

WINTER DEER FOOD PRODUCTION AND RABBIT UTILIZATION OF VARIOUS SITE PREPARATION TREATMENTS

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Abstract

The effects of several site preparation treatments on winter deer food yield and rabbit utilization were studied in one to four year old loblolly pine plantations in Kemper County, Mississippi. Winter deer food availability ranged from 5-20 times greater on clearcut and site prepared areas than on the uncut forest. The bedded treatment produced the highest amount of winter food. However, rabbit utilization was much lower on the bedded areas than on the sheared and chopped treatments.

Introduction

Harvesting the second forest by clear-cutting to make way for faster regeneration is an accepted silvicultural practice used by many forest industries today. Furthermore, forest industries use several mechanical site preparation techniques in their regeneration program. The objectives of this study were to give the land manager some additional information on the effects of various site preparation techniques on winter deer food production and rabbit utilization in young loblolly pine plantations.

The study area was located on Weyerhaeuser Company land in the interior flatwoods in Kemper County, Mississippi. A detailed description of the habitat is given by McKee (1972).

Materials and Methods

Winter Deer Food Availability

Five categories of desirable and undesirable food plants were sampled by the ranked-set sampling scheme (Halls and Dell, 1966). Plant categories sampled were as follows: woody, forbs, grasses, vines, and mushrooms. All samples were clipped from ground level to a height of five feet and placed in paper bags. Green portions of woody plants and succulent woody twigs were clipped, indicating that spring came earlier than usual. Forbs were sampled to ground level. Green leaves and succulent portions of the terminal shoots of woody vines were sampled. Green rosettes along with any other green parts were clipped for all grasses. The entire plant was taken for the mushroom category. Clippings were taken within a 42 inch diameter hoop. Forty-two plots were clipped in each replication of the uncut forest while only 14 were clipped on the site prepared areas. Oven-dry weight of each sample in grams per hoop was multiplied by ten to convert to pounds per acre (Campbell and Cassady, 1955).

Three replications of each treatment were randomly selected over the interior flatwoods area. A randomized complete block design was used to test for significance. Treatment means were separated by Dunca's New Multiple Range Test (DNMRT).

Rabbit Utilization

Rabbit utilization was determined by counting the number of pellets inside a 42 inch diameter hoop. The hoop was toosed at random 150 times in each of the 11 treatments studied. A randomized complete block design was used to

determine if a real difference exists among the treatments. Each treatment was replicated three times. Furthermore, treatment means were separated by DNMRT.

Results and Discussion

Winter Deer Food Availability

A highly significant difference, 0.01 level of probability, was noted among the eight treatments studied. One and two year-old bedded treatments seem to produce the largest amount of food, 93.69 oven-dry pounds per acre and 79.62 oven-dry pounds per acre, respectively (Table 1). Miscellaneous grasses and *Panicum* spp. rosettes made up the majority of food available in the young loblolly pine plantations (Table 2).

Table 1. Mean winter deer food production of several site preparation treatments in the interior flatwoods of Kemper County, Mississippi.¹

Treatment	Mean ²
One year cut, shear, pile, burn, bed and plant	93.69 a
Two year cut, shear, pile, burn, bed and plant	79.62 a b
One year cut, shear, pile, burn, bed and plant	57.65 a b c
One year cut, mistblow, burn, plant and inject	53.53 a b c
Two year cut, mistblow, burn, plant and inject	45.54 b c
Two year cut, shear, burn and plant	32.64 e
Three year cut, mistblow, burn, plant and inject	23.06 c
Uncut Forest	4.53 d

¹Any two means not followed by the same small letter differ significantly at the 0.05 level of probability as judged by DNMRT.

²Oven-dry pounds per acre.

Table 3. Rabbit utilization as estimated by pellet counts of several site preparation treatments in the interior flatwoods of Kemper County, Mississippi.¹

	Mean ²
Four year cut, shear, pile, burn, disc and plant	2.41 a
Two year cut, chop, burn and plant	2.38 a
Two year cut, shear, burn and plant	2.35 a
One year cut, mistblow, burn, plant and inject	1.94 b
Two year cut, mistblow, burn, plant and inject	1.83 b c
One year cut, shear, burn and plant	1.74 b c
Three year cut, mistblow, burn, plant and inject	1.69 c d
Two year cut, shear, pile, burn, bed and plant	1.49 d
One year cut, shear, pile, burn, bed and plant	1.21 e
Uncut forest, low areas	1.09 e
Uncut forest, high areas	1.00 e

¹Any two means not followed by the same small letter differ significantly at the 0.05 level of probability as judged by DNMRT.

²Square root transformation of the original data.

Table 2. Winter food production, oven-dry pounds per acre, for several food categories.

Food	A ¹ Mean	B ² Mean	C ³ Mean	D ⁴ Mean	E ⁵ Mean	F ⁶ Mean	G ⁷ Mean
Forbs	13.56±2.03	9.57±2.62	0.33±0.23	2.78±1.34	2.91±0.94	1.72±0.68	—
Desirable Woody	1.17±0.83	0.97±0.52	0.33±0.16	—	2.12±0.83	0.30±0.19	2.77±1.32
Undesirable Woody	—	—	—	—	—	0.73±0.45	—
Grasses	78.96±5.88	67.41±10.78	56.81±5.51	29.86±6.84	46.48±9.80	42.42±6.10	20.29±2.25
Vines	—	1.67±1.49	—	—	1.83±0.97	—	—
Mushrooms	—	—	0.18±0.14	—	0.18±0.14	0.37±0.28	—
Total	93.69±5.21	79.62±10.99	57.65±5.23	32.64±6.56	53.52±8.95	45.54±6.03	23.06±1.81
CV ⁸	8.0	14.9	11.7	19.2	20.6	16.3	8.6

¹One year cut, shear, pile, burn, bed, and plant

²Two year cut, shear, pile, burn, bed, and plant

³One year cut, shear, burn, and plant

⁴Two year cut, shear, burn, and plant

⁵One year cut, mistblow, burn, plant, and inject

⁶Two year cut, mistblow, burn, plant, and inject

⁷Three year cut, mistblow, burn, plant, and inject

⁸Coefficient of variation, percent

Summary

A thorough investigation of winter deer food production and rabbit utilization was made in February, 1972, in the interior flatwoods in Kemper County, Mississippi. Special emphasis was placed on site prepared areas that were planted from 1-3 years ago. Specific findings are listed below.

1. Winter deer food availability ranged from five to twenty times greater on site prepared and planted areas than on the uncut forest. Average uncut forest production ranged from 3.48 oven-dry pounds per acre to 6.33 oven-dry pounds per acre while production on site prepared and planted areas ranged from 18-58 oven-dry pounds per acre to 108-47 oven-dry pounds per acre.

2. Grasses, mainly *Panicum* spp., ranged from 2.77 oven-dry pounds per acre to 5.71 oven-dry pounds per acre in the uncut forest. While in the site prepared and planted areas, production ranged from 17.50 oven-dry pounds per acre to 78.96 oven-dry pounds per acre.

3. Bedded treatments, one and two years old, produced the highest amount of winter food. An average of 93.69 oven-dry pounds per acre was found on the one-year old bedded areas and an average of 79.62 oven-dry pounds per acre was found on the two-year old bedded areas.

4. Significantly greater rabbit utilization was noted in the various site preparation treatments as opposed to the uncut forest.

Acknowledgements

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