

Lucerne

Common name: Lucerne/Rizka

Botanical name: *Medicago sativa* L.

Lucerne is known as 'Queen of forage crops'. In India, lucerne is mostly grown in irrigated areas of Punjab, Haryana, Uttar Pradesh, Rajasthan, Gujarat, Maharashtra, Tamil Nadu and in Leh area of Ladakh. It is generally grown during *rabi* season as an important fodder crop, in areas where water supply is inadequate for



berseem and winter period is short. Its deeper root system makes it very well adaptable to dry areas with irrigation facility. It grows well as rainfed or un-irrigated crop in high water table areas. It is perennial (3-4 years), persistent, productive and drought tolerant forage legume which contains 15% crude protein with 72% dry matter digestibility. It supplies green fodder for a longer period (November - June) in comparison to Berseem (December - April), although lucerne is a native of temperate region, but it can be successfully cultivated even in most of the countries of the tropics. It can also withstand well under fairly low temperatures.

Soil and its preparation

Lucerne can be raised on a wide range of soils. However, well drained fertile soils with neutral pH are ideal. It can not thrive on alkaline soil, but can be raised on acid soils with liberal application of lime. It does not thrive well on very heavy and waterlogged soils. Lucerne needs a fine well leveled seed-bed with adequate moisture. For proper seed bed preparation, ploughing the field once with mould board plough and 3-4 times with country plough, followed by planking each time is sufficient. A fine seedbed ensures better contact of seeds with soil particles and facilitates quick and better germination.

Varieties

Variety	Area of cultivation	Green fodder yield (t/ha)
Sirsa-8	Northern zone	80-85
Anand-2	Gujarat, Rajasthan and Madhya Pradesh	80-100
Anand-3	Hills (cold dry zone)	40-50

RL 88	Entire growing tract	75-100
CO-1	Tamil Nadu and Karnataka	80-90
T-9	Northern zone	80-95

Sowing time

Middle of October is the best time for sowing lucerne. However, it can be sown from the end of September to early December.

Seed rate and sowing method

A seed rate of 20-25 kg/ha is sufficient for good crop growth when it is broadcasted, while in line sowing a seed rate of 12-15 kg/ha is required. It can also be sown through seed drill or desi plough with solid planting and row to row spacing of 25-30 cm. The seed should not be planted deeper than 1.5 cm. Under broadcast method of sowing, it is very important to cover the seed as soon as possible with soil. Care should be taken that seed should not go more than one cm deep as seed size of lucerne is very small.

Cropping Systems

It is usually raised after harvest of *kharif* crops, such as Sorghum, Rice, Soybean, Maize, Cowpea, Cluster bean etc. It can be raised in rotation with almost every grain or forage crop. The most common crop rotations adopted are Maize - Lucerne, Rice - Lucerne, Sorghum -Lucerne, Green gram - Lucerne, Soyabean - Lucerne, Cowpea + Maize (fodder) - Lucerne, Sorghum (grain) – Lucerne - Maize (fodder), Napier grass – Lucerne, etc. Sometimes it is raised mixed with Berseem to get the continuous supply of green fodder till May - June, where Berseem is completely finished in hot months of April and May.

Nutrient management

Lucerne responds well to FYM application on sandy loam soils. Being a perennial crop, it is beneficial to apply 20 t FYM/ha every year. Being a legume crop, it fixes the atmospheric N in soil through symbiotic bacteria. Seed inoculation with *Rhizobium meliloti* is recommended, where lucerne is being cultivated for the first time. Besides this, a basal dose of 20 kg N, 60-75 kg



P₂O₅ and 40 kg K₂O/ha is also required. Boron deficiency is generally noticed in leached and

coarse textured soils. Spray of 0.2% borax, can boron deficiency. Iron deficiency, leading to chlorosis, is fairly common in poorly drained alkaline soils. Liming the soil well in advance of sowing is helpful in areas where soil is acidic. Application of 20 kg/ha each of S and Zn along with 2 kg/ha of Mo may enhance the effectiveness of biological nitrogen fixation.

Water management

To obtain good germination, pre-sowing irrigation (*palewa*) is essential in lucerne. Since lucerne takes a long time to establish at early stage, very frequent irrigations may be required at the interval of 7-10 days. Later on, this interval may be extended to 25-30 days as its root system gets well established. During summer, interval of irrigation should be reduced to 15-20 days. The crop requires about 15-20 irrigations in a year.

Weed management

Lucerne takes a long time to establish itself and gives ample scope for weed infestation up to the first cutting. It is very difficult to control weeds in broadcast crop. If crop is sown in lines, weeding and hoeing become easier. First weeding should be done 20-25 days after sowing. Pre-emergence application of Pendimethalin 1-2 kg/ha or post emergence application of Diquat @ 6-10 kg/ha (5-10 days after sowing) effectively controls *Cuscuta*.

Disease and insect-pest management

Lucerne weevil and aphid are two important insects of this crop. These insects can be managed through the application of neem oil @ 30 ml per litre of water. The most important diseases of lucerne are rust, leaf spot, downey mildew and phytophthora rot. Application of Dithane M-45 (0.25%) as spray is effective for rust and leaf spot control. Spraying with Mancozeb is recommended for control of downey mildew. Phytophthora root rot occurs in wet soils especially when free water persists for an extended period. Use of resistant cultivars accompanied by optimum water management is recommended for its management.

Harvesting management

The first cut is taken 50-55 days after sowing and the subsequent cuts at an interval of 25-30 days when crop attains the height of 60 cm from the surface of the soil. In a year, 8-10 cuts can be taken between October-April with 80-120 t/ha green fodder and 18-20 t/ha dry fodder yield. The perennial varieties can be retained for 3-4 years in the same field.