

CROP PRODUCTION

WHEAT SEED PRODUCTION TECHNOLOGY FOR FARMERS

Wheat being a self-pollinated crop, the varietal deterioration takes at a slow rate and seed needs replacement after five to six years, provided a separate seed plot is maintained following a systematic seed production programme. Farmers can multiply quality seed for their own use from the source seed of any class-breeders, foundation, certified, or truthfully labeled, procured from a reliable source by adopting the guidelines developed by the Directorate of Wheat Research (DWR), Karnal as described below:

LAND REQUIREMENTS

A well levelled separate piece of fertile land with assured irrigation, free from surface drainage problems should be demarcated for seed production. In the hilly areas, since the emergence of volunteer wheat plants is a serious problem, therefore, the fields with the previous wheat crop should be avoided.

METHOD OF SOWING

Seed rate of 80 kg/ha for timely sowing and 100 kg/ha for late sown crop should be used. Adopt normal recommended nutrient management practices for the area. Seed production plots should be sown using a seed drill by adopting the following steps:

- The seed drill's pipes, seed cups and bin should be thoroughly cleaned as any left back seed will contaminate the seed production plot.
- Ensure that there is no physical mixture due to negligence at sowing time.
- Every eighth and ninth row should be left unsown in order to walk through the plots for easy cultural operations, monitoring and effective rouging.



Bumper wheat crop for seed production

ISOLATION

Maintain minimum isolation distance of three meters of seed plot of a variety with other varieties to avoid possible out-crossing and admixture. Also, ensure that no loose smut infected wheat; triticale or rye field is nearby seed plot (within 150 meters) to ward off infection from seed borne diseases.

ROUGING

Off-type plants can be identified in seed plot based on the variation noticed in features of the variety like:

- Auricle pigmentation
- Days of flowering
- Plant height
- Waxy bloom
- Ear color
- Ear shape
- Ear density, etc.

It is recommended to perform at least three rougings i.e. one each at early vegetative growth, 75% ear emergence, and maturity. The rouged plants, particularly those having physiological seed maturity, should be removed from the field and disposed-off from seed plot to avoid any chance of its mixing with the seed bulk.

HARVESTING AND POST-HARVEST HANDLING OF BREEDER SEED

Extra care is needed to avoid mechanical mixing likely to occur during harvesting, threshing, seed treatment, packing and processing. The threshers, combine harvesters, trailers, processing machinery etc. to be used for seed production should be thoroughly cleaned.

SEED TREATMENT AND STORAGE

Treat the seed through seed dresser using Vitavax 75 WP @ 2.5 g/kg or Raxil 2 DS @ 1.25 g/kg seed to control loose smut and other seed borne diseases such as hill bunt. If seed production is undertaken in the hills, seed treatment is strongly recommended to control hill bunt.

Generally, at harvesting time the seed moisture is around 14 to 15% and at such a moisture level the seeds should not be sent to the warehouse. The seed should be dried in shade or with a seed drier to bring the seed moisture to 9–10%. This will besides increasing seed viability also minimizes the chances of damage due to storage pests and fungi. Proper record of seed bags and storage should also be maintained.

During storage in ware house/silo, samples must be drawn at periodic intervals to measure grain moisture, and also inspect for pest/fungi damage. As the situation may demand, action must be taken either to reduce seed moisture levels or fumigate seed to suppress insect-pest incidence. Occasionally, rodent control may also be necessary.

SEED PURITY STANDARDS

A series of tests should be undertaken to assess the quality of seed. Generally such tests are conducted in designated Seed Testing Laboratories. Every State has at least one Seed Testing Laboratory to conduct such tests.

Minimum certification requirements for field standards

Field selection	Field standards				Specific requirements				Limits		
	Number of field inspections needed	Isolation distance (metres)		Off type plants (%)	Inseparable other crop plants (%)		Seed born disease infested plants				
		Crop	Disease		F	C	F	C			
Free of volunteer plants	Two	3	3	150	150	0.05	0.2	0.01	0.05	0.1	0.5

F- Foundation Seed, C-Certified Seed

Minimum certification requirements for seed standards

Parameters	Standard	
	Foundation	Certified
Pure seed (minimum, %)	98	98
Inert material (maximum, %)	2	2
Other crop seed (maximum per kg)	10	20
Other distinguishable varieties (maximum per kg)	10	20
Total weed seed (maximum per kg)	10	20
Objectionable weed seed (maximum per kg)	2	5
Germination (minimum, %)	85	85
Moisture (maximum, %)	12	12
Moisture for vapour-proof containers (maximum, %)	8	8

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