

SUPPLEMENTARY SUMMER AND WINTER PASTURE FOR THE SOUTHEASTERN UNITED STATES

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Temporary summer and winter pastures can be used on deer and elk farming systems and as food plots to supplement native rangeland. Annual forages are used for these temporary pastures and must be planted from seed each spring or autumn. The best stands of annual forages are obtained when the seed are planted into a prepared (disked) seedbed. Annual forages, especially legumes, have a higher nutritive value and are more digestible than perennial forages. Annual summer and winter pastures can be rotated on the same land area. Summer forages, planted in April and May, can be mowed off in October and the land disked for planting winter forages. The winter pasture can be mowed and disked about May 1 and planted back to summer forages. With adequate moisture, grazing of summer pastures can begin about 6 weeks after planting and continue through early fall. Winter pastures are planted from late September through October. Limited forage is available during winter because of cold temperatures with maximum growth during the spring.

Summer Annual Pastures

Cafeteria style grazing trials with summer annual grasses and legumes have been conducted at the Texas A&M University Agricultural Research and Extension Center at Overton. Forage entries were planted in 5 by 15 ft plots in a randomized complete block design and replicated four times. In separate studies, fallow and axis bucks, red deer yearlings, and elk cows grazed the plots for 3 to 4 day periods in June and again in July. Each day the percent defoliation (leaf and stem tip removal) was estimated on each plot. Only the percent defoliation by the third day of the first grazing period is reported.

In all three studies, the large seeded legumes (cowpea, soybean, and lablab) were eaten first with essentially complete defoliation by the third day (Table 1). All three species have large leaves about two to three inches in diameter and would be classified as a forb. All deer and elk prefer forbs over grasses. In addition, legumes are higher in protein, phosphorus, calcium, and magnesium and are more digestible than grasses. Cowpea does best on sandy acid soils and soybeans are better adapted to loam and clay soils with a neutral (pH 7) to alkaline pH. Seed costs of lablab are two to three times greater than cowpea and soybean and is therefore more

expensive to grow. Aeschynomene, alyceclover, and phaseybean are also legumes but with smaller leaves about 0.5 in. wide. We assume the smaller leaf size makes them less appealing to the deer.

Forage sorghum (sudangrass x sweet sorghum cross) with the brown midrib characteristic (BMR) ranked behind the large seeded legumes. The BMR characteristic is associated with a low lignin concentration that makes the forage more digestible. Defoliation of the forage sorghum with BMR was about 25 percentage points higher than forage sorghum without BMR by the third day. Larger differences were recorded on the first and second day of the grazing period. Forage sorghums are more drought tolerant than legumes and therefore better adapted to areas with 30 in. or less of annual rainfall. If a forage sorghum is planted, buying seed of one that has the BMR trait is strongly recommended.

Both Teafleaf II and browntop millet were not consumed by deer. Pearl millets have a high alkaloid content and barbs on the leaf margins that may have been objectionable to the deer. Red River crabgrass had low utilization by the deer. Elk did graze both the millets and crabgrass. None of these three grass species should be used as pastures or food plots for deer.

The fallow, axis, and red deer are more selective than the elk. The large seeded legumes were almost completely defoliated by the deer after the first part of the grazing period before they began grazing the other entries. Elk were less selective and even grazed the millets that the deer avoided. This is in agreement with other reports that the digestive system of elk is more like a cow than deer. Elk grazed all forage entries but did show preference for the large-seeded legumes and forage sorghums with and without the BMR trait during the first two days of the grazing period. Any of these summer annual forages could be used for elk, but the large seeded legumes and forage sorghum with the BMR character have a higher nutritive value and would provide better animal performance.

Winter Annual Pastures

Cool-season forages have higher nutritive value than warm-season forages and can meet the nutritional requirements of all physiological stages of deer and elk. A cafeteria style grazing trial comparing four clovers with

annual ryegrass and rye was conducted at the Overton Center. The study was grazed with fallow bucks from January 25 to February 9 and again from March 18 to April 9. Plots were sampled before and after grazing to estimate percent utilization. All forages were utilized during the first grazing period with only 200 lb dry matter per acre or less remaining at the end of the second grazing period (Table 2). There was very little clover available during the first grazing period. Fallow deer had a definite preference for the clovers over the grasses during the second grazing period. Available ryegrass was the same before and after the second grazing period, but some ryegrass was consumed because of growth during this period. Very little, if any, rye was eaten during the spring when it began heading out due to its earlier maturity and corresponding drop in digestibility. Attempts to graze ryegrass-clover mixtures have been unsuccessful because deer selectively graze the clover out of the mixture. If clovers are used for deer, they should be grown alone in pure stands.

Annual ryegrass is the best grass species for winter pastures because it tolerates close grazing by deer and is adapted to a wide range of soil types. If grown in an annual rainfall of less than 30 inches, irrigation will be necessary to obtain high yields. Other cool-season annual grasses (rye, wheat, oats) can be used but should not be grazed shorter than 2 in. because of poor regrowth. Cost of winter pasture is about \$100 to \$125/acre (land preparation, seed, fertilizer). Because of their high costs, cool-season pastures are best utilized by weaned fawns. However, these winter pastures can also be used for mature does and bucks. The normal grazing season is from December to May depending on location and management. Growth is slow during the cold winter months when a stocking rate of about 600 lb animal weight/acre is recommended. Warm spring temperatures enhance growth rate which should support a stocking rate of 1200 to 1500 lb animal weight per acre. Mature does and bucks can be grazed on cool-season pastures. However, bred red deer hinds could get too fat which may result in fawning difficulties caused by oversized fawns.

Stocking rate is the main factor that influences animal performance when grazing pastures. Stocking rates of 12, 16, 20, and 24 weaned fallow bucks were evaluated on annual ryegrass pastures for 2 years. As stocking rate is increased the amount of available forage per animal decreases which lowers animal performance. Average daily gain decreased from 0.265 lb/hd/day at 12 hd/acre to 0.117 lb/hd/day at 20 hd/acre (Table 3).

Therefore gain/hd also decreased from 29.2 to 13.5 lb/hd. However, gain/acre peaked at 16 hd/acre. As stocking rate increased, gain/animal decreases but the greater number of animals/acre resulted in the highest gain/acre at 16 hd/acre. The best stocking rate depends on the producer's goals. If maximum gain/animal is the goal in order to reach slaughter weight as soon as possible, the lowest stocking rate of 12 hd/acre should be used. If the weaned fawns are to be retained for breeding stock and maximum weight gain/hd is not critical, the 16 hd/acre stocking rate would be the best.

If cold temperatures limit ryegrass growth in January and February, fawns will have to be removed from the pasture. During this time they can be fed good quality bermudagrass hay and a soybean:cracked corn (25% soybean meal:75% part cracked corn) supplement at 1.0% of body weight daily. All hay, whether grown or purchased, should be tested for protein and digestibility.

Temporary summer and winter pastures require annual land preparation and seeding. However, they provide forage of high nutritive value when warm-season perennial grasses, rangeland, and forest land provide limited forage.

Table 1. Defoliation of summer annual legumes and grasses after grazing for three days by fallow and axis bucks, red deer yearlings, or elk cows.

Entry	Variety	Seeding Rate	Fallow and Axis	Red Deer	Elk
		lb/acre	-----Defoliation %-----		
Cowpea	Iron & Clay	80	100	100	99
Soybean	Donegal	70	100	100	98
Lablab	Tecomate	100	100	100	96
Aeschynomene	Common	15	50	B	75
Alyceclover	Common	18	23	B	74
Phaseybean	Common	15	38	8	41
Forage sorghum	SS 200 BMR	35	80	93	100
Forage sorghum	Green Grazer V	50	58	67	99
Pearl millet	Teafleaf II	20	0	1	73
Millet	Browntop	25	B	2	73
Crabgrass	Red River	3	B	26	68

Table 2. Available forage at the beginning and end of two grazing periods and estimated utilization

percentage of six cool-season annual forages.

Species	25 Jan.	9 Feb.	Utilization	18 Mar.	9 Apr.	Utilization
	-----lb DM/acre-----		%	-----lb DM/acre-----		%
Arrowleaf clover	75	28	63	883	119	87
Crimson clover	85	29	66	867	53	94
Subclover	106	26	76	399	83	79
White clover	19	12	36	295	30	90
Ryegrass	970	186	81	1058	1044	1
Rye	1104	194	82	1629	3239	0

Table 3. Effect of stocking rate on weight gain of weaned fallow bucks grazing annual ryegrass (2 yr avg).

Stocking rate	Average daily gain	Gain/hd	Gain/acre
hd/acre	lb/hd/day	-----lb-----	
12	0.265	29.2	350
16	0.220	24.3	388
20	0.149	18.4	369
24	0.117	13.5	324