

Paddy Drying Systems

Importance of Drying Paddy Correctly

Rice is usually harvested at grain moisture content (MC) between 24 and 26% (wet basis). Any delays in drying, incomplete drying or uneven drying will result in qualitative and quantitative losses including:

- Yellowing or discoloration caused by mold development and heat build-up from respiration.
- Reduced milling yields caused by high temperatures and re-wetting of grains.
- Loss of germination and vigor from grain respiration, mold and insect activities, or from exposure of grains to temperatures above 42°C.
- Damage caused by insects that are more active at higher MC levels.

Paddy Drying Recommendations

- Immediately dry paddy after harvest to 18% MC for storage up to two weeks.
- Dry paddy for milling to 14%. Drying below 14% reduces weight and milling yield.
- For 8-12 month storage dry to 13% or less, for long term storage exceeding 1 year to 9%.
- Clean the grains before drying to avoid uneven drying and wet spots.
- Do not mix grain with different MC to avoid cracking.
- Monitor grain temperature and MC to prevent excess temperatures and over-drying.

Methods of Drying Paddy

A. Sundrying - Sun drying continues to be the preferred drying method in Asia because of its low cost. It is labor intensive and control of grain temperature is difficult.

For optimum quality:

- Spread the grains in thin layers (5 cm)
- Cover or collect the grains during rain
- Mix frequently, at least every 30 minutes
- Monitor the grain temperature
- Shade or cover when grain temperatures are above 50°C (42°C for seeds)

B. In-store Drying - Paddy with MC below 18% can be slowly dried in storage bins using aeration with slightly pre-heated air (3-6K above ambient temperature).

Farm to commercial level, capacity depends on storage structure.

Drying time: days to weeks

- Pros: Good quality, low energy usage, storage included
- Cons: Second stage dryer, long drying time



Heated Air Drying

C. Fixed Bed Batch Dryer - For farmers, contractors, small rice mills. Capacity: 1-10 t/batch. Drying time: 6-8h

- Pros: Simple, cheap, local versions available
- Cons: Uneven drying, labor intensive

D. Re-circulating Batch Dryer - For rice mills and cooperatives. Capacity: 4-10 t/batch. Drying time: 6-8h.

- Pros: Even drying, automatic operation, affordable
- Cons: Wear of mechanical components

E. Continuous Flow Dryer - For large commercial facilities. Capacity: ~10 t/hour. Drying rate: 1-2%/pass

- Pros: High capacity, automatic operation
- Cons: Capital intensive, requires large volumes



For more information:

To view all of the factsheets on technology transfer, visit <http://www.knowledgebank.irri.org/factsheets>.
For an overall view of crop management practices, visit <http://www.knowledgebank.irri.org/tropRice>.
To diagnose problems in the field visit <http://www.knowledgebank.irri.org/ricedoctor>.

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