

DEER DIETS

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Deer express seasonal cycles involving growth, appetite, and energy expenditures that are controlled by metabolic hormones whose rise and fall is associated with daylength. Food intake or appetite decrease with decreasing daylength in autumn and winter and increases during spring and early summer with increasing daylength. Seasonal intake is most pronounced in mature males and the least in weaned fawns or calves with mature females being intermediate. The spring increase in feed intake is related to body function. Mature males are regaining weight lost during the autumn rut and growing antlers if they are seasonal breeders. Females are preparing for fawning in late May and June and for milk production until weaning in autumn. Axis deer will breed year round but still experience the seasonal effect on intake, however, at a lower level than seasonal breeders.

Deer are ruminants (four compartment stomachs) like sheep, goats, and cattle. Wild ruminants have been classified as grazers (consuming grasses and sedges), browsers (concentrate selectors consuming primarily forbs and shrubs) and intermediate or opportunistic feeders which can use grasses, sedges, forbs, and shrubs. Cattle and sheep are examples of grazers which have a large rumen that allows for a slow rate of fermentation and passage through the digestive system. This enables them to use high fiber or low quality diets. Grazers have about three major feeding periods a day. In contrast, browsers have a small rumen with a high rate of passage and fermentation which requires them to have many small feeding periods (8 to 12) throughout the day. Because of this faster rate of passage, browsers require a higher quality diet low in fiber. White-tailed deer, mule deer, and moose are examples of browsers. Forage of warm-season perennial grasses in July and August is usually low quality and high in fiber and therefore avoided by browsers. Intermediate feeders have a digestive system between grazers and browsers which allows them to use most plants with about six feeding periods a day. Red deer, fallow deer, axis deer, sika deer and elk are examples of intermediate feeders. The ability to utilize a higher fiber diet than the native deer classified as browsers allows this group of cervid species to be farmed as domestic livestock.

A deer's diet can consist of browse, forbs, grass, hard and soft mast (fruits of woody plants), and fungi

(mushrooms). Forbs and browse are preferred. Browse includes the young, tender stem tips and leaves of shrubs and trees. Forbs are broadleaf plants which may be considered weeds in some pastures and includes cool- and warm-season legumes such as clovers and cowpeas. White-tailed deer primarily eat browse and forbs because as browsers they require a high quality diet low in fiber. Perennial grasses constituted less than 5% of their diet during the summer under range conditions. White-tailed deer will consume the higher quality cool-season annual grasses (oats, wheat, ryegrass, etc.) in winter when available browse and forbs have been depleted. In contrast, warm-season grasses can constitute the total diet for non-native deer and elk.

The digestive system of an elk resembles a cow (bovine) more than a deer (cervid). The larger size and shape of the elk mouth parts are also similar to a cow and therefore are not able to select small nutritious plant parts like the smaller deer. Because elk are not as selective as deer, they are more flexible and can adjust their plant selection based on availability.

Estimated crude protein percentages of the diet for deer are 15 to 16% for weaned fawns, 14 to 16% from spring to mid-autumn for mature deer and 10 to 12% from mid-autumn through winter. In terms of percent digestible dry matter terms, a minimum of 65% is needed for weaned fawns, a minimum of 62% for does nursing fawns, and mature bucks during spring and summer and a minimum of 55% for mature bucks and dry does from late autumn to early spring.

Suggested crude protein concentrations for elk are 10 to 12% for maintenance of mature animals in late autumn and winter but should be 14 to 18% during female lactation and male antler growth in spring and summer. Weaned calves should have a 16 to 18% crude protein diet until about 9 months of age when it can decrease 12 to 14% crude protein.

Quantitatively, energy is the most important item in an animal's diet because all the animal's biological processes require energy. The amount of energy required in the diet depends on body function and parallels that of protein. Energy requirements for mature, lactating females are double that of non-lactating females. Energy may be provided by carbohydrates, fats, or excess protein. The primary and usually the most economical energy source is forage from pastures, forbs, and browse. Animals lose weight when diets are low in energy and gain

weight on diets high in energy. Animals store energy as fat during periods of abundant forage like spring and use this stored fat when energy is limiting in the diet during the winter. When forage diets are limiting, grains such as corn are used as an energy supplement and soybean meal is used as a protein supplement.