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## Feed and fodder –a major challenge in cold arid region of Leh

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### Introduction

Agriculture and animal husbandry in cold arid region are interwoven with the complex fabric of the society in socio-cultural, religious and economical ways. Mixed crop-livestock farming systems have exerted a powerful influence on climate of Leh because of dissected topography with high peaks and deep valleys, having immense surface area and substantial area of which is clothed with a massive green mantle of plant cover during cropping season. Increased development in terms of increased agriculture, construction of roads, other miscellaneous constructions, and revenue oriented forestry has accentuated deforestation to meet the demand of fuel, fodders based industries. This has also exerted negative impact on pasture lands. However, the area under permanent pasture and grazing lands and net sown area have been surprisingly constant in the last decade. While the area under fallow other than current fallow has reduced by 50 per cent and the current fallow have increased almost two folds clearly indicated the need ever increasing demand for feed and fodder.

The data/estimates of fodder production in the country vary widely. Fodder production and its utilization depend on the cropping pattern, climate, socio-economic conditions and type of livestock in a particular region. The cattle and other livestock are normally fed on the fodder available from cultivated areas, supplemented to a small extent by harvested grasses and top feeds. The three major sources of fodder supply are: crop residues, cultivated fodder and fodder from common property resources, forests, permanent pastures and grazing lands. The regional deficit is more important than the national deficit, especially for fodder, which is not economical to transport over long distances. The pattern of deficit varies block to block of the region. For instance, in general fodder availability in cold arid region is 40-50 per cent of the actual requirement, however, in few blocks, it is below 40%.

### Materials and Methods

Keeping in view the above features, a survey was carried out by Regional Research Station, CAZRI, Leh during 2014 at different villages of Leh valley which is located in Trans-Himalayan region to understand the pasture ecology around Leh district. Mean annual precipitation is about 80-150 mm, which is very scanty and negligible, making region cold arid. For the purpose, growth and growing pattern of *Medicago* sp. (Alfalfa) were recorded in various land conditions like grazed pastures, managed pastures, bunds, agri-horticultural systems (apple/ apricot orchards with arable crops), and unmanaged pastures with the objectives to find out the ways to improve pasture and increase fodder production for timely availability for livestock to reduce their the mortality.

### Results and Discussion

Existing practice in Leh, especially in central belt, the fodder Alfalfa (rich in nutrient content) is grown as secondary crop up to recent past and only on the rejected areas. Now it has established as main fodder crop, supplemented by wheat and barley straw. During the survey at Thiksey and Stakna villages, it was recorded that crops were sown at much higher seed rate as compared to recommended rate so as to obtain good amount of crop residues for fodder which can be utilized in during winter when nothing is available. Few amount of weeds after manual weeding (at 30 days after sowing) from crop fields are also realized as fodder. Good part of growth of alfalfa fodder is lost as the regenerating crop in its early stage in April-May season because it is grazed by animals except in some fenced areas. The animals are let loose for grazing the fields and Alfalfa faces huge loss in its total production due to grazing and as well as its early harvest by 3<sup>rd</sup> week of August to avoid labour load.

Survey made in different pastures revealed that managed pastures attained significantly maximum height of *Alfalfa*. (135 cm) compared to grazed pastures (55 cm) and non-managed pastures (89 cm) with a fresh weight of 2 kg per sq metre, 0.92 kg/sq m and 0.29 kg/sq m, respectively and dry weight 1.05 kg/sq m, 0.30 kg/sq m and 0.12 kg/sq me, respectively. In case of bunds and agri-horticultural systems, *Alfalfa* grew almost at par to each other i.e. with 89 and 80 cm plant height having fresh weight and dry weight of 0.81 and 0.62 kg/sq m, respectively. Area under managed pastures is very

low as compared to grazed and unmanaged pastures. Area under permanent pastures and other grazing lands is constant *i.e.*, 1092 hectares since last one decade which is very low viewing the pressure of livestock population. Barren lands spread over on 27169 hectare contributed negligible amount of fodder. It was also recorded that *Medicago sativa* (blue flowered Alfalfa) and *Medicago falcata* (violet flowered Alfalfa) are the most preferred fodder at present as it yields more without any change in its variety and seed quality since last two decades. Shortage of Alfalfa seeds is main constraint for its in adoption. On the other hand, farmers prefer to harvest crop for fodder rather than for seed collection due to acute shortage of labour. There is an urgent need to bring Alfalfa under large scale cultivation to produce seeds locally in new command areas for ensuring high quality availability of fodder. Alfalfa seeds are costly and climatic conditions are congenial for alfalfa seed production.

### **Conclusion**

Overall it could be attributed that the amount of fodder grown is very less than the required fodder production. Many of the grazing lands of *Alfalfa* have been infested with other grasses and weeds like *Artemisia* sp. and others, which are threatening the future perpetuation of this fodder.