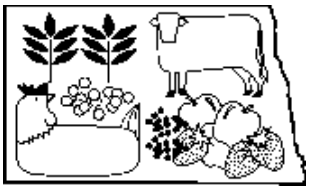

Red and Fallow Deer

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The modern practice of deer farming originated in New Zealand, West Germany and Scotland. In New Zealand large populations of wild red deer (*Cervus elaphus*) provided the basis for explosive industry growth when, in 1969, legislation was passed to permit the capture and commercial exploitation of wild deer and to raise deer in captivity.

Most of the deer farmed in New Zealand are red deer and the primary product was initially antler velvet for Asian markets. Venison for European markets became increasingly important, but fallow deer (*Dama dama*) are reputed to produce a finer table venison than other species.

The two main deer species being farmed in the United States are the fallow and the red deer. The fallow deer are small (100-pound does), somewhat flighty, and produce a fine-textured meat. The red deer are about twice as large as the fallow and more "docile" (though quite unpredictable, occasionally). The red deer belong to the same species as the wapiti (American Elk). Efforts have been made to genetically improve disposition, early breeding, antler size, and growth rate of the red deer.

Red deer versus Fallow deer

Red deer have a quiet temperament in the yards. Many tasks can be performed simply by an operator standing amongst a pen of deer. Simple jobs such as drenching and vaccinating can be done in this manner. However, more intricate jobs may require strong physical restraint of the deer or commercially manufactured mechanisms for restraining.

Fallow deer are more reactionary in the yards but are more inclined to "flow" voluntarily into tunnel systems, particularly if there is a pronounced gradient from dark to light.

An important element to consider when yarding fallow and red deer is the different yard requirements.

According to Joseph von Kerckerinck, a veteran New York deer farmer of 14 years, fallow deer is the better species for U.S. deer farmers for five reasons: resistance to disease, availability at many game farms for a reasonable price, low maintenance, excellent venison, and more than 2,000 years of having been in captivity.

Facility Requirements

A deer farming enterprise requires a building, fenced grazing land, year-round access to water, supplementary winter feed,

handling facilities (holding pens, catching facilities) and cash. Starting with about 10 to 20 deer may be advisable, in order to learn how to handle them. But in the long run 50 deer or less would be termed a hobby.

Farm layout and pasture design are important to the workability of a deer farm. Fencing is one of the largest expenses. Placement of gates is important: they should always be in the corner, not in the middle of the stretch, since deer have a tendency to run to the corners.

Special deer fence from New Zealand, called Tightlock, has proven to be the best. It is a high tensile fence that is easy to install. It costs approximately $2.00 to $2.50 per running foot.

Handling and Equipment

Anyone planning a deer enterprise should include plans for the appropriate handling system. Cattlemen are often told that they indirectly pay for handling facilities whether or not they have them because of increased time, labor, and injury that occur from improper handling. This is even more the case with deer.

Deer handling activities involve close confinement or restraint to perform a number of management activities, including vaccination, anthelmintic application, weighing, ear tagging and collaring, recording female lactational status, antler removal, health testing, assisting births, and artificial insemination.

To handle deer with minimal stress to animals and operator, certain basic facilities are required: raceway entry system, receiving corral, covered shed and yard system, mechanical restraining device, drafting system, and load-out race.

Health Management

Animals imported into the United States must go through specific certification tests and quarantine procedures. The country of origin must be free of foot and mouth disease, rinderpest, surra, and contagious pleuropneumonia. The herd of origin must have been free for 12 months of any evidence of bluetongue, brucellosis, and tuberculosis. Deer must be tested for tuberculosis and brucellosis before export and tested twice for brucellosis during quarantine.

The operator should work with a veterinarian to develop an animal health program. In the projections given below, animal health costs include worming the herd twice during the year (spring and fall). Other costs include a clostridial vaccination, tuberculosis and brucellosis testing.

Diseases of deer include brucellosis, tuberculosis, anaplasmosis, malignant catarrhal fever, yersiniosis, pasteurellosis, enterotoxemia, tissue clostridium, bluetongue, and parasitic diseases.

Beginning deer farmers should develop a specific herd health program based on the diseases present in his area and the disease experience of the herds of origin.

Reproduction

Bucks can mate successfully at 16 months and breed 10 to 15 does. Bucks normally start rutting (being sexually active) in early October, and the bulk of the calves are born about 230 days later, over a two- to four-week period. Well-grown does (160 to 180 pounds) first breed at 16 months with a 90 percent calving rate. Wild and lighter weight (100 to 120 pounds) does usually calve as three-year-olds. Does have four teats and produce 3 to 4 pounds of milk daily that contains 8 to 13 percent fat, 7 to 9 percent protein, and 4.5 percent lactose (21 to 23 percent total solids).

Fawning will normally occur in June. Normal birth weight for fallow deer is 8.5 to 10 pounds and 16 to 24 pounds for red deer. Calf mortality and calving assistance are usually low. Mortality is closely related to calf weight and doe weight. Doe weight affects productivity (fertility, calf vitality, and growth rate of the calf). A 50 percent increase in hind weight increases calf production 161 percent.

Fallow deer may be weaned before or after the rut. However, weaning should be done no later than April, when the yearling bucks are beginning to develop spikes.

Nutrition

The nutrition of deer is similar to that of sheep. Fallow deer are about half the size of red deer. Both species consume considerable grass and browse. The nutrient requirement of a red deer is assumed to be half that of a fallow deer.

Much of a deer's growth occurs during the first winter. Growth retarded in the first year cannot be made up in later years, despite high nutrient intake.

The appetite of fallow deer tends to decrease over the winter period. A high-energy, grain-based pellet with added minerals, vitamins and protein is required to supply added nutrients during cold weather and later stages of gestation, or to supplement lower quality forages or pasture.

Deer differ from sheep in that their voluntary feed intake varies greatly by yearly season and the breeding season. During the rut, bucks eat little and may lose 30 percent of their body weight. Their feed intake returns to normal in early March, but with their fat reserves depleted they are more subject to winter mortality than are the hinds.

Deer By-products

While venison will undoubtedly be the principle product from farmed deer, there are a number of additional products that either stand alone (velvet antler) or are by-products of venison production.

"Velvet antler" refers to the entire growing antler harvested for use in traditional Asiatic medicines and tonics. Velvet antler is removed from red deer bucks at 55 to 70 days post-casting and may have a total weight (frozen) of between 2 and 10 pounds. Velvet antler is removed from fallow deer bucks at 35 to 40 days post-casting due to earlier calcification in this species. Yields from fallow bucks are as low as one half to one pound.

The Asiatic markets (mainly Korea) for New Zealand products prefer red deer and Wapiti velvet antlers over the fallow deer products. In 1989 returns for red deer velvet antlers ranged from $75 to $125 per pound, and for fallow antlers ranged from $30 to $45 per pound.

There is a certain conflict of interest between antler production and venison production. Antler yields increase with age of the buck, and the first high-value cut is not obtained until the animal is at least two years old. However, at this age the animal is generally not suitable for venison. Most venison bucks are slaughtered earlier, between 12 and 20 months of age. That's why in venison production herds, velvet antler is removed only from those males retained for use as sires.

Markets for velvet antler are not always readily available in the United States, but large ethnic Asian populations in some major North American cities (San Francisco, Vancouver) do use traditional medicines and tonics. Establishing markets in these metropolitan areas may be possible. It is also possible to export antlers to Asia. However, the product will compete with the large volumes of velvet antler produced in New Zealand, Russia and China.

Deer hides are a potentially valuable by-product from slaughtered deer. In New Zealand virtually all hides are used in suede leather production and will return to the farmer between $10 and $20. Deer suede is used in fine garment manufacture, as it is fully washable.

Red deer tails contain a deposit of brown fatty tissue that serves as a scent gland. Red deer tails are dried and marketed in Asia for use in herbal medicines and tonics. Returns to the farmer range between $2.50 to $10 per tail. Fallow deer tails do not contain this gland and have no commercial value.

It is difficult to establish markets for eye teeth, pizzles, and offal, due to the limited numbers of deer slaughtered.

United States Production

The deer farming industry in the United States is in its infancy. The North American Deer Farmers Association (NADeFA) has about 300 members, and herd size varies from less than 10 head to more than 2,000 head.

Approximately 50,000 deer are being farmed in the United States. According to the North Dakota Game and Fish Department, seven people in the state have propagation licenses for deer. However, licenses are not required to raise deer, so information regarding location or numbers of deer farms in the state is difficult to obtain. By the end of 1992 some form of license will be required to farm deer. No North Dakota producers are members of the NADeFA. New York, Texas, Florida and Wisconsin have the most deer farms.

United States Imports

The United States imported 626 tons of venison and by-products in 1991, according to the U.S. Department of Commerce. This figure represents approximately 25,000 deer. One can appreciate the potential market for venison in this country when one considers that just a few decades ago it was only hunters who were eating venison. Today in city populations there seems to be great interest in high-quality venison, for it is low in fat and cholesterol, but high in protein. It is a healthy and lean red meat and, if treated right, is a gourmet specialty.

Marketing and Markets

Yearling does in the budget shown below are sold from June to September at 12 to 15 months of age. All does are sold as breeding stock. Yearling bucks are marketed directly off pasture at 14 to 16 months and slaughtered. At this age, their live weight will be approximately 110 pounds, their dressed weight 65 pounds.

The traditional meat products are marketed through retail and food service venues or company-owned route distributors. Venison, because of its low volume, specialty image and high price, can best be successfully marketed using direct sale and mail order programs.

If venison ever became a commodity-oriented product rivaling pork, beef and lamb for market share of meat sales, then a more traditional marketing technique would need to be employed. But this does not seem feasible or realistic during the next ten to fifteen years.

Budget assumptions for raising Fallow Deer

Size of operation	100 Does
Buck/Doe ratio	1:33
Fawning rate	85%
Weaned and marketed	80%
Losses in breeding stock	2%
Breeding doe replacement rate	7%
Yearling bucks to market	14-16 months of age
Yearling does sold as breeding stock	12-15 months of age
Buck replacement rate	25%
Land requirements	40 acres
Fencing (6 foot fence)	5,280 feet
Barn	24 x 40 feet
Stock overwintered	
Breeding does	100
Yearling does	40
Yearling bucks	40
Breeding bucks	3
Total	183
Stock marketed	
Yearling bucks	40
Yearling does (breeding)	33

Cull does	5
Cull bucks	1
Total	79

Deer (100 Does)

	Economic		Cash Flow	
	Per Doe	Per Herd	Per Doe	Per Herd
Returns	$	$	$	$
Yearling Bucks	96.00	9,600	96.00	9,600
Yearling Does	264.00	26,400	264.00	26,400
Cull Does	5.50	550	5.50	550
Cull Bucks	1.20	120	1.20	120
Gross Revenue	366.70	36,670	366.70	36,670
Variable Costs				
Feed				
Pellets	19.07	1,907	19.07	1,907
Alfalfa	36.56	3,656	36.56	3,656
Pasture	2.50	250	2.50	250
TM Salt	1.80	180	1.80	180
Total Feed Costs	59.93	5,993	59.93	5,993
Other Variable Costs				
Vet & Medical	6.85	685	6.85	685
Breeding	7.38	738	0.41	41
Utilities	1.00	100	1.00	100
Bedding	4.02	402	4.02	400
Marketing	31.12	3,112	31.12	3,112
Operating Interest	10.75	1,075	10.07	1,007
Total Other Variable Costs	61.12	6,112	53.47	5,347
Total Variable Costs	121.05	12,105	113.40	11,340
Fixed Costs				
Building	15.85	1,585	5.69	569
Equipment	4.55	455	1.74	174
Breeding Stock	82.46	8,246	16.00	1,600
Total Fixed Costs	102.86	10,286	23.43	2,343
TOTAL LISTED COSTS	223.91	22,391	136.83	13,683
Return Over Variable Costs	245.65	24,565	253.30	25,330
Return to Labor & Management	142.79	14,279	xxxx	xxxx
Net Cash Flow/ No Debt	xxxx	xxxx	229.87	22,987

The economic budget is generated by charging market rates for all resources needed for production. It helps answer the question "Is this enterprise profitable?" The bottom line represents a return to labor and management.

The cash flow budget is an estimate of the out-of-pocket cash needed to run the enterprise, including not only direct costs but indirect cash costs such as principle and interest payments, insurance and taxes. It helps answer the ques-tion "Can I make meet my cash obligations if I go into this enterprise?" Total cash expenses are subtracted from total cash receipts to calculate the net cash which is available for family living and other needs.

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