

Whether combine harvester is speeding up rural transformation in India?

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Introduction

- Farm mechanization is a major thrust areas of the Government of India's national development plan
- Development of rental markets for farm machinery has provided economy of scale in use of the heavy machineries, also benefiting small holding farmers to gain from the machineries.

Objectives

- To analyze the extent of use of combine harvesters in SAT India
- To estimate costs and benefits of using combine harvesters and farmers' perceptions on its uses.

Data and methodology

- Data collected from primary and secondary sources
- Data used from Village Dynamics Studies in South Asia (VDSA), and Focus Group Discussion in the selected villages
- The results were derived by integrating quantitative and qualitative survey data
- Partial budget analysis (PBA) is carried out to assess economic costs and benefits of custom hiring of the combine harvester.



Results

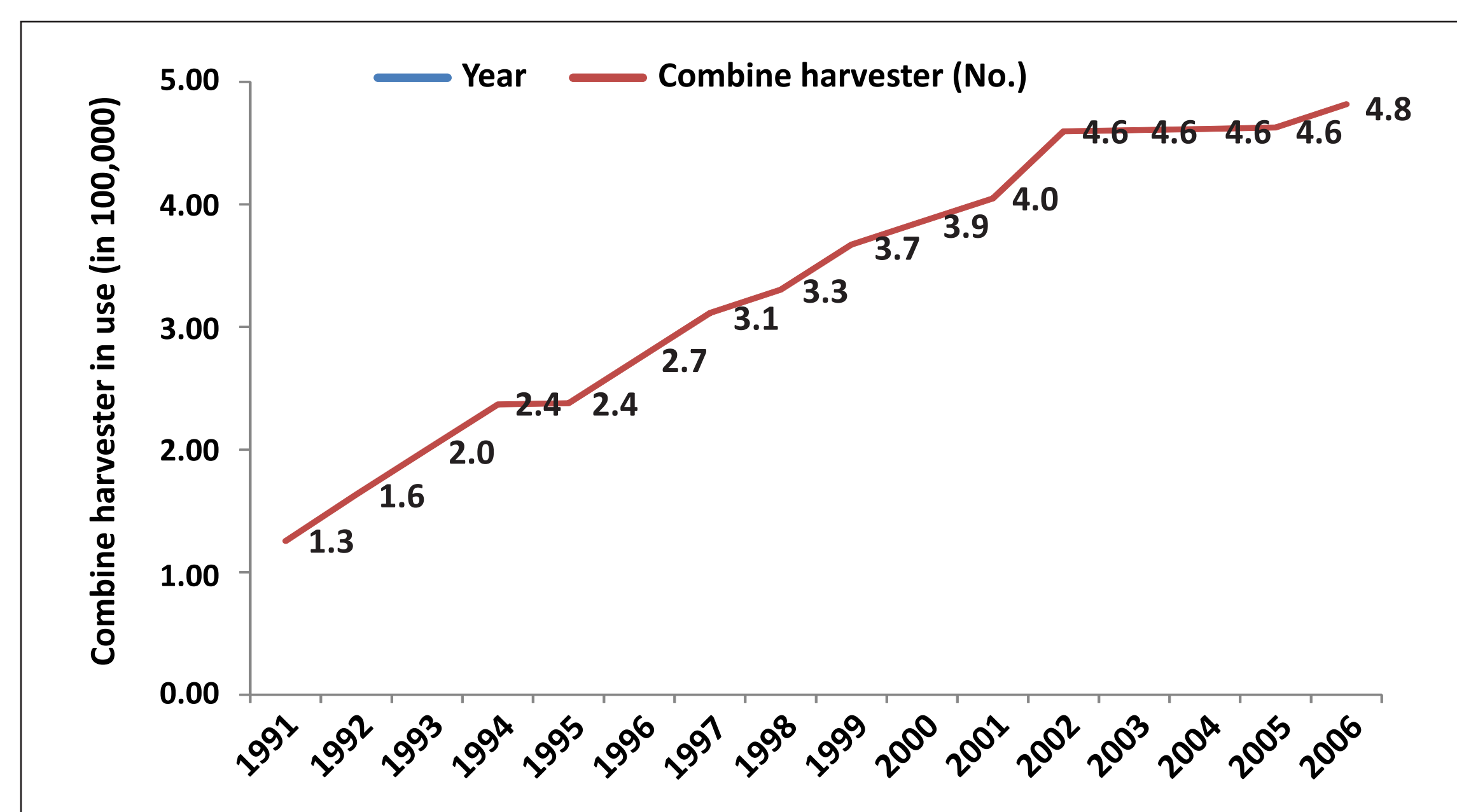


Fig 1. Trend of combine harvester use in India.

Source: FAO STAT

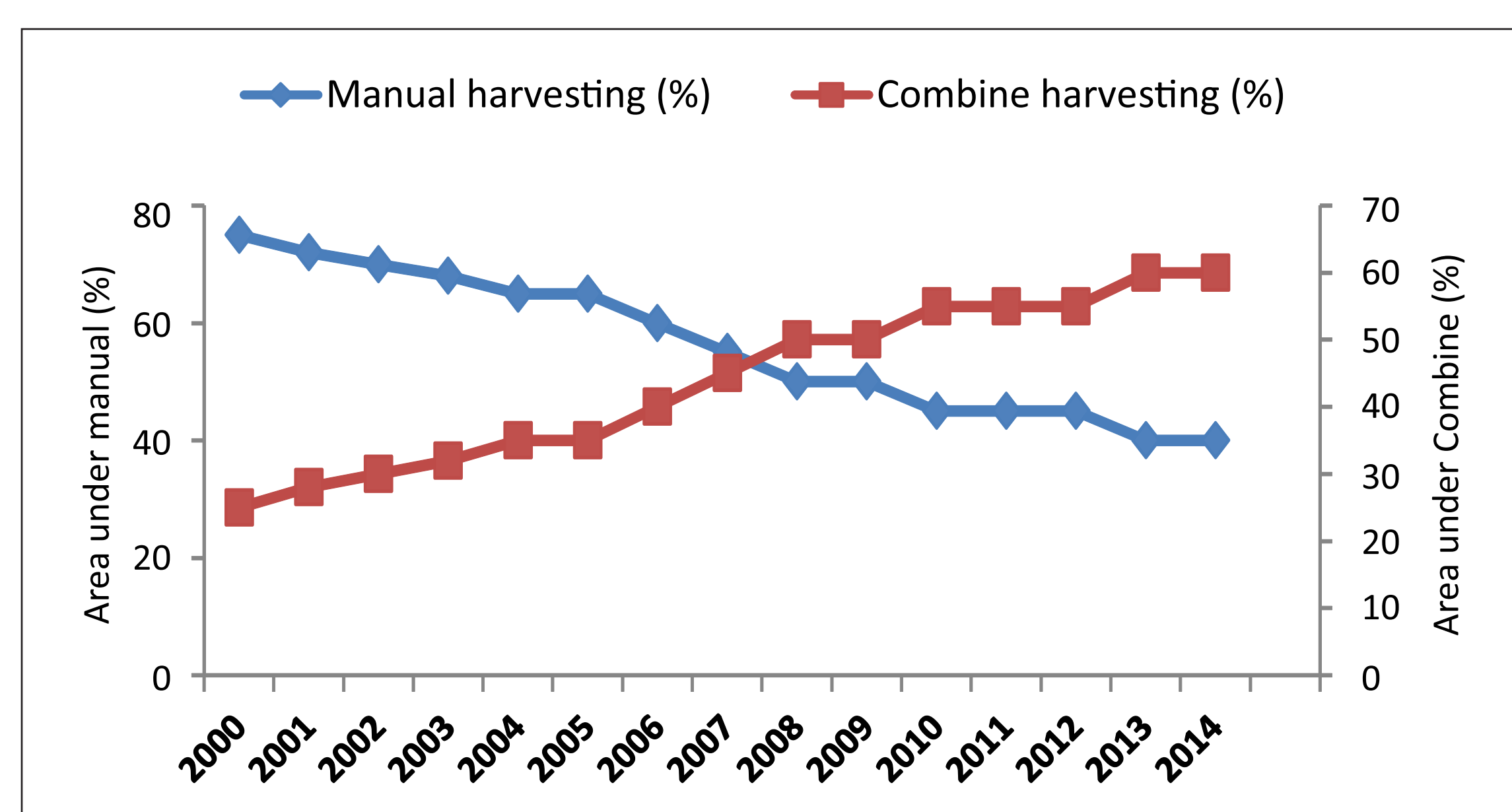


Fig 2. Wheat harvesting under manual and combine harvester in Papda village, MP (in %).

Table 1. A partial budget analysis of the use of combine harvesters for wheat in Papda village, MP, 2013.

Benefits	US\$/ha	Costs	US\$/ha
<i>Added returns</i>		<i>Added costs</i>	
		Rental charges of combine harvesters	41
<i>Reduced costs</i>		<i>Reduced returns</i>	
Reduced cost of labor for harvesting, threshing	140	Loss of straw using harvester (Opportunity cost)	62
		Grain loss (5%)	23
Total added benefit	140	Total added cost	126

Net benefits per ha= US\$140-US\$126=US\$14.

Implications of combine harvesters use in village economy

- **Expansion in mono crop area:** Combine harvesters has helped to expand profitable mono crops and ameliorate the shortage of labour in peak season
- **Timely operation of farm operation:** Harvesting, threshing and packing of wheat of one acre takes 2-3 weeks. With combine harvester, the same operation would reduce to one hour, apart from saving over 15 labor days (Table 1)
- **Development of Custom hiring institutions:** The spread of the technology is supported by custom hiring (rental market) institutions and government subsidy, which has allowed smallholding farmers to get benefit from the costly technologies
- **Better adaptation to climate vagaries:** Harvesters helped farmers to cope with and adapt to climate vagaries.

Key messages

- The **shift of rural** labor from farm to non-farm activities has provided incentives to increased use of combine harvesters in India
- **Improvement on technical efficiency** of the harvester will minimize straw and grain losses
- The diffusion of combine harvesters has helped to save labor days in farming, and has facilitated for intersectoral shift of labor and rural transformation
- **Social safety nets** and other **employment support schemes** will be needed to those displaced labor forces, specially for female and vulnerable groups.