Agri Articles
(e-Magazine for Agricultural Articles)
Volume: 04, Issue: 05 (SEP-OCT, 2024)
Available online at http://www.agriarticles.com
©Agri Articles, ISSN: 2582-9882

Sewan Grass: The King of Indian Thar Desert

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Pasture grasses are valuable forage resources for sustainable animal production in the rainfed areas of the arid zone. Sewan (Lasiurus sindicus), known as "The King of Thar Desert," is the primary grass of the hyper-arid zone, thriving under moisture stress on sandy plains, low dunes, and hummocks. It is predominantly found in the Jaisalmer, Bikaner, and Barmer districts of Rajasthan, which receive annual rainfall of 100-350 mm.

Fig. A view of Sewan grass

Sewan grass has a deep and well-developed root system, allowing it to survive under minimal moisture conditions and tolerate heat and drought. The grass becomes dormant during periods of moisture stress, with sprouting and growth resuming after the onset of the monsoon. This grass improves the micro-climate, enhances soil fertility, and aids in sand dune stabilization in the arid zone. Remarkably, a pasture of Sewan grass can remain productive for over 20 years. Sewan grass is highly nutritious and palatable to all kinds of livestock up to the flowering stage. However, as it matures, the stem hardens, potentially causing wounds in the mouths of animals, and both its palatability and nutritional value decrease.

Sewan grass can be established by seeds, root slips, or nursery-raised seedlings during the rainy season. It can also be established using seed pellets on undulating sand dunes. To prepare grass seed pellets for pasture establishment, mix 100 g of grass seed with 3.0-3.5 kg of clay powder, 500 g of compost powder, and 100 g of sand. Place this mixture into a tyre mounted on an iron stand, and rotate it using the handle. Continue rotating for 5-6 minutes until the mixture forms pellets. Afterward, remove the pellets from the tyre and allow them to dry in the shade during May-June. Once dried, the pellets should be bagged and stored. When ready for use, the pellets can be mixed with 1.25 litres of water before broadcasting them on sand dunes before the onset of rains. This method ensures effective distribution and germination of the grass seed, promoting successful pasture establishment.

For the establishment of Sewan grass, 7-8 kg/ha of quality seed is sufficient when planted at a 50 cm x 75 cm geometry. Improved varieties and elite genotypes of Sewan grass, such as CAZRI Sewan 1, Jaisalmeri Sewan (RLSB 11-50), CAZRI-M-30-5, CAZRI-317, and CAZRI-319, have been developed by the ICAR Central Arid Zone Research Institute in Jodhpur and Swami Keshwanand Rajasthan Agricultural University in Bikaner. Although pasture grasses in the arid zone are typically not fertilized, applying 20 kg/ha each of nitrogen

and phosphorus at the time of establishment, followed by 20 kg/ha of nitrogen after effective rains each year, can enhance the forage yield of the pasture.

Sewan grass thrives alongside native trees, shrubs, and bushes such as Phog, Lana, Jharberi, Khejri, etc. It is often planted on farm bunds and boundaries to create forage resources in agricultural fields. Sewan-based agri-pasture systems, incorporating arid legumes like moth bean, cowpea, cluster bean, and mungbean in an alley cropping system, can also be developed to minimize risk and conserve resources.

Sewan grass requires a full year to establish properly, so grazing should not begin until the second year. A deferred rotational grazing method with an optimal number of animals has been found effective for improving the productivity and quality of grassland. Green fodder yield of 100-200 q/ha may be harvested from a well-managed pasture of sewan grass in arid zone. During the summer season, grass remains dormant and after effective rains, its roots start sprouting and provide green fodder for grazing animals between August to October. Its fodder contains 6-14% crude protein at various growth stages and about 75% dry matter digestibility. Seed production in Sewan grass is challenging due to the shy nature of the spikelet. Mature seeds are collected manually through handpicking, yielding an average of 20-50 kg/ha of seed from a well-managed pasture.

Fig. Sewan Sewan-based agri-pasture in arid zone

Given its natural adaptability and utility in generating perennial forage resources for sustainable livestock production, as well as its role in soil health improvement, sand dune stabilization, and micro-climate enhancement in the hyper-arid zone, the natural habitat of Sewan grass in Jaisalmer and its vicinity needs protection and improvement through re-seeding and pasture management techniques. Lay farming may be adopted on poor arable land in a 4–5-year rotation to improve the physio-chemical and biological properties of the soil, alongside forage production. Each year, Sewan grass produces new roots after regeneration during the rainy season, adding substantial organic matter to the soil and thus improving soil health and productivity. Sewan-based agri-pasture systems in the form of alley cropping should also be promoted on cultivated lands in the hyper-arid zone.