

Deenanath grass: A most suitable grass for pasture

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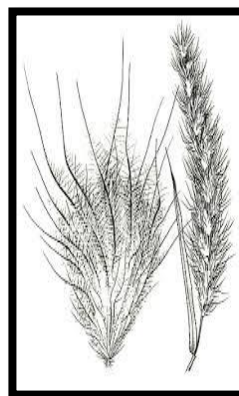
Common name- Deenanath grass (India), Kaysuwa (Nigeria), Barn (English)

Scientific name- *Pennisetum pedicellatum* Trin.

Family- Poaceae



(a)



(b)



(c)

Picture: (a) Plant of deenanath grass (b) and (c) Inflorescence of Deenanath grass

Any plant of the family Poaceae, having jointed stems, sheathing leaves, and seeds are like grains comes under grass. Deenanath grass is simply known as **desho** or **desho grass**, is an indigenous grass of Ethiopia of the monocot angiosperm plant family Poaceae. (Picture:1)





(a)

(b)

Picture: (a) Schematic diagram of grain of poaceae family (b) Purple point shows appendages that wrap around the stem

Identification: The grass is mainly identified by its peculiar morphology. It is a tall, erect and produces annual bunchgrass of 0.6 0-1.0 m height; it is branched from the base and often branched above. Culm is bright with light reddish at base. Inflorescence is pink in the beginning but tends to become white towards maturity. It is a heavy seed producer. Leaves are linear, acuminate, rounded at base, sparsely hairy or glabrous, size ranges from 15-25 cm to 45-60 cm long and 4-10 mm wide with light to dark green in colour, flat, glabrous. Cylindrical racemes, 5-12 cm long, it is dense-flowered, rachis is glabrous, notched, with few outer bristles, and they are slender, short (about 3 mm long). There are numerous inner bristles or cilia (longest 9 mm), densely villous below the middle. Spikelet length is about 4 mm long, usually solitary. It spreads rapidly by regenerating each year itself by self-sown seeds (fallen seeds).

Chemical compounds- The plant part have good quantity of tannins and alkaloids.

Origin and distribution- It is native of north tropical Africa, south Africa and Asia (India, Malaysia, Philippines, Thailand), Australia, Fiji, United States and an indigenous grass of Ethiopia. It is widely distributed in West Africa and India particularly in Bihar, West Bengal, Haryana, Punjab, M.P. and U.P.

Habitat- Its habitat is drier sites, savannahs and woodland margins, a weed in croplands, grasslands, waste places. It has good drought tolerance and it prefers warm climate and is found in regions of rainfall from 800 to 1250 mm



Climate- As it requires hot and humid climate with temperature 15- 38°C. It is best suited for growing in the monsoon season under rainfed condition.

Soil- All types of soils with good drainage are good for its cultivation. But loamy to sandy loam soil are best suited for its cultivation. It does not come up well on heavy clay soil or flooded or waterlogged conditions but can be grown on poor soils by proper drainage and giving sufficient fertilizer.

Field preparation- It needs a well-prepared moist seedbed. For this first of all the stumps and root should be removed followed by one deep ploughing with disc harrow or mould board plough and 3-4 harrowing is required. After the onset of monsoon, the sowing can be done in lines or broadcasted using clean seeds.

Manure and fertilizers- For the cultivation of deenanath grass 100-120 kg of N ha⁻¹, 40-50kg of P₂O₅ ha⁻¹, 30- 35kg of K₂O ha⁻¹ is required. Half dose of nitrogen and complete doses of phosphorus and potassium is given as basal and remaining nitrogen is applied at first cutting of the grass. Except this, 15 days prior to sowing 8- 10 tons of well decomposed FYM or compost should be added into the field and mixed well.

Seed rate- For broadcasting 4-5 kg ha⁻¹ and for line sowing 2.5kg ha⁻¹ or 33,000 seedlings (six weeks old) are needed for one hectare for planting 2 seedlings at one spot in growing season help in better establishment of pasture.

Planting geometry- It requires 35 x10 cm spacing or for solid sowing in lines seeds have to be placed 30 cm apart.

Sowing time- Suitable time for its sowing is first fortnight of June- July. If irrigation water is sufficient, it can also be grown during March- April

Irrigation- As this is a rainy season crop, it does not require a greater number of irrigations. But when there is a scarcity of water in its root zone irrigation should be done timely. The crop produces good fodder during the month of October and November, for that crop requires water frequently with good drainage channel. Poor drainage can lead to decaying of plants.



Table 1: Deenanath grass varieties in India are as follows (Source: Agropedia, submitted by Vinod Kumar on Wed. 20.03.2013-11:44 and database of forage crop varieties: 2018)

S.No.	Variety name	Developed and released from	Releasing year	Recommended States	Duration (Days)	Cultivar description and Characteristic features
1.	Jawahar Pennisetum- 12	JNKVV, Madhya Pradesh	1974	In low rain fall areas of Madhya Pradesh, Chhattisgarh, Maharashtra and part of Uttar Pradesh		Plant is perennial, the variety is 156 cm tall, profuse basal tillering (30-35 tillers plant ⁻¹), the leaves are long and broad, with average leaf stem ratio of 1.27, suitable for two cutting system, if 1 st cut is taken at boot stage. Potential yield: GFY- 55-60 t ha ⁻¹ , DMY-12-14 t ha ⁻¹
2.	Pusa Deenanath Grass	IARI, New Delhi	1983	All states, except hilly tracts where temperature is low	120-130	Plants are erect with average height 200- 225 cm. stem dark green with purple pigmentation on stem, nodes and junction of leaf blades. Flower pinkish in colour. Days to 50% flowering 90- 100. It is an annual grass and ideally suited to all type of soils. It is cultivated as <i>kharif</i> crop in northern India but it can be grown throughout the year in southern India where winter is not severe. It is a rainfed crop grown mostly on marginal lands as well as in forest areas. Potential yield: GFY- 60- 70 t ha ⁻¹ , DMY- 15-16 t ha ⁻¹
3.	Bundel-1	IGFRI, Jhansi	1987	All states		Plant is perennial, average height 107 cm with profuse tillering, late maturing grass with purple stem and abundant long velvety leaves, hairs on ventral surface of the leaf. The spikes are very large and loose, large spikelets have long bristles. Also, high field resistance to leaf spots and <i>Helminthosporium</i> and tolerant to lodging. Potential yield: GFY is 30-40 t ha ⁻¹ , DMY-6-7 t ha ⁻¹
4.	Bundel Deenanath- 2	IGFRI, Jhansi	1990	All states		Average GFY is 30-48 t ha ⁻¹ , highly tolerance to leaf spots. <i>Helminthosporium</i> and other major diseases and insect pests, resistance to lodging, drought hardy and high fertilizer responsive. Potential yield: GFY- 30-40 t ha ⁻¹ , DMY-6-7 t ha ⁻¹
5.	COD-1 (TNDN- 1)	TNAU, Coimbatore	1997	Tamil Nadu	100- 105	Plant height 190 cm, profuse tillering (385 tillers m ⁻¹ length). Nodes and internodes purple at the bottom, while greenish purple at the top. Dorsal side of lamina is hairy and leaf margin are sparsely hairy. Ear heads creamy yellow at bloom stage, and light brown at maturity. Panicle long and semi compact. Flowering in 70-75 days. It is capable of 3- 4 cuts with assured irrigation. October seed sowing is ideal. Resistant to drought. Potential yield: GFY- 60- 70 t ha ⁻¹ , DMY-12-14 t ha ⁻¹

Source: Agropedia, Vinod Kumar on Wed, 20-03-2013-11:45 and Annual report on forage crops



Crop rotation- The following crop rotation can be adopted to maintain the soil fertility-

1. Deenanath grass – Berseem– Mustard
2. Deenanath grass – Cowpea- Berseem– Maize
3. Deenanath grass – Cowpea– Oat– Maize
4. Deenanath grass – Cowpea– Lucerne– Mustard

Weed management-The growth rate of crop during the early growth phase is remarkably slow. At this time the weed infestation is also more and hence it becomes necessary to control weeds. At later stages weeds get controlled due to crop's smothering effect on weeds.

Pest management- Such problems of insect- pest is generally not seen in deenanath grass.

Harvesting- 70- 80 DAS is suitable for its first cut. Cutting should be done 10 cm above the ground; it helps plants to regenerate faster. Two cuttings are sufficient for good green production, but three cuttings can be taken in summer.

Yield- On an average the crop produces 800- 1000 quintal green fodder per hectare.

Seed production- when the crop is left after first cut it produces more as well as healthy seeds as compared to seed-to-seed practice without cut.

