



HAND TRACTOR ATTACHMENTS (HARVESTER & TRANSPLANTER)



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METALS INDUSTRY RESEARCH AND DEVELOPMENT CENTER**



2013
On-Going
R&D Projects

The Metals Industry Research and Development Center (MIRDC) of the Department of Science and Technology (DOST), in partnership with Philippine Center for Postharvest Development and Mechanization (PhilMech), is initiating a prototype equipment for design and development for the project entitled “Design and Development of Hand Tractor Attachments (Harvester and Transplanter)” are transplanter-attached-handtractor and harvester-attached-handtractor. The concept of developing rice transplanting and harvesting implements that can be readily mounted to and dismantled from the hand tractor unit is a relatively new concept. The availability of such implements will significantly increase further the utilization of hand tractor in farm areas. Moreover, it can potentially reduce the cost of farm level mechanization. The target beneficiaries of this project are the farmers, rice field owners and planters, agri-cooperatives and local fabricator shops.

Unlike commercially available transplanters and harvesters which are self-propelled and dedicated machines, these mechanisms are integration of a transplanter or harvester to a hand tractor which can be readily disassembled in order for the hand tractor to be usable for other farm operations. The transplanter-attached-handtractor is driven by 7HP diesel engine, with a 6-row planting capacity. Its planting distance is within 20cm to 25cm as required by the Philippine Agricultural Engineering Standards (PAES). Furthermore, it has also adjustable planting depth comparable to commercially available transplanters. The harvester-attached-handtractor is driven by 9HP diesel engine, with target working efficiency of 500m²/hour.

Overall, the transplanter-attached-handtractor and harvester-attached-handtractor offer many operational and financial benefits. By using these mechanisms, an appropriate, efficient and effective transplanting and harvesting functionalities will be added to plowing, tilling and harrowing, which a hand tractor can perform. This will also address the delayed or longer transplanting and harvesting period and its high labor cost due to lengthy job.

As of December 2013, the transplanter-attached handtractor prototype was completed and field testing will be conducted in January 2014. The design, prototyping and testing of harvester-attached-handtractor is also expected to be completed in 2014.

Target Specs of Transplanter

Transplanting Productivity: 600 m² per hour
Row Spacing: 20 cm
Number of Rows: 4 rows
Rice Seedling Length: 15 – 30 cm
Depth: Adjustable

Target Specs of Harvester

Working Width: 0.8 meter
Working Efficiency: 500 m² per hour
Loss Ratio: ≤ 3.5%
Impurity Ratio: 6%
Power Requirement: Minimum of 7 HP; varies depending on the engine of a hand tractor

Priority Area

Countryside Development and Inclusive Growth

Research Program

Enhancing Rice Production and Post Production Efficiencies Through the Improvement and Use of Appropriate Technologies

R&D Partners

Philippine Center for Post Harvest Development and Mechanization (PhilMech)
Project Management and Engineering Design Services Office (PMEDSO)