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Groundnut Haulms: A Promising Resource for Sustainable Livestock Nutrition

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INTRODUCTION

Groundnut (*Arachis hypogaea*) is one of the most important protein-rich crops and ranks fifth among global oilseed crops after soybean, cottonseed, rapeseed, and sunflower seed. It is a high-energy crop due to its rich oil and protein content, providing 5.6 calories per grain when raw and 5.8 calories per grain when roasted. Groundnut is also a good source of essential amino acids, minerals, and vitamins. It is grown as an annual crop on about 32.7 million hectares in world, yielding about 31.43 million tonnes, resulting in an average productivity of 1,648 kg per hectare. Its quality and usage differ between developed and developing countries. Groundnut is valued for its nutritional benefits, food and fodder use, income generation, and industrial applications.

Groundnut Haulms

Groundnut fodder, also known as groundnut haulms, plays a significant role in the agricultural landscape of India and specifically in arid regions of the country. India is one of the largest producers of groundnuts in the world. The main groundnut-producing states include Gujarat, Rajasthan, Tamil Nadu, Andhra Pradesh, and Karnataka. These states benefit from favorable climatic conditions, advanced irrigation techniques, and innovative farming practices.

Groundnut cultivation not only supports oil production but also generates substantial quantities of fodder used to feed livestock, thereby contributing to the agricultural economy and food security. Rajasthan ranks as the second-largest groundnut producer in India, despite being a drought-prone region. The state's sandy soil is well-suited for groundnut cultivation. Over the years, the Rajasthan government has implemented advanced irrigation methods such as drip and sprinkler systems to overcome water scarcity challenges. These efforts have led to a significant increase in groundnut production, with the state producing approximately 1.62 million tones of groundnuts in 2020. The use of groundnut fodder in Rajasthan is crucial, especially given the state's large livestock population. Groundnut haulms are a valuable source of nutrition for cattle, sheep, and goats, which are integral to the rural economy.

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The availability of groundnut fodder helps to mitigate the effects of fodder shortages during dry periods, ensuring the health and productivity of livestock As of 2024, Rajasthan's livestock sector plays a critical role in the state's economy and rural livelihoods, especially in arid and semi-arid regions. The state is home to a substantial portion of India's livestock, ranking first in goat and camel populations and second in buffalo numbers. According to the 20th Livestock Census, Rajasthan has a total livestock population of approximately 56.8 million. Rajasthan's livestock contributes notably to the state's economy. Animal husbandry provides around 8-10% of the state's GDP, with over 80% of rural families engaged in this sector. The state is also a leading producer of milk, wool, and meat in India, ranking second in milk production and first in wool production . However, fodder availability remains a significant challenge in Rajasthan due to its predominantly arid environment. The state struggles with inadequate feed resources, impacting livestock productivity. Efforts to address these issues include developing pasture lands and improving the quality and availability of fodder. Additionally, Rajasthan is focusing on enhancing livestock infrastructure, such as veterinary services and market facilities, to support the sector's growth .

Nutritive value of groundnut haulms

Groundnut haulms, is a valuable feed for livestock due to its rich nutritional profile. Below is the detailed nutritive value:

Nutrient	Percentage (%)
Crude Protein	12.5
Crude Fiber	25.6
Ether Extract (Fat)	2.0
Nitrogen-Free Extract	45.8
Ash Content	8.2
Calcium	1.5
Phosphorus	0.4

Groundnut haulms are a good source of protein and fiber, making them an excellent feed for ruminants. They provide a balanced mix of nutrients essential for livestock health and productivity. Groundnut fodder is particularly beneficial during dry seasons when other green fodders are scarce. Its high nitrogen-free extract content indicates a good energy source for animals. The ash content, which includes minerals like calcium and phosphorus, is crucial for bone development and metabolic functions in livestock.

Benefits of Groundnut Fodder

a. **Palatability:** Groundnut haulms are highly palatable to livestock, ensuring that animals readily consume them.
b. **Digestibility:** The high fiber content promotes better digestion and nutrient absorption, improving the overall health of the livestock.
c. **Energy Source:** The high nitrogen-free extract content provides a substantial energy boost, necessary for maintaining livestock productivity.
d. **Cost-Effective:** Utilizing groundnut haulms as fodder is cost-effective, especially in regions where groundnuts are cultivated extensively, as it reduces the need for purchasing additional feed.

Livestock performance by feeding of groundnut haulms

Utilizing groundnut haulms as fodder is cost-effective, especially for farmers in groundnut-producing regions. Economic analyses

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demonstrate that using groundnut haulms lowers feeding costs while maintaining or improving livestock productivity, making it a sustainable choice for small and medium-sized farms. Significant improvements in milk yield and quality have been observed when dairy cattle are supplemented with groundnut haulms, attributing these benefits to the enhanced nutritional profile of the fodder. Conventional wheat straw can be replaced with groundnut haulms up to 40% without any adverse effect on the production performance in lactating cows while, in growing cattle groundnut haulms can be included as a roughage source at 50% levels without affecting growth rates. Inclusion of groundnut haulms in concentrate diets of crossed bulls up to 75% can improve nutrient digestibility and nitrogen balance. Livestock, particularly young and growing animals, benefit from the high protein and energy content in groundnut fodder, leading to better weight gain. Researches showed that incorporating groundnut haulms into the diet of growing animals results in higher average daily weight gain compared to conventional fodder, due to its superior nutritional content. In dry season, sheep fed with 50 g/kg *Cynodon nlemfuensis* hay + 50 g/kg groundnut haulm improved weight gain and nutrient digestibility whereas, feeding of 300 g/day/head of groundnut haulm is recommended as alternative source of protein supplements to browsing goats during the dry season. Feeding of higher proportion of groundnut haulms (75:25) as compared to cluster bean straw has pronounced improvement in nutritional utilization by the camels. Hence, groundnut haulm could be used as a supplement to poor quality roughages to increase the productivity of ruminant livestock in tropical regions.

Feeding groundnut haulms to livestock presents a myriad of benefits owing to its high nutritional value, digestibility, and economic advantages thus making groundnut haulms an excellent choice for enhancing livestock health and productivity, although proper drying and storage is required to maintain nutrient quality.