



Tropentag, September 17-19, 2013, Stuttgart-Hohenheim  
“Agricultural development within the rural-urban continuum”

## Mechanizing Tribal Rainfed Agriculture in India using Small Farm Machinery

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### Abstract

India the second most populated country in the world with 1.21 billion people, has since the 1950s an average annual population growth rate of 2.0% (Census 2011). It is predicted that India will have 1.63 billion people by 2050 (Population Reference Bureau). The Indian economy continues to be dependent on agriculture and it contributed 12% to the national gross domestic product (GDP), although there has been a steep fall in the use of labour in agriculture which fell from 60% in 1999 to 52% in 2009. Increased off-farm job opportunities with higher wages lead to migration of labour to the cities. Approximately 2 million people are shifting from rural to urban areas annually and about 22 million people have migrated since 2001. Per capita availability of agricultural land has declined from 0.48 ha in 1951 to 0.16 ha in 1991 and is projected to slide down to 0.08 ha in 2035. These have brought about visible changes in agriculture, notably mechanisation.

This paper is an attempt to show the introduction of small farm machinery - power tillers, threshers, row markers and pulverisers in three tribal locations in India: Koraput district of Odisha, Kolli Hills of Namakkal district in Tamil Nadu, and Wayanad district of Kerala and to highlight their implications. The majority of farmers in the locations are marginal and smallholders (ranging between 55.7 to 82.3%), and are affected by shortage of labour. About 40.7% of households from the Kolli Hills, 12.0% from Koraput and 10.9% from Wayanad have household members who undertake short term seasonal and long term migration to other locations including the major cities. Introduction of row markers has led to saving in labour, reduce drudgery among women and improve farm productivity. Traditional methods of food processing require ninety minutes to process one kilogram of grain compared to ten minutes using mechanical hullers, thereby reducing drudgery among women. Livestock and human labour were critical for rainfed areas in the past and introduction of small farm machinery like power tillers and threshers help farmers significantly in carrying out agricultural operations on time.

**Keywords:** Drudgery reduction, farm machinery, labour deficit, seasonal migration, smallholder agriculture in tribal areas