

How to Manage for Deer Food

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A well-known quote states, "If you can raise deer food, then you can raise deer."

Several questions might logically be asked. Is it possible to manage for deer food? Can ranch management decisions really affect the abundance and/or quality of deer food? Both answers are yes. In fact, it is almost impossible not to affect deer food by management decisions. As a rancher you do not have total control of all factors affecting deer foods, but your management is decisively important when it comes to deer food production.

Deer are products of what they eat. Years of research and practical deer management have proved that the key factor in the production of deer is nutrition. There are various reasons why managing for deer food is important to the rancher, but generally, reason number one is money. Hunters are willing and eager to pay for the opportunity to hunt. Even though hunters are sometimes cursed by ranchers, they are a source of financial security for an ailing ranching industry. It is doubtful that the present emphasis on proper deer management would exist if it were not for the money that could be made from deer hunting.

Since it is possible and important to manage for deer food, the next question is obvious. How is it done? Our current knowledge and understanding of the subject has come a long way in the past 30 years, but is still far from complete. However, even the present level of knowledge is far beyond its practical application on the ranch in most cases.

The concept of managing for deer food is complex. There are no simple formulas for success. What works well on one ranch may not be the best management on the next ranch. The basic principles, however, are universal and can be applied on any ranch.

Before one can attempt to manage for deer food he must have a clear understanding of what deer food is. Deer food is usually range-produced forage that is adequate in nutritional quality. Deer require a high quality diet to perform to their potential. In fact, they require a diet twice as high in protein content and with significantly higher percentages of TDN (total digestible nutrients) than a range cow requires. A deer will normally choose the highest quality plants that grow in a pasture.

Many deer diet studies have been conducted showing what deer eat at certain seasons and under certain

conditions. If some general conclusions could be drawn from these studies they might be that:

1. deer seem to prefer forbs when they are available;
2. deer readily eat browse – sometimes because of its quality and sometimes because of its abundance;
3. deer will eat some grass, but in most cases, it does not play an important part in their diets; and
4. in certain areas, such as South Texas and northern Mexico, prickly pear is a very important part of the diet – presumable because of its high digestibility and energy content.

Deer food is not just the thorny brush and unpalatable weeds that livestock don't eat. It is more often the choicest, most palatable shrubs and forbs. Deer food can be and often is the same as livestock food, and dietary overlap or competition is a common situation.

What Influences Deer Food Plants

Before one can determine how to manage for deer food (or any other category of range plants), he must know what affects or influences their abundance. Range plants are affected by some factors that people cannot control and by other factors that they can. We certainly cannot control such influences as soil type and the general climate. Nor can we control such occurrences as drought, severe freezes, wildfires or population explosions of termites or rabbits. All of these things have pronounced effects on range plant production and, thus, on deer food production.

There are, however, other factors which are totally controlled by man's decisions. In fact, proper decision making regarding these factors will buffer and greatly reduce the impact of the "Mother Nature" factors mentioned above. These all-important man controlled factors are:

- ☐ brush management – pattern, extent and method;
- ☐ livestock numbers and class;
- ☐ grazing systems; and
- ☐ deer numbers.

Brush Management

The management or control of brush affects deer cover as well as deer food. Whether brush control is considered habitat improvement or habitat destruction depends on three factors:

- 1) the pattern in which brush control is practiced;
- 2) the extent or amount of brush control; and
- 3) the method of brush control used.

Deer populations are most often associated with areas where thick brush cover is abundant. While deer can at times be found far from brushy cover, they prefer to be close to concealing, protective brush at all times. A brush control pattern is simply the arrangement of treated acreage among untreated brushy acreage. Since deer prefer to be close to cover at all times, brush control patterns should be designed so that even the middles of treated areas are close to brush. How close is close?

Opinions vary on how large clearings can be to still allow them to be useful to deer. It varies with the topography, the thickness of the brush, the method of control used and the quality of the habitat desired. Generally, for optimum utilization by deer, the centers of clearings should be no more than 250 feet from thick cover. This would mean that clearings 500 feet across from brushline to brushline should receive adequate deer use. As the distance from cover is decreased to about 100 feet (as with a 200-foot-wide opening) the quality of the habitat increases. As the distance from cover increases to 500 feet (as with 1,000-foot-wide clearings), the quality and utilization of the habitat diminishes. The abundance or quality of good deer forbs being produced in these large, open areas does not matter if they are too far from cover. Deer will fully utilize only those openings in which they feel safe.

One of the primary factors to be considered when planning a brush control pattern for dual livestock-deer management is the amount of "edge" that will be created between brushy areas and openings. The more miles of edge effect a pattern provides, the closer deer will always be to cover.

Controlling brush in patterns beneficial to wildlife has become commonplace in much of South Texas. The shapes and designs of patterns can take on countless forms. They vary from straight strips to contoured or zigzag strips to checkerboard blocks to random natural clearings. All types of patterns can create good deer habitat if they retain sufficient amounts of brushy cover close to all openings.

The extent of brush control is also an important factor in addition to the pattern in which it is cleared. The first thing which must be determined before a decision can be made on the amount of brush control to be done in a pasture is the landowner's objective. Does he really want to optimize the pasture for deer habitat, possibly at the

expense of less livestock forage? Or does he want to merely keep some deer in the area? The emphasis a rancher places on deer will often be one of the primary factors he uses to determine how much brush to control.

For dual cattle/deer production objectives, the proportion of a brushy pasture that can be cleared ranges from about 20 percent to 70 percent. Treatment of less than 20 percent of a pasture usually is not recommended since it becomes very difficult to properly manage the grazing in a pasture with such a small proportion improved. Treatment of up to 70 percent of a pasture will still allow some deer to use the area, but the carrying capacity will be significantly reduced and some deer will leave the area. For the manager attempting to optimize the deer habitat, no more than about 40 percent of the pasture should be treated. Remember that brush control can have a long-term effect on deer food. More brush can always be cleared later, but once too much is cleared, the effects will be noticed for a long time.

No matter what percentage is decided upon, it should be done in a pattern to create lots of edge area and to leave cover well distributed. The clearing of 40 percent of a pasture in a block will usually be detrimental to deer food while the clearing of 40 percent in a good pattern will usually not hurt the habitat and will in most cases help it.

The method of brush control used also will have an impact on deer food plants. Methods of total or near total brush kill, such as rootplowing followed by rootraking, will have a long-term impact. Partial kill or topkill methods such as roller chopping, discing, some herbicides or prescribed burning will have a much shorter-term effect on deer food due to resprouting. Generally, a higher percentage of a pasture can be safely treated with the short-term practices, while clearing a smaller percentage would be wise if long-term, intensive control methods are used. Likewise, the pattern of control is not as critical when regrowth is expected, while patterns become quite important when control methods will remain effective for a long period.

In addition to the immediate removal of food and cover, brush control may have a very long-term impact on the diversity of any future brush communities. It is often observed in South Texas that when a diverse stand of virgin brush with a variety of 10 to 15 different species is rootplowed, the reinfestation that will occur without follow-up treatment will invariably be much less diverse, with three or four species dominating. It also seems to hold true that these reinfestation species are usually the less desirable browse plants.

The primary reason why patterned brush control improves deer habitat is that forbs often greatly increase in the cleared areas. This is especially true with mechanical methods that result in soil disturbance. Some of the prime deer food forbs will invariably be a part of this "weed infestation" on newly disturbed land. With the increased production of deer food in

close proximity to browse and cover the quality of the habitat improves. Certainly the objective of brush control is usually to increase grass production, not forb production. However, in the semi-arid parts of the state, seeded grass stands will rarely be so thick as to eliminate all forb production. Brush control with herbicides will, on the other hand, greatly reduce forb population for 1 to 3 years following application. Thereafter, forb production will be largely a function of grazing management.

Under certain prescribed situations, some of the topkill methods of brush management are used as browse renovation practices. When thick stands of certain desirable browse species get old, the lower branches tend to die off, leaving little browse within reach of deer. Practices such as roller chopping, hydro-axing, disking or dragging done in patterns have been successfully used to stimulate regrowth and sprouting of these good browse plants. The new growth is not only highly productive, but is also much higher in nutritional quality than older, mature growth.

Livestock Numbers

Since deer and livestock often share the same foods, the potential for forage competition is very real. The degree of competition will vary from minimal to severe, depending on the class and numbers of livestock. Cattle, sheep, goats and exotic wildlife are all competitive with deer to varying degrees.

Cattle, under proper management, are the least competitive because they prefer different forage. With their requirements for large daily amounts of comparatively low quality feed, cattle can best meet their needs with grass. Deer, however, are more well-suited to eating forbs and browse, as they require smaller quantities of high quality feed. The teeth and mouth structure of the two animals verify that they are designed to consume different classes of plants.

As long as cattle numbers are kept at the proper level, they will be primarily grass eaters during most of the year. Cattle will eat some forbs and browse even when properly stocked, and this should be expected. However, as cattle numbers are increased, there is a point at which there is no longer enough grass. Cattle are then forced to rely more heavily on browse and forbs to meet their needs. This is when they would begin to seriously compete with deer. The result is a deterioration of range condition and deer habitat where the best plants are killed out or greatly reduced by overgrazing. The short-term effects can be alleviated by a reduction of cattle numbers to the proper level. The long-term effects of overgrazing are very difficult to erase and can be treated only by a long-term commitment to proper management.

Determining the proper number of cattle for a given area is truly one of the most difficult, yet most critical decisions a rancher must make. Since the amount of forage produced will vary dramatically from season to season, the

numbers of livestock grazed should be flexible to be able to take advantage of the extra forage in good years, yet not abuse the land in dry years. A good measure to use in stocking decisions is the old "*Golden Rule of Range Management*" – take half and leave half. The grazing of half of the yearly growth of the key grasses by the end of the winter will ensure that the better forage plants, including good deer food plants, will remain healthy and productive.

Assistance is available in helping ranchers determine what stocking rates are proper for each individual situation. Years of research and practical ranching experience have gone into the development of stocking guidelines by the Soil Conservation Service. Stocking figures from these guidelines are certainly not rigid, but they are a good place to start. Cattle and deer are a very compatible combination when cattle numbers are properly managed.

Sheep, goats and most exotic wildlife have nutritional needs and forage preferences similar to deer, and are therefore highly competitive with deer. While it is possible to successfully manage sheep, goats and exotics with deer, it must be understood that there will be extreme competition for the same food plants. In fact, it can almost be said that for each sheep, goat or exotic present on a ranch, one less deer can be fed. Ranchers who want to optimize their number of deer should not graze these competitors.

Grazing Systems

Besides the effect that livestock numbers have, the kind of grazing system used also has an impact on deer food. Key deer food plants, both perennial forbs and browse, respond positively to periodic pasture rest and negatively to continuous grazing. The fact that pastures need periodic rest from grazing is indisputable if one looks at research and practical ranch experience.

A grazing system is simply the frequency and duration of pasture rest periods and grazing periods. No attempt will be made to discuss all types of grazing systems or to state which ones are better for deer habitat. Each ranch situation requires its own custom designed grazing system and should never be managed straight from charts in range management articles or publications.

The first necessity of a successful grazing system is a properly stocked ranch. Grazing systems are not a remedy for overstocking.

One of the keys in determining the effect a grazing system will have on deer food is the ratio of time grazed to time rested. For example, in a normal three pasture/one herd system, a pasture will routinely be grazed for one unit of time and rested for two units (while the other two pastures are being grazed). Generally, a system that provides frequent or long rest

periods will allow for faster improvement in the production of good deer food plants. Fewer and shorter rest periods would allow for maintenance of existing plants or slow improvement.

In most rangeland situations there is a definite need for range condition and wildlife habitat improvement. In South Texas the grazing systems that seem to be providing the best deer habitat are those in which pastures are rested more than 50 percent of the time. Numerous three pasture/one herd and four pasture/one herd systems are being used on ranches with successful deer management programs.

The hot topic in grazing management in recent years is the use of rapid rotation systems, sometimes called cell systems. The effects of these systems on deer food are only speculative at this time, since long-term research has not been completed and practical ranch experience is not conclusive. While some people are advocating their use to help improve deer food, one should be cautious of attributing short-term deer quality increases to cell systems. Most wildlife managers at this time are reluctant to encourage their use for habitat improvement until more is learned.

Research is needed to determine the effects of this kind of grazing management on prime deer forbs and browse. Some of the questions that need researching are:

- ☐ Will forbs, especially low successional forbs, be out-competed by grass and therefore decrease?
- ☐ Will the system favor increases in the best perennial forbs?
- ☐ Will repeated and/or severe defoliation of choice browse plants by livestock allow them to remain vigorous over the long term?
- ☐ Is the recommended 30- to 90- day rest after grazing sufficient for browse plants to regrow the amounts they are browsed?
- ☐ Will the most desirable browse plants be able to reproduce (are rest periods long enough for seedling establishment)?
- ☐ Will these systems in the long-run renovate brush stands to be more available and of higher quality through a stimulation of sprouting?
- ☐ Will an increase in rainfall penetration into the soil occur and will it result in more forb production?

These and other unanswered questions on the impacts of cell grazing on deer food are not meant to discourage their use. The discussion is intended only to make people aware of some of the possible effects. As important as deer production is to so many ranching operations, more information is needed before cell grazing or a variation of it can be wisely recommended.

Deer Numbers

One of the most often cited factors affecting the deer food supply is the relationship of deer numbers to carrying capacity. Excessive deer numbers or overpopulation has for many years been mentioned as the primary reason for decreased deer quality and habitat deterioration. There is ample proof that overpopulation has caused die-offs.

If a given unit of land produces enough forage to properly feed 100 deer, but 200 deer inhabit the area, something must give. The habitat will be hurt by extreme overbrowsing and deer will be undernourished and poor. If deer numbers are not kept within the carrying capacity of the range through hunting, then the biological laws of nature will begin to take over. It only makes sense to profitably harvest excess animals for human consumption and recreation.

The difficult part is determining the proper number of deer for each given area. The proper density will vary from ranch to ranch and year to year. One ranch grazing cattle, sheep and goats will have a lower carrying capacity than a neighboring ranch grazing cattle only. A ranch that is overstocked with cattle will not support as many deer as a ranch that is properly stocked with cattle. A ranch that has done extensive brush control or brush control in large blocks will carry fewer deer than a ranch that has done moderate amounts of brush control in patterns. The carrying capacity, then, of a region cannot be quoted as a fixed figure, such as 20 acres per deer. Carrying capacity must be analyzed on a ranch-by-ranch basis.

Even though deer numbers have an effect on deer food production, too much concern has been placed by wildlife biologists on proper deer numbers, while too little concern has been placed on the other factors of livestock grazing and brush control. Deer food management is a complex combination of all these factors. Each must be carefully balanced to meet the deer and livestock management objectives of a ranch.

Where Do You Stand?

Since management of deer food is of critical importance to deer production, how is it possible for one to know if the management is adequate or if adjustments are needed? A gauge of some sort is needed to indicate where you stand and which direction you are headed. Probably the best, most practical gauge is to keep good records of deer harvest. A good record-keeping system is an essential part of a deer management program. The records which are needed for each deer shot are age and field-dressed weights for both sexes. For bucks, basal circumference of antlers, main beam length, number of points over one inch and the length of the longest tine will be needed. These measurements, when averaged for each age class, can be used to determine trends in deer quality, which reflects habitat quality and deer food. For example, if over a

5-year period field-dressed weights of 1 1/2-year-old bucks and basal antler circumferences of 3 1/2-year-old bucks declined, it can be assumed that deer nutrition also declined. The manager can then begin to look into what may have caused it and take action to reverse the trend.

Webb County – A Case History

Webb County, Texas is the home of some of the most intensive and extensive deer management in the country. Deer management is as important to many ranchers as cattle management. Considerable time, effort and money is expended in attempts to properly manage the deer resource. Noticing decreases in deer quality, the Texas Parks and Wildlife Department began an intensive deer population and deer quality record-keeping system in 1970. These records, along with rainfall records and cattle number records from the Texas Crop and Livestock Reporting Service, must have been used to explain some of the principles mentioned in this paper.

Some might claim that rainfall is the main determining factor in deer food, and thus deer quality. Generally, when rainfall is high, quality is better, and when rainfall is low, quality is low. However, rainfall alone cannot account for the pattern of deer quality. When quality was highest in 1970, rainfall was well below normal. During 6 consecutive years of above average rains, deer quality dropped dramatically. During three consecutive below average rainfall years, including the two driest of the period, deer quality increased.

It is obvious that other factors affected the deer quality during this period. The general conclusion is that when the deer population is low, the quality is high and vice versa. However, several exceptions show that deer numbers alone do not control deer quality. During 3 straight years of low deer population, deer quality dropped. When the population dropped drastically from 1978 to 1979, the quality continued to drop. A drastic population increase from 1972 to 1973 was paralleled by an increase in quality.

Again, it is evident that there are other factors besides rainfall and deer numbers that influence deer food and thus deer quality in Webb County. The most important of these is cattle numbers. Based on data, it is clear that high cattle numbers correspond to low deer quality and lower cattle numbers help bring about higher deer quality. However, it is also clear that cattle numbers, like rainfall and deer numbers, are not solely responsible for changes in deer quality.

The deer quality figures from these data are the computed, weighed averages of field-dressed weights of 1 1/2-year-old bucks and the basal antler circumferences of 2 1/2-year-old bucks. These are two of the measurable variables that best respond to nutritional changes.

Several factors in combination with one another also affect deer food. Two important factors are brush control and grazing systems. There are quite a number of ranches in Webb County with good deer management programs which consistently produce above average quality bucks. There are five things which almost all of these ranches have in common:

1. They are properly stocked with cattle and follow the graze half, leave half rule. They reduce cattle numbers in dry years before the range becomes overgrazed.
2. They carry out grazing systems which allow pastures to rest at least half of the time.
3. They never control more than 40 percent of the brush in any pasture.
4. They always carry out brush control in patterns, usually strips 200 to 400 feet wide.
5. They keep deer numbers at the estimated carrying capacity through proper yearly harvest of bucks and does.

The Need For a Plan

Ranchers are managers and decision makers in a complex industry. The decisions they make affect the range and the animals which utilize it as well as their pocketbooks. The development of a plan, and the constant revising and adjustment of that plan as it is carried out is a tool that will make decision making easier and better. If deer are a part of the ranching operation, then the plan should be developed with due consideration for the management of deer food as a part of the total ranching operation. It will pay dividends of improved deer nutrition and deer quality for this and future generations. As Ian Goss stated at last year's Roundup, "We did not inherit our ranches from our forefathers, we are borrowing them from our children." One of the things that will help lend security to the uncertain ranching industry of today and tomorrow is wise deer management and the marketing of these products of the range through hunting. Remember, if you can raise deer food, then you can raise deer.

