OVARIAN STATUS OF NON-GRAVID SLAUGHTERED ZEBU COWS IN ZARIA: RELATIONSHIP WITH AGE, SEASON AND CARCASS WEIGHT

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SUMMARY

OF 3,900 non-gravid zebu ovaries examined at 3 Zaria slaughter houses, 2,652 (68%) were active.

Ovarian activity was highest during the rainy season and anestrus highest during the dry season ($P < 0.01$). Anestrus non-gravid cows and empty cows with active ovaries had the lowest (135 ± 41 kg) and the highest (170 ± 43 kg) carcass weight respectively. Aged anestrus empty cows had the lowest carcass weight (127 ± 28 kg) and mature empty cows with active ovaries had the highest (180 ± 47 kg). The incidence of anestrus increased with age.

The magnitude of slaughtering of young and mature empty cows with active ovaries was discussed and it was recommended that rectal examination be done before culling animals in order to reduce this major source of loss of reproductively active cows.

INTRODUCTION

A SOURCE of wastage not recognized by abattoir personnel, stock-owners, as well as animal scientists and veterinarians is the slaughter of young and matured cows with active ovaries. This wastage is of concern to the Federal and State Governments of Nigeria but the incidence is unknown. The relationship of ovarian status of slaughtered empty cows to age, season and carcass weight are also unknown.

During the survey to assess pregnancy wastage in our slaughter houses, records were kept of the ovarian status of empty cows slaughtered in slaughter houses around Zaria. Reported here are the results of these observations.

MATERIALS AND METHODS

Location and time

The study was conducted at the slaugh-

ter houses in Samaru, Sabongari and Zaria-City from September, 1975 to November, 1976. This period included the 4 seasons; pre-dry (October—December); dry (January—March); prerain (April—May); and rain (June—September). Meteorological data as obtained from Samaru meteorological station for the period were shown in Table 4.

Cows

Cows were randomly selected during daily visits (Monday to Friday) to the 3 slaughter houses. The breeds involved were Rahaji (65%), Bunaji (30%) and Wadara (5%). Their ages were estimated by examining the incisors (Sisson and Grossman, 1959). The cows were divided into 3 age groups Young-temporary teeth to 6 erupted teeth (less than 3.5 years), Mature-fullmouth with little wear (3.5 to 7 years), and old-moderate to excessive wear (greater than 7 years).

Gross assessment of ovarian status

This was based on sizes of the ovaries, the presence or absence of corpora lutea, their sizes and their consistency. The presence or absence of follicles, their sizes as well as their consistency. Based on these criteria, the ovaries were classified as active or anestrus.

Carcass weight

The Carcass weight ("hot or recently slaughtered weight less three percent) was recorded.

Herd history

The owners were interviewed to deter-

mine the main reasons for culling cows slaughter. Questions included: lactation status prior to slaughter, whether calves had been weaned within previous one to six months to slaughter. Any history of reproductive problems, was rectal palpation used as an aid for culling, and the grazing conditions as well as management practices in the state of origin at the time of culling.

Data processing and statistical analysis

Herd and individual cow data were recorded on punch cards and analysed by computer. Differences in carcass weight between ages, ovarian status in relation to seasons and age were assessed by student's "t" test.

RESULTS

Of the 3,900 cows examined 2,652 (68%) had active ovaries. The incidence, age and seasonal relationship are given

in Tables 1—2. The incidence of anestrus increased with age. The age distribution was 2 erupted teeth 12 (0.30%), 4 erupted teeth 15 (0.40%), 6 erupted 176 cows (4.5%), fullmouth without wear 172 (19.53%), fullmouth with some wear 1804 cows (46.76%), incisor well-worn 700 (17.95%) and incisors worn to the gums 431 (11.06%). Composite grouping revealed that 5.20 percent of the cows were young, 65.70 percent mature and 29.01 percent old.

The relationship between coldcarcass weight and ovarian activity and age are given in Table 3 and Fig. 1.

Ovarian activity differed significantly between seasons ($P < 0.05$), being highest during the rainy season. Differences between rainy season and the 3 drier seasons were highly significant ($P < 0.01$). The incidence of anestrus was highest during the dry season and lowest during the rain ($P < 0.01$).

TABLE 1

Seasonal variations in the ovarian activity of empty Zebu cows slaughtered in Zaria between September, 1975 and November, 1976

Season	Total Examined	Cows with Active Ovaries	Anestrus Cows	Cows with active Ovaries (% of Total)
Pre-dry	1,381	829	552	60.02
Dry	812	331	481	40.76
Pre-rain	811	690	121	85.08
Rain	896	802	94	89.50
Total	3,900	2,652	1,248	68.84

TABLE 2

Relationship between age and ovarian activity in empty Zebu Cows slaughtered in Zaria between September, 1975 and November, 1976

Age group*	No of Cows examined	Ovarian No	Active %	Anestrus No	%
Young	203	144	71	59	29
Mature	2,566	1,899	74	667	26
Old	1,131	667	59	464	41
Total	3,900	2,710	68	1,190	32

*Young (< 3.5 years)
Mature (3.5 — 7 years)
Old (7 years and above)

OVARIAN STATUS OF NON-GRAVID ZEBU COWS

TABLE 3

Relationship between cold carcass weight and age and ovarian activity in empty Zebu cows slaughtered in Zaria between September, 1975 and November, 1976

Age group*	Cows No	examined Wt. (kg)	Active No	Ovaries Wt. (kg)	Anestrus No	Ovaries Wt. (kg)
Young	203	164±38	144	169±38	59	136±42
Mature	2,566	169±43	1,899	180±47	667	144±50
Old	1,131	147±31	667	152±32	464	127±28
Total	3,900	161±40	2,710	170±43**	1,190	135±41

* = Young (< 3.5 years), Mature (3.5 — 7 years), and Old (7 years and above).

* = Standard deviation from the mean.

** = $P < 0.01$.

TABLE 4

Mean meteorological data in the area of study between September, 1975 and November, 1976

Month	Temperature (°C)	Rainfall (mm)	Relative humidity (%)
September	23.8	227.2	69.1
October	24.4	35.6	49.2
November	23.1	1.4	24.9
December	22.0	0.0	19.0
January	21.8	0.2	16.0
February	23.8	1.5	11.0
March	26.9	7.0	17.0
April	28.3	41.2	40.0
May	27.2	123.2	49.0
June	24.8	163.0	65.0
July	23.6	218.0	72.0
August	23.2	277.8	76.0
September	23.7	227.0	69.0
October	24.4	35.5	49.0
November	23.3	1.2	25.0

Anestrus cows had the lowest (135 ± 43 kg) carcass weights while non-pregnant cows with active ovaries had the highest weight (180 ± 47), the differences being significant ($P < 0.01$). When age was considered with ovarian status, aged anestrus cows had the lowest carcass weight (127 ± 28 kg), and mature cows with active ovaries had the highest (180 ± 47 kg).

Interview of the cattle owners as regards herd history were unsatisfactory as the great majority were buyers who had little or no history of the herd and said they were unaware of rectal palpation as an aid in culling.

DISCUSSION

Daily observation of the ovaries con-

firmed a problem of wastage of reproductively active young and matured cows. That almost 68 percent of the empty cows slaughtered were having active ovaries is serious because these could have been detected by rectal palpation prior to sale or slaughter. Detection and retention of young and mature cows with active ovaries by original owners or by female recovery schemes would have contributed considerably towards meeting the meat production target in Nigeria. It is recommended that the government make greater efforts in implementing the recent law on the slaughtering of cows. If cows are to be slaughtered, they should be those that have out-lived their reproductive usefulness.

The magnitude of this problem of slaughter of young and mature fertile

cows in Nigeria may be extrapolated from this study. The total number of cows slaughtered annually at the three slaughter houses of Zaria is approximately 7,000. Allowing for 32 percent being old and anestrus and the other inescapable cullings, then 68 percent would be young mature fertile cows. This figure may not appear large but when added to expected and similar results from other slaughter establishments in the country, the potential wastage is a problem for major concern and requires positive action.

The finding that the ovarian activity was highest during the rainy season and anestrus highest during the dry season **respectively lend support and explanation to the previous findings that in the Northern States of Nigeria, that conception rates are highest during July and August (Osori 1976).**

With regards to carcass weight and age *per se*, the finding that carcass weight appeared to be highest in cows 3.5 — 7 years old differed from the results of Brinks *et al.* (1962) in the United States of America who found that the weight of Hereford range cows nursing calves increased up to 7 years of age. The obvious decrease in carcass weight after maturing of cows in the present study is probably due to poorer management and

environmental conditions.

The highest incidence of active and anestrus ovaries during the rainy and dry season respectively could be explained in relation to the lush and high quality pasture during rainy season and scarce and declining quality in the dry season. **Supplementation of herd feed during the dry season should be advocated to reduce the high incidence of anestrus ovaries during the dry season.**

Herd history was relatively meaningless as the owners were recent buyers of the cattle. Some owners were co-operative while others refused to supply any information without payment. The various state governments will go a long way in helping improve livestock productivity by educating the local farmers.

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