

Importance of Improved Seeds

Chanchal Bhargava⁰¹, Chandrabahan Ahirwar⁰², Riya Thakur⁰³

Dept. of Genetics and Plant Breeding JNKVV, Krishi Vigyan Kendra, Chhindwara

Dept. of Genetics and Plant Breeding, JNKVV, Jabalpur

JNKVV, Krishi Vigyan Kendra, Chhindwara

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An improved seed is one that has 100% genetic purity, is free from seeds of other crops and weeds, is resistant to diseases and pests, has a high germination rate, ensures good establishment in the field, and ultimately leads to higher yields. The use of improved seeds results in better productivity, and such seeds are resistant to diseases and well-suited to the region's climate. Often, farmers sow seeds that lead to lower production, preventing them from achieving the expected profits. Therefore, only certified improved seeds should be used.

Using high-quality certified seeds can increase productivity/yield by approximately 20%. A seed is that part of the plant which contains the embryo and meets standards such as germination capacity, genetic and physical purity, and appropriate moisture

content, while also being free from seed-borne diseases. Before sowing, farmers should seek guidance from agricultural scientists at Krishi Vigyan Kendras (KVKs) regarding the selection of seed varieties and other contemporary recommendations. KVKs are actively working in this direction. Therefore, farmers must consider several important factors when selecting seeds.

Important Considerations for Seed Selection Before Sowing

01. Seeds should have genetic and varietal purity, meaning the seeds should have the characteristic shape, type, color, appearance, and weight of the specific variety to be considered good-quality seeds.
02. To increase crop density, farmers should use seeds of high-yielding and short-duration varieties.

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03. Hybrid seeds should be replaced every year. Using seeds from previous years leads to reduced yields.

04. Selected seed varieties should not be used continuously for more than three to four years.

05. Seeds should be pure and clean, without any mixing of seeds from different crops or varieties. Pure and healthy seeds have a higher germination rate and better initial growth capacity.

06. It is essential for the seed to be disease-free. Therefore, only such seeds should be used that have not been previously infected with any disease. A diseased seed has lower resistance, which either prevents it from germinating or causes it to die after germination.

07. Almost all seeds should be uniform in grain size, weight, and shape. For quick and uniform germination, the seed must have good vigor. Seed vigor refers to the natural and physiological health of the seed, which ensures rapid and uniform germination, leading to healthy plant growth.

08. The germination capacity of seeds should be tested. Based on germination capacity, the desired number of plants per unit area can be maintained. Otherwise, improper treatment can have adverse effects.

09. The seeds should not be broken and must be fully matured.

10. The moisture content of the seed should be known. If the moisture content in the seed exceeds the prescribed level of 10-15%, it

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negatively affects germination capacity and seed quality during storage. Determining Seed Germination Percentage.

Assessment of Seed Germination Capacity

To quickly assess the germination capacity of seeds, they are soaked in water overnight. The next morning, they are immersed in a 1% solution of tetrazolium chloride or bromide for 2-4 hours. Living seeds undergo respiration, whereas dead seeds do not. The colorless tetrazolium reacts with the enzymes in the embryo and turns the living cells of the embryo red. This test is known as the Tetrazolium or “T-Test”.

Some seeds should also be counted and properly sown in a corner of the field. After germination, the number of sprouted seedlings

should be counted, and the germination percentage can be calculated using the following formula:

$$\text{Germination Percentage} = \frac{(\text{Number of Germinated Seeds})}{(\text{Number of Sown Seeds})} \times 100$$

You Can Also Produce Improved Seeds :

To ensure easy availability of high-quality improved seeds, agricultural universities, the agriculture department, Madhya Pradesh State Seed Corporation, and the National Seed Corporation are actively working. However, despite these efforts, farmers sometimes face difficulties in obtaining improved seeds.

In such situations, farmers should produce their own seeds on their farms. For successful seed production, farmers need to have the following technical knowledge, which

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ensures that the seeds will be of good quality and high vigor.

Use of Foundation Seed :

Foundation seed is most suitable for seed production. The seed produced from breeder seed is called foundation seed. This seed is produced in such a way that it retains genetic traits and purity according to specific standards.

Field Preparation:

The field selected for the seed production program should be thoroughly plowed during summer to ensure the complete destruction of weeds and to eliminate pests hidden in the soil due to heat exposure. To facilitate proper plant growth, improving the physical condition of the soil through land preparation is

essential. Well-loosened soil allows for proper absorption and circulation of water and air, promoting the healthy development of crop roots. Therefore, proper plowing and leveling of the seed production field should be done, ensuring it remains weed-free.

Use of Well-Decomposed Manure:

Care should be taken while using cow dung and compost manure. It must be fully decomposed; otherwise, weed seeds may persist, negatively affecting the crop yield. Additionally, harmful bacteria, termites, and other pests may enter the soil through improperly decomposed manure. Therefore, before sowing, Imidacloprid or Fipronil should be thoroughly mixed into the soil to prevent such issues.

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Seed Treatment – A Necessary Requirement :

Certain seed-borne diseases such as seed rot, root rot, damping-off, leaf spot, blight, and smut spread through seeds, adversely affecting crop growth and productivity. To protect seeds from these fungal diseases, it is crucial to treat them with fungicidal chemicals. This can be done using both dry and wet methods.

In the dry method, the recommended amount of seed and fungicide is placed in a seed-treating drum and rotated for 10 minutes, allowing the chemical to form a protective coating over the seeds. If a seed-treating drum is unavailable, a clay pot can also be used.

In the wet method, the fungicide is dissolved in water, and the recommended quantity of

seeds is soaked in the solution for 10 minutes before sowing.

Remove heterogeneous Plants :

To maintain seed purity, farmers should regularly inspect the field and remove any off-type plants. This ensures that the harvested seeds belong to a single variety.

Regular Weeding and Hoeing :

Farmers should regularly carry out weeding and hoeing in the field. This helps eliminate unwanted plants and improves air circulation around the roots. Additionally, it breaks up soil moisture cells, reducing unnecessary water evaporation from the soil.

Adopt Necessary Plant Protection Measures :

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Most farmers do not take preventive measures in advance to control pests and diseases. They start looking for solutions only after an infestation occurs. By that time, the seeds are already affected by diseases or pests, which negatively impacts the quality of the harvested seeds. Therefore, farmers should pay special attention to pests and diseases during seed production. As soon as the initial signs of an infestation appear, immediate plant protection measures should be implemented to control them effectively.

Pay Special Attention to Harvesting :

Harvesting should only be done when the seeds in the crop have fully matured and contain the appropriate moisture level. It should neither be done too early nor too late. Additionally, care should be taken to ensure that

the plants are not uprooted during harvesting, as this can mix soil with the seeds, leading to unnecessary expenses for cleaning later.

Take Precautions During Threshing :

Traditional threshing methods using animals often result in contamination of the produce with stones, soil, etc. To avoid this, it is advisable to use a thresher whenever possible. The threshing floor should be clean, paved, or coated with cow dung to maintain hygiene. While using a thresher, it is essential to ensure that the grains do not get broken or damaged. This can be managed by adjusting the pulley size of the thresher. The rotations per minute (RPM) of the thresher should be adjusted according to the specific requirements of different crops.