

Growth and development of some organs, muscular and fatty tissues and bones in lamb carcasses

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Growth and development of some organs, muscular and fatty tissues and bones in lamb carcasses. SUMMARY The experimental work of this study was carried on crossbred (Ossimi - Rahmani) male and female lambs. Lambs were divided into three groups. The first group, consisted of twenty-four male lambs and twenty-four female lambs, chosen randomly and were fed milk for two months. At two months of age six lambs (3 males and 3 females) were assigned at random and were slaughtered for carcass study. The second group which consisted of eight male lambs and eleven female lambs (assigned randomly from the rest lambs) and were fed fattening ration for three months (i.e. during the age interval 3 -- 6 months of age) and 6 lambs (3 males and 3 females) were assigned randomly and slaughtered at 6 months of age. The third group consisted of the rest lambs were fed the same fattening ration for another three months also (i.e. during the age interval 7 — 10 months) and 6 lambs (3 males and 3 females) were chosen randomly and slaughtered at 10 months of age. Lambs were weighed weekly during the three periods of fattening till slaughter. Feed consumption, feed conversion and daily gain of lambs during the three periods were calculated. Live body dimensions were recorded just before slaughter. Carcass study was studied. The results could be summarized as follows: 1 — Crossing Ossimi rams with Rahmani ewes was associated with increasing body weight of crossbred lambs during the period from birth till 6 months of age. Lambs gained higher absolute weight increase (13.528 kg) during the third growth period of fattening. The mean weight of male lambs were heavier than females during the three growth periods. The differences between body weight means, due to the effects of age during 6. SUMMARY - 225 - Growth and development of some organs, muscular and fatty tissues and bones in lamb carcasses periods of fattening, sex and the interaction between them were significant. Rate of increase of daily body gain was significantly affected by age. 2 The amount of feed consumed increased with advance in age and the opposite trend with respect to feed conversion. Feed consumption and feed conversion for males were higher than for females. 3 — Live condition score and all body dimensions just before slaughtering increased significantly by ageing and sex differences were non — significant. 4 — Means of carcass confirmation score and subcutaneous fat score decreased insignificantly with age advancing from 2 to 10 months. The means of carcass length differed significantly from 2 to 10 months of age. 5 — Muscular growth and development: a — The means of weight (gm), depth, length and width (cm) of quadriceps femoris muscle increased significantly as age increased from 2 to 10 months. A decrease in growth rates from 6 to 10 months compared with 2 — 6 months was obvious in muscle weight, due to the decrease in length and width. The increase in weight from 2 — 6 months was mainly affected by length of the muscle while from 6 — 10 months was affected by depth. b — The means of Longissimus dorsi muscle weight after birth increased rapidly for the first 2 months of life and thereafter, much more gradual increase has occurred. The rate of increase was mainly affected by depth of the muscle and partly affected by its length. The decrease in growth. 6. SUMMARY - 226 - Growth and development of some organs, muscular and fatty tissues and bones in lamb carcasses rates from 6 to 10 months was obvious in case of muscle weight, muscle depth and length. The differences between weights of the muscle

and all dimensions, due to sex effect, were significant between means of muscle weight and length.c — The means of semitendinosus muscle weight and dimensions after birth, increased rapidly for the first 2 months of life and thereafter much more gradual increase has occurred. The rate of increase in weight was mainly affected by depth of the muscle.d — The increase in means of growth rates of psoas major and psoas minor muscles from 2 to 6 months was obvious in weight and length and depth while muscle width show marked decrease. The increase in muscle weight from 6 to 10 months was mainly in depth.e — The low growth rates of triceps brachii muscle with respect to weight, depth and width, were particularly evident compared with the other muscles studied. The rate of increase in weight from 2 to 6 months was mainly affected by length of this muscle, while from 6 to 10 months was affected by depth.f The increase of biceps brachii muscle weight was mainly affected by the high rate increase of the short.(B) muscle depth and width. The differences between weight of this muscle and all dimensions, due to age and sex effects were4significant.g — The differences between each of weight, depth and width of the muscles, due to location effect, were nonsignificant, in6. SUMMARY - 227 -Growth and development of some organs, muscular and fatty tissues and bones in lamp carcassesmale and female muscles, except the length of muscles in both sexes as the differences were significant. The differences between each of the above dimensions. due to the effect of muscles within each of the three locations were significant except width of female.6 — Growth' rate and dimensions of body offals and internal organs of lambs:a — Growth rates of weight of head, small and large intestine decreased significantly with advance in age. On the contrary, were the dimensions length and width of the head and length and volume of small intestine, length of large intestine. Males exceeded significantly females in weight and dimensions.b — Rumen volume of lambs increased significantly by ageing, while rate of rumen weight unsignificantly differed. Rumen volume of males was unsignificantly larger than in females.c — The means of growth rates of weight of legs, heart, lungs and trachea, kidneys, brain and brisket decreased by ageing while rate of spleen increased.7 — Growth rates of lean, fat and bone of 9, 10, 10 ribs and meat component ratios and Longissimus dorsi measurements:Lean growth rates of weight of ribs component and,Leanratio, increased from 2 to 6 months and thereafter the rates Bonedecreased. The opposite trend with respect to fat weight, growthof bone and fat thickness growth on ribs. Lean + Fatof 9, 10, 11Bone6. SUMMARY - 228 -Growth and development of some organs, muscular and fatty tissues and hones in lamp carcassesribs increased from 2 to 10 months of age, whileLeandecreased.Fat8 — Growth rates of dimensions of forelimb and hindlimb bones of lambs:Length and circumference of widest transverse (C. W. T) and circumference of narrowest transverse (C. N. T) of humerus and radius and ulna of forelimb bone of lambs increased with age advancing, and rates were higher from 2 to 6 months than from 6 to 10 months. The length and C. W. T and C. N. T of femur and tibia and fibula of hindlimb bone of lambs increased with age advancing. Length of tibia and fibula was higher in dimensions than femur and the apposite trend in case of C. W. T and C. N. T.9 — Growth rates of Neck bones dimensions:The means of length, width, depth dimensions of first two vertebraes atlas & axis and the length, width, depth and spinous process length (S. P. L) of the third, fourth, fifth, sixth and seventh cervical vertebraes increased by ageing. Rates of growth of all dimensions from 2 to 6 months were higher than the growth rates from 6 to 10 months.10 — Growth rates of thoracic vertebraes dimensions:Growth rates of means of length, depth, width, ribs length of thoracic vertebraes increased by ageing and males did not differ significantly with females, while in case of ribs length and spinous process length females exceeded significantly the males. Means of depth, width and spinous process length of thoracic vertebrae (7 & 10) of males exceeded significantly the same dimensions in females. Mean of depth of thoraCic vertebrae (11) of males was significantly higher than females.6. SUMMARY -229-Growth and development of some organs, muscular and fatty tissues and bones in lamp carcasses11 — Growth rate of lumber vertebraes dimensions of lambs:Means of length of lumber bones increased by ageing. Mean of males was higher than mean of females. Means of length, width & transverse process and depth of the six lumber vertebraes of the lumber bone increased by ageing.12 — Bone growth and development:' The' diameter and width of ossification centers (the diaphysis) of casted tibia and fumer bone, increased by ageing. The diameter of ossification center of males were higher than the means of diameter in females. The

differences between means of upper length of epiphyseal centers and epiphyseal plate, the lower length of epiphyseal centers and plate and length of diaphysis, due to age effect were significant.¹³ — The percentage of moisture, protein and pH of lean on 9, 10, 11th ribs decreased by ageing, while the percentage of fat, ash and colour increased. The percentage of moisture, protein and ash were significantly higher in males than in females. The apposite trend was obtained in fat as lean of females contain more fat than males. The percentages of pH and colour did not differ, due to sex effect.¹⁴ — The general appearance of muscle tissues show that the muscle fibres are held together in bundles or Fasciculi by the endomysium connective tissue. A number of these bundles, in turn, are held together by perimysium inside the connective tissues the blood vessels and fat tissues could be observed. The cross section in the six muscles studied used for measuring fibre diameter and counting the number of fibres per muscle bundle, revealed that means of fibre numbers significantly decreased.⁶ SUMMARY - 230 - Growth and development of some organs, muscular and Aar tissues and bones in lamp carcasses with age. While in each muscle, means fibre diameter significantly increased with age. The importance of the diameter lies in its relation to tenderness of the meat. Variation in size of muscle bundle are due to both number and diameter of fibres.⁶ SUMMARY - 231 -