply). (If 3 is used, please explain.)

- (36) 1. The house is cleaned and disinfected at least 1 week before the chicks arrive.
Comment: _____
- (37) 2. The heat is turned on at least 24 hours prior to the arrival of the chicks.
Comment: _____
- (38) 3. Feed trays or box lids were left down at least until the the chicks reached 4 to 5 days of age.
Comment: _____
- (39) 4. The water jugs were cleaned daily until they were removed.
Comment: _____

- (40) 5. Caked or wet litter is removed from the house.
Comment: _____
- (41) 6. Feeders were raised periodically as the broilers increased in size.
Comment: _____
- (42) 7. During the first week, a curtain is used in the house to keep the chicks and heat in one side of the house.
Comment: _____
- (43) 8. Dead broilers were removed several times per day.
Comment: _____
- (44) 9. Weeds were not allowed to grow along the outer edges of the broiler house.
Comment: _____
- (45) 10. Chicken wire around the house was kept in good condition so the wild birds could not enter the broiler house.
Comment: _____
- (46) 11. Daily mortality records were kept.
Comment: _____
- (47) 12. The broilers were debeaked at 1 day of age at the hatchery.
Comment: _____
- (48) 13. The contractor keeps enough feed in the bins so that the broilers have feed at all times.
Comment: _____
- (49) 14. The ceiling portion of the broiler house is insulated.
Comment: _____
- (50) 15. The insulation has not been allowed to sag or fall from the ceiling.
Comment: _____
- (51) 16. Water troughs were kept clean.
Comment: _____
- (52) 17. Visitors were kept away from the broiler house.
Comment: _____
- (53) 18. The serviceman reacts quickly whenever there is a problem.
Comment: _____
- (54) (55) Number of recommended practices used (actual number).

C. Other

- (56) 1. Do you plan to build a new broiler house
(1 = yes; 2 = no)?
- (57) 2. If a broiler house is built, financing will
be obtained from (1 = P.C.A.; 2 = F.H.A.; 3 =
bank; 4 = other).
- (58) 3. If you feed by hand, do you plan in the near
future to switch to mechanized feeding
equipment (1 = yes; 2 = no)?
4. Would you be interested in learning more about:
- (59) a. Management (1 = yes; 2 = no)
- (60) b. Housing (1 = yes; 2 = no)
- (61) c. Contracts (1 = yes; 2 = no)

APPENDIX B

1978 JAMAICA BROILER SURVEY

Name of Grower _____

Address _____

Company Represented: _____

A. General

1. Is respondent a full-time broiler grower? (yes; no)
2. Respondent's main source of agricultural income? (poultry; dairy; beef cattle; row crops; hort. crops; other farm; nonfarm)
3. Years respondent has been growing broilers. (actual number)
4. Number of broiler houses on farm. (actual number)
5. Total number of broilers that can be grown in all the houses at one time. (actual number)
6. Number of broilers on hand today. (actual number)
7. Age of oldest broiler house. (actual number)
8. Type of heating system. (forced air; hot water; gas brooders; electric brooders)
9. Type of ventilation. (natural; fan; combination)
10. Type of feeders. (automatic; pan)
11. Number of grow-outs on the same litter. (actual number)
12. Type of litter. (shavings; sawdust; sugar cane hull; other)
13. Source of water. (well only for broiler house; well for broiler house and home; river; public supply)
14. Number of grow-outs per year per house. (actual number)
15. Number of days between grow-outs that houses are vacant. (actual number)

16. Method of dead bird disposal. (incinerator; disposal pit; hogs; trash piles; other)
17. Average percent condemnation for the last grow-out. (actual percent)

B. Recommended Practices

1. The house is cleaned and disinfected at least one week before the chicks arrive.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

2. The heat is turned on at least 24 hours prior to the arrival of the chicks.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

3. Feed trays or box lids were left down at least until the chicks reached 4 to 5 days of age.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

4. The water jugs were cleaned daily until they were removed.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

5. Caked or wet litter is removed from the house.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

6. Feeders were raised periodically as the broilers increased in size.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

7. During the first week a curtain is used in the house to keep the chicks and heat in one side of the house.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

8. Dead broilers were removed several times per day.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

9. Weeds were not allowed to grow along the outer edges of the broiler house.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

10. Chicken wire around the house was kept in good condition so that wild birds could not enter the broiler house.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

11. Daily mortality records are kept.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

12. The contractor keeps enough feed in the bins so that the broilers have feed at all times.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

13. The broilers were debeaked at 1 day of age at the hatchery.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

14. Water troughs were kept clean.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

15. Visitors were kept away from the broiler house.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

16. The serviceman reacts quickly whenever there is a problem.

Read or heard of		Interested in		Is using or will use		Has tried	
Yes	No	Yes	No	Yes	No	Yes	No
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

Comment: _____

C. Other

1. Do you plan to build a new broiler house? (yes; no)
2. If a broiler house is built, financing will be obtained from (P.C.B.; commercial bank; J.D.B., other).
3. If you feed by hand, do you plan in the near future to switch to mechanized feeding equipment? (yes; no)
4. Would you be interested in learning about:
 - (a) management? (yes; no)
 - (b) housing? (yes; no)
 - (c) contracts? (yes; no)

VITA

Radcliffe Joel Brown was born in Brown's Hall, St. Catherine, Jamaica, West Indies. He attended elementary school there and graduated from Dinthill Technical High School, Linstead, St. Catherine, in 1969.

He graduated from the Jamaica School of Agriculture with a Second Class Honors' Diploma in Agriculture in 1973 and received a Bachelor of Science degree with Honors in Animal and Poultry Science at Tuskegee Institute in Alabama, 1977.

In 1978 he entered The University of Tennessee's graduate school of Agriculture and majored in Agricultural Economics. After completing his studies, he plans to return home to Jamaica to work for the Extension Service.