

Raising Mat-type Nursery



What is a mat-type nursery ?

A mat-type nursery is a prerequisite for machine transplanting. It establishes seedlings on a layer of soil-FYM mixture on a perforated polythene sheet spread on a leveled firm surface. Based on methods of preparation, it is of two types, (i) Wet-bed nursery and (ii) Dry-bed nursery.

Preparation of mat-type nursery

Materials required: Polythene sheet, wooden or iron frame, sieve to have stone-free soil (for dry-bed mat-type nursery), well decomposed FYM, sprouted and treated paddy seed, watering can/ sickle/sharp knife to cut nursery-mat into convenient sized pieces, and ice cutter or thick handled needle for piercing polythene sheet.

Frame: Removable frame is used to ensure uniform sized mats. The dimension of the mat-frame should be 1.2m x 1.2m, and thickness should be 0.5 inch (1.25cm) for wet

bed, and 0.75 inch (1.9 cm) for dry bed. Wooden staff or aluminum bar (1.5 m x 10 cm x 10 cm) may be used to drag extra soil and FYM mixture to maintain uniform thickness, and to level the top of the bed.

Seed quality: Good quality seed is clean (contains no pebbles, soil particles, weed seeds), genetically pure (contains only grains of one variety), and healthy (well filled, of the same color, without cracks, and no obvious disease- or pest-damage).

Seed selection: Seeds are immersed in plain water and stirred well. Seeds which sink are selected, and which float are rejected.

Seed treatment

Once the selection process is done, the seeds should be soaked directly in one of the following fungicidal suspensions for 12 hours. One liter of fungicidal solution is required to treat one kg of seed. Treated seeds should be kept in incubation for 48 hrs.

Fungicide	Dose (g/ml per kg seed / liter of water)	Use
Chlorothalonil 75% WP	2	To avoid damping off, wilt and root-rot in seedling stage
Carboxin	2.5	
Trifloxystrobin 25% WP	1.5	
<i>Trichoderma harzianum</i>	10	To avoid seed borne disease



- The World Bank is the funding agency of APART
- Department of Agriculture, Govt. of Assam is the nodal department for APART
- ARIAS Society is the State level coordinating and monitoring agency for APART
- Assam Agricultural University is one of the implementing agencies of APART, imparting scientific support.
- International Rice Research Institute (IRRI) is the rice global leader providing technical support for paddy value chain in APART



Wet-bed mat-type nursery:

- Before preparing the nursery, the field should be ploughed, puddled and levelled. After puddling leave the field to settle for 24 hours. Once the soil is settled, prepare a raised bed 50 m in length, 1.5 m in width and 15cm in height, for raising the seedlings to transplant in one hectare area of the main field. Leave the bed to settle for 36-48 hours. Thereafter, settle the bed with a plank. Also prepare a 60 cm wide channel all around the bed.
- Take a 1.5 m wide and 50 m long polythene sheet, fold it into 8-10 layers and perforate randomly with an ice prick or thick-handled needle. Cover the bed with this perforated polythene sheet, and remove the air bubbles beneath the sheet. Put the iron frame over the plastic sheet. Keep the required FYM/compost in the channel and mix with soil (4 parts wet soil + 1 part FYM/compost). Spread this mixture on the plastic sheet inside the 0.5-inch thick iron-frame. Make sure the soil and FYM mixture is free from clods, stones, twigs etc. Now spread the sprouted seeds at 40 kg/ha uniformly on the top of the soil layer. Repeat all above-said steps till the whole bed of 1.5 m x 50 m is completed. Now cover the seeds by a thin layer of straw or banana leaves for 2-3 days to avoid seed displacement, or removal by birds, and to minimize the pre-flooding moisture-need by restricting evaporative water-loss. Remove the cover 2-3 days after emergence of seedlings.

Seedlings will be ready for transplanting in 15-20 days in *Sali* season and in 20-25 days in *Boro/early Ahu* season, when they attain 15-18-cm height. .

Dry-bed mat-type nursery

- The crushed and sieved soil free of weed-seeds, having particle size less than 5 mm, is mixed with FYM in a 4:1 ratio. The FYM is also crushed to ensure a homogeneous mixture.
- The mixture should be free from stone or any other foreign object, which otherwise may damage the paddy transplanting machine finger. Plough and level the field before bed preparation. Puddling is not required. Prepare a raised nursery bed of 50m length, 1.5m width and 15 cm height. Collect soil from a weed-free field and sieve it using a 2mm-mesh sieve to get clod-free soil. Mix FYM with sieved soil free from clods, stones, twigs etc. in a ratio of 4 parts soil to 1 part manure. It will be best to mix the soil on a polythene sheet. Follow the rest of the steps as indicated under wet-bed mat-type nursery preparation.

Water management and nutrient supplement

For the initial four days, water should be sprinkled on the covered bed so that the soil remains wet. After four days, when the roots are well anchored to the soil, the cover is removed. Now controlled flooding can be done, through peripheral channels/farrows to a level up to the top of the raised bed. The free turbulent flow of water should be avoided, or it may loosen the root anchorage. Nutritional requirements usually met by soil FYM mixture supplemented with 250 g powder of NPK (15:15:15) @ 75 sq. m nursery area, can help in faster growth and early transplanting.

Nursery bed cutting

Stop flooding the nursery 20 hours before transplanting for better stability of mat, and anchoring of roots while transplanting. The mats are then cut into pieces of convenient size to be used for planter.