

## TECHNOLOGICAL INTERVENTION

### Selection of Appropriate field

- Soil should have good drainage, fertility status and not deficient in micro and macro nutrients.
- Field should be free from weed seeds

### Sowing a class of improved seed

- For seed production row to row spacing is kept more so that there is enough space for movement in field for roughing, inspection etc.
- For breeder seed every after two row one row is left fallow so that proper seed formation takes place.

### Maintenance of recommended isolation distance

Protect seed production plots from other fields of same crop so that no risk of contamination by pollen from neighboring fields occur.

- Spatial isolation
- Temporal isolation
- Mechanical Isolation

### Following recommended agronomy

- Agronomic practices starts from sowing of crop till harvesting, which involves fertilizer application, irrigation, weed and pest management.
- Presence of Obnoxious weeds and diseases reduce physical purity of seed.
- Integrated weed control measures, use of resistant varieties and seed treatment.

### Roughing off types

- Roughing is the removal of off-type (those plants that are phenotypically different from plants of the variety grown as seed crop) plants from a field.
- Roughing should start before flowering and continue till maturity.
- Roughing should be done several times under supervision of technical experts

### Field inspection

Field inspection refers to the scrutiny of seed production plots by a team of qualified persons. It is checked that source of seed is approved or not.

### When to make inspection?

In general field inspection may be made during following five stages as required, based on mode of pollination of field crops.

1. Pre-flowering.
2. Flowering.
3. Post-flowering.
4. Pre harvest/Physiological maturity.
5. Harvesting

### Seed Processing

Seed processing means improving the quality of harvested seed

including several operations starting from harvesting of seed crop till its marketing through

1. Drying
2. Cleaning
3. Grading
4. Packaging
5. Labelling

### Objectives of Seed Processing

To improve seed quality through removal of adulterants, non seed material, broken seeds.

- To maintain seed viability and vigour.
- To Make seed handling easy.
- To increase real value of seed.

$$\text{Real value} = \text{Purity (\%)} \times \text{Germination (\%)} / 100$$

### Seed Grading

Removal of under sized/under weight seeds from seed lot. Grading is done on the basis of

1. Length
2. Width
3. Thickness
4. Density of seed

### Seed Treatment

Seed treatment refers to exposure of seed to certain chemical or physical agents which are able to protect them from pests and provide good health to the seed.

- Infected seeds may fail to germinate.
- Infected seeds lead to Introduction of pathogens into new areas.

### Seed Packaging

Seeds are packed in bags of appropriate quality and size. Choice of packing material depends upon type of crop, amount of seed and storage conditions. Packaging materials are of three types

- Moisture-vapour resistance, e.g. polythene.
- Moisture-vapour permeable, e.g. cloth, paper bags
- Moisture-vapour proof, e.g. Tin cans.

### Seed Labeling

All seed bags must carry printed information about

1. Crop
2. Variety
3. Class of seed
4. Name and address of producer
5. Physical purity (%)

### Impact

- Surplus availability of breeder seed with appropriate technological framework.
- Availability of quality seed at farmers doorstep.
- Increased Seed Replacement Rate (SRR) & Varietal Replacement Rate (VRR) for varied crops.
- Increased monetary returns to the farmers *vis-a-vis* farm income.

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*Food security through seed security*

## AUGMENTATION OF BREEDER SEED PRODUCTION THROUGH TECHNOLOGICAL INTERVENTIONS



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## AUGMENTATION OF BREEDER SEED PRODUCTION THROUGH TECHNOLOGICAL INTERVENTIONS

### Overview

Seed is prime input having the capacity to ensure food security by means of seed security. Increased food grain production in the country despite of abnormal weather conditions for last couple of years could largely be credited to the use of quality seed of improved varieties, improved farming practices along with ingenuity of Indian farmers. Role of quality seed is documented and acknowledged across farming systems and ICAR duly acknowledged this fact by launch of flagship projects i.e AICRP-NSP(crops), now it is known as AICRP on seed(crops). Presently this programme is being carried out in 41 centres of the country, this university is one of the leading centre among them in breeder seed production as well as in varietal maintenance programme. To operate quality seed programme, it is imperative to produce sufficient quantity of N/S as well as B/S for implementation of successful seed production programmes, research back up on various aspects of seed production technology, quality maintenance and its fine tuning, storage, seed health & Seed processing etc are vital and found to be indispensable, in order to address issues like Seed Replacement Rate(SRR) and Varietal Replacement Rate (VRR) and develop need based technological interventions. Launch up AICRP-NSP(Crops) has been a milestone under ICAR in order to bring holistic development of farming systems. Resultant, Indian seed sector, as witnessed by multifold increase in breeder seed production from a meager quantity of 3914.00q. during 1981-82 to a level of 127823.36 in 2020-21 Surpassing the indent received both from DAC & FW and state governments. The university has also played a pivotal role by producing of 4168.00q. breeder seed more than indented quantity of 1233.96q. of 15 crops and their 108 different varieties during last three years (2019-20, 2020-21 & 2021-22).

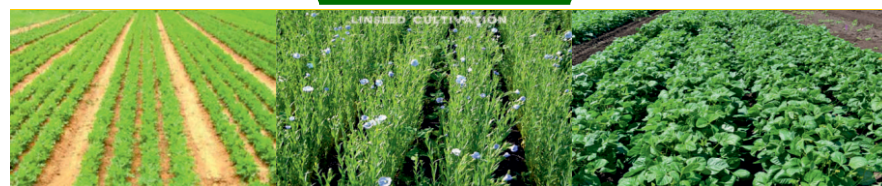
### MANDATE

1. To produce adequate quantity of nucleus and breeder seed as per national requirements.
2. To make linkages with crop improvement projects, seed industries, seed certification agencies, NGOs/KVK etc.

### SEED PRODUCTION SYSTEM IN INDIA

The Indian seed production programme largely adhere to the limited three generations system.

#### B/S - F/S - C/S



Field View of B/S

Field View of F/S

Field View of C/S

### AWARENESS PROGRAMME ON QUALITY SEED PRODUCTION TO FARM MANAGERS



## INFRASTRUCTURE AND TECHNICAL STRENGTH UNDER B.S.P.

### Production Unit (Farms)



### Seed Processing Unit



View of B/S Processing Plant & Godown

### TECHNICAL STRENGTH & MOTIVATOR



Dr. D.R. Singh  
Hon'ble Vice Chancellor



Prof. (Dr.) Karam Husain  
Director, AES



Prof. (Dr.) C.P. Sachan  
Nodal office AICRP on Seed (Crops)

### TEAM OF BREEDERS



Prof. (Dr.) Mahak Singh  
Breeder, Indian Mustard/Sesame



Dr. Nalini Tiwari  
Breeder, Linseed



Dr. Mahesh Verma  
Breeder, Groundnut



Dr. Manoj Katiyar  
Breeder, Green Gram/Lentil/Chickpea



Dr. Geeta Rai  
Breeder, Black Gram/Fieldpea



Dr. A.K. Srivastav  
Breeder, Pigeon pea



Dr. Somveer Singh  
Breeder, Wheat



Dr. P.K. Gupta  
Breeder, Barley

## View of monitoring of N/S & B/S Field



### SILENT ACHIEVEMENTS

#### N/S Production

Year	2019-20	2020-21	2021-22
Cereals, Pulses & Oil Seeds (q.)	54.93	51.32	52.54

#### B/S Production

Year	Oil Seeds (q.)	Pulses (q.)	Cereals (q.)	Total Production (q.)
2019-20	78.29	542.04	907.9	1528.23
2020-21	43.57	285.42	764.07	1093.10
2021-22	113.66	438.01	995.00	1546.67

#### Status of B/S Revolving Fund

Year	Total Income (Rs.)	Total Expenditure (Rs.)	Real Income
Opening Balance in FY-2018-19	-	-	527000.00
2019-20	13168000.00	9276332.00	3891668.00
2020-21	10309735.00	8498340.00	1811395.00
2021-22	10630403.00	6318163.00	4312240.00

### Varieties under National/ State Seed Production chain

Sl.No.	Crops	No.	Varieties (O/N)
(A)	Cereal Crops		
1.	Wheat	16	K-307 (Satabdi), K-7903 (Halana), K-9423 (U. Halana), K-424 (Golden Halana), K-402, K-607 (Mamta), K-9107 (Deva), K-9434 (Prasad), K-9162, (Gangotri), K-9351 (Mandakini), K-9533 (Naina), K-307, K-1317, K-1006, K-607, K-1616
2.	Maize	2	Azad Uttam, Azad Kamal
3.	Sorghum	3	CSV-13, CSV-15, Bundela
4.	Barley	8	Geetanjali, K-508, Jagriti, K-551, K-560, K-409, K-603, Prakhar
(B)	Pulse Crops		
1.	Chickpea	6	KPG-59, Avarodhi, Radhey, KGD-1168, KWR-108, Pragati (K-3256)
2.	Field pea	6	Rachana, Shikha, Sapna, Swati, KPMR-400 (Indra), KPMR-522 (Jai)
3.	Greengram	5	K-851, SML-6681 (Swati), HUM-2 (Malviya Jagriti), Arun, Sweta,
4.	Blackgram	7	T-9, Shekhar-1, Shekhar-2, Shekhar-3, Azad-1, Azad-2, Azad-3, Uttara
5.	Lentil	9	K-75 (Malika), KLS-218, Azad Masur-1, KLB 320, KLS 303, KLS-2008-4, KLS-9-3, KLS-122, KLB-345
6.	Pigeon pea	2	Azad, Amar
(C)	Oilseed Crops		
1.	Groundnut	7	Kaushal, Amber, Chitra, Utkarsh, Prakash, Avtar, Divya
2.	Linseed	17	Garima, Parvati, Sheela, Sharda, Shekhar, Shikha, Rashmi, Sweta, Shubhra, Neelam, Azad Linseed-1, T-397, Ruchi, Gaurav, Indu, Uma Rajan
3.	Rai/Mustard	11	Varuna (T-59), Rohini, Kanti, Basanti, Urvashi, Maya, Vardan, Ashirvad, Vaibhav, Pitambari, Azad Mahak
4.	Toria	4	T-9, Bhawani, Tapeshwari, Azad Chetna
5.	Sesame	5	T-78, T-4, Shekhar, Pragati, Tarun