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Mechanization adopted in transplanting of rice seedlings

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The transplanting practice of rice seedlings in India: Transplanting process is adopted for the various crops across the world. It is achieved through manual operation and numerous machines have been developed for most of the crops in the world. In case for paddy crop, both manual as well as mechanical method is adopted for the transplanting of the paddy seedlings. The manual transplanting of the paddy is a labour intensive, time consuming and tedious operation. Due to the shortage of the labours during the transplanting season of the paddy seedlings, leads to decrease in the production of the paddy crop. Therefore, there is necessity for mechanization in this field, which will ensure the timely sowing of the crop.

The performance of the rice transplanter highly depends on four bar transplanting mechanism, because picking and leaving of the seedlings are governed by the effective working of the transplanting mechanism. The three types of rice transplanters available in the market are manual, walking and self-propelled type type transplanter. The manual operated rice transplanter does not have power source. It is pulled manually; hence it has

Fig. 1: Self-propelled rice transplanter

Fig. 2: Trailed type rice transplanter

Fig. 3 : Manual transplanting of rice

Fig. 4 : Manual operated rice transplanter

lesser field capacity and efficiency. The manually pulling of the machine in the muddy loose soil is a very difficult task. It creates muscles strain and tiredness to the farmers, but the initial cost of the machine is very less, so small and marginal farmers can afford and is generally practised.

The walking type transplanter is an extension of the manually operated transplanter. The transplanting mechanism of the transplanter receives power from the power tiller engine. The operator only controls the direction and movement of the transplanter using a handle and brake system. It has higher field capacity and efficiency. The initial cost of the transplanter is higher than manually operated transplanter.

The self-propelled rice transplanter is an advance technology for the transplanting of the rice seedlings. It has a higher horse power gasoline or diesel engine and provides human comfort. There is a requirement of two labors, one is the driver and other one for the seedling handling during the transplanting operation. It has high field capacity and efficiency, because it can move fast in the field and has more number of furrow openers. Many researches confirmed the potential ability of the self-propelled rice transplanter for maintaining the seedling to seedling distance, depth of planting and thus enhancing productivity. Therefore, there is a need of an appropriate and periodic demonstration of the transplanter, so that, the farmers can be introduced with the latest updates about the technology.

Advantages :

– It overcomes the problems of the intensive labour requirement at the critical time.

– It maintains the proper plant to plant distance which leads to higher productivity.

– Repair and maintenance cost is minimum.

– It will help to achieve the target of double income for the farmers.

– Time saving, *i.e.* it allows the farmers to transplant rice seedlings within the sowing season itself.

Constraints :

Psychology of the farmer : There is a need to change the psychology of the farmers, who prefer the older practice of manual transplanting of the rice seedlings. In India, most of the farmers belong to small and marginal farmer groups, therefore, they feel afraid to adopt a new technology and have a fear that the new technology may not work well and may cause failure of their crops and may therefore create a lot of troubles for their family economically. In addition, it will take course of time to win their belief for the adoption of new technologies.

Financial capability of the farmers : India is a very diverse country in terms of soil type, availability of water resources and fertility of soil. The Indo-Gangetic-Brahmaputra plain is one of the largest alluvial fertile areas in the world and it stretches from about 3,200 km from the mouth of the Ganga to the mouth of the Indus River. The success of the crop highly depends on the fertility of the soil, therefore, financial inequality exists among the farmers across the country. It makes the farmer unable to purchase the costly machines for farming operations.

Demonstration of the technologies : For the dispersion of the developed technology, requires appropriate and periodic demonstration about the technology among the farmers, especially in the rural areas. An incapable and insufficient technical knowledge of extension officer and inadequacy of well trained staff for distribution of scientific knowledge is a big hurdle in Indian society.

Preparation of the rice seedlings : The success of the rice transplanter highly relies on the preparation of rice seedlings. It should be raised through the scientific approach, because picking, placement and growth of the seedlings is significantly affected by the depth of the soil during the preparation of seedlings.

Way forward :

Many rice transplanters are working successfully in some parts of India. Most of the Indian farmers prefer manual practices for the transplanting of the rice seedlings. This happens due to lack of awareness and psychology of the farmers, so we can counter these constraints through demonstration of the appropriate technology, delivered by well trained and organized technical staffs. The financial capability of the farmer must be improved through the crop insurance scheme, double farmer income initiative, investment on the research and development, subsidy for the expensive machines and/or custom hiring initiatives for the poor farmers. The success of rice transplanter will reduce the drudgery and save the precious time required in sowing and would also increase the productivity of the paddy crop. Hence, demand of the rice transplanter will increase and lead to increased establishment of the industries related to agriculture and transplanter manufacturing industries. Furthermore, it will create the employment opportunity and decrease the dependency on other countries for the rice transplanter or other implements, when the machineries would get manufactured in India itself, which would also reduce the cost of the machineries.

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