Available online at
http://currentagriculturetrends.vitalbiotech.org/

ISSN (E): 2583 – 1933

Curr. Agri.Tren.:e- Newsletter, (2023) *2*(5), 14-17

Current Agriculture Trends: e-Newsletter

Article ID: 203

Techniques of Rice Nursery Establishment and Transplanting

Kaptan Baboo*

Ph.D. Scholar, College of Agriculture, Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya, Uttar Pradesh.

*Corresponding Author
Kaptan Baboo*

Article History
Received: 17. 05.2023
Revised: 24. 05.2023
Accepted: 28. 05.2023

INTRODUCTION

If we use the transplanting method rather than the direct seeding method for crop establishment, we need to produce seedlings. These seedlings are produced in a nursery. Seedling nurseries use 15 to 20% of the total farming area. In preparing the nursery seedbed, the surface needs to be level, free of weeds, and well drained. Low rates of nitrogen and phosphate fertilizer can be applied to the nursery. Usually seeding rates vary from 400 to 800 kg per hectare of nursery depending on locality, soil type, and seed quality.

The rice residues also serve as an important feed source for animals. The rice husk is also used in paper industries as well as used for fuel purpose. The rice flour is mostly used for making bakery products. High-quality bran oil of unique properties is also extracted from rice bran. In contrast to other cereals' growth ecology, the rice crop can grow well under flooded conditions. In most parts of the world including India, first the rice nursery is grown through various methods and then that nursery is transplanted in puddled flooded soil. In this chapter, we will discuss various rice nursery establishment methods common in India.

Methods of Nursery Establishment

The nursery methods common in India include dry method, wet method, Dapog method (mats),
and tray method. Each method has been discussed in detail below.

Dry Method

Dry method is most suitable for the areas where soils are silty, and water cannot stay for long time on soil. In this method, pre-sowing irrigation is applied followed by 2–3 plowings when soil reaches workable soil moisture. Plowing is followed by planking. Then, the seeds are broadcasted at the seed rate of 1.5 kg per marla for non-basmati coarse varieties and 750 g per marla for Basmati varieties.

ISSN (E): 2583 – 1933

It is followed by covering the broadcasted seed with a layer of one inch of dry farmyard manure, wheat straw, rich husk, or rice straw. After this, the field is irrigated. It is recommended to place some dry grass stubbles at the opening of water channel (Nakka) in order to prevent the overflow of rice seeds due to heavy water flow pressure. In this method, seed rate per unit area should be 1.5 times as compared to wet method. In this method, the nursery will be ready for transplanting after 35–40 days. Weeds in nursery can be controlled as per recommendation of agriculture department of each province depending on the type of weeds and weed infestation.

The **advantage** of the dry-bed method is that seedlings are short and strong, with a longer root system compared with the wet-bed method. The seedlings can be raised even during periods of heavy rains.

A **disadvantage** is however that roots may get damaged during pulling. Seedlings of upland nurseries may also get infected with blast and are more prone to pests such as rodents etc.

Wet Method

The wet-bed nursery is mainly used in areas where there is enough water**. Pre-germinated seeds** are broadcast on a soil that is thoroughly puddled and leveled. Drainage canals for proper removal of water must be constructed. Addition of organic manure (decomposed) and small amount of inorganic fertilizer as basal dressing will increase easiness of uprooting of seedlings and seedling vigor. Total seed bed area is about 1/10 of the area to be transplanted and about 40 kg of seed are required to transplant 1 hectare. The best seedling age for transplanting is about 15-21 days. Nurseries should be free from weeds, any pest or disease incidence and nutrient deficiencies. If such conditions occur it must be treated at the nursery level.

Tray Method

This method is used when paddy nursery needs to be transplanted through mechanical transplanter instead of manual transplanting. Mechanical paddy transplanting is the advanced form of paddy transplanting technology to shift the paddy seedling into the field by using paddy transplanter. This technology is more efficient than manual transplanting with the list of advantages, that is, less labor use, timely sowing, water saving, and ensure optimum plant population which enhance the yield and increase the more profit returns to the farmers which make them more prosper and happy.

Dapog method (mats)

Dapog nurseries can be located anywhere on a flat firm surface but water supply/control should be very reliable. The area needed is about 100 m^2/ha or 1% of the transplantable land which is much smaller than conventional nurseries. Another advantage of the "dapog" over wet/dry-bed nurseries is that the cost of uprooting of seedling is minimal. But, because the seedlings are small, transplanting can be more difficult. Very young seedlings from dapog nurseries suffer less from the transplanting shock compared with other nurseries, thus the seedlings are more suitable for short duration varieties. Irrigation is obligatory to prevent water stress.

The dapog or mat method

Nursery Transplanting Methods

The following methods are being used for transplanting the rice nursery seedlings by the farmers into the fields. Mainly, the method of transplanting depends upon the conventional practices of an area or region, nature of soil, availability of labor force, economic conditions of the farmers, and the availability of advanced technological implements.

REFERENCES

Ahmad S, Hasanuzzaman M (2012) Integrated effect of plant density, N rates and irrigation regimes on the biomass

production, N content, PAR use efficiencies and water productivity of rice under irrigated semiarid environment. Not Bot Horti Agrobot Cluj-Napoca 40(1):201–211

Ahmad S, Zia-ul-Haq M, Ali H, Shad SA, Ammad A, Maqsood M, Khan MB, Mehmood S, Hussain A (2008) Water and radiation use efficiencies of transplanted rice (*Oryza sativa* L.) at different plant densities and irrigation regimes under semi-arid environment. Pak J Bot 40(1): 199–209

Ahmad S, Ahmad A, Zia-ul-Haq M, Ali H, Khaliq T, Anjum MA, Khan MA, Hussain A, Hoogenboom G (2009) Resources use efficiency of field grown transplanted rice (*Oryza sativa* L.) under irrigated semiarid environment. J Food Agric Environ 7(2):487–492

Ahmad S, Ahmad A, Soler CMT, Ali H, Zia-Ul-Haq M, Anothai J, Hussain A, Hoogenboom G, Hasanuzzaman M (2012) Application of the CSM-CERES-Rice model for evaluation of plant density and nitrogen management of fine transplanted rice for an irrigated semiarid environment. Precis Agric 13(2):200–218

Ahmad S, Ahmad A, Ali H, Hussain A, Garcia y Garcia A, Khan MA, Zia-Ul-Haq M, Hasanuzzaman M, Hoogenboom G (2013) Application of the CSM-CERES-Rice model for evaluation of plant density and irrigation management of transplanted rice for an irrigated semiarid environment. Irrig Sci 31(3):491–506