

CULTIVATION OF ALFALFA (MEDICAGO SATIVA L)

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ABSTRACT: *Medicago sativa* Linn, commonly known as 'Alfalfa', is a tonic plant rich in proteins, minerals, enzymes and vitamins, Bulk quantity of the whole plant is required in the pharmaceutical industries especially in homoeopathic pharmacies, Hence, there is a great need to cultivate this plant for sustained supply of the drug. Use of good and adequate phosphate-containing farm yard manure, timely irrigation and appropriate spacing between plants results in good yield.

INTRODUCTION

Medicago sativa Linn., Commonly known as 'Lucerne' or Alfalfa', belongs to the family fabaceae. widely occurs in the caucasian region and in the mountainous regions of Iran, Afganistan and adjacent localities. The cultivated form probably arose in western Persia, whence it has spread to many countries. It is used as tonic due to presence of high percentage of proteins (60.5%), minerals, enzymes, vitamins etc. Alfalfa is a valuable source of vitamins A and E fresh is rich in Vitamin C (1.78 mg/g) but it loses 80% of vitamins on drying. The enzymes reported in alfalfa are amylase, emulsion, coagulase peroxidase, erepsin, lipase, invertase and pectinase (W.I., 1962; Uphof, 1968).

It is highly valued as a legume fodder, most important fodder crop in USA where millions of acres are devoted to it. In India it is also valued as green fodder especially for horses and its cultivation is confined to military farms. But is largely used by various pharmaceutical industries especially in homeopathic pharmacy. Updated market survey indicates that there is an increasing demand and use of this drug in preparation

of health and vitality tonic i.e. Alfalfa tonic. It favorably influences nutrition, evidenced in 'tonic up' the appetite and digestion resulting improved mental and physical vigour with gain in weight (Boericke, 1927). There is a short fall in supply of this important raw drug material and demand is rising day by day due to lack of knowledge of proper cultivation, therefore, it was felt to undertake the experimental cultivation of this important plant for sustained supply by growing the plant for sustained supply by growing the plant in an organized way in our experimental garden we are growing this plant for consecutive six years with success.

Cultivation

Medicago sativa can be grown on a wide range of soils but does best on rich, friable, well drained loamy soil while it fails to grow in acid soil, It is hardy and drought resistant, can withstand high temperature (40°C to 45°C) and an annual rain fall of 45-50 CM in optimum but can also survive in low rain fall of 35CM.

Preparation of Land

Cultivation of Alfalfa requires well ploughed land during the rains. Soil should be friable, smooth and clean. It needs adequate and timely application of manure for good yield. Experimental small-plot cultivation shows 10-15 tonnes/acre of farmyard manure is to be applied after the rains and a dressing of lime is required before sowing. For better yield farmyard manure is applied to the soil four weeks before sowing. Phosphate containing manures like bone meal, fish, ammonium phosphate etc. give good result.

Propagation /Planting

Plants were raised by sowing the seeds directly in the field. Seeds have hard coat and they were soaked in water before sowing. Sowing is done in the month of October to November during the cold weather in lines or on ridges, sowing on ridges is preferred as it helps in keeping the field free from weeds, about 5 to 6 kg/acre seeds were used for sowing on ridges and little more in line sowing. Studies show that 2 to 3 years old seeds germinate better than the fresh or 4 to 5 year old seeds. Seeds germinate within 3 to 4 weeks and thinning was done after it. Under cultivation, in favorable conditions, flowering commences in the third or fourth week of February and continues till the end of April. During the period of 6-7 months (October to April) Plants get optimum vegetative growth. So early sowing is desirable.

Irrigation

Consecutive cultivation experience indicates alfalfa needs more irrigation than other legumes and is mainly grown under irrigation. First irrigation is done after seed sowing and frequent irrigation is necessary until the seedlings are 5-10 CM above the ground. Subsequent irrigations are given at

interval of 15-25 days up to dud stage and at 10-15 days interval during the flowering. When the crop is well established a single copious irrigation is sufficient. The crop requires frequent hoeing to keep the field free from weeds and to stir the soil.

Spacing

Experimentally it is grown in three different spacing combinations i.e 40x20 cm and 80 x 40 cm But it was observed that 60 x 30 cm resulted best growth, plants being much taller with more side branches, full of flowers and pods. Studies showed that closer planting decreased or checked the growth of side shoots. It is therefore, recommended to adopt the spacing of 60 to 70 cm x 30 to 35 cm and it should not be less than 60 cm.

Fertilizers and Pesticids

For continuous cultivation of alfalfa additional 4 to 5 tones/acre farmyard manure is given as top dressing after every cutting, castor cake may be substituted for farmyard manure. About 2-3 tones/acre P₂O₅ (Superphosphate) in alternate year improves the yield.

The diseases and pests that affect the crop are not serious in nature. Leaf spot which is caused by *Pseudopeziza medicaginis* can be checked with good manuring. Insect and pest can easily be controlled by dusting with 5% BHC powder at the rate of 6-9 kg/acre after cutting the crop.

Harvest and Yield

Flowering is initiated at the end of February and continues till April. The crop is ready for cutting just before or immediately after flowering, under cultivation subsequent 6 to 10 cuttings are made at the intervals of 1 to 2 months, but top dressing of manure and

irrigation is necessary after each cutting for better yield.

About 20 to 30 qtls. Of raw drug per acre per annum is obtained which is one and a half time more than when cultivated by normal practices and yield is sustained for 3 to 4 years. Some time the field is damaged by cutting the roots of plant by rats and eating aerial parts by wild rabbits which affect the yield, hence, the crop should be totally saved from these animals, some plants are set apart for seed production. Collection is done in may when most of the pods have turned brown. Dry seeds are separated from pods by beating with sticks or by threshing. Usually 80 to 100 kg seeds per acre are obtained, but with above cultivation practices the yield is 150-200 kg per acre.

References

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2. Boericke, W. (1927) Pocket manual of homoeopathic material medica, ninth edition (reprint), B.Jain Publishers (pvt) Ltd., New Delhi, pp 88.
3. Uphof, J.C TH (1968) Dictionary of Economic Plants. Second Edition, Verlag Von J. Caramer, New York, PP. 335.

The herb is usually allowed to dry under open air sheds for maintaining its medicinal and nutritive values. Sun drying decreases its vitamin contents, specially vitamin C. Plant material should be dried at an average temperature of 30°C to 40°C.

Conclusion

The raw drug is sold in Indian market approximately at the rate of Rs. 30.00-50.00 per kg Though it is not an economically important and highly valued one, even then increasing popularity of this "Tonic" and demand at manufacturers' level shows that the day is not far off when its cultivation may prove to be profitable.