



Staking and seed cleaning

Seed yield: 3 to 5q/ha

Maintenance of genetic and physical purity: Sesame is highly prone to mechanical mixture due to its very light, small seed and shattering habit which affect genetic purity. Therefore care has to be taken to avoid mixture at all stages of seed production.

Following precautions are to be taken to maintain the genetic purity.

- Select the field with no preceding crop of Sesame.
- Use seed from authenticated source
- Maintain safe isolation distance as recommended for different class of seed
- Restrict selection to only true to the type plants, as any kind of selection will change the identity of a variety.
- Renewal of seed should be done at least once in three years. Follow strict rouging at vegetative, flowering and maturity stages.
- Harvesting should be done at proper stage. Threshing should be done on a clean floor.

Grow-out test:

- Grow 800 plants of the submitted sample
- The permissible limit of off types in sesame is 0.5%.

Challenges in seed production

- Maturity of the capsules is not synchronous
- Shattering is the main problem
- Very small, light seeds and shattering of capsules make the crop prone to mechanical mixture at harvesting, threshing and processing stages

Seed Standards for certification

Factor	Standard for each class (%)	
	Foundation	Certified
Pure seed (minimum)	97.0	97.0
Inert matter (maximum)	3.0	3.0
Other crop seeds (maximum)	10/kg	20/kg
Weed seeds (maximum)	10/kg	20/kg
Other distinguishable varieties (max.)	10/kg	20/kg
Germination (minimum)	80	80
Moisture (maximum)	9.0	9.0
For vapour-proof containers (max.)	5.0	5.0

Tips to obtain higher yield of quality seed

- Minimum isolation 100 m for breeder and foundation stages and 50 m for certified stage
- Ensure 'source seed' for genetic purity and authenticity
- Grow five border rows of same variety to serve as barrier
- Select variety recommended for cultivation specific to the given region
- Select fertile land with adequate irrigation and drainage.
- Avoid fields with previous season/year sesame crop.
- A seed rate of 2.5 - 3 kg/ha.
- Apply 5t FYM/ha and recommended RDF and S.
- Cautious about admixtures while production, harvesting, post harvest processing, packing.



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2019

Technologies for Quality Seed Production in Sesame



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Sesame (*Sesamum indicum* L.) is an oldest oilseed crop and is a source of high quality edible oil with pharmaceutical and nutraceutical value for sesamin and sesamol. It is traditionally grown in all regions in India. Varieties of different seed coat viz., white, black and shades of brown are commonly cultivated for its use as oil and confectionery purpose. It is predominately a self-pollinated crop, but to some extent of cross-pollination occurs due to honey bees. Sesame is season bound and location specific due to photo and thermo sensitivity. Sesame is cultivated across 24 states in wide range of agroclimatic zones in 1.52 million ha with production of 0.78 million t.

Regionwise seed coat colour preferences exist. White seed is predominant in Northern and Western states, light brown seed type in Eastern states, Dark brown and Black type in Southern states of India. The average productivity is low at 502 kg/ha. West Bengal record highest productivity of 933kg/ha.

Despite the availability of wide range of varieties for different sesame growing regions, the varietal replacement rate (VRR) and seed replacement rate (SRR) is very poor (<10%) due to poor seed production efforts. It is paradoxical that despite very low seed rate (3-5 kg/ha), and very high seed multiplication ratio (1:250), very poor seed replacement rate (5-10%) coexist.

Improvement in quality seed production will help in seed availability and encourages varietal and seed replacement among the farmers.

A total of 91 varieties released from 1960 to 2019 for different agro-climatic zones. Twenty nine varieties are currently in seed chain.

Promising varieties

Cultivar	Recommended Regions/Areas	Yield (kg/ha)	Salient Features
CUMS-17	Summer WB, OD, AP, TN	800-900	Brown seed,
DSS-9	<i>Kharif</i> , KK	600-650	White bold
Jawahar Til-12	Summer, MP	700-750	White seed.
Jawahar Til –14	Summer, MP	700-750	Black seed. Tol. capsule borer.

JLT-408	<i>Kharif</i> , MS	700-800	White seed. Tol. to gall fly.
PKV-NT-11	Summer, MS	800-850	White seed.
RT-346	<i>Kharif</i> , RJ, HA, PB, HP, GJ, UP and MS	750-850	White seed. Tol. leaf curl.
RT-351	<i>Kharif</i> , RJ, HA, PB, HP, GJ, UP and MS	750-900	White seed. Tol. leaf curl, phyllody.
RT-372	<i>Kharif</i> , RJ, HR, PB, HP, GJ, UP and MS	600-700	White seed. Tolerant to leaf curl, phyllody.
SWB-32-10-1	<i>Rabi</i> /Summer, WB	1200-1500	Light brown seed,
TKG-308	<i>Kharif</i> , MP	700-750	White seed.
TMV (Sv)-7	Summer, TN, AP <i>Kharif</i> KK	750-820	Tol. <i>Macrophomina</i>

Most varieties are of 85-90 days duration and resistant to *Macrophomina* root rot

Important diagnostic characters

Characteristic	Category	Example varieties
Stem hairiness	Absent Sparse Dense	RT-372 CUMS-17 DSS-9
Flower petal colour	White Light purple Dark purple	TMV-7 RT-351, RT-372 RT-103, JLT-408
Capsule hairiness	Absent Sparse Dense	RT-351, RT-346, CUMS-17 DSS-9
Capsule number/ leaf axil	One More than one	CUMS-17, RT-372 RT-351
Capsule arrangement	Alternate Opposite Cluster	CUMS-17,PKDS-11 RT-372 RT-351
Capsule length (cm)	Short (<1.5) Medium (1.5-2.5) Long (>2.5)	DSS-9 CUMS-17 RT-372
Seed coat colour	White Light brown Dark brown Black	RT-351, RT-372 SAVITRI TMV-7, CUMS-17 PKDS-8

Foundation and Certified Seed Production

Suitable areas: Seed production shall be under taken preferably in the areas where soil and climate are highly suitable for the growth and development with optimum expression of diagnostic characters; facilities for protective irrigation, low incidence of diseases and pests. Seed production should not be undertaken in the hot spots of seed borne diseases.

Isolation: Minimum Isolation distance:

Foundation seed = 100m; Certified = 50m

Rouging: As per the standard characters of varieties, undertake rouging.

Vegetative stage: remove morphological off types based on height, leaf size, shape and serration;

Pre-flowering stage: Remove off types for branching, height and flower initiation, stem pubescence

Flowering stage: Late and early flowering, flower colour

Capsule formation stage: Capsule characters for locules, length, shape, hairiness, formation, etc.

Remove phyllody affected plants at all stages.

Harvesting and Post-harvest processing

Harvest when 70% of the capsules from bottom turn light green to greenish yellow. Cut the plants at the bottom and stack over a tarpaulin in slant heap/bundles in field for 3-5 days when most leaves dry and fall. Transport the heaps to threshing yard.

Over a tarpaulin, manually thresh by gentle beating with club with rotation of plants for all the seed to fall. Heap the seeds, dry for 2-3 days with intermittent stirring.

Winnow and sieve to get select bold seeds. Sesame seeds can be screened with several mesh sizes of hardware cloth. Aluminum window screens can also be used. It is useful to have a large variety of mesh sizes and shapes to suite wide variety of sesame seed types.

Dry to safe moisture level of 7-8% and store in polythene lined bags in cool dry store. For safe long-term storage, sesame seed should be clean, have moisture content not more than 6% and stored at a relative humidity of approximately 50% and at cool temperature.