Kudzu as a feed for Angora Goats

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Kudzu (*Pueraria lobota*), a large-leaved, deep-rooted, perennial legume, favors a warm moist climate and has the ability to thrive on almost any soil. During the 1930's, the government gave an $8 per acre incentive to plant kudzu to control soil erosion in the Southeast, and the forage was subsequently used for cattle grazing. But the asset turned to liability.

By 1950, the plant was no longer confined to gullies, roadsides and grazing areas. It had encroached and continues to encroach upon productive farm and forest land. Its ability to grow rapidly and to climb and cover trees makes it a threat to both the farm and timber industries.

Presently, kudzu occupies about two million acres of forestland in the Southeast. This makes its control of paramount importance and virtually all the literature centers around its eradication.

The growth of kudzu can be arrested by three main methods: chemical, mechanical and biological. Using herbicides is the most common, but there are growing environmental concerns about the use of chemicals. Mowing, a form of mechanical control is only effective when it is done at regular intervals (once per month). Then again, if vines have become established and root reserves are well developed, the plant will withstand repeated defoliation.

Biological control in the form of grazing has proven a very effective form of kudzu control if the grazing is continuous. It has been reported that, if greater than 80% of the foliage is consumed continuously for two growing seasons, kudzu will be eliminated. Pigs and goats have been known to eradicate kudzu from entire fields. In addition, kudzu provides around 15-18% crude protein (CP) and is quite palatable to livestock. Since Tuskegee University scientists are presently investigating the use of Angora goats as a form of biological control of kudzu in forests, the objective of this study was to determine the nutritional composition and quality of kudzu.

The kudzu vines (at the growing tip) were randomly sampled from the Angora goat-kudzu study site, and the first meter of each vine harvested was divided into four sections -0-25 cm, 25-50 cm, 50- 75 cm and 75-100 cm with zero centimeter being the growing tip of the vine. Leaves and petioles were removed from stems and pooled by section. Both leaf and stem samples from each section were air-dried and ground through 1 mm mesh using a Wileymill. Samples were placed in a 1000C oven and dry matter (DM) determined. The samples were then ashed according to the AOAC method. Neutral detergent fiber (NDF) and acid detergent fiber (ADF) content of the forage material were determined by the Van Soest procedure. Leaf and stem samples were also analyzed for nitrogen content using the Kjeldahl analytical procedure.

Differences among the leaf and stem samples for percent DM, ash, NDF, ADF and CP were analyzed by the analysis of variance procedure. When treatment effects were significant ($P<0.05$), differences among means were separated using Duncan's Multiple Range Test.

Although there was no significant difference in DM content of kudzu leaf, there was a general increase in DM of kudzu stem from the growing tip. Leaf sections from 0-25 cm had significantly less ash. This would be expected since plants tend to build up their nutrients as they matured. Although not significantly different, there was an increase in the dry matter content and therefore the carbohydrate content of the leaves as the plant matured.

Results further show that leaves from the 75-100 cm section had the least NDF while the 25-50cm section had the highest level of ADF.

There was a general increase in both ADF and NDF content as stem material was sampled away from the growing tip.

Crude protein in leaves increased as they matured. At the growing point, leaf CP was 15.4% and increased to 18.0% in the 75-100 cm section. The reverse was true for stem CP content. It declined ($P<.05$) from 14.3% at the meristem to 7.4% in the 75-100 cm portion of the plant.

Based on chemical analysis, kudzu is comparable with many other forages. Although further studies are needed, the data presently available suggest that kudzu may adequately supply the basic nutrient requirements of Angora goats.

Percent Dry Matter, Ash, Crude Protein and Fiber Content of Kudzu Along the First Meter Length from the Growing Tip

Sample			Dry Matter	Ash	CP	NDF	ADF
Leaf	0-25	cm	86.7a	5.0c	15.4b	52.2a	24.5b
	25-50	cm	88.1a	6.2b	18.5a	46.3a	30.9a
	50-75	cm	88.1a	6.9a	18.2a	47.8a	26.4b
	75-100	cm	87.6a	6.3ab	18.0a	39.0b	26.0b
Stem	0-25	cm	86.5b	6.8a	14.3a	44.4b	27.8c
	25-50	cm	88.1ab	7.0a	11.8b	53.1a	31.9b
	50-75	cm	88.7a	5.7b	7.9c	53.7a	38.6a
	75-100	cm	89.1a	5.4b	7.4c	57.8a	39.1a

Means in the same column (leaf or stem) with the same superscripts are not significantly different ($P<0.05$).

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