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Course name :

**Crop Production Technology-II
(ASAG 2204)**

Course credit :

(2-1-0)

Lecture 11

Topic: Sunflower



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SUNFLOWER

Scientific Name : *Helianthus annuus*

Family: Asteraceae

It is an important oilseed crop contributes **14%** of the total oilseed production from nine major oil seed crops.

The genus *Helianthus* (Helio=Sun, anthus= flower). Sunflower is known as a “suryajmuki” as it is grown for ornamental purpose.

It is the third most important oilseed crop of world after Soybean and Rape seed & Mustard in India .



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The area and production of sunflower crop significantly increased due to following merits of the crops.

1. Short duration (90-100 days) as it is fit well in multiple and intercropping systems.
2. Wide adaptability: it comes well up in any type of soils.
3. Drought and saline tolerant: suitable for the best component crop in dry land farming.
4. High productivity per unit area per unit time with respect to yield of oil.
5. High seed multiplication ratio (1:80) with low seed rate requirement.
6. It is the best substitute for groundnut crop in contingency crop planning.



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11.1 USES/ECONOMIC IMPORTANCE

1. The oil content varies from **48-53%** and it is premium oil with **pale yellow in colour** used for cooking and margarine.
2. Sunflower is a rich source of **linoleic acid** (40-67%) which helps in **reducing the cholesterol** deposition in the coronary arteries of the heart.
3. Sunflower oil is used as **industrial feed stock** for manufacturing cosmetics, soaps and pharmaceuticals. most of 90% fat is good for human.
4. Oil contains high level of alpha tocopherol, a form of vit. E.
5. Oil cake contains 40-50% high quality protein and it is ideally suited for poultry and livestock.
6. The roasted kernels are used as food for human beings. Sunflower is grown as green manure, fodder crop.



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10.2 ORIGIN:

Southern USA (Peru) & Mexico

1.2.1 AREA AND DISTRIBUTION:

It is mainly grown in **USSR, USA, Argentina, France, Italy and China.**

India covers **0.59 million ha** of sunflower with productivity of **0.43 million t** and yield of **736 kg/ha.**

Leading states are Karnataka, AP, Telengana, Bihar, Haryana, Maharashtra and UP.



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10.3 Sequence Cropping

It is profitable in Andhra Pradesh where rainfall is 700 – 800 mm.

In Northern Telangana Zone

Maize – Sunflower

Sorghum – Sunflower

Sesame – Sunflower

Mungbean – Sunflower

Scarce rainfall Zone

Greengram – Sunflower

Sesame – Sunflower

Soybean– Sunflower



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11.4 VARIETIES / HYBRIDS

Karnataka

Morden, TANUSAF 7, DRSF 108, DRSF 113

Hybrids

MSFH 8, BSH 1, KBSH 1, Jwalamukhi,
Sungene 85, PAC 36, PAC 1091, DSH 1,
KBSH 41, KBSH 44, Pro-Sun 09

Morden, TANUSAF 7, Surya, SS 56, LS 11,
LSF 8, DRSF 108, TAS 82, DRSF 113

Hybrids

MSFH 8, MSFH 17, KBSH 44, Sungene 85,
PAC 36, PAC 1091, Pro-Sun 09, MLSFH 47



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11.5 CLIMATIC REQUIREMENT

- Day neutral plant
- Optimum temperature requirement 20-25⁰C
- Temperature beyond 38-40⁰C may cause desiccation of pollen and drying of stigma
- Rainfall 500-700 mm

11.6 SOIL

- Sunflower can be grown in a wide range of soils (Vertisols, Alfisols, Inceptisols and Entisols) with texture varying sandy-loam to deep clay.
- pH 6.5-8.0
- Moderately tolerant to alkalinity and salinity, but crop fails below the pH 4.6 on sandy loam soil



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11.7 SEED BED

Sunflower requires well prepared deep and friable soil. After primary tillage, the soil should be brought to fine tilth by harrowing and leveling. Fine bed should be prepared. Soil should be thoroughly tilled up to a depth of 20-25 cm.

11.8 SEED RATE

5-7.5 Kg/ha

11.9 SEED DORMANCY

Freshly harvested seeds have dormancy of 40-50 days. After this period the seeds will be ready for sowing.

To overcome dormancy, seeds may be treated with ethrel solution (25 ppm), seeds are soaked for 6 hours.



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11.10 SEED TREATMENT

- Seeds may be treated with Captan/Thiram @ 2.5-3.0 g/ kg of seed.
- Recent Threat: Necrosis, caused by sucking pests
- To manage sucking pest problem at initial stage (up to 30 days), seeds may be treated with Imidachloprid @5g/kg seed.

11.11 SOWING DEPTH

3-7 cm.

11.12 SPACING

45cm X 30cm = 74074 plants/ha

60cm X 30cm= 55555 plants/ha

Thinning should be done, if over crowded.



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11.13 SOWING TIME

STATE	KHARIF	RABI	SUMMER
KARNAT AKA	June-July (R)	Sept-Oct (R)	Dec-Jan (R)
	June-July (I)	September (I)	Mid Jan- Feb (I)
AP/TG	June-mid July (light soil)	Sept-Nov	Mid Jan-Feb
	Late August (heavy soil)		
MS	Last wk June- 1 st wk July	1 st week Oct	1 st week Feb
TN	June-July (R)	Oct-Nov (I)	Dec-Jan
UP & others	July last wk-2 nd wk Oct (R)		Mid Feb-last March



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11.14 NUTRIENT MANAGEMENT

- **N-P₂O₅-K₂O: @ 80-60-40**

50% N+ total of P₂O₅ and K₂O as basal

Remaining 50% of N @ 30DAS

- **S:** Elemental sulphur @ 20-40kg/ha
- **Ca:** 20 kg Gypsum (beneficial to saline soil)
- **B:** foliar spray @ 0.2%
- **Zn:** Foliar spray @0.5%

11.15 WATER MANAGEMENT

25-30 cm Critical stages

- Seedling (30DAS)
- Bud initiation
- Flowering



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11.16 HARVESTING

Moisture content of seed
during harvesting: 30-40%

Moisture @ storage : 8-
10%

11.17 YIELD

20 q/ha