

Sunflower

Origin

Distribution Of Species

Wild Relatives And Forms Breeding

Objectives

Major Breeding Procedures For

Development Of Hybrids / Varieties



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INTRODUCTION

Originated from Central part of United State of America.

Sunflower is an important oil seed crop after soybean

Its oil content ranges from 46 to 52%

The leading Sunflower growing countries are USSR,
Bulgaria, Canada and USA

In India , this crop was Introduced in 1969 from USSR



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Taxonomy

Division : Phanerogams

Class : Dictyoledanae

Sub class : Gamepetalae

Order : Asterase

Family : Asteraceae

Genus : *Helianthus*

Species : *annuus*($2n=2x=34$)



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BOTANY

- It is distinguished from all other cultivated plants by its single stem and large inflorescence.
- The inflorescence is capitulum .
- It is having a bisexual flower



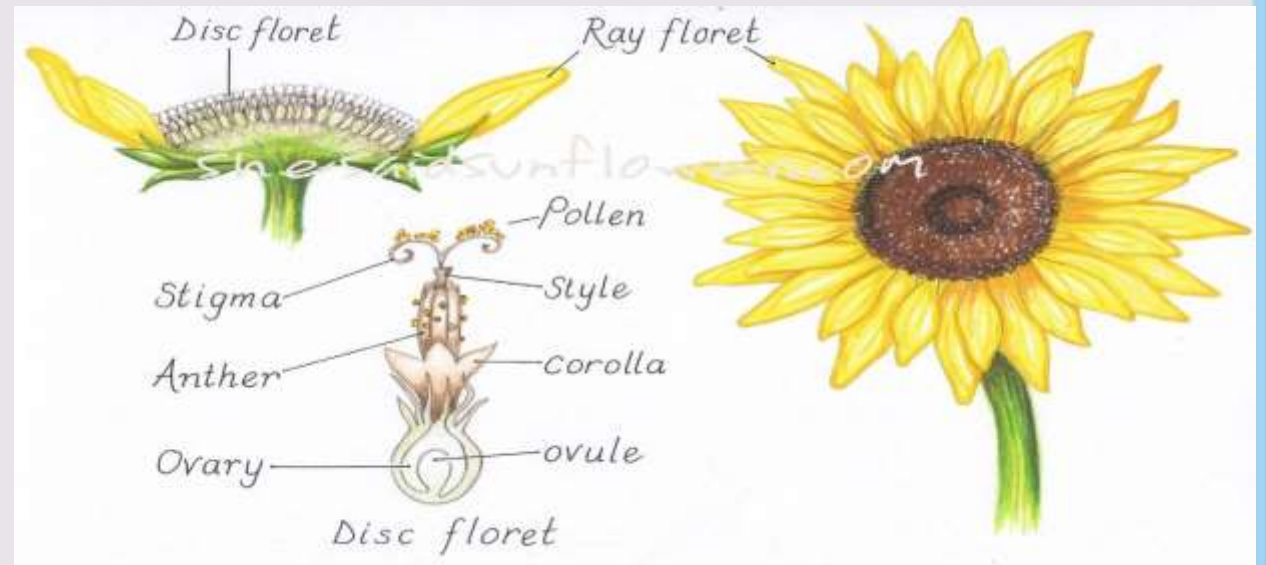


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FLORAL BIOLOGY

Highly cross-pollinated crop mainly through insect and to a limited extent by wind

- It is protandrous in nature .
- Flowering starts in the early morning 6-10 am.
- The pollen grain viability up to 12 hrs.
- The stigma receptivity up to 2-3 days.



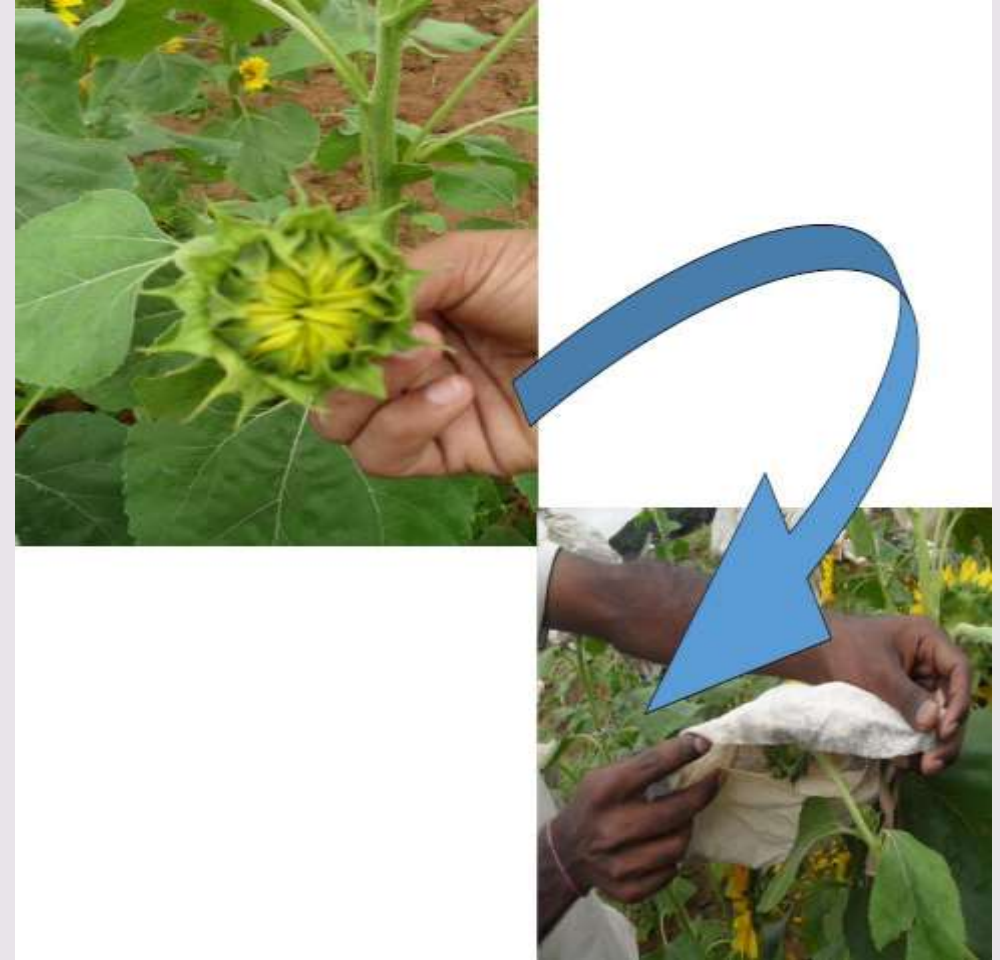


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SELFING

- Selfing is done by bagging of the entire head.

(The bagging material could be cotton cloth or paper bag or cheese cloth bag.)





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CROSSING

HAND EMASCULATION:

Emasculation is done by removing the anther tubes with forceps on the morning that the flowers open.

Unemasculated flowers are removed.





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HAND EMASCULATION & BAGGING





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Chemical Emasculation:

This is achieved by spraying of 0.05% solution of gibberellic acid per plant during bud initiation.

Application of gibberellic acid after bud initiation consecutively for 3 days in the morning gives better results.

•**Pollination:** is carried out by collecting the pollen from the male parent which are already bagged prior to flowering.

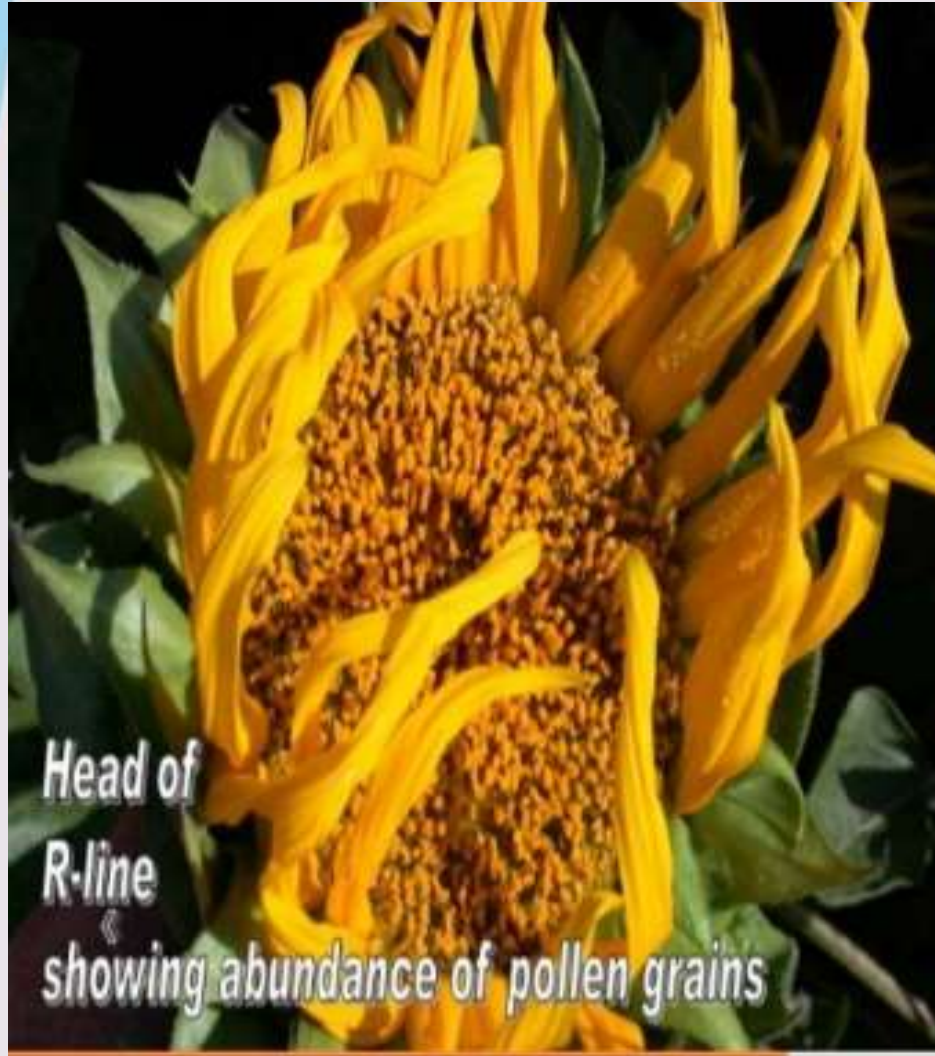
Pollen can be collected from the flowering head. Pollination is usually done in the same morning after emasculation.





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POLLINATION



Head of
R-line
showing abundance of pollen grains





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AICRP ON SUNFLOWER AND VARIETIES

- **AICRP** on sunflower was established in the year **1972**, with head quarters at **UAS, BANGALORE**.
- 1974-No. of hybrids were developed by CMS lines. BSH1 and BSH2 were found promising hybrids among them.
- 1975-EC-68414,68415 for cultivation.
- 1978-Morden –Early duration variety.



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HYBRIDS.

HYBRIDS	STATES	DURATION	SEED YIELD (Kg/ha)
BSH 1	ALL	85-90	1,000-1,500
KBSH 1	ALL	90-95	1,200-1,500
KBSH 11	ALL	90-95	1,000-1,500
LSH 1	MAH	85-90	900-1,200
LSH 3	MAH	95-100	1,000-1,500
PSFH 67	PUNJAB	90-95	1,000-1,500
PKVSH 27	MAH	75-80	900-1,100



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VARITIES.

VARITEY	STATES	DURATION	SEED YIELD (Kg/ha)
MORDEN	ALL	70-80	600-800
EC 68414	ALL	100-110	800-1,000
EC 68415	KAR	100-110	800-1,000
SURYA	MAH	90-95	800-1,000
CO-1	TN	65-70	500-700
CO-2	TN	85-90	800-1,000