

Lolium perenne as an uncultivated forage grass of District Baramulla(JK)India: Case study

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Case Report

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CITATION

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ABSTRACT

Lolium perenne L. commonly known as “ray grass” is a temperate grass species commonly used as pasture for livestock. *Lolium perennen* belongs to family Poaceae and is a perennial herb. It has great economic importance owing to its suitability as a forage grass. *Lolium perenne* is cultivated in fields for forage grass to feed livestock. However, current study focuses on *Lolium perenne* as uncultivated forage grass. Ray grass is widely distributed in cultivated and uncultivated fields, mostly found in moist places, banks of stream, pastures etc. Farmers benefit from the uncultivated growth of ray grass to feed their livestock.

Keywords: Ray grass, Poaceae, Forage, Uncultivated, Livestock

1. INTRODUCTION

Plants are a source of food, fodder, fuel, etc., and the use of plants as herbal medicines to cure various ailments parallels human civilization (Dubey et al., 2004). Poaceae are the most crucial component of crops and livestock feed, as well as the primary source of income for many people in rural areas around the world (Hussain et al., 2019). Several species of the grass family (Poaceae) are economically valuable forage crops and represent a fundamental component of our grasslands. Natural resources are the bone of the economy of the rural area of a country. Livestock is an integral part of the environment and economy of the rural areas dependent on these resources. Fruit Valley of Western Himalaya, India is rich in fodder resources. A total of 240 species from different life forms as palatable species has been reported, out of which 122 (50.83%) are forbs, 40 (16.66%) grasses, 7 (2.91%) sedges, 15 (6.25%) climbers, 43 (17.91%) shrubs and 13 (5.41%) trees (Lokender Singh et al., 2017).

Lolium perenne (Perennial ryegrass) is a member of the Poaceae family of plants which contains approximately 10,000 species. It has great economic importance owing to its suitability as a forage grass. It has high digestibility and palatability making it ideal for dairy and sheep forage systems and it is particularly suitable for animals with high nutrient requirements (Hannaway et al., 1999).

Perennial ryegrass (*Lolium perenne* L.) is the most important forage grass species sown in temperate agriculture systems where it is exploited via grazing and mowing. Its economic value is based on the high quality and quantity of the biomass produced (Smith et al., 2001; Baert and Van Waes, 2014). Most forage grasses are obligate outcrossers due to a gametophytic self-incompatibility (SI) system that prevents inbreeding (Cornish et al., 1979). Perennial ryegrass (*Lolium perenne*) is the most commonly used grazing grass in temperate Australian and New Zealand pasturelands, and symbiotic *Epichloe* fungal endophytes are commercially exploited to provide insect resistance in some environments (Ekanayake et al. 2012; Hettiarachchige et al. 2019; Kaur et al. 2015;

Reed 2014). Perennial ryegrass is the economically main forage grass sown in Europe, New Zealand, and in the temperate regions of Japan, Australia, South Africa and South America. Perennial ryegrass is also widely used in amenity grassland including sports turf. This is reflected in a 100 years period of effort in plant breeding activity, in high number of varieties on the OECD list in 2011 (1362) and in seed production concerning that since 2000 the EU-27 countries have produced, on average, 83,660 t perennial ryegrass seed per year and on global scale 209674 t per year (Humphreys et al., 2010).

Uncultivated grasses are drought tolerant, fast growing, disease resistant, no need to sow, no need to watering, no need to use fertilizers because these soils are enriched with humus (cattle dung), nutrients and moisture. They are helpful in controlling soil erosion. Overgrazing leads the pastures to disappear, so retire the land from the use by livestock at least till the green cover is sufficiently restored (R. Prameela and M. Venkaiah 2016). The collective efforts of ethnobotanists, phytochemicals, pharmacognosist and pharmacologists are needed to document and evaluate the efficacy and safety of the claims. The indigenous knowledge and uses of the plants of a particular area have to be analyzed to develop appropriate management measures (ex situ and in situ conservation) for best utilization of natural resources (Dhara J. Gandhi et al., 2011).

2. Material and Methods

2.1. Study site

Current study was carried out in District Baramulla. District Baramulla is the largest District in UT of Jammu and Kashmir in terms of both area and population. The District headquarter of Baramulla town lies between 34°11'53'' N and 74°21'50'' E at a height of 1850 m (6069 ft.) MSL. The District Covers an area of 2072.42km², comprising 544 villages. District Baramulla covers a large forest area and becomes an important resource. Forests are spread over an area of 2963 sq. km and the district has 71% area under forests. Administratively, the district is divided into 08 tehsils (Uri, Baramulla, Pattan, Tangmarg, Sopore, Rohama, Boniyar & Kunzer) and 13 Forest

blocks (Uri, Buniyar, Baramulla, Dangi-wacha, Zanig-eer, Pattan, Singhpora, Kunzer, Tangmarg, Wagoora, Rohama, and Sopore). (census 2011).

2.2. Botanical survey

Field work was carried out in different areas of District including uncultivated areas, grasslands, road sides, stream banks, forests. The distribution pattern of *Lolium perenne* was recorded. Local farmers were interviewed about the forage use of *Lolium perenne*; mostly uncultivated usage was recorded in proper notes. Ethnobotanical survey was also conducted in grazing pastures for forage use of *L. perenne*. Many shepherds intervened for forage use of grass.

3. Result and Discussion

Lolium perenne is a perennial grass commonly known as “ray grass” is used in forage to feed livestock throughout the world. In the UK, *L. perenne* has been widely used in the sowing down of leys for hay production for many years, and has thus become widely naturalized (Beddows, 1967).

Lolium perenne is rich in nutrients and is effectively used as forage grass. The grass is either directly used for forage or may be dried, stored and later used for forage. Duke (1983) reported that the green grass contains 26.6% dry matter, 3.0% crude protein, 1.3% fat, 6.7% fiber, 13.2% nitrogen free extract, 2.4% ash (Ca, 0.12%; P, 0.07%; K, 0.51%). The hay contains 12% H₂O, 88% DM, 9.2% protein, 3.1% fat, 24.2% fiber, 43.4% nitrogen free extract, 8.1% ash.

The grass is cultivated traditionally in various crop fields, pastures for forage purposes. *Lolium perenne* flowers during July - August and seed formation occurs during August- September. Seeds of *L. perenne* are caryopsis and can be easily collected. If spring grazing is hard enough to limit flower head production without damaging vegetative growth then this can prolong the spring grazing season (Waller and Sale, 2001). In dry summers it can become dormant and if overgrazed at that time of the year the grass may not survive to regrow in autumn. It may not survive very cold winters (Cool et al., 2004).

Seeds are later sown in a proper way for forage cultivation in crop fields and pastures by farmers. Seeds of *L. perenne* are also stored for future cultivation. As the seeds of *Lolium perenne* are mainly dispersed by wind however, they are also dispersed by different sources like human beings, water to uncultivated fields, roadsides, stream banks, crops fields. The important characteristic of *Lolium perenne* is that once it's cultivated in the particular crop field, it regenerate by its own in next coming five years. The uncultivated germination of particular grass benefit farmers. The easy uncultivated growth of *Lolium perenne* benefits farmers as no plowing, sowing of seed is needed. *L. perenne* is most productive in spring and autumn. After harvesting *Lolium perenne* may be used directly to feed livestock or may be dried, processed for future use.



Figure 1. Photograph of *Lolium perenne*

Survey conducted to various pastures, grasslands of District Baramulla revealed forage use of *L. perenne* is most common in District and also most carried out in other Districts. However, grass is mainly used to

feed livestock in dairy farms due to its richness in nutrients. After harvesting the grass regenerate, which is then directly used for grazing by local farmers. The growth pattern of *Lolium perenne* as in cultivated and in uncultivated fields does not show much variation. However when the grass regenerates after harvesting the growth pattern shows variations. The growth of *Lolium perenne* after harvesting has stunted growth. The grass does not grow upto actual height. Because of the unstinted growth, *Lolium perenne* is not harvested and is used directly for grazing of cattles and sheeps. Distribution patterns of *Lolium perenne* in cultivated fields and uncultivated fields studied by the quadrants of size 1m x 1m show the same number of individuals on average. *Lolium perenne* was also found in maize fields as a potential weed. The weed concurrence at early stages of perennial ryegrass development has negative influence on distribution and development of the stand and decreases dry mass per area unite (Hagggar and Kirkham, 1981; Dimitrova, 1995; Dimitrova and Katova, 2010).

Conclusion

From above study we concluded that *Lolium perenne* is the most common forage grass used by farmers to feed their livestock. The grass is cultivated in fields, however it also grows in different areas like uncultivated fields. The uncultivated germination and growth of *Lolium perenne* is beneficial for farmers and cultivators as seeds are dispersed easily by wind and other agents. Besides, *Lolium perenne* regenerates from rhizomes so cultivation is not needed till next 5 years. The grass is rich in nutrients and is commonly used to feed livestock.

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