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FODDER PLANTS DISTRIBUTED IN SURKHAN-SHERABAD BOTANICAL-GEOGRAPHIC REGION

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Abstract: The Surkhan-Sherabad botanical-geographic region is known for its rich biodiversity and favorable conditions for plant growth. In this article, we will explore the various fodder plants that are distributed in this region. Fodder plants play a crucial role in providing nutrition to livestock, and their availability in the Surkhan-Sherabad region is of great importance to the local agricultural community.

Keywords: alfalfa, clover, diversity, livestock, nutritional requirements, economic significance.

Introduction:Fodder plants serve as a vital source of nutrition for livestock, including cattle, sheep, and goats. They are essential for maintaining the health and productivity of these animals. The Surkhan-Sherabad region has a significant livestock population, and the availability of suitable fodder plants is crucial for sustainable animal husbandry practices.

Variety of Fodder Plants

The Surkhan-Sherabad botanical-geographic region offers a diverse range of fodder plants due to its favorable climatic conditions and fertile soil. Let's explore some of the prominent fodder plants found in this region.

1. Alfalfa (Medicago sativa)

Alfalfa is a widely distributed fodder plant in the Surkhan-Sherabad region. It is a highly nutritious plant with deep-rooted taproots, enabling it to access water and nutrients from deeper soil layers. Alfalfa has a high protein content, making it an excellent choice for animal feed. Its adaptability to different soil types and resistance to drought make it a popular choice among local farmers.

2. Clover (Trifolium)

Clover is another common fodder plant found in the Surkhan-Sherabad region. It is a legume that enriches the soil with nitrogen through its symbiotic relationship with nitrogen-fixing bacteria. Clover is rich in proteins and minerals, providing a balanced diet for livestock. Its ability to withstand grazing makes it a sustainable choice for fodder production in the region.

3. Sudan Grass (Sorghum sudanense)

Sudan grass is a warm-season annual grass that thrives in the Surkhan-Sherabad region due to its heat tolerance. It is an ideal choice for fodder due to its high yield and rapid growth. Sudan grass is rich in carbohydrates and provides abundant forage for livestock. Its ability to withstand dry conditions makes it a valuable option for fodder production in the region.

4. Ryegrass (Lolium)

Ryegrass is a cool-season grass that grows well in the Surkhan-Sherabad region during the cooler months. It is known for its fast germination and establishment, making it an excellent choice for early-season grazing. Ryegrass has a high leaf-to-stem ratio, which enhances its nutritional value for livestock. Its adaptability to different soil types and climates makes it a versatile fodder plant in the region.

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5. Berseem Clover (Trifolium alexandrinum)

Berseem clover is a winter annual legume that flourishes in the Surkhan-Sherabad region. It is highly palatable and provides a rich source of protein for livestock. Berseem clover is an excellent choice for crop rotation, as it improves soil fertility through nitrogen fixation. Its ability to withstand cold temperatures and low water availability makes it a valuable fodder plant in the region.

Diversity of fodder plants in the region and their benefits for livestock.

There are thus strong analogies to what is observed in grassland-based systems, in which a combination of livestock species with complementary ecological niches also increases the overall use of pastures. The results of a meta-analysis reveal a positive effect of mixed grazing of sheep and cattle on the daily live weight gain of sheep, while cattle live weight gain was similar in mixed and monospecific grazing systems. On average, sheep grazed with cows grew 14.5 g/day faster than those grazed alone, resulting in higher meat production per hectare compared with that of a monospecific grazing system (d'Alexis et al. 2014).

In another survey conducted over 5 years on permanent grasslands in Germany, lamb production also showed the highest benefits under mixed grazing, with a 17% increase in liveweight gain (Jerrentrup et al. 2020). Mixed grazing significantly increased daily average liveweight gains of suckler cows, but not that of calves. Mixed system productivity was also higher, which confirms the advantages of combining livestock species, attributed to complementary pasture use. This complementarity between grazing species could, however, lead to overgrazing as observed across nine Uruguayan farms where sheep to cow ratio was negatively correlated with cow pregnancy rate (Modernel et al. 2019).

Due to their nutritional requirements and morphological capacities, cattle and sheep exhibit distinct grazing behaviors (Dumont et al. 1995) and have complementary effects on the vegetation structure, which can benefit pasture nutritive value (Jerrentrup et al. 2020) and biodiversity. For instance, mixed grazing with sheep and cattle not only improved livestock production but also provided suitable habitats for butterflies in Welsh upland pastures (Fraser et al. 2014). A recent study extended this finding across six groups of above-ground and below-ground organisms (plants, herbivorous insects, predatory insects, soil bacteria, fungi, and nematodes), and it suggested that mixed grazing is likely to provide enhanced levels of ecosystem services (Wang et al. 2019). Thanks to their two sets of incisors, horses graze close to the ground and maintain relatively stable open patches with specific plant communities (Ménard et al. 2002; Fleurance et al. 2016).

Patch stability is likely to impact ecosystem functioning for agricultural (maintaining sward nutritive value) or conservation purposes (Dumont et al. 2012). Another key process is the competitive exclusion of cattle by horses: as cattle were not able to meet their daily requirements on the short lawns they switched to tall grass areas where they limited the development of competitive and unpalatable grasses on horse latrine areas. Consequently, co-grazing cattle and horses produced more species-rich vegetation communities than cattle or horses grazing alone (Loucougaray et al. 2004). Species combinations between ruminants and monogastrics (e.g. cattle and pigs or poultry) remain largely ignored, although they may have some potential due to their complementary diet compositions and resource-acquisition strategies (Sehested et al. 2004; Martin et al. 2020).

Forage grasses and legumes are the principal source of nutrition for most ruminant livestock in developing countries. Raising yields of forage crops can increase the availability and affordability of livestock products as well as reduce pressure on increasingly scarce land resources by enabling greater herd densities on existing pasture. However, the economic significance of cultivated forage crops in developing countries is not well-understood.

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We provide estimates of the present area and production value of cultivated forage crops as well as review evidence on the extent of adoption of CGIAR-derived improved varieties of cultivated forage species and their economic impact in developing countries. There are at least 159 million hectares under cultivated forage crops producing yield worth around $63 billion per year (at 2014-2016 prices). Latin America accounts for about 85% of this forage crop area. CGIAR forage breeding programs have developed and helped disseminate improved varieties of Brachiaria, Stylosanthes, Vigna unguiculata, and Calliandra spp. which by 2015 had been adopted on over 12 million hectares producing economic benefits of over $5.8 billion/year

Rotationally grazing on sown swards with increasing botanical complexity (in terms of the number of species and functional types) has been shown to improve animal performance in dairy cows (Roca-Fernández et al. 2016) and sheep (Grace et al. 2019). Grazing sheep on multispecies swards reduced the requirements for mineral fertilization and chemical anthelmintics, due to the availability of N-fixing legumes and the presence of tannin-rich plants, respectively (Grace et al. 2019).

In dairy cows, improved animal performance resulted from the cumulative effect of improved pasture nutritive value and increased daily intake (Roca-Fernández et al. 2016). Such an increase in daily intake happens through a higher feeding motivation in association with a more diverse diet (Ginane et al. 2002) rather than through associative effects between grasses and legumes on dry matter digestibility (Niderkorn et al. 2017). Diversified natural grasslands also have the potential to combine high digestibility with a reduction in enteric methane and nitrogen losses in urine (Macheboeuf et al. 2014). Knowledge of the individual and associative effects of plants containing bioactive compounds (polyphenolic compounds, alkaloids, and terpene compounds) is still scarce.

Some legumes containing condensed tannins, including species such as Onobrychis viciifolia and Hedysarum coronarium, have also been used to control strongyle larval development in small ruminants (Hoste et al. 2006) and horses (Collas et al. 2018) but these compounds are toxic to animals when consumed in large amounts. Further research is thus needed to balance their positive and toxic effects in a way that benefits animal health and performance without impairing their digestive efficiency

Conclusion: The Surkhan-Sherabad botanical-geographic region offers a wide variety of fodder plants that contribute to the sustainability and productivity of animal husbandry practices in the area. The diverse range of fodder plants described in this article, including alfalfa, clover, Sudan grass, ryegrass, and berseem clover, provide valuable nutrition to livestock and help maintain the overall health of the agricultural community. By understanding the benefits and characteristics of these fodder plants, local farmers can make informed choices and optimize their livestock management practices in the Surkhan-Sherabad region.

References:

1.North America: Physical Geography. (n.d.) Retrieved October 10, 2023, from www.nationalgeographic.org

2.Region.(n.d.)Retrieved October 10, 2023,from www.nationalgeographic.org/encyclopedia/region/

3.Incorporating Diversity Into Animal Production Systems Can Increase Their Performance and Strengthen Their Resilience. (n.d.) Retrieved October 10, 2023, from www.frontiersin.org/articles/10.3389/fsufs.2020.00109

4.The Extent and Economic Significance of Cultivated Forage Crops in Developing Countries. (n.d.) Retrieved October 10, 2023, from www.frontiersin.org/articles/10.3389/fsufs.2021.712136.