

Modified Mat Nursery

What is a Modified Mat Nursery?

A modified mat nursery establishes seedlings in a layer of soil mix, arranged on a firm surface. Seedlings are ready for planting within 15-20 days after seeding (DAS).

Why Use a Modified Mat Nursery?

The modified mat nursery uses less land, can be installed closer to the house than traditional field nurseries, and uses less labor for both transporting seedling mats and replanting. As a result, root damage is minimal while separating seedlings.

How to Establish a Modified Mat Nursery?

1. **Seed:** To plant 1 ha (with 2 seedlings/hill at 20 X 20 cm spacing), use 18-25 kg good quality seeds (i.e., >80% germination and establishment). Note: Good seeds result in lower seed rate, more uniform germination, vigorous seedlings, less replanting, fewer weeds, and 5-20% higher yields.
2. **Nursery area:** Prepare 100 m² nursery for each 1 ha to be planted. Select a level area near the house and/or a water source. If area is not sufficiently compacted, then spread a plastic sheet or banana leaves on the marked area to prevent roots growing into soil.
3. **Soil mixture:** Four (4) m³ of soil mix is needed for each 100 m² of nursery. Mix 70-80% soil + 15-20% well-decomposed organic manure + 5-10% rice hull or rice hull ash. Incorporate around 20 kg N/ha (1.5 kg powdered diammonium phosphate or 2.0 kg 15-15-15 powdered NPK fertilizer for every 100 m² of nursery area).
4. **Pre-germinating seed:** Soak the seeds for 24 h (some varieties may need longer to bud). Drain and incubate (cover and keep moist) the soaked seeds for 24. In this time, the seeds sprout (bud) and the first seed root grows to 2-3 mm long.
5. **Laying the soil mixture:** Place a wooden frame of 0.5 m long, 1 m wide and 4-cm deep divided into 4 equal segments on the plastic sheet or banana leaves. Fill the frame almost to the top with the soil mixture.
6. **Sowing:** Sow the pre-germinated seeds uniformly and cover them with a thin layer of dry soil. (Approximately 1 seed/cm²)

7. **Soaking the seedbed:** (a) Sprinkle water immediately to soak the bed. (b) Remove the wooden frame and continue the process (i.e., fill soil mix-sow seed-cover seed-water) until the required nursery area is completed.
8. **Watering:** Water the nursery as needed to keep the soil moist. Protect the nursery from heavy rains for the first 5 DAS. If the nursery can be flooded then at 7 DAS, maintain a 1-cm water level around the mats. Drain the water 2 days before removing the seedling mats for transplanting.
9. **Fertilizer topdressing (optional):** If temperature and water are adequate, but the seedlings show yellowing (N deficiency). Sprinkle seedlings with 0.5% urea (1.5 kg Urea in 300 l water/100 m²).
10. **Lifting seedling mats:** Seedlings reach sufficient height for planting in 15-20 DAS. Lift the seedling mats and transport them to main field.



Limitations

The system is best suited for irrigated areas. If transplanting is delayed, seedlings can be damaged when separated for planting.

For more information:

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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