

White-tailed Deer Management for Montana Landowners

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Life History

White-tailed deer (*Odocoileus virginianus*) fawns are born in late May and June after a gestation period of approximately 202 days, roughly seven months. Fawns weigh seven to eight pounds when born, and their weight may double in the first two weeks of life. Twins are the normal litter size, but triplets are not uncommon. Whitetail does can breed at six to seven months of age, but most breed for the first time at one-and-one-half years of age. Mature bucks can weigh 200 to 300 pounds. Females typically weigh 25 to 40 percent less, or roughly 120 to 180 pounds. Whitetail does select one to five-acre cover patches, areas with low shrubs and overstory tree cover, to have their fawns. Nearby water and succulent vegetation are also important. Although mortality in fawns is usually due to predation, forage quality is extremely important to their survival. Fawns are kept hidden by the doe for the first two weeks of life or until they are mobile enough to accompany her as she travels.

During the remaining summer months, the doe looks for lush cover to satisfy the high nutritional demands of her fawn and to provide protection from predators. After the fawning season, yearling does often regroup with their mothers and their mothers' new fawns, remaining together until the next fawning season. During summer, bachelor bucks stay in groups of two to four. Because their antlers are growing and tender during summer, bucks tend to minimize movements and spend most of their time feeding and loafing in areas that are secure, cool and offer relief from biting insects.

During fall, after their antlers harden, bucks begin sparring and forming a dominance hierarchy that will determine who breeds the does during the November rut. Bucks mark their area with "scrapes" created when they rub small trees with their antlers. They also mark their territory by urinating in pawed-out areas or by rubbing twigs with scent from their pre-orbital glands, located on the inside corner of each eye. The other method of using odor to mark territory involves activating the external glands, called the tarsal and metatarsal glands. The metatarsal gland is located on the outside of the hind leg above the hoof. The tarsal gland is located inside the rear leg at the hock. Both sexes, including fawns, urinate on the tarsal gland. Even though bucks mark their area, they do not actually defend it. A buck "tends" a doe for one to three days before her heat period and for two or three days after. The doe is in heat (estrus) for twenty-four

hours. If she fails to conceive, she will come into heat a couple of times again at twenty-eight-day intervals.

White-tailed bucks are more aggressive toward each other than are mule deer. Combat is common among dominant bucks in the same area. A buck defends the area around a doe in heat and challenges other bucks that approach her. After the rut, deer of both sexes and all ages mix. Unlike mule deer, whitetails often winter in the area where they spent the other seasons if food and shelter are sufficient. In some parts of the northern Rockies, whitetails “yard up” during hard winters. This means they stay within a couple acres of dense cover rather than expose themselves to wind and more extreme weather. White-tailed deer are very productive, especially when compared to mule deer. In theory, one buck and one doe could increase to 22 animals in five years. In reality, this rarely happens in a wild population because of mortality factors. Herds are more likely to increase at a rate of 20 to 35 percent.

Limiting Factors

As a landowner, you can take management actions to impact the size of the whitetail population on your land once you fully understand all the factors that limit whitetail population growth. It is important to remember there is rarely one factor that by itself limits a deer herd’s size. Normally, several interacting factors affect population. For example, coyote predation may appear to prevent a white-tailed deer herd from expanding; however, if a drought, fire or some other factor has eliminated cover, fawns will be easier for coyotes to find. A lack of small rodents resulting from drought or fire may also force coyotes to concentrate on deer.

To understand how certain factors can limit white-tailed deer population on your land, it is important to understand the concept of “carrying capacity.” In its simplest terms, the carrying capacity of a whitetail range refers to the maximum number of deer the habitat can support. If the size of the deer herd is too close to carrying capacity, the size of the herd will rise during favorable years and fall during poor years. As a landowner, you should try to achieve “optimum” carrying capacity, which means finding and maintaining a population level at which the animals are in good condition and can meet their needs on a sustained basis. If the deer on your land look skinny or their coats are not sleek during summer, the deer may not be in good condition. If you look at browsed bushes and see that more than 50 percent of the branches have been nipped, you are probably feeding too many deer. If branches are browsed to a diameter greater than one-eighth inch, they are being forced to eat unpreferred food.

Traditionally, we have considered food, water, cover and space as the habitat components that determine suitability for wildlife. However, other factors may also contribute to enhancing or reducing the value of the habitat. For example, other land uses can impact whitetail deer in a positive or negative way. Even though whitetails are very adaptable and thrive in urban, agricultural, logged and mined areas, threats like feral dogs and automobile collisions have proven to be obstacles that not even white-tailed deer can overcome.

Food and Water

Forage quantity and quality are the most common factors that limit how quickly a white-tailed deer population grows. Having a wide variety of forages available under various conditions is important. Whitetails are primarily browsers.

Secondarily, they are grazers. This means that they will only graze grasses and forbs when buds and twigs are not available or when they are unpalatable. When browse is not available, it is very important that there be adequate access to forbs, which are nutritionally superior to grasses. Forbs are the small leafy plants that grow close to the ground under or between the taller grasses. Grasses alone will not provide the 16 percent protein necessary for white-tailed deer to grow and reproduce at optimal levels. Forbs and browse, which are higher in protein, are necessary for an adequate diet. If snow cover reduces the availability of forbs, the presence of woody browse above the snow becomes very important. Thus, a deer herd dependent on grass and forbs will not do well during a winter of deep snow cover or freeze-thaw conditions.

During drought conditions, white-tailed deer are especially unlikely to get all the nutrients they need by grazing. Because forbs are less plentiful during these times, the nutritional benefits of woody browse become very important. Food supply, or forage, is the predominant constraint on the size of most white-tailed deer herds. During winter and periods of severe drought, forage limits are usually reached in the West, meaning that all the available forage is consumed during those times. It is vital for landowners to look beyond their own property boundaries to determine food limitations. Although white-tailed deer can live the entire year on a few hundred acres if *all* needs are met, most landowners do not provide year-round habitat for their deer.

By looking at the entire landscape, deer managers can better determine which forage needs can be best satisfied on their property and which are available on nearby lands. Forage *quality* is just as important as *quantity*. If there is plenty of forage available but it is unpalatable or indigestible, it will obviously not provide an adequate ration of food. If coarse or dry grasses are the only forage available, whitetails will not thrive, regardless of the quantity. If brush or trees are readily available but unpalatable, deer will starve rather than eat them. Deer need free water to drink. Free water, as opposed to the water contained in plants, is especially important when forage is dry. In one study, deer drank about three pounds of water for each pound of dry food eaten. They drank only one half pound of water for each pound of fresh succulent vegetation eaten. During winter, deer use snow as a source of free water.

Winter

Winter weather with snowy, windy or severely cold conditions can limit the size of a deer population by causing starvation and malnutrition. Deep snow and severe cold may cause deer to remain in sheltered areas where food is scarce rather than face better, but colder, foraging areas elsewhere. When snow is deep, whitetails tend to form groups and make large paths through the snow. This practice, called yarding, increases local mobility but leads to the depletion of available forage. Winter weather can also make whitetails more susceptible to

predators. Concentrations of deer attract and hold predators in an area and deep or crusting snow allows those predators to catch deer more easily. In addition, their weakened body condition during severe winters makes deer more vulnerable to predation. Snowy conditions also make it difficult for predators to obtain other prey, such as mice or other rodents, resulting in more pressure on deer herds.

Disease

Disease and parasites can be serious challenges for some deer populations and may indicate other problems, such as overpopulation or inadequate nutrition. High populations, or high densities, of deer make it easier for some diseases and parasites to spread. The following four diseases and two parasites are common problems for whitetails.

- Bluetongue is an infectious, non-contagious viral disease that causes inflammation of the mucous membranes, nose and gastrointestinal tract. Signs of bluetongue include reddening of lips, muzzle and ears; in addition, the tongue swells and turns a bluish purple color. Discharge may form crusts around the nostrils. Bluetongue is primarily spread by a bloodsucking gnat.
- Epizootic hemorrhagic disease (EHD) is an infectious, non-contagious viral disease that mostly occurs in white-tailed deer. Initial signs include loss of appetite and decreased fear of humans. Hemorrhage occurs around the eyes and mouth, and within 36 hours the animal becomes comatose and dies. As with bluetongue, the virus is transmitted by a gnat.
- Chronic wasting disease (CWD) is a transmissible disease of deer and elk that produces small lesions in brains of infected animals. It is found in several Rocky Mountain states and is characterized by loss of body condition, behavioral abnormalities and death. CWD is similar to mad cow disease in cattle and scrapie in sheep. Although CWD is a contagious fatal disease among deer and elk, research suggests that humans, cattle and other domestic livestock are resistant to natural transmission. While the possibility of human infection remains a concern, it is important to note there have been no verified cases of humans contracting CWD.
- Tuberculosis, or TB, has been reported in deer. Mercifully, when deer are infected, the disease progresses rapidly and the animal dies quickly. Until a recent prolonged tuberculosis outbreak in Michigan, TB was thought to be self-limiting in native deer.
- Liver flukes are parasites usually observed by hunters as they field dress deer. Although the parasite causes little or no damage to the deer, hunters tend to discard the infected liver because the flukes make it visually unappealing. Adult liver flukes are flat, leaf-like trematodes, gray to greenish in color and measuring one to four inches in length.
- Nose and throat bots are parasites spread when adult female flies deposit larvae on the nose of the host deer. The larvae migrate to the nasal passages and develop. After the larvae become adult bots, they infect the throat and nasal areas. Like most other parasites, bots create an additional problem for hosts, but are not fatal in themselves.

Predation

The kinds of predators that prey on white-tailed deer vary by location. For example, one study attributed 82 percent of fawn mortality to coyotes. Bobcats occasionally kill fawns, as do bears. Mountain lions can be a significant whitetail predator, especially in areas where coyotes find the lions' cached kills, causing the lion to kill more deer. In Ontario, wolves killed 9 to 11 percent of a deer herd during a five-month winter period. Uncontrolled dogs can also be a serious menace to deer in many areas. They are especially significant as predators when snow is deep or crusted. The predator-prey relationship is complex and the advantage constantly shifts, depending on a variety of factors.

In general, a healthy white-tailed deer herd can easily withstand the impacts of normal predation. However, several studies show that when deer herds are in decline due to unfavorable environmental conditions such as drought, predation can contribute to the population decline even after the condition ends. In these situations, it may be beneficial for landowners to control the predator population until the deer population rebounds. *Landowner Influence on Predation*

It is important to understand that sometimes there are better solutions to excessive whitetail predation than controlling the predator population. While harvesting predators will obviously protect whitetails, you can also help the whitetail population by managing your land so the deer are better able to avoid predators. Healthy animals with adequate nutrition will escape predators more easily. Diverse types of habitat with well-distributed food, cover and water will keep the deer from concentrating and make predators less successful. Also, a good diversity of healthy vegetation will provide habitat for alternate prey, such as mice and other rodents.

WHITE-TAILED DEER NUTRITION

White-tailed deer depend on their habitat for nourishment and healthy reproduction. The size and health of the deer herd is a direct reflection of the quality and size of their habitat. The size of the habitat area must be large enough to prevent the deer from competing for food. Keep in mind that competition only occurs when a commodity, in this case food, is limited. The fact that other animals are present does not mean that competition is occurring. Competition occurs only when other animals, both wild and domestic, are trying to get the same *scarce* resource.

Deer are selective feeders. Whereas cattle have a broad flat muzzle that can clip a large swath of grass, deer have pointed muzzles that allow them to pick selected forage. Because of this, deer are able to pick forbs from among grass or to nip or strip specific buds, leaves or twigs from shrubs. In this way, deer can select food which is more palatable or higher in nutrition.

White-tailed deer are ruminants. They have four-chambered stomachs through which food passes during various stages of digestion. The first chamber, the rumen, contains great quantities of bacteria and protozoa (microflora) that reduce plant materials to nutritional materials. The protozoa are very specialized. Some are able to break down one plant species while others break down other plant species. These microflora are such specialists that if a deer changes its diet

drastically, the new material may not be digested until the population of appropriate microflora build up. This is why deer artificially fed hay or corn during a severe winter may starve to death even though their stomachs are full. White-tailed deer need to eat two to four percent of their body weight in dry matter each day. The amount they consume varies seasonally, with mature bucks peaking at four-and-one-half to six-and-one-half pounds during spring, and does peaking in fall at three to six pounds per day. Four important nutritional categories are outlined below. You may want to collect typical deer food and have it and your soil analyzed. Your county extension agent can direct you to an appropriate testing facility.

Protein

Young deer require 16 to 20 percent (dry weight) of their diet to be protein. Most mature deer can maintain themselves on diets as low as eight percent protein. But pregnant and lactating does and bucks growing antlers need diets with 16 to 20 percent protein, the same as young growing deer. An advantage of a deer's digestive system is that, even though forage protein may vary throughout the year, microbial protein found in the rumen remains of good quality.

Vitamin Requirements

Ruminants have no need for dietary Vitamin C because it is produced by the rumen microflora. They attain vitamin E by consuming green forage and storing the vitamin. Vitamin D has a precursor in the body that is activated by the sun. All B and K vitamins are synthesized within the rumen. Nutritional deficiencies encountered by white-tailed deer can be traced to energy, nitrogen or minerals, but not to vitamins.

Mineral Requirements

White-tailed deer need a variety of minerals to support growth, development and to maintain their metabolic system. Calcium, phosphorus, sodium and selenium are three of the most significant minerals.

- Calcium is critically important in the development of bones and teeth. During times when the body needs more calcium than diet provides, it can be pulled from the bones to other areas of the body. This may happen, for example, during early antler development or during pregnancy and lactation. However, calcium is usually available at adequate levels in the vegetation in Rocky Mountain states. Nutritional problems arise when high calcium levels combine with low phosphorus levels. Phosphorus levels for white-tailed deer should be about 0.2-0.3 percent of the diet, while calcium should be no more than five times the phosphorus level. Calcium at a level of 0.25-0.5 percent of the dry matter diet is adequate for growing deer. To produce best antler growth, calcium should be 0.6 percent and phosphorus at 0.55 percent.
- Phosphorus is important for healthy bones, teeth, red blood cells and reproduction. It also aids in the transportation of nutrients throughout the body. In some situations, supplements of phosphorus may be very important. If soils lack sufficient phosphorus, fertilizing with phosphorus will increase the amount of phosphorus available in vegetation.
- Another important mineral, sodium, effects the regulation of pH and plays a role in the transmission of nerve impulses. Whitetails may use salt blocks, natural salt

licks or drink brackish water when vegetation is low in sodium. Many types of forage are low in sodium, which means that deer need access to other sources of it.

- Selenium is often touted as a supplemental mineral that will enhance antler growth in deer. However, selenium is required at very low dietary levels; at high levels it can be toxic. Muscular dystrophy is one possible consequence if selenium is absent from the diet.
- Other minerals, such as potassium, chlorine, magnesium, sulfur, iron, iodine and copper, are very important but are adequately obtained by white-tailed deer from common forage plants. Adequate levels of trace minerals, such as cobalt, zinc and manganese, are also usually found in forage.

Water Requirements

White-tailed deer drink water when it is available, but they can go for long periods without free water. Winter snow is usually a sufficient source of moisture. In late spring, summer and fall, free water is important for sufficient hydration even though deer can get some of their required water from succulent vegetation.

WHITE-TAILED DEER HABITAT REQUIREMENTS

Ideal habitat for white-tailed deer contains a mosaic of vegetation types, primarily composed of dense, brushy vegetation interspersed with small clearings and riparian cover. Mature woodlands do not provide good habitat for whitetails. They do best in early successional stage areas like the low, brushy areas that develop five to 15 years after a fire. In most of the West, alfalfa fields provide a source of attractive forbs for whitetails. It cannot be overemphasized that managing white-tailed deer habitat requires looking beyond your own land. A landscape vision is needed to understand what is available and what is needed.

White-tailed deer will remain in the same area if it meets all of their habitat requirements. If the various types of habitat are not close to each other, deer will regularly travel to meet their needs. The home range of a whitetail may be as small as 200 acres. Generally, ideal white-tailed deer habitat is made up of 40 percent cover areas and 60 percent foraging areas. Half of the 40 percent cover should be hiding cover, with the remaining half equally divided between thermal cover and fawn-rearing cover. The more mixed this habitat is, the more valuable it will be. For example, a mosaic pattern of cover areas and foraging areas will be much more valuable than one block for cover and another block for forage.

The best way to determine the needs of whitetail habitat is to understand how each component is used and why it is needed. Then, apply this information to white-tailed deer on your land. The components of foraging habitat and cover habitat are described below.

Components of Foraging Habitat

White-tailed deer diets vary according to the season. This means that it's desirable to have a mixture of trees, shrubs, forbs and grasses on your land. Ideal foraging habitat is within 50 to 100 yards of escape cover. Deer prefer foraging in areas that are most attractive, and what is attractive to them varies from season to season. In winter, south-facing slopes that have little or no snow

are most attractive. In summer, a cool and shaded slope or areas with breezes that deter biting insects are most attractive. Attractiveness can also include areas that offer seclusion during hunting season, protection from wind or a combination of these and other factors.

Foraging Habitat by Season

- Early spring is the only time grasses are of any importance to the whitetails' diet. During this time, whitetails eat the young green grass shoots, along with the more nutritious green forbs. These plant materials offer high nutrition at a critical time of year. It is during spring that deer need a high level of nutrients to help them recover from winter stress, develop fetuses and maximize antler development. The young, nutritious grasses and forbs are also very palatable and succulent. Various clovers and alfalfa are also important to the whitetails' spring diet. Forbs make up more than 50 percent of that diet. And, some forbs, such as legumes like alfalfa and clover, contain 25 percent or more crude protein and are more than 60 percent digestible.
- The whitetails' summer diet is very diverse. Forbs make up two-thirds of the diet, but shrubs, fruits, leaves and agricultural crops are heavily used. As forbs become less palatable and less available in late summer, browsing on shrubs increases.
- After fall frosts, whitetails eat more shrubby vegetation. Forbs may still make up 25 percent of the diet if they are available.
- When winter snow cover makes food sources from other plant species unavailable, woody shrubs and trees become very important. If deer are forced to paw through snow to forage, excessive energy expenditures will reduce their condition. Important browse species include quaking aspen, serviceberry, mountain mahogany, dogwood, chokecherry, willow, rose, snowberry, cottonwood, mountain maple and bitterbrush.

Plant Species and Their Food Value to White-tailed Deer

Browse

Quaking aspen-Excellent
Cottonwood-Good
Willow-Excellent
Chokecherry-Good
Serviceberry Good
Mountain mahogany-Excellent
Mountain maple-Excellent
Bearberry-Good
Bitterbrush-Excellent
Dogwood-Good
Snowberry-Excellent
Ponderosa pine-Poor
Rocky Mountain juniper-Poor

Forbs

Red clover-Good
Yellow sweet clover-Good

Vetch-Good
Alfalfa-Excellent

Water enhances food digestion. Water sources should be within one half mile of cover and foraging areas. As a landowner, you should try to keep livestock watering points available to deer even when livestock are not using them.

Components of Cover Habitat

The four different types of cover habitat are described below.

- Whitetail deer use escape cover whenever they perceive a threat, so it is important to intersperse escape cover throughout the habitat. White-tailed deer prefer cover that allows them to detect predators while remaining unobserved. They will often stay hidden or slip away without the predator knowing. If danger gets too close, deer bound away, putting as much vegetation as possible between themselves and the predator. The best escape or hiding cover for white-tailed deer contains scattered, five- to 10-acre patches of dense vegetation. Conifer thickets, brushy riparian areas and dense woodlots provide adequate escape cover as long as they are no more than one-quarter mile apart.
- White-tailed deer spend most of their time in loafing cover, where they rest, bed, ruminate and engage in other inactive activities between feeding and traveling times. During summer, loafing areas provide shade and relief from insects. Loafing areas also allow whitetails to detect approaching danger while staying hidden. It is no coincidence that loafing areas are part of escape cover and provide seclusion from human disturbance.
- Thermal cover protects deer from temperature extremes in both summer and winter. Whitetails use dense conifer thickets with at least a pole-sized overstory, usually in low areas protected from wind, to conserve heat during winter. Dense riparian thickets and brushy draws also provide winter thermal cover. Summer thermal cover provides shade and usually consists of an understory open enough to allow cool breezes to pass through. In winter an area used as thermal cover should be four to five acres in size, while in summer the area can be two to four acres.
- Fawning cover features escape and hiding cover closely intermingled with water sources and high quality forage. Fawning cover should have low shrubs from two to six feet tall in an area with a 50 percent overstory. Ideal fawning cover is made up of two- to five-acre areas that are scattered to keep predators from finding fawns.

Habitat Enhancement

Before undertaking any habitat enhancement for white-tailed deer, landowners must determine what is available and what is missing in the deer range. As obvious as this may sound, many landowners undertake elaborate strategies to develop forage when food is plentiful but more escape cover is needed. Look on adjacent land as well as your own, then provide what is missing to ensure your efforts are worthwhile. In general, habitat enhancement that creates a patchy pattern of early successional vegetation stages will provide the most benefits to whitetail deer. Consider the habitat needs of whitetails, compare what is available

in the area and then develop what is missing. It is impossible to anticipate the potential of your specific property, so consider the following ideas as they apply to your land.

Tree and Brush Management

- Young stands of aspen interspersed with grass and forb strips and conifer clumps provide ideal foraging, loafing and thermal cover for summer, fall and early winter.
- Stimulate sprouting and regrowth of aspen by clear-cutting, bulldozing or burning five to 20 acre patches. Because aspen roots spread far beyond the stand of trees, try to expand the clone by clearing an area outside the boundaries. Consider repeating this on a 10- to 20-year cycle to provide continuous availability of this valuable habitat.
- Coniferous stands provide excellent hiding and thermal cover. But they provide almost no forage value, so brush and deciduous trees must be nearby. Maintain a forest of mixed vegetation species and ages.
- Use brush management to create diversity. Alternating strips of cover and treatment enhances white-tailed deer habitat.
- In areas where young cottonwoods are sprouting, consider removing some of the large overstory trees to encourage new cottonwood growth.
- Consider the hunting season when planning brush or timber operations. Because cover areas are used by whitetails as travel lanes, they can be narrowed to funnel deer through small open areas where they can be harvested more readily.
- Selectively cut or burn ponderosa pine trees to promote aspen or brush growth.
- When logging an area, leave wooded travel corridors 25 to 100 yards wide. Logging activities will encourage the growth of forbs and shrubs.
- Reseed skid trails, log landings and logging roads with a mixture of grasses and legumes. Clover, alfalfa, small burnet and orchard grass are all good choices for reseeding.
- Cottonwood is an extremely important component of whitetail habitat in many parts of the Rockies. Periodic flooding of cottonwood areas will enhance cottonwood germination. If natural or prescribed flooding occurs, landowners should take advantage of the opportunity to improve this segment of whitetail habitat.

Livestock Grazing

- Consider having your livestock graze important deer habitat in spring and early summer. This will aid shrubs that are competing with grass for soil nutrients and water. By providing an advantage to shrubs, you will increase their availability as winter deer food. Be sure to remove cattle if they start browsing shrubs.
- Use livestock grazing to manipulate forage composition. This means that you can stimulate new growth and production of forbs (legumes) by allowing livestock to graze grasses fully. This means at least 65 percent utilization. Follow this up by allowing a two- to three- year rest period that will allow forage plants to fully recover. If soil testing indicates an inadequate phosphorus level, you can enhance forb production by applying an 11-52-0 or similar fertilizer at 100 pounds

per acre. This recommended phosphorus fertilizer encourages growth of the stand's forb component more than the grass. Be cautious when using fertilizer because undesirable plants may also benefit.

- If your livestock graze excessively in riparian areas, cottonwood will not be able to regenerate. Riparian areas should be managed as separate pastures to ensure that grazing accomplishes your goals.
- Manage grazing in riparian areas to protect brush species. If cattle concentrate in riparian areas, you may need to fence them out and manage the riparian pasture as a separate grazing unit.

Food Plots

- Food plots may enhance white-tailed deer nutrition if there is at least one-half acre per deer.
- A major shortcoming of food plots is that if they become covered with snow, deer may lose a food source they've come to rely on. Consider this before planting food plots.
- Food plots should be established close to cover.
- Several scattered, smaller plots (less than five acres) are better than one large field.
- Legume plantings, like clover and alfalfa, provide high nitrogen for spring, summer and fall foraging. Sainfoin is very attractive and nutritious.
- Cereal grains provide forage for fall, summer and early winter, until there is too much snow accumulation. Safflower is attractive to whitetails during winter and it stands up in snow.
- Highly palatable and nutritious food plots can be established by mowing or flailing existing vegetation and applying an 11-52-0 fertilizer at 100 pounds per acre, if soil testing indicates added phosphorus is needed. Remember that this recommended phosphorus fertilizer favors forb growth over grass. Be cautious when using fertilizer because undesirable plants may also benefit.
- Consider establishing browse plots to ensure winter food availability. Drilling or broadcasting mountain mahogany or bitterbrush seed can be successful if moisture and soil conditions are suitable. Seedlings are available for silver buffaloberry, American plum, purple willow, Wood's rose, serviceberry, chokecherry, red-osier dogwood, skunkbush sumac and Nanking cherry.
- Contact your county extension agent to determine local seed sources, planting dates and crop suitability. Be sure to tell your agent that you are concerned about the crop as a wildlife food source rather than an agricultural crop with maximum yield.
- If you live in an area of the Rockies that receives less snow, you can provide winter forage for white-tailed deer by planting oats, wheat, barley, triticale and legumes, such as clover and alfalfa.
- Spring, summer and fall forage could include clovers, alfalfa, triticale, milo, corn and trapper pea.
- Clover or Sainfoin plots are two of the most nutritious, attractive and easy to establish perennial crops.

There are two main types of fertilizers, nitrogen and phosphorous. Both can improve forage. For example, nitrogen fertilizer increases the protein

content of forage as well as forage production. Phosphorus fertilizer improves the soil for forb production. The numbers used when describing fertilizer refer to pounds per acre of nitrogen, phosphorus and potassium when the mixture is applied at 100 pounds per acre. For example, an 11-52-0 fertilizer applied at 100 pounds per acre will provide 11 pounds of nitrogen, 52 pounds of phosphorus and 0 pounds of potassium per acre.