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Session120: Alfalfa/Lucerne Seed Production



Introduction

✓ **Lucerne/Alfalfa** (*Medicago sativa*, $2n = 4x = 32$) commonly known as **Queen of fodder crops** belongs to family Leguminosae while, **berseem** is known as **king of fodder crops**

- ✓ Lucerne was probably the first forage crop to be cultivated for hay
- ✓ It is the most productive and nutritious forage crops, grown for hay, silage and pasture
- ✓ It is a allogamous plant, generally self-incompatible and pollinated through insect
- ✓ Since it is a legume crop, replace high N-requirements and improve soil health
- ✓ The variation in the areas harvested from year to year indicates two important factors regarding lucerne seed production:
 1. That most farmers regard lucerne as a catch crop
 2. The terrific influence climatic conditions have on seed yield



Flowers and Pollination



Observations on pollinating insects suggested that **honey bees** were mainly responsible for the amount of seed set

Land requirements and field inspection

Land Requirements:

- Most preferable soil type is loamy soil, should be free from volunteer plants and FYM or other contaminating materials
- Land should also be well drained
- Acidic soil are not suitable for lucerne seed production

Isolation distance:

Contaminants	Minimum distance(Meter)	
	Foundation seed	Certified seed
Field from other variety	400	100
Fields of the same variety not conforming to varietal purity requirements for certification	400	100

Field Inspection

- A minimum of **two inspections** shall be made from the time the crop approaches flowering until it is ready for harvesting

Brief cultural practices

Land preparation:

- The land should be well prepared
- One deep ploughing and two to three harrowings, followed by levelling are sufficient for desired tilt
- An ideal seed bed is moist and fairly firm

Time of sowing:

- The best time for seed sowing is October to November

Sources of seed:

- Obtained nucleus/breeder/foundation seeds from a **source approved by a certification agency**

Seed inoculation:

- Seed inoculation with lucerne culture (*Rhizobium melilotii*) is necessary, if the lucerne is being taken for the first time in the field

Brief cultural practices

Methods of sowing:

- ✓ The seed crop should be sown in the rows 50-60cm apart
- ✓ The depth of seedling should be kept at 0.75-1.25cm

Seed rate: For line sowing **12-15kg/ha**

Varieties: Chetak (S-244), GUAL-1(Anand-2), GUAL-2 (SS-627), Composite-5, Composite-3, Anand lucerne-3 (AL-3) etc.

Fertilizer:

- N:P:K::25-30:50-60:15kg/ha (all fertilizer applied as basal dose)
- Boron deficiency can be overcome by spraying the crop with 0.2% borax.
- Spraying of hormones, such as IAA (50gm/ha) at flowering increases seed yields

Brief cultural practices

Irrigation:

- Irrigate the crop as and when required
- One irrigation at full bloom and another irrigation at pod filling stage are necessary

Interculture:

- ✓ For obtaining good quality seed it is necessary to keep the field free from weeds, particularly dodder, after the last cutting
- ✓ Do not allow dodder plants to set seeds

Plant Protection:

- Cutting of green fodder soon after insect infestation reduces the extent of infestation
- Spraying 0.2% solution of zenab to control the leaf spot and 0.25% ziram solution for control mildew

Continued

Brief cultural practices

Plant Protection:

Diseases/insect pests	Managements
Root rot and crown rot	Seed treatment with Carbendazim @ 2.5g/kg or Thiophenate-M @ 2 g/kg of seed reduces the initial infection from the seed and soil borne fungi Application of Neem cake @ 0.5 t/ha before sowing of crop or spraying of Carbendazim @ 250 g/ha or Thiophenate-M @ 500 g/ha or Propineb 1250 g/ha after appearance of disease in field subsides it to a great extent
Stem rot	Seed treatment with Carbendazim @ 2.5 g/ kg and line sowing for maintaining optimum plant population in the field prevents the disease occurrence. Spraying of Carbendazim @ 1 g/litre or Chlorothalonil @ 2g/litre after disease appearance helps in minimizing the loss (Bhaskar et al., 2003)
Pod borer	Cypermethrin @ 200 ml/ha or Spinosad @ 150 ml/ ha after last cut, if larval population is more than economic threshold level (ETL) controls the infestation
Thrips	Spray 0.05% diazinon or 0.02% metasystox solution at the rate of 800lt of water per ha
Aphids	Spray 0.05% melathion solution @ 900lt/ha

Brief cultural practices

Supplementary pollination:

- ✓ Bee hives should be set up for tripping flower and pollinating them

Cuttings:

- Stop the cuttings for fodder by the last week of February

Roguing:

- ✓ The seed crop must be rogued carefully at pre-flowering, flowering and maturity stage
- ✓ All the off types, other crop plants and dodder plants must be removed before harvest

Harvesting:

- The seed crop can be harvested when two third of the pods have turned brown
- The crop after harvesting should be left in the field for three to four days
- Harvesting and collection of crop should be done early in the morning when the dew drops are still on the plants to prevent shedding of seed heads

Brief cultural practices

Threshing:

- ✓ Threshing of seed should be done when the seeds are fully matured and dry
- ✓ After threshing and cleaning, the seed should be further dried to 8-10% moisture content before storage

Seed yield:

- Average seed yield is **2-3qtl/ha**



Seed Standard

Factor	Standards for each class	
	Foundation	Certified
Pure seed (minimum)	98.0%	98.0%
Inert matter (maximum)	2.0%	2.0%
Other crop seeds (maximum)	10/kg	20/kg
Total weed seeds (maximum) 10/kg 20/kg	10/kg	20/kg
*Objectionable weed seeds (maximum)	5/kg	10/kg
Germination including hard seeds (minimum)	80%	80%
Moisture (maximum)	10.0%	10.0%
For vapour-proof containers (maximum)	7.0%	7.0%
<i>Special requirements</i>		
Off-types	0.20%	1.0%
**Objectionable weed plants	None	0.050%
*Maximum permitted at and after flowering, **Objectionable weed shall be: Dodder (<i>Cuscuta</i> spp.)		



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*Thank
you*

