## **2.7 Seedling Vigor**

The Seedling vigor is the ability of plants to arise rapidly through the substrate including soil or water and cover the surface fast (Fukai, 2002). Seedling vigor is having an interaction with the all phases of the seedling development from emergence up to the field establishment which enables the seedlings to grow in an agile manner after the germination (Rani, 2012). Seedling vigor is a quality character of the seedlings which represents the potency of the seedlings to rapid growth in the nursery stage and this potential change according to the inheritance and the environmental conditions (Rani, 2012).

The key factor on the successful growth of the transplanted plants is the vigor of the seedlings (Lal and Roy, 1996). The production of vigorous seedlings through better care of the nursery and transplanting them at the correct age is very essential to obtain high yield in rice cultivation (Rani, 2012; Sarwar et al., 2011). According to the Deseo, 2015 increased seedling vigor can be classified as an important attribute which determines the final grain yield obtained. An extra care on the nursery is very important to get vigorous seedlings to transplant in the field (Islam and Salam, 2017). The improved nursery management practices including better applications of nutrients, pest and disease management, irrigation at optimum level will ensure the vigor of the seedlings in the nursery rather than the conventional nursery management practices (Ghosh and Suman, 2011).

The seedling vigor is having an positive correlation with the early crop vigor after field established which decided the effectiveness of the transplanted rice (Panda et al., 1991). The vigorous seedlings after transplanted showed morphological differences in the growth of both above ground and below ground parts (Hoshikawa and Ishi, 1974). The seedling vigor associated with the shoot length, root length, leaf area, seedling dry weight, plant viability and the uniformity (Lal and Roy, 1996; Matsuo and Hoshikawa, 1993; Rajendran et al., 2005). The newly established vigorous seedlings are able to cope with the transplanting shock well and recover with in a short period of time and start the vegetative growth in successful manner than the weak seedlings. The dense root system available in the healthy seedlings produced new shoots and absorb nutrients, moisture well which increased the early plant growth of transplanted rice (Grist, 1975).

The strong seedlings with the early crop vigor is desirable character for increased grain yield from the transplanted crops as the strong seedling are having the ability to compete with weeds , weedy rice, pest attacks and grow well which subsequently increase the dry matter accumulation in the plants (Akram, n.d.; Ellis, 1992). The main factor which decides the final rice yield obtain from the transplanted rice is due to the seedling vigor obtained through different nursery treatments (Deseo, 2015; Nachit, n.d.; Rani, 2012; Ros et al., 2003). The increased growth vigor at the nursery stage is having a significant co relation with the tillering ability in the field which subsequently increases the final yield (Nachit, n.d.; Rani, 2012; Sarwar et al., 2014; Tekrony and Egli, 1991).

Seedling vigor is defined as the plant’s ability to emerge rapidly from soil or

water and cover the ground fast (Fukai, 2002).

Seedling vigor is the basic component of the transplanted rice, which depends on its growing environment and proper age. Influence of Nursery Management and Seedling Age on Growth and Economic Performance of Fine Rice

Success of transplanted rice directly correlate with the nursery seedlings as it plays major role for establishment in the main field (Padalia, 1980).

Transplanting of healthy seedlings grown at proper nitrogen application at nurserybedshowed better paddy yield (Panda et al., 1991 and TeKrony and Egli, 1991).

Healthy and vigorous seedlings from nursery-bed will give good results after transplanting in the main fiel

Increase in growth rate might be due to the better seedling vigor. Seedlings grown with high seeding density and without fertilizer appli- cation decreased vigor due to high seedling competition, which ultimately gave a weaker start to crop.

Influence of Nursery Management and Seedling Age on Growth and Economic Performance of Fine Rice

The optimum SA was identified as 12 days, but seedlings from 9 to 15 days can be also used without any yield decline

Impact of varieties, spacing and seedling management on growth and yield of mechanicaly transplanted rice

Early vigor is associated with rapid crop establishment which is important in increasing the ability of rice to compete against weeds. Rice competitiveness with weeds, as either the ability to suppress weeds or the ability to avoid being suppressed by weeds (Goldberg and Landa, 1991; Namuco, et al.,

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2009), o Early Vigor Traits in Selected Upland and Rainfed Lowland Rice ( Oryza sativa L .) Genotypes

Thus, dry weight could be used as a basis in defining early vigor

Good seedling vigor is also another trait that could increase yield of upland rice.

Early Vigor Traits in Selected Upland and Rainfed Lowland Rice ( Oryza sativa L .) Genotypes