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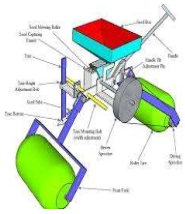

A new transplanting mechanism of rice transplanter

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Introduction : Rice is sown commonly by two methods such as directly and indirectly. Rice seeds are sown in the field by the rice planter without puddling of the soil, in indirect method. The main problem in this method is that thinning of the crop is required. In case of indirect method, seedlings of rice are raised in a small area. These seedlings are transplanted manually as well as with the help of a machine. The manual transplanting of the seedlings is more laborious and time taking process. The late sowing of rice crop leads to a reduction in production, so mechanization in this field is required.

The machine which transplants the rice seedlings in a puddled field is known as rice transplanter. There are three types of rice transplanters such as manual, walking and self-propelled type transplanter. The manual operated rice transplanter has less field capacity and efficiency. The manual pulling of the transplanter is a very difficult task for the entire day. The walking and self-propelled transplanters have higher field capacities and efficiencies. The initial cost of these transplanters is very high as compared to the manual operated transplanter.

In India, most of the farmers belong to a marginal and small category that's why they are not in a position to adopt these types of transplanters. The mechanization is required in this field to increase the production of rice by sowing at the right time. To fulfil the requirement of mechanization now a days, we have to optimize between efficiency and labour work. The power operated transplanting mechanism has been developed for the reduction of force, which earlier required pulling and

Fig. 1 : Directly sowing of rice by rice planter

Fig. 3 : Seedling sown

Fig. 2 : Manually transplanting of seedlings

Fig. 4 : Self- propelled rice transplanter

Fig. 5 : Power operated transplanting mechanism for single row rice transplanter

operating the transplanting mechanism of the transplanter. In this type of mechanism, only external power is needed to pull the transplanter since the DC electric motor operates the transplanting mechanism that is pre-installed on the transplanter.

New transplanting mechanism :

The performance of the transplanter depends on the mechanism, is known as transplanting mechanism or four bar mechanism. It consists of four bars such as fixed link, coupler link, crank link and a follower link. The mechanism ensures the picking and planting of the rice seedlings. The mechanism rotates with the help of a DC motor.

Advantages :

– Productivity increases.

– Low initial cost of the machine.

– Repair and maintenance cost is minimum.

– It increases the income of the farmers.

The main feature of the transplanting mechanism of transplanter :

– Maintain the row to row and plant to plant distance which leads to more production.

– Lesser power is required to operate the machine so a man can pull it easily in the fields.

– Easy handling and operation.

– Acts as a bridge between manual and self- propelled transplanter.

– Simple design and construction.

– It is suitable for the small and marginal farmers.

– It transplants one or two seedlings per hill and reduces the competition among seedlings.

– It plants the seedlings at a uniform depth and helps them to grow well.

– The damage rate of seedlings is negligible.

Conclusions : This newly developed transplanting mechanism would help the farmers to transplant the seedlings very effectively in respect of uniform depth, number of seedlings per hill and in maintaining the plant to plant distance. It is a best suited to the small and marginal farmer due to low repair and maintenance. It would enhance the production by sowing the crop at the right time and would lead to more income. A man can operate it for long time because it reduces the force required to operate the transplanting mechanism.

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