

Deer and Antelope Meat Studies

season of highest palatability and food value subject of investigation of California antelope and deer

Bessie B. Cook and Agnes Fay Morgan

Bucks of the California mule deer and the black-tailed deer usually are in prime condition—with the antlers hard—in August and early September. On the basis of palatability and vitamin content the meat of the mule deer from Santa Barbara and Ventura counties was found to be desirable from June through August and the meat of the black-tailed deer from Marin County was most palatable from the middle of March through July. The vitamin content of black-tailed deer meat seemed to be highest in the winter months.

Antelope meat in the months from May through October varied in palatability, not only from month to month, but also within the groups of animals killed each month. In vitamin content and tenderness, the antelope meat excelled that of both kinds of deer; but in flavor, it was judged inferior to venison.

These are the findings of a series of studies begun in 1944 to determine the palatability factors and food value of venison and antelope meat as they are influenced by seasonal variations, age, and the general condition of the animals.

Samples Taken

Each month, for 14 months, five black-tailed and five mule deer were taken for these studies.

The black-tailed deer were taken from the north side of Mt. Tamalpais in Marin County, where an excess of deer had been causing damage to the gardens and cultivated areas.

The mule deer were taken from the west central portion of Ventura County in the upper Cuyama and Sespe areas from January through April, in 1944, and after that date, from Santa Barbara County, in the vicinity of Gibraltar Reservoir and Big Pine mountain.

Five California prong-horned antelope bucks, taken in Lassen County each month for six months beginning in May and ending October of 1945, were also studied.

Findings

Generalizations as to the qualities of meat, with only five animals in a group of such varied general body condition and age, are not without danger of misinterpretation. The variations were great

in some cases, but certain general trends were evident.

The factors considered in determining the total palatability of the meat were tenderness, desirability of both odor and flavor, and juiciness. These factors, though varying from month to month, showed certain seasonal trends. Some of them followed the general condition of the animals quite closely, others did not.

Deer

Tenderness in mule deer was greatest from May through August of 1944, and in February of both 1944 and 1945. In the black-tailed deer, greatest tenderness occurred in the months of April, July and September of 1944, and in January and February of 1945.

The peak of tenderness in 1944 occurred when the animals were reported to be in prime condition, but the meat also was tender in the spring of 1945 when the general condition, though improving over that in November, was reported to be only fair.

The tenderness found at the height of the breeding season was surprising. However, the general condition was declining rapidly at the time, and in November, after the breeding was over, the deer were all thin and the meat was generally tough.

The increased exercise from running during the breeding probably explains the toughness of the muscle tissue, as much so or more than loss of body fat.

Age probably plays a less important part in determining palatability than is generally supposed. The average shearing force required to cut standard size samples of meat from six yearling deer was 9.9 pounds; it was 12.7 pounds for two-year olds, while in older deer, the average was about the same for each year. When the figures for the older animals were examined, it became clear that the general condition was a more important factor than was age.

Only slight monthly variation appeared in the desirability of flavor and of odor in the muscle meats of the mule deer.

The livers of these animals were reported to have a grassy, shrubby-like flavor in May and a musk-like flavor and odor in October.

The same off-flavors and odors were reported in liver, and to less extent, in

the muscles of the black-tailed deer in April and in October.

The musk-like flavor observed in October in both groups of deer was obviously associated with breeding, when glandular secretions are known to permeate the meat. The peculiar flavor which occurred in the spring was probably caused by a change in the kind of forage.

The flavor of venison did not depend greatly on the degree of fatness in the animal. The fat itself was distasteful.

The scores for palatability followed, with slight variations, somewhat the same general seasonal trend as the body condition, except for the deer taken in the spring of 1945, when there was a rise in all factors of palatability.

In mule deer, the highest scores occurred from March through August, and were lowest in January. In the black-tailed deer they were highest from March through July, in October and November of 1944, and in February of 1945. The lowest scores occurred in August and September.

The vitamin—thiamin and riboflavin—content of the muscle meats paralleled that of liver in the mule deer. In the black-tailed deer, the vitamin content of the liver decreased as that of the muscle increased, and vice versa.

This suggests the possibility of a breed difference in tissue storage of these vitamins.

Both mule and black-tailed deer taken in February of 1945 scored better in every way than animals taken in the same groups in corresponding months of 1944.

Variability exists in deer meat, not only at different seasons in the year, but from year to year. The yearly variation probably arises from differences in range conditions resulting from climatic changes.

Antelope

The desirability of the antelope meat was extremely variable.

The meat of only one animal was judged to be excellent, that of several was rated good, and of most, as medium in quality. The lowest ratings were given in May and September, the months when the animals were reported to be in poor condition. Off-flavors and odors were re-

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OLIVES

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to the full depth in which most of the roots are located.

The soil in which these experiments were conducted holds about five or six inches of water in the top six feet of soil. Conversely, when dry, it requires five to six acre inches of water to bring the supply back to the average field capacity. Consequently, in some of the irrigations, an average of only about three acre inches was applied.

In the period following the irrigation on June 2d, there was readily available moisture in the top foot for about three weeks, and in the second and third foot for about five weeks, with a longer period in the lower depths. The amount of water used by olive trees during the growing season is between 24 and 30 acre inches. In addition, some water will be necessary during the fall or winter, depending on the climatic conditions.

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The above progress report is based on Research Project No. 633A.

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ported in all groups of animals. Some of these impressions were undoubtedly due to the fact that the flavor of antelope is entirely different from that of other meats and was reported in this way because of its unfamiliarity.

In most of the animals the meat was very tender. Over the period studied, it was found to be more tender than venison.

The thiamin content of the muscle meats equaled that of the livers. It was highest in May and lowest during the rut.

The riboflavin content of all antelope tissues studied was found to vary with the general condition of the animals and, as in the California mule deer, that in the muscles tended to parallel that found in the livers.

Vitamin Contents

The antelope hams and loins had more thiamin than the same cuts of either species of deer, and deer in turn had slightly more than similar cuts of beef, veal, or lamb as determined by methods similar to the ones used in these experiments. Pork liver ranks with venison liver in thiamin; lamb and antelope come next; and beef and veal livers have the least of this vitamin.

Antelope hams and loins are the highest of all of these meats in riboflavin;

veal, pork, and lamb come next, and beef last. Antelope and venison livers excel in this vitamin, having approximately one and one-half times as much as the livers of any of the other animals. The muscular activity of the deer and antelope may be accepted as greatly in excess of that of domestic meat animals. This may account for the higher concentration of riboflavin found in the tissues of the game species.

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The studies reported above were made with funds provided by the California Division of Fish and Game under the Federal Aid in Wild Life Restoration. Project California 15 R. Data regarding the history of the project, collection and handling of animals in the field, and the general condition, age, and dressed weights of specimens were supplied by the California Division of Fish and Game.

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—now ready for distribution—

Each month, new publications of the College of Agriculture are listed in this column as they are received from the press.

Single copies of these publications or a catalogue of Agricultural Publications may be obtained without charge from the local office of the Farm Advisor or by addressing a request to: Publications Office, 22 Giannini Hall, University of California, College of Agriculture, Berkeley 4, California.

PORK PRODUCTION IN CALIFORNIA, by E. H. Hughes and Hubert Heitman, Jr., Ext. Cir. 15, revised August, 1949.

This handbook on raising hogs for meat is intended for both small- and large-scale producers. It lists needed equipment, tells how to care for the breeding herd and young pigs, gives growing and fattening rations, and describes symptoms of important diseases.

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