

Rice crop establishment



Fig 1. Rotavation using oxen



Fig 2. Ploughing



Fig 3. Laser levelling



Fig 4. Banding

Important stages of rice cultivation

Rice cultivation involves a series of processes to achieve the desirable product from land preparation to planting/ sowing up to crop maturity.

Land Preparation

Proper land preparation, is achieved by the following options; mechanical preparation – tractors, hydro tillers; ox plough, and manual. Paddy field leveling is critical for uniform flooding, weed control and uniform germination.

Similarly, rainfed lowland and upland rice also require good land preparation to achieve a fine tilth for proper contact of seed with soil.



Fig 5. Direct machine seeding



Fig 7. Transplanting



Fig 8. Healthy direct seeded crop

Seed selection methods:

The first step is winnowing, followed by physical sorting by removing debris manually or by seed sorter. Easy way is to put seeds in a container and put water to allow bad grains to float, then sieve.

selection of quality seed have the capacity to;

- Improve yield by 5 – 20%
- Improve germination by more than 80%
- Increase resistance to disease and pest attacks
- Enhance crop uniformity
- Minimize pests, disease and weed infestation
- Maintain varietal purity thus attract better price.



Fig 9. Transplanting



Fig 9. Hydro Tiller



Fig 10. Seedling in nursery



Fig 11. Rice transplanter



Fig 12. Seeding rice



Fig 13. Coated rice seed



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Rice crop establishment Continued

Crop establishment

The two methods used are :

1. Transplanting

The quality seeds is either soaked overnight or just sown in a well prepared nursery bed. Normally seed is broadcasted but the best way is to plant in a row.

For best field crop establishment, young healthy seedlings of 14-21 days should be used. The seedling crop should be well nourished and protected from pest and disease attack to prevent spreading diseases and pests from nursery to production field.

Disadvantages: In some instances the nursery maintenance is expensive. The yield are low due to poor & unhealthy seeds. It uses a lot of seeds. The operation costs are high due to nursery management and transplanting.

Planting: The spacing vary depending with variety and if row weeders are to be used, but generally 20cm between row and 15cm within row is used.

Manual transplanting in a row is done on a drained field with a marked or unmarked string . Experienced farmers can do without string provided 1st rows are well done for guidance.

2. Direct seeding

In direct seeding, either dry seed or pre-germinated seeds are sown by hand or a planter (machine) in a well prepared field/paddy at a spacing of 20cm between rows and 10-15cm within the row. Sometimes the seed is drilled or broadcasted. For row planting with a marked or unmarked string, yields are higher than drilled or broadcasted crop. For unmarked string, two sticks for inter and intra-row spacing can be used. Row planting minimizes competition and thus more vigorous growth that result into higher yields.



Fig 15. Seedling Transplanter nursery



Fig 16. Healthy crop



Fig 17. Good seed bed preparation



Fig 18. Mature crop

Source of pictures John Kimani

Water and weed management

Sometimes the seeded field especially for direct seeding require immediate watering to initiate biological start date (BSD) immediately after planting if there is no rainfall. For more details on water, weed, nutrient management and harvesting please refer to the respective factsheets.

Crop care

The crop should be continuously scouted for any sign not consistent with healthy crop growth and consult the respective factsheets for diagnosis.

Bird scaring

At grain filling, the soft, medium & hard dough stage birds cause huge damage. The crop can be protected by bird netting, using scare crows or employing a guard. This activity increases the cost of rice production. Breeder are striving to develop varieties with erect flag leaf above the panicle to deter birds from parching and feeding on grains.

Contact experts: Kimani, J (john.kimani@kalro.org), Wandera, F; Thurairana, D., Wasike, V., Otipa, M., Kega, V., Nyamongo, D., Magoti, R., Ochieng, V., Kirigua, V., Wasilwa, L., Wayua, F., Mugambi, C., Ndungu, J., Too, A., Ngari, B., Musila, R., Esilaba A.O. Mutiga, S (ILRI-BeCA); Nyongesa, O (IRRI), Zhou, B (IRRI); Mitchell T. (OSU); Wang, G. L (OSU); Were, V (TSL); Ouedraogo, I (INERA); Rotich, F (UoEm); Correll, J. C. (UARK) and Talbot, N. J. (TSL). *E-Guide for Rice Production in East Africa (2019)*

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