
AGRICULTURAL ALTERNATIVES

Fallow Deer Production

Venison has been a gourmet dish in Europe since the days when wealthy landowners kept herds of semidomesticated fallow deer on their large estates for sport and meat. The fallow deer's varied coloring is the result of a long history of selective breeding.

The modern practice of deer farming originated just over 20 years ago. Today, commercial deer production generates over \$100 million in income for major deer-producing countries, such as New Zealand, Ireland, Great Britain, and Germany. Americans consumed about 1.2 million pounds of commercially produced venison in 1992, and this market has grown 25 to 30 percent annually. One-fourth of this venison is raised domestically, and the balance is imported primarily from New Zealand.

U.S. deer production is growing steadily due to increasing demand for deer products, minimal acreage requirements for production, and adaptability of deer to marginal pastures. More than 200,000 fallow, red, axis, sika, and white-tailed deer and elk are raised in national parks and on game preserves, farms, and ranches. Almost 30,000 fallow deer alone are in U.S. game parks, on game farms, and in commercial herds. Pennsylvania has about 30 commercial deer operations.

Compared to other livestock enterprises, deer farming has several advantages. Because deer convert pasture efficiently into protein, with proper management they can be raised on marginal land. They also fit well into an existing grazing operation. Another advantage is the high ratio of

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lean meat produced per pound of live weight. The labor requirements for deer production are minimal, while the profit potential can be much greater than for a comparable beef cow-calf operation.

Marketing

Before establishing a deer operation, you should research local demand and identify possible markets for your products. Producers can market directly or through a distributor. Individual producers can promote their products through county fairs, mail order businesses, state and national deer associations, agricultural publications, and media outlets.

Fallow deer are raised mainly for venison and breeding stock. A fallow doe weighs about 100 pounds and stands 25 to 30 inches high at the shoulder. These small cervids are known for producing high-quality venison. Farm-raised venison is a fine-grained, mild, tender meat with a delicate

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flavor that is distinctly different from wild game venison. It also meets the American Heart Association's guidelines per serving for fat, cholesterol, and calories (Table 1). While venison is sold mostly to gourmet restaurants, the meat also is sold to the general public through specialty shops or mail-order businesses, and at special events such as food fairs.

Table 1. Calories, cholesterol, fat, and protein content of various types of meat (3-ounce cooked portions).

	CALORIES	CHOLESTEROL (MG)	FAT (G)	PROTEIN (G)
Venison loin	139	62	5	22
Beef brisket	223	77	13	24
Ground beef	213	84	12	25
Pork shoulder	207	82	13	22
Beef bottom round	189	81	8	27
Lamb loin	183	80	8	25
Veal cutlet	155	112	4	28
Chicken breast	140	72	3	26
Salmon	140	60	5	22

SOURCE: USDA research; venison analysis by The National Food Laboratory, Inc.

Yearling bucks (males) are slaughtered between 15 and 20 months of age at a weight of about 100 pounds. Two-year-old bucks are slaughtered at 27 to 30 months of age at a weight of about 130 pounds. The meat is sold as prime cuts or whole carcasses. Some large producers have their own on-site USDA slaughtering facilities. For smaller operations without on-site facilities, USDA has a voluntary inspection program that for a fee offers live inspection on the farm and a postmortem inspection at a USDA-inspected slaughtering facility.

Breeder markets are another specialized outlet for fallow deer producers. Weaners, yearlings, and older breeders can be sold directly to other producers or at auctions. When selling breeding stock, you need to have accurate performance and health records readily available. Many customers are looking for bucks and does with high weight gains and good fertility. A calm temperament also is important as the animals are not completely domesticated.

Fallow deer by-products, including hides, tails, leg sinews, and antler buttons, all have special markets. The 0.5 to 1 pound of velvet per buck produced each year sometimes can be sold for use in traditional Asian medicines and tonics,

but the demand for fallow deer velvet is not very great. Occasionally, bucks can be sold as trophy animals to game and hunting preserves.

Facilities and Equipment

Deer farming requires special facilities, including adequate grazing land, a fresh water supply, and natural shelter for fawning, such as trees, shrubs, or fallen branches. The stocking rate for fallow deer generally is eight adults plus nursing fawns per acre of pasture. Grazing areas should be fenced with high-tensile woven deer wire that is at least 6.5 feet tall. To keep fawns and predators from getting under fences, add either a strand of barbed wire at ground level or an electrified wire just above ground level. Provide some form of shelter (such as a stand of trees or a three-sided shed) to protect the deer from wind, freezing rain, and the hot summer sun.

You also will need a handling facility with chutes, gates, squeezes, and stalls. A trailer with solid walls or ample stock crates (both with all light sources covered) is required for transporting deer. A gutted horse trailer often works well. Before building new facilities or purchasing handling equipment, you should visit other operations to determine what you will need.

Breeding

Fallow deer are able to reproduce at approximately 16 months of age. Does weighing at least 55 pounds have the best chance for a successful pregnancy. Appropriate buck-to-doe ratios change as bucks mature, but one buck generally can breed up to 35 females.

Two types of breeding programs can be used. With single-sire mating, one buck is grouped with a number of does. This method is used to improve genetic characteristics and keep more accurate records. When using single-sire mating, you should change bucks after two estrus cycles (each cycle lasts 21 days) to ensure pregnancy. With multisire mating, several bucks are grouped with a number of does. This method requires fewer paddocks, but it increases buck aggression and puts younger bucks at a disadvantage. The breeding season lasts from mid-October until late November, and fawning begins in early June.

Nutrition

The fallow deer diet consists mainly of pasture, trees, and brush. Grasses should be varieties that withstand constant trampling by hooves. Rotational grazing systems can reduce parasite levels and help utilize pasture to its fullest potential. Hay, grain, vitamins, and minerals are fed during the winter months (November to April) to maintain nutritional requirements. Deer also require supplemental feed when using wooded acreage or when pasture regrowth is slow during hot, dry weather. Does require additional feed during lactation to maximize fawn growth rates. Because of severe weight loss during the breeding season, bucks should receive good-quality feed prior to rutting to maintain prime breeding condition.

Animals raised for venison require grain supplements for increased weight gain and conditioning before slaughter. Mineral-fortified salt blocks also should be available in pastures year-round. Routine soil and blood tests should be conducted to determine what mineral supplements will meet the deer's needs. Clean, fresh water should be available year-round, and heated systems should be provided to ensure the availability of fresh water under freezing conditions.

Health Program

It is beneficial to you as a breeder and to the industry to maintain strict health practices. A good health program is essential. Deer are susceptible to many of the diseases found in cattle, and the same vaccinations, dewormers, and treatment periods are used. You should always be aware of changes in state and federal health regulations. Pennsylvania regulations require deer over 6 months of age to test negative for brucellosis and tuberculosis within 180 days of being transported from one farm to another. Deer brought into Pennsylvania that are over 6 months of age must test negative for brucellosis and bluetongue within 60 days of importation, and must test negative for tuberculosis within 90 days of importation, according to recommended USDA protocol. The herd should receive yearly health tests and vaccinations and should be weighed. Deer also should be dewormed periodically throughout the year.

In September, breeding groups should be formed, and fawns should be weaned and ear tagged. In early summer, prior to breeding, bucks should have their antlers removed to help prevent injuries to deer and handlers. Stress is a concern because fallow deer are easily excited or frightened, which can lead to injuries.

Sample Budgets

The two sample budgets in this publication provide examples of the annual costs and returns for two different fallow deer production and marketing programs. Both budgets are based on a herd of 100 does and 5 bucks. Each budget assumes that 5 bucks are sold as breeding stock and the rest are sold for slaughter at 100 pounds. The first budget assumes that 32 young does are sold as breeders and 5 are kept for replacement and expansion. The second budget assumes that 32 does are sold for slaughter at 88 pounds and 5 are kept for replacement and expansion. These sample budgets should help ensure that all costs and receipts are included in your calculations. Costs are often difficult to estimate in budget preparation because they are numerous and variable. Therefore, you should think of these budgets as an approximation and then make appropriate adjustments using the "Your Estimate" column to reflect your specific resource situation. More information on the use of livestock budgets can be found in *Agricultural Alternatives: Enterprise Budget Analysis*.

Prepared by George L. Greaser, senior research associate in agricultural economics; Melissa Morrow, extension assistant in agricultural economics; Jayson K. Harper, assistant professor of agricultural economics; John Behrmann, technical adviser on deer production; and Andrew Murray, technical adviser on deer production. Photograph by Rosemarie Greaser.

Initial resource requirements

- Land: 25 acres
- Total labor: 550 hours per year
- Capital
 - Livestock (per head):
 - \$500 x 100 does = \$50,000
 - \$600 x 5 bucks = \$3,000
 - Existing buildings, equipment, and fencing:
\$14,000
 - Total capital: \$67,000

Sample Fallow Deer Breeding Budget

Selling 32 does for breeding and keeping 5 does for replacement and expansion; selling 5 bucks for breeding, and selling the remaining 32 bucks for slaughter at 100 pounds live weight.

Item	Quantity	Unit	Price	Amount	Your Estimate
Receipts					
Venison (from bucks, carcass weight)	1,920	pound	\$4.25	\$8,160.00	_____
Doe breeding stock (sold)	32	head	\$500.00	\$16,000.00	_____
Buck breeding stock (sold)	5	head	\$300.00	\$1,500.00	_____
Hides and other by-products	33	head	\$30.00	\$990.00	_____
<i>Total receipts</i>				\$26,650.00	_____
Variable costs					
Feed					
Pasture (hay equivalent)	35	ton	\$40.00	\$1,400.00	_____
Hay (mixed grass and legumes)	35	ton	\$70.00	\$2,450.00	_____
Grain	8.5	ton	\$200.00	\$1,700.00	_____
Salt and minerals	150	pound	\$4.00	\$600.00	_____
Total feed costs				\$6,150.00	_____
Health program	103	head	\$15.00	\$1,545.00	_____
Transportation	103	head	\$15.00	\$1,545.00	_____
Marketing and inspection	33	head	\$50.00	\$1,650.00	_____
Advertising				\$1,000.00	_____
Supplies and miscellaneous	103	head	\$5.00	\$515.00	_____
Interest				\$329.03	_____
<i>Total variable costs</i>				\$12,734.03	_____
Fixed costs					
Labor charge	450	hour	\$0.00	\$0.00	_____
Buck replacement	0.5	head	\$600.00	\$300.00	_____
Fencing				\$1,200.00	_____
Buildings and facilities				\$1,000.00	_____
<i>Total fixed costs</i>				\$2,500.00	_____
Total costs				\$15,234.03	_____
Returns					
Returns over variable costs				\$13,915.97	_____
Net returns				\$11,415.97	_____

Sample Fallow Deer Slaughter Budget

Selling 32 does at 88 pounds for slaughter and keeping 5 does for replacement and expansion; selling 5 bucks for breeding, and selling the remaining 32 bucks for slaughter at 100 pounds live weight.

Item	Quantity	Unit	Price	Amount	Your Estimate
Receipts					
Venison (from bucks, carcass weight)	1,920	pound	\$4.25	\$8,160.00	_____
Venison (from does, carcass weight)	1,742	pound	\$4.25	\$7,403.50	_____
Buck breeding stock (sold)	5	head	\$400.00	\$2,000.00	_____
Hides and other by-products	65	head	\$30.00	\$1,950.00	_____
<i>Total receipts</i>				\$19,513.50	_____
Variable costs					
Feed					
Pasture (hay equivalent)	32	ton	\$40.00	\$1,280.00	_____
Hay (mixed grass and legumes)	30	ton	\$70.00	\$2,100.00	_____
Grain	7	ton	\$200.00	\$1,400.00	_____
Salt and minerals	130	pound	\$4.00	\$520.00	_____
Total feed costs				\$5,300.00	_____
Health program	107	head	\$15.00	\$1,605.00	_____
Transportation	107	head	\$15.00	\$1,605.00	_____
Marketing and inspection	65	head	\$50.00	\$3,250.00	_____
Advertising				\$1,000.00	_____
Supplies and miscellaneous	107	head	\$5.00	\$535.00	_____
Interest				\$293.38	_____
<i>Total variable costs</i>				\$13,588.38	_____
Fixed costs					
Labor charge	450	hour	\$0.00	\$0.00	_____
Buck replacement	0.5	head	\$600.00	\$300.00	_____
Fencing				\$1,200.00	_____
Buildings and facilities				\$1,000.00	_____
<i>Total fixed costs</i>				\$2,500.00	_____
Total costs				\$16,088.38	_____
Returns					
Returns over variable costs				\$5,925.12	_____
Net returns				\$3,425.12	_____

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Periodicals

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Associations

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Ingram, TX 78025

North American Deer Farmers Association (NADeFA)
9301 Annapolis Road
Lanham, MD 20706

Pennsylvania & Maryland Branch of NADeFA
John Behrmann
RD 3 Box 296
Dallastown, PA 17313