Rice Science for a Better World

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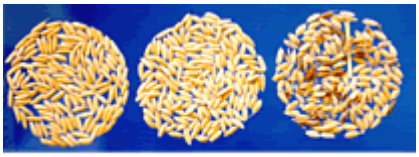
Using Good, Clean, and Healthy Seed

Why use Good Seed?

Good seed leads to lower seed rate, higher crop emergence (>70%), reduced replanting, more uniform plant stands, and more vigorous early crop growth. Vigorous growth in early stages reduces weed problems and increases crop resistance to insect pests and diseases. A combination of higher crop emergence, vigorous early crop growth, and increased crop resistance to insect pests and diseases will result to a 5-20% increase in yield.

What is Good Seed?

Good seed is pure (of the chosen variety), full and uniform in size, viable (more than 80% germination with good seedling vigor), and free of weed seeds, seed-borne diseases, pathogens, insects or other matter. Seed should be properly labeled.



Good Seed > > > > Poor Seed

Obtaining Good Seed

Buy certified seed that is pure and labeled,

get farmer-produced good seed, or

select your own good seed.

Winnowing to get Good Seed:

Harvested seed includes seed of varying sizes and non-seed matter (e.g., weeds and trash). Full plump (heavier) seed can be selected by winnowing with natural wind or an electric fan. Procedure: Pour seed slowly from a height of 1-1.5 m.

Winnowing removes lighter seeds and debris.

Repeat winnowing, if necessary. Select heavier seed closer to the side from which the wind blows. This procedure will also remove lighter weed seed and non-seed matter.

Drying and Storing Good Seed

After harvest, clean seed and select full and uniform seed. Dry seed to 12-14% moisture content. Store the seed in sealed airtight containers until ready for planting (seed is good for up to one year if stored properly). Seed in non-airtight containers absorbs moisture and loses viability over time.

IRRI International Rice Research Institute

Prepared with input from: Mew, J Rickman, M Bell, V Balsubramanian and D Shires.

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Testing Seed Germination to Ensure Seed is Good

1. Select a number of small random samples from the seed to be planted and select a subset (e.g., 200 seeds) of the combined sample. Soak the seed in water for 24 hours.
2. Arrange 100 soaked seeds in a grid pattern on a wet paper towel.
   - Place the paper in a closed container or
   - cover the seeds with another moist paper towel and roll together and place the sample in a plastic bag.
3. Ensure paper remains moist (but not wet to the point of water running off – or seed will rot).
4. Count the germinated seeds 3 and 5 days later and record the germination percentage.
5. Seed should have at least 80% germination to be considered good.

Testing Establishment vs. Germination

It is best to also check seed germination in soil, as emergence can often be 70% or less of germination. Place 2 samples of 100 seeds in a tray filled with soil – cover lightly with soil (e.g., 5 mm), keep moist and count establishment after 7 days. Note: Larger seeds tend to establish better then smaller seeds.

Seed Treatments (used in some countries)

Seed priming (optional) for direct seeding
Soak seeds in water for 12 to 24 h just before direct seeding in a field. If seeding is delayed, the soaked seeds can be dried in shade and stored until it can be planted that season.

***Azospirillum* inoculation (for N fixation by rice seedlings)**
Use 1 g of Azospirillum sp. inoculant (as a powder) per kg of seed and mix with primed wet seed just before sowing.

Fungicide seed treatment (rarely used in Asia)

- Dissolve 3 g fungicide (e.g., Benlate + Mancozeb or Arazone red alone) per kg seed in 5 ml water inside a plastic bag or plastic bottle.
- Distribute fungicide slurry about the walls of the container.
- Place seed in container, seal, and shake to coat seed uniformly with fungicide slurry.
- Wear protective equipment and follow appropriate safety procedures.

Ten Steps for Farmers to Produce their Own Good Seed

1. Select a fertile field.
2. Use clean, good quality seed.
3. Plow, puddle and level the field well to control weeds and improve water management.
4. If transplanting, plant young (15-20 d) seedlings from a healthy, weed-free nursery at 2 per hill at 22.5 cm x 22.5 cm spacing.
5. Apply balanced nutrients (N, P, K, S, Zn) as per crop demand.
6. Keep the crop free of weeds, insect pests and diseases.
7. At maximum tillering and flowering, rogue off-types (by plant height, appearance, flowering time, etc.) and poor, diseased or insect damaged plants or plants with discolored panicles.
8. Harvest at full maturity (80-85% of the grains are straw-colored).
9. Thresh, clean, dry (12-14% moisture content), grade and label the harvested seed.
10. Store the labeled seed in sealed clean containers in a cool, dry and clean area.

Find Out More about Good Seed:

Send an email to: IRRItraining@cgiar.org.

For information on the seed management, visit http://www.knowledgebank.irri.org/seedMgmt.

To diagnose problems in the field, visit RiceDoctor at http://www.knowledgebank.irri.org/ricedoctor.

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