

For B. Sc. (Ag.) IV-Semester

e-Lecture Prepared by: **Dr S. P. Vishwakarma**, Associate Professor,
Department of Agronomy, KAPG College, Prayagraj (U P)

“Scientific Cultivation of Linseed”

European Common Name : Flax

Botanical Name : *Linum usitatissimum* L.

Family : Linaceae

Chromosome No. : $2n = 30$

Origin

According to **Vavilov**, linseed or flax have two centres of development-

1. **Small seeded** mainly used for oil purpose-South –Western Asia comprising India, Afghanistan and Turkey.
2. **Bold seeded type** mainly grown for fibre purpose- Mediterranean region, including Asia Minor, Egypt, Algeria, Spain and Italy.

Climatic Requirement

It is cool season crop and mostly grown as rainfed crop. It requires 25- 30 0C for germination of seed. Moderate temperature is good for vegetative growth and development. Moderate temperature 21 to 26.5 0C is ideal. High temperature above 32 0C during flowering caused drastic reduction in yield. During flowering frost damage the crop. It is long day plant.

Prevalent Cropping Systems

Most common cropping systems are:

Soybean- linseed

Urd-Linseed

Paddy-Linseed (Utera)

Hybrid Maize-Linseed+Gram

Sugarcane+Linseed (3:1)

Linseed+Lentil (1:1)

Gram+linseed (3:1)

Linseed+Mustard (1:7)

Soil

It can be grown almost all type of soils but heavier soils like black cotton or alluvial soil having good drainage facility is the best.

Sowing time

First week of October to first week of November

Utera/Paira Sysem (Mostly adopted in M. P. and Bihar)

Practiced in paddy growing areas. Linseed seed is broadcasted in standing paddy crop and seed is germinated before harvesting of paddy.

Seed Rate

Normal condition- 20-25 kg/h

Utera System- 10-12 kg/ha

Spacing and Depth

30 x 5-7 cm at 4-5 cm depth.

Seed Treatment

Before sowing, seed treatment is done with **2.5-3 g Carbendazim / kg** seed or Carboxin 2 g and *Trichoderma viridae* / kg seed.

Nutrient Management

The appropriate doses of nutrients can be recommended on the basis of the soil testing of the field. In normal conditions where soil testing is not done nutrient management may be done as under-

Organic manures

Incorporation of well decomposed FYM/Compost @ 4-5 t/ha at the time of last ploughing.

Fertilizers Management

Rainfed Condition- 40 kg N : 20 kg P : 20 kg K /ha

(Whole amount is applied as basal dressing in furrows below the seed).

Irrigated Condition- 60 kg N: 40 kg p: 20 kg K/ha

(1/2 dose of N+full doses of P and K as basal dressing and rest amount of 1/2 N applied as top dressing just after Ist irrigation.

Since, linseed is an oilseed crop hence, 20-25 kg Sulphur/ha should also be applied as basal dressing for harvesting better yield.

Biofertilizers

Biofertilizers like *Azotobacter* or *Azospirillum* and **Phosphate Solubilizing Bacteria (PSB)** culture may be used for enhancing crop yield. Seed should be treated with biofertilizers @ **10 g /kg seed** or soil treatment @ 5 kg /ha. For soil treatment biofertilizer is mixed with well decomposed 50 kg FYM powder and uniformly broadcasted in the field at the time of last ploughing.

Weed Management

Linseed is poor competitor with weeds due its lesser leaf area and short stature nature. Hence, proper weed management at appropriate time is necessary for higher yield.

Hand Weedings- Ist at 20-25 DAS

IIInd at 40-45 DAS

Chemical Weed Control- Application of **Alachlor @ 1.0 kg a.i./ha** in 500-600 litres of water as **Pre-emergence**.

Water Management

Generally linseed is grown as rainfed crop but 2-3 irrigations at critical stages gave higher crop yield. Most critical stages are:

- a. Ist - at 30-35 DAS
- b. IIInd - Just before flowering

Excessive water should be drain out immediately from the field.

Harvesting and threshing

The crop matured in about 130-150 days. The crop become ready when leaves begin to dry and plants and capsules turn yellow with shining seeds. After harvesting, bundling of the plant is done and budles are kept on threshing floor for more drying and threshing. Threshing is usually done by threshers.

Storage

Seed is stored at 70 % relative humidity and 8 % moisture content.

Average Yield

By adopting an improvement package of practices, 15-20 q seed yield/ha may be harvested.

Causes of Low Productivity of Linseed

1. Cultivation on marginal and low fertile soils.
2. Grown mainly as rainfed crop.
3. Cultivation by utera/paira system.
4. Sowing traditional seed and lack of HYVs.
5. Imbalance and sub-optimal use of manures and fertilizers.
6. Usually adopting little or no plant protection measures.
7. Poor management of crop due to higher attention towards high remunerative crops.

Measures to Increase Linseed Production

1. Growing area wise recommended high yielding insect and disease resistant varieties.
2. Use adequate P and organic manures in rice fields where Utera cropping is adopted.
3. Select heavy soils having good water holding capacity (WHC) for growing linseed crop.
4. Apply 10 kg N/ha before sowing linseed as Utera crop in rice field.
5. In the linseed growing areas of M P and Chhattisgarh where *Cuscuta* infestation is serious problem, sowing pure seed or *Cuscuta* detected seed is necessary.
6. Timely sowing especially in rainfed condition which assures optimum plant population per unit area.
7. Sowing seed before 10-15 days earlier to harvest rice crop in Utera system.

8. More attention must be given for linseed crop management.

Improved Varieties of Linseed with Their Main Characteristics

Variety	Maturity (Days)	Yield/ Productivity (kg/ha)	Resistant to
A - Seed varieties			
Heera	140-150	1800	Wilt and rust
Neelam	140-145	1500	Wilt and rust
Himalayi	160-165	1300	Wilt, rust and powdery mildew
Chambal	115-120	900	-
LC-54	155-160	1300	Wilt, rust and powdery mildew
R-552	115-120	900 (Rainfed-RF)	Wilt, rust and powdery mildew
Pusa-2	120-155	1300 (Irrigated) 750 (RF)	Rust and drought
Pusa-3	150-155	1350	--
Jawahar-23	120-125	1000	Wilt and powdery mildew
Shweta	130-135	900 (RF)	Wilt, rust, powdery mildew and Ascochyta blight
Shubhra	130-135	1400 (Irrigated) 900 (RF)	Wilt, rust and Ascochyta blight
Laxmi-27	115-120	1300 (Irrigated) 1000 (RF)	Wilt, rust and powdery mildew
Kiran	120-125	800 (RF)	Wilt, rust and powdery mildew
Janki	165-170	1200	Wilt, rust and powdery mildew
Surabhi	165-170	1000 (Utera)	Wilt, rust and powdery mildew and Lodging
Triveni	120-125	1400 (Irrigated) 1100 (RF)	Rust and powdery mildew
Sheetal	110-115	900 (RF)	Wilt, rust and powdery mildew
Mukta	125-130	1800	Wilt and rust
Azad Alsi-1	115-120	1600	Wilt, rust and powdery mildew and Gall Midge
Sanyog	115-120	1500	Wilt, powdery mildew

			and Fruit fly
Jawahar Alsi-17	115-120	800	Rust
Jawahar Alsi-23	120-125	1500-1800	Wilt
Jawahar Alsi-9	115-120	1100-1300	Wilt, rust and powdery mildew
JawaharAlsi-7	115-120	700 (RF)	Rust
B - Dual Purpose Varieties			
Gaurav	135-140	1100 (Seed) 1000 (Fibre)	Rust and Ascochyta blight
Jeewan	175-180	1100 (Seed) 1100 (Fibre)	Wilt, rust and powdery mildew
Paevati	140-145	1550 (Seed) 1050 (Fibre)	Rust and powdery mildew
Nagarkota	170-175	1250 (Seed) 1150 (Fibre)	Rust and powdery mildew

Varieties Suitable for Uttar Pradesh

Rainfed : Laxmi-27, Kiran, Shweta, Shekhar etc.

Irrigated : Neelam, Garima, Gaurav. Nagarkot,shikha, Rashmi, Meera, Parvati, NI-142 etc.

Utera/Paira System

Jawahar Alsi-552, Jawahar Alsi-7, Shurabhi, Sheela, KL-224 etc.

For Summer Season: PKDS-14
