

BOOSTING FARM MECHANIZATION FOR THE BENEFIT OF FOR FARMERS

Abstract

Mechanised agriculture or agricultural mechanization is the use of machinery and equipment, ranging from simple and basic hand tools to more sophisticated, motorized equipment and machinery, to perform agricultural operations. The farm mechanization aids in increasing production, productivity and profitability in agriculture by achieving timeliness in farm operations, bringing precision in placement of inputs, increasing utilization of costly inputs (seed, chemical, fertilizer, irrigation, water etc.) and by reducing labour cost and drudgery of farmers/farm women. The are various limitations in adopting farm mechanization are small and fragmented land holdings leads to lack of access to farm power, unchallenging agricultural labour in India, expensive machines and lack of availability of appropriate farm machines for different farm operations. Custom Hiring Centre (CHC) is a unit composing a set of farm machinery, implements and equipment meant for hiring to farmers. It identifies the farm machinery to be kept based on the local cropping pattern and demand from the farming community. The subsidy schemes are also being formulated to encourage entrepreneurs and agri graduates to set up custom hiring centres. Therefore, keeping in view the emphasis of agricultural farm machinery and the need for taking the of farm machinery within the reach of small/marginal farmers, institutional credit needs to be made available for CHCs. The CHCs hire out farm equipment to the farming community in order to make revenue. The hourly hiring fees are depending on machine size; larger machines will incur higher fees. Therefore, the country's growing requirement for agricultural mechanisation can only be met

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by implementing clear policy measures and strategic planning. In order to stay up to date with the latest developments in agricultural mechanisation, technology upgrading must be an ongoing process.

Keywords: Farm Mechanization, farmers, production, shortage of labour, custom hiring centre.

Mechanised agriculture or agricultural mechanization is the use of machinery and equipment, ranging from simple and basic hand tools to more sophisticated, motorized equipment and machinery, to perform agricultural operations. Many farm tasks that were once completed by hand labour or by working animals like oxen, horses, and mules have been supplanted in contemporary times by powered machinery.

There are several instances of the employment of tools, including the hoe and the plough, throughout the history of agriculture. Since the Industrial Revolution, farming has been able to integrate machinery more and more, resulting in a significant reduction in labour intensity.

A component of this technological advancement towards agricultural automation is agricultural mechanisation. In summary, it can be described as a step-by-step progression from hand tools to animal traction, motorised mechanisation, digital equipment, robots, and artificial intelligence (AI).[3] These developments have the potential to increase productivity, enable more cautious management of crops, animals, aquaculture, and forests, improve working conditions, increase earnings, lessen the workload associated with farming, and create new prospects for rural entrepreneurship.

Tractors, lorries, combine harvesters, a plethora of agricultural tools, aeroplanes, helicopters (for aerial application), and other vehicles are all part of modern mechanised agriculture. To boost yields, precision agriculture even employs computers in tandem with satellite imagery and GPS guidance. Motorised machines are gradually being replaced by new digital equipment that enables autonomous diagnostics and decision-making.

One of the main causes of industrial economies and urbanisation was mechanisation. In addition to increasing productivity, mechanisation promotes large-scale farming and occasionally raises the standard of agricultural output. However, if administered haphazardly rather than comprehensively, it can lead to environmental damage (pollution, deforestation, and soil erosion).

Agriculture, being the mainstay of India's rural economy, contributes to employment and livelihood creation. The sector remains crucial for the economy, to meet food and nutritional requirements of population. Despite its vital role, the sector suffers from major hindrances and roadblocks in production, intermediaries and water scarcity, which have restrained growth. The rapidly growing population is leading to increased food demand. Hence, the food security for the Nation has to be achieved. Hence, it is imperative to focus on increase in production, productivity and profitability in agriculture by improving the intensity of farm mechanization in the country.

Farm mechanization refers to the development and use of machines, which replace human and animal power in agriculture. In other words Farm Mechanization is the operation of using Agricultural Machinery to in agriculture to increase productivity and reduce the drudgery.

The farm mechanization aids in increasing production, productivity and profitability in agriculture by achieving timeliness in farm operations, bringing precision in placement of inputs, increasing utilization of costly inputs (seed, chemical, fertilizer, irrigation, water etc.) and by reducing labour cost and drudgery of farmers/farm women.

I. ADVANTAGES OF MECHANIZATION

- Increase the land productivity by facilitating timeliness and precision/quality of farm cultivation
- Meet the labour shortages and manages the increasing demand for labour
- Decrease the environmental footprint of agriculture when combined with adequate conservation agriculture practices
- Reduces the drudgery and musculo- skeletal disorders of farm women caused by performing the farm activities continuously
- The amount of farm women/farmers work is significantly decreased as mechanization takes less man power to complete operations
- Need of lesser man power with the inception the mechanization results in decreased labour costs, as well as increased profits
- Production is completed in a shorter amount of time with the introduction of mechanization thus saves the time
- Boosts crop output and farm income

II. LIMITING FACTORS IN FARM MECHANIZATION

Mechanical power is largely consumed in large land holdings. It is still beyond the reach of small/marginal holdings which constitutes around 80% of the total land holdings. This is due to the fact that the small/marginal farmers, by virtue of their economic condition are unable to own farm machinery on their own or through institutional credit. Apart from these there are various limitations in adopting farm mechanization:

- Small and fragmented land holdings leads to lack of access to farm power
- Low investment capacity of farmers to efficiently own such equipment
- Unchallenging agricultural labour in India
- Availability of adequate draught animals
- Lack of availability of appropriate farm machines for different farm operations.
- Difficulty in maintenance machines because of
- Lack of trained and skilled man power in rural areas
- Lack of co-ordination between University/Agriculture department/ Research organization and Manufacturers.
- Expensive machines, hence difficult to for the farmers to purchase
- The after-sale service is a major concern due to the inadequacy of proper maintenance of machines in remote regions of rural areas
- The unwillingness of commercial banks to finance the famers to purchase farm equipment

Therefore in order to bring farm machinery available within the reach of small/marginal holdings, collective ownership or Custom Hiring Centres needs to promoted in a big way.

III. CUSTOM HIRING CENTERS

Custom Hiring Centre (CHC) is a unit composing a set of farm machinery, implements and equipment meant for hiring to farmers. The main objective of CHC is to supply of farm implements to small, marginal and poor farmers at subsidized rates on hire. Though certain implements and equipment are crop specific, the traction units like tractors, power tillers etc., and self-propelled machinery like combine harvesters etc., are used in common. The CHCs identify the farm machinery to be kept based on the local cropping pattern and demand from the farming community.

1. Potential for Custom Hiring Centers: The availability farm machines for small/marginal land holdings is the lowest. The small/marginal holdings constitutes around 80 per cent of total land holdings, the potential for CHC is quite huge. The Government of India, after acknowledging potential of Custom Hiring Centre has envisaged increase of farm power availability from the present level (0.93 kw/ha) to 2kw/ha during the 12th plan period. The initiative towards this objective is The Sub Mission on Agricultural Machinery (SMAM).

The subsidy schemes are also being formulated to encourage entrepreneurs and agri graduates to set up custom hiring centres. Therefore, keeping in view the emphasis of agricultural farm machinery and the need for taking the of farm machinery within the reach of small/marginal farmers, institutional credit needs to be made available for CHCs.

2. Location of the CHCs: One CHC is anticipated to cater to the demands of four to five villages and therefore a common place equidistant from the villages is preferable. The CHCs are maintained by the Department of Agriculture.

3. Income and Expenditure: The amount of money spent on buying the specified farm machinery, appliances, and equipment. The principal ongoing expenses are the cost of fuel and lubricant for the equipment, driver fees, maintenance and repair costs, personnel salaries, bank loan interest, and insurance. Afterwards, the CHCs hire out farm equipment to the farming community in order to make revenue. The hourly hiring fees are depending on machine size; larger machines will incur higher fees.

Therefore, the country's growing requirement for agricultural mechanisation can only be met by implementing clear policy measures and strategic planning. In order to stay up to date with the latest developments in agricultural mechanisation, technology upgrading must be an ongoing process.