

Reference 16 Transplanting

Summary

Water control in inland-valley rice cropping is often relatively poor, resulting in problems with flooding or weeds. These are the main reasons why farmers mostly transplant, rather than direct-seed rice in inland valleys. This reference will provide guidelines to consider when transplanting rice seedlings.

The main crop-establishment method for rice in inland valleys is transplanting rather than direct-seeding. This is because transplanted seedlings can, to some extent, resist the effects of flooding, a common problem in inland-valley lowlands that are often poorly leveled and without adequate water control structures. Transplanting rice also gives the crop a considerable advantage over weeds. Weed infestation is, therefore, generally much lower in transplanted plots compared to direct-seeded plots. Transplanting also helps save water and seeds, and facilitates weeding and other crop management interventions as compared to broadcast direct-seeding.

However, the growth duration of transplanted rice is somewhat longer than that of direct-seeded rice because of the stress induced by transplantation ('transplanting shock'). Another very important drawback is the considerable amount of labor that is required to transplant: approximately 30 to 40 person-days per hectare.

When a young seedling is transplanted too deep, the bottom node cannot produce tillers as it is deprived of oxygen. Before producing tillers, the seedling has in that case to develop a second node, a little higher on the stem, resulting in loss of tillering capacity. However, when seedlings are transplanted too superficially (i.e. at too shallow a depth), they may be easily uprooted by incoming floodwater. The ideal transplanting depth is about 3 cm.

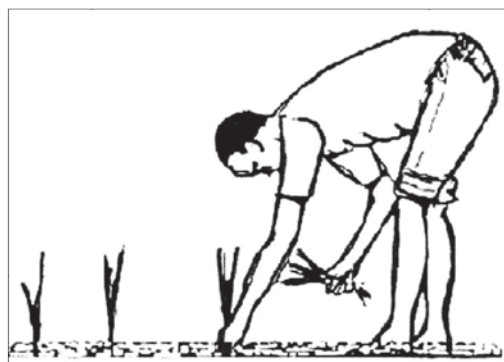
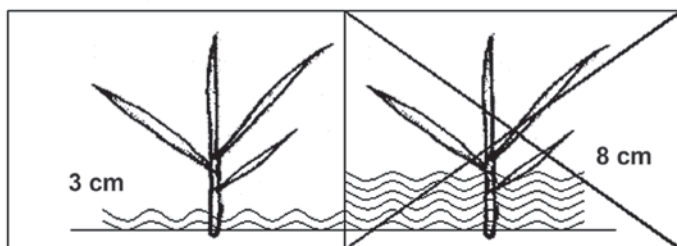


Figure 16.1. Transplanting

Figure 16.2. Transplanting depth should be about 3 cm to favor tillering from the bottom node



Reference 16

Transplanting

Transplanting mode and density

Transplanting density and tillering during the vegetative phase determine to a large extent the number of panicles that are formed per unit surface area during the reproductive stage. A crucial indicator is the canopy cover that has been obtained at panicle initiation, as this is the start of the reproductive phase. A good transplanting density will produce a closed canopy cover that will optimize the use of solar radiation, water and fertilizer nutrients. A density that is too low will not result in closed canopy cover at panicle initiation and solar radiation will, therefore, not be optimally used (light is hitting the soil or the water surface instead of rice leaves). Moreover, weeds will take the place of the rice plant and will start competing for light, water and nutrients. Conversely, a density that is too high will lead to competition between seedlings and a reduction in tillering. The transplanting density to choose depends on the tillering capacity of the rice cultivar used. Most varieties produce the best yields at transplanting densities of between 15 cm × 15 cm and 20 cm × 20 cm.

Transplanting along a line

This involves transplanting along a string with the transplanting interval clearly marked on the string. This takes a bit of organization but time lost may be mostly gained at a later stage, because this method allows the use of a rotary hoe for weeding. Moreover, moving inside the field will be easy, thus facilitating all other crop management interventions that require entering the field. Transplanting density will be uniform.

Random transplanting

Random transplanting is the method commonly used in farmers' fields. This is a much faster method than transplanting using a line or other device, and it does not require synchronizing work as for line transplanting. However, weeding using a rotary hoe will be impossible and, in general, moving around in the field without damaging the plants becomes very difficult. Transplanting density will not be uniform.

Replacement of missing hills

Seedlings that are pulled from the nursery may be damaged to such an extent that they do not survive after transplanting. To ensure that planting density is not affected, missing hills should be replaced as soon as possible, preferably within two weeks after transplanting.

Bibliography

Yoshida S., 1981. *Fundamentals of rice crop science*. International Rice Research Institute, Manila, Philippines, 269 pp.