Needs of smallholder farmers in India and mechanization-based solutions

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ReCAMA Workshop and Business-matching Event on Sustainable Mechanization for Smallholder Farmers

By

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Background

- India's foodgrain production is estimated at 316.06 million tonnes,

This is Result of:

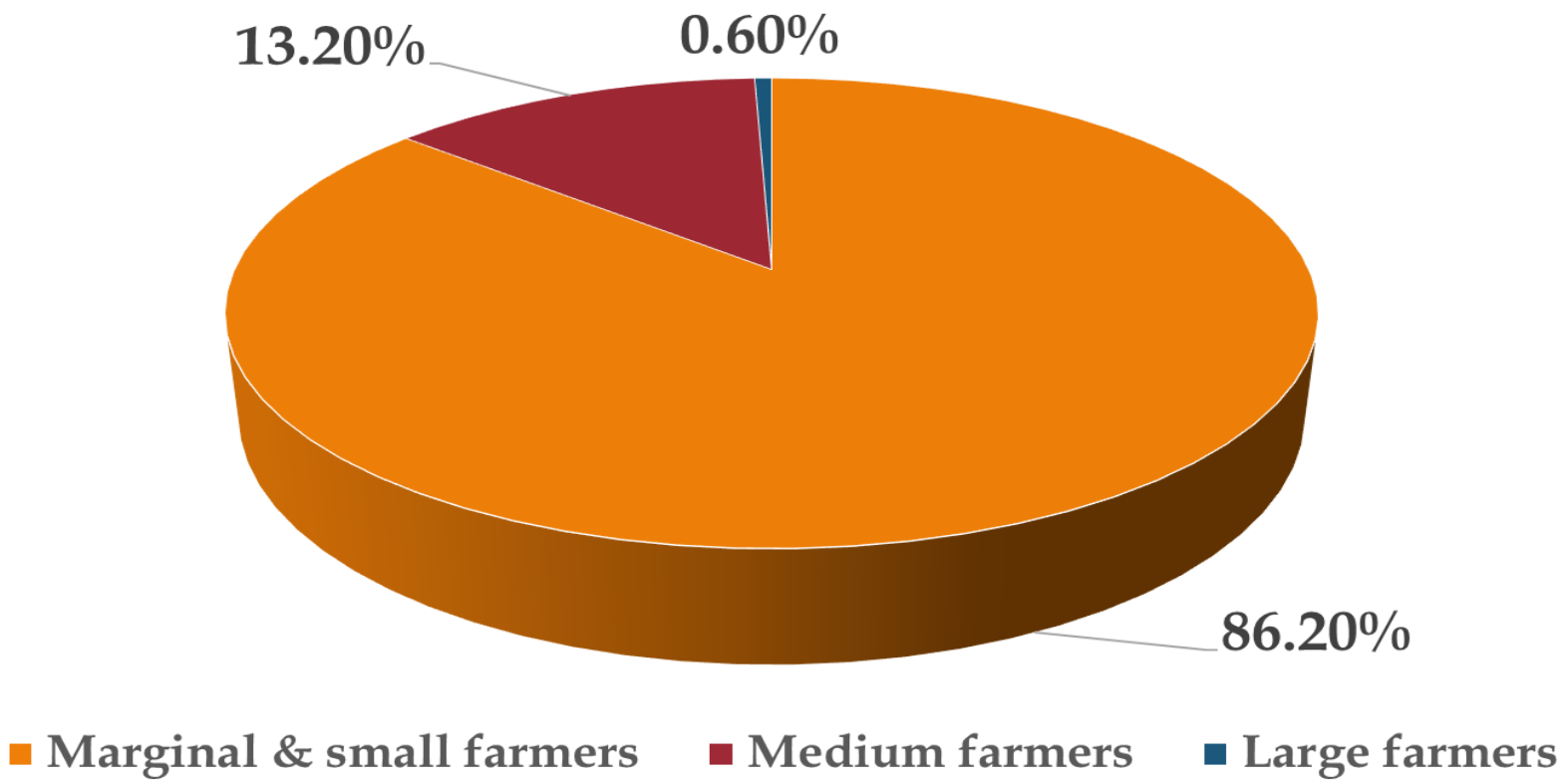
- Hard work of farmers,
- increased use of farm equipment and machinery,
- efficient research of scientists, and
- farmer friendly policies of the Government.

Background

- Domestic tractor sale is highest (45%) in 41-50 hp range followed by 36% in 31-40 hp range.
- Power availability on Indian farms is 2.85 kW/ha
- Expected to go up to 3.5 kW/ha by 2024-25.
- Improved implements has potential to increase productivity up to 30%
- Improved implements has potential to reduce cost of cultivation up to 20%.
- Estimated that agricultural workers of total work force would drop to 25% by 2050 from 55% in 2011.
- Thus, there is a need to enhance the level of farm mechanization in India.

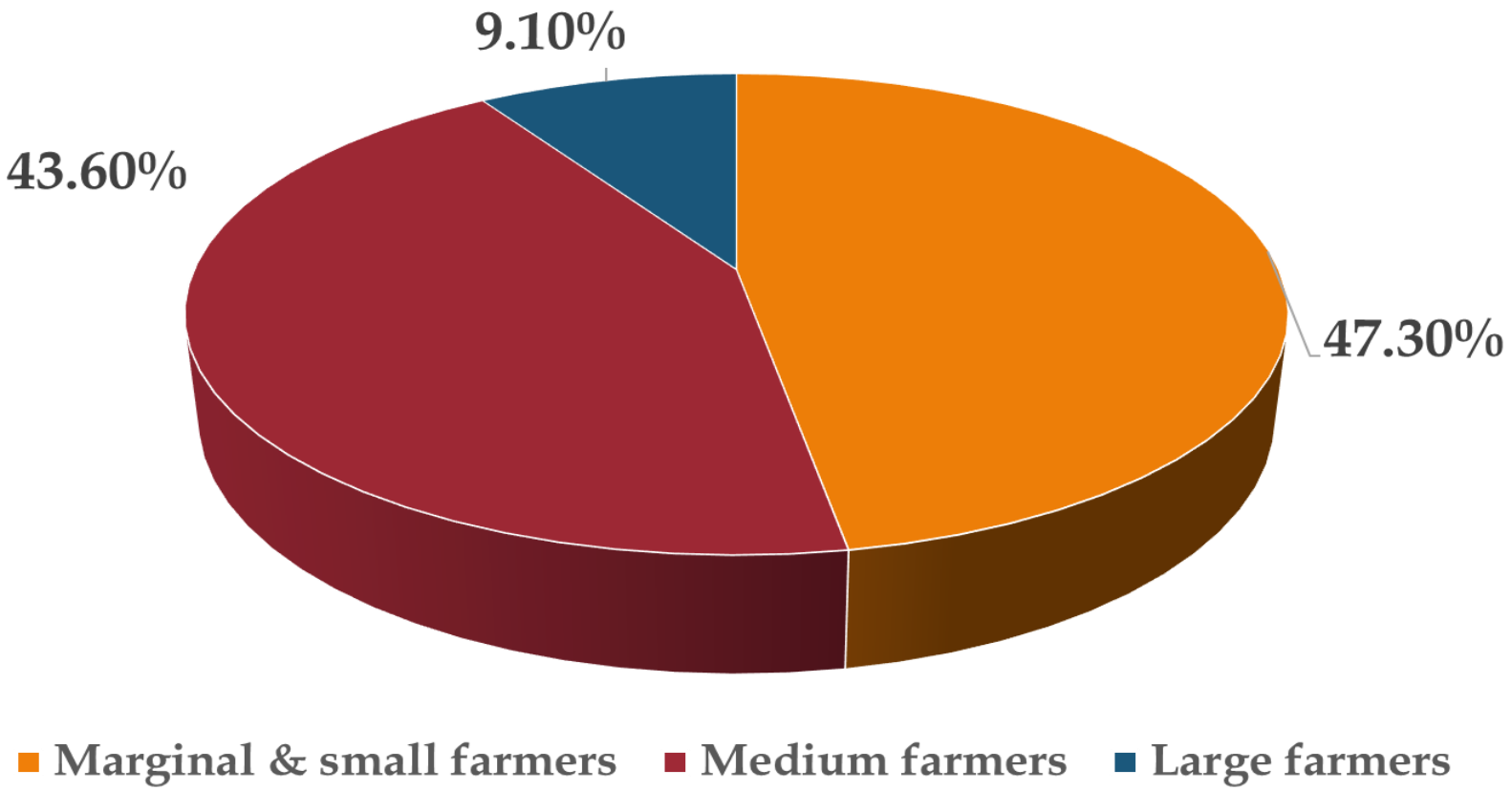
Number of land holdings

Total 138 million farmers

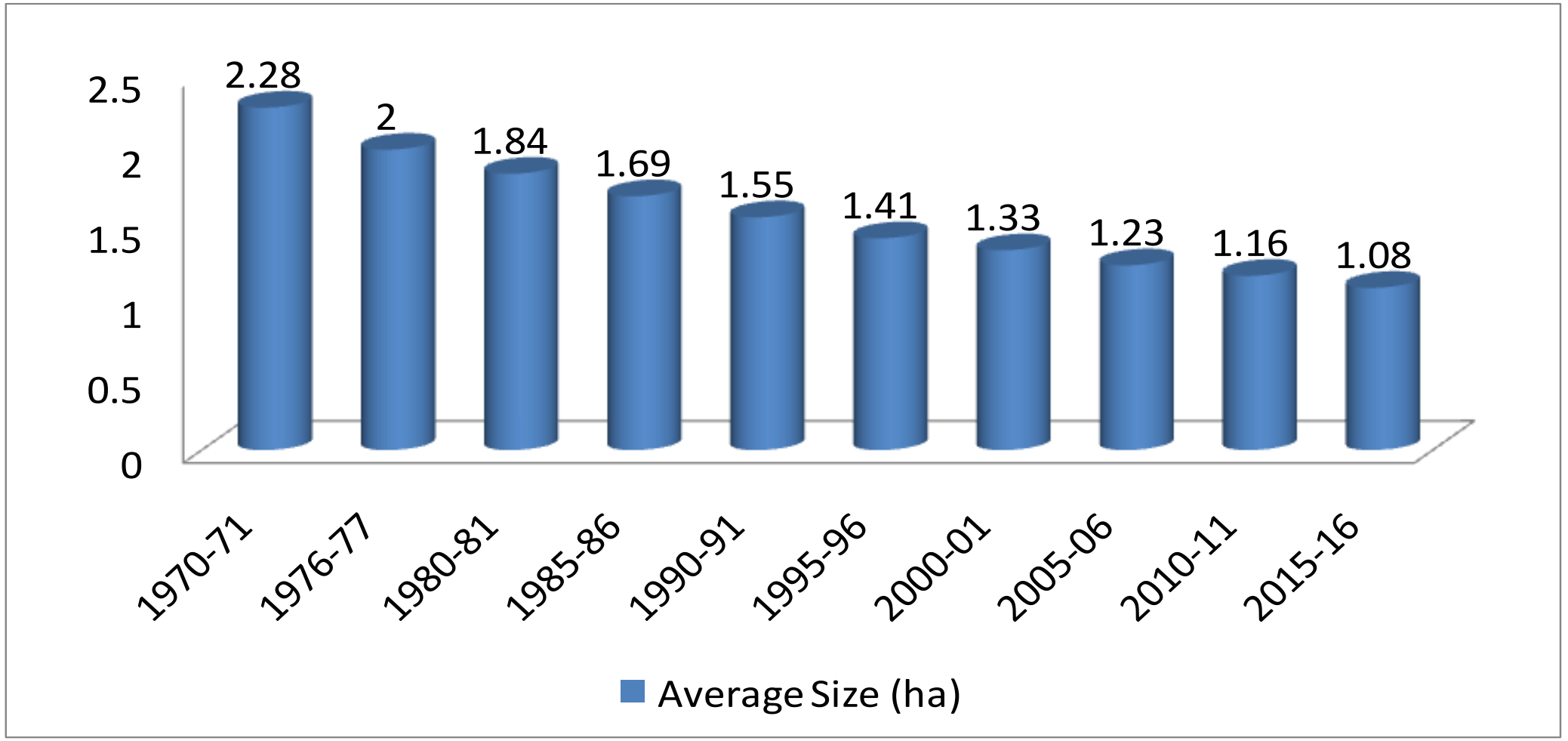


Net cultivated area

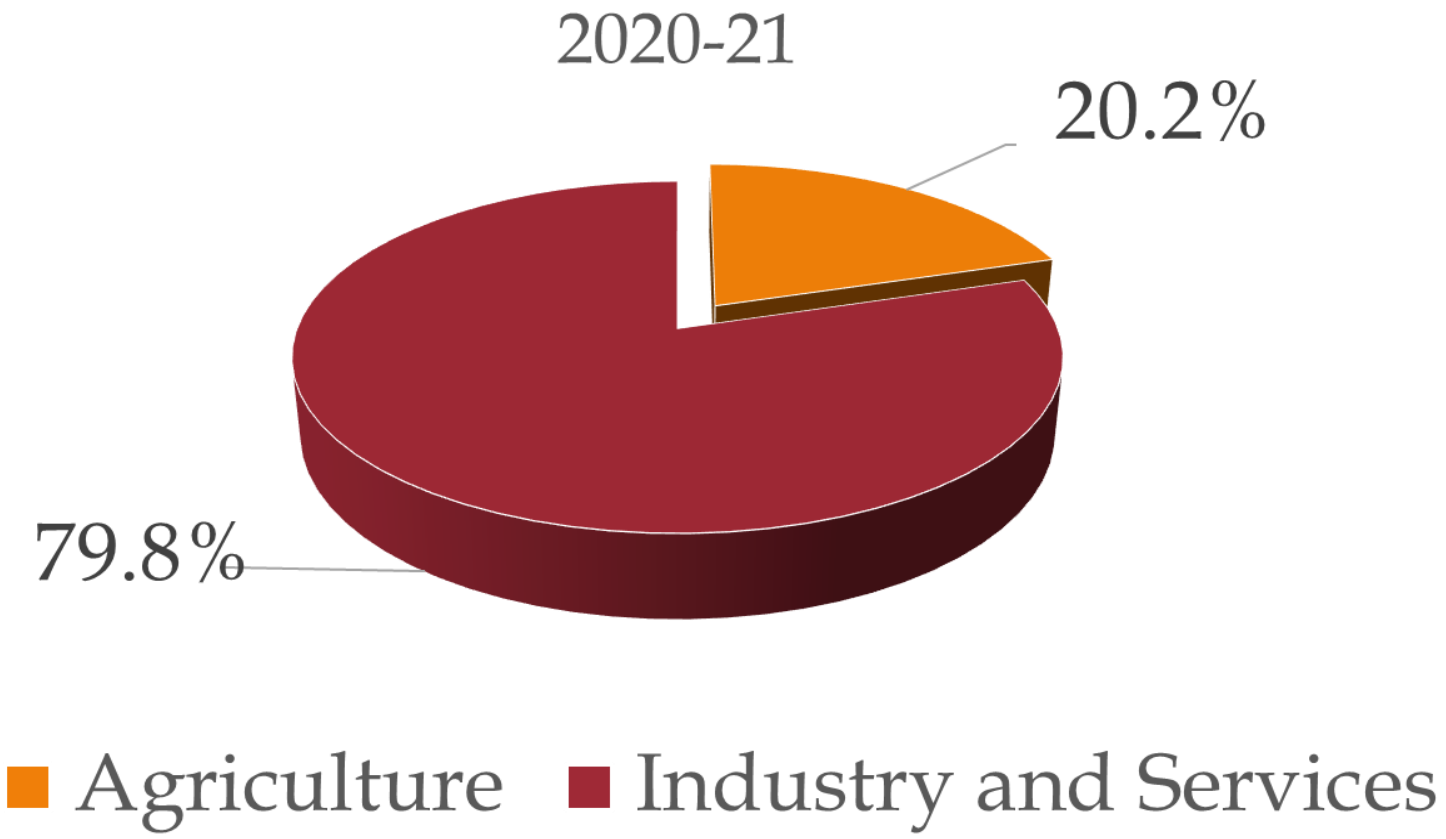
Total 140 million ha



Average size of operational holdings



Indian Agriculture Contribution to GDP



Level of Farm Mechanization in India

Operation	Percentage
Soil working and seedbed preparation	60
Seeding and planting	40
Plant protection	50
Irrigation	45
Harvesting and threshing	70-80% for wheat and rice and less than 25% for others

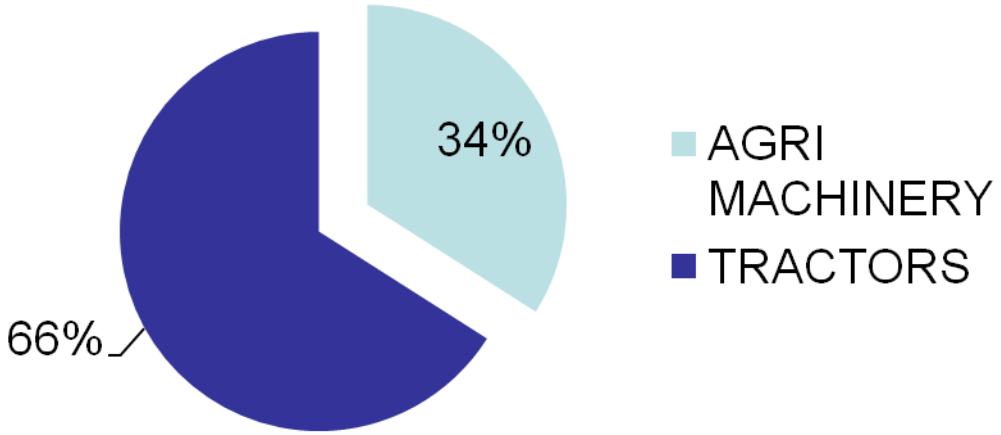
Overall about 55%

Status of Agricultural Machinery Industry

MANUFACTURING UNITS

- 250 Medium to Large Scale Units
- 2,500 Small Scale Industries

10 billion USD with CAGR growth 5-8%



Small farmers in India need: Pull based mechanization

- Affordable No-till seeders
- Weeding equipment for raw crops: cotton, soybean, sugarcane etc
- Residue management tools, Farm waste – compost management
- Multipurpose farm prime movers
- Precision spraying equipment to reduce input costs
- Multi grain seeders and direct seeding equipment for rice
- Harvesters for cotton, Soybean and other field crops
- Harvesters for vegetables and fruits
- Oil palm cultivation, spraying, harvesting and processing

Small Scale Farm Mechanization

- Access to credit and extension services, economic status, and training positively influence farm mechanization.
- Farmers have poor access to inputs, minimal or lack of extension services support and use suboptimal management practices.
- The farmers lack precision in use of inputs to boost productivity.

Hence, along with enhanced provision for credit and training, an agricultural policy that aims to improve access to farm machinery should target marginalized and poor farmers to sustain agricultural production and ensure food security.

Issues/challenges for mechanization

Majority of farmers in India are small and marginal and mainly engaged in conventional farming. Although shifting from conventional to commercial farming is vital to augment farm income.

Financial barrier accompanied by lack of timely access to farm machinery often hinders the required shift from occurring. In this context, scaling up farm mechanization in India requires in-depth understanding of the challenges faced by the multiple stakeholders, including farmers, machinery producers and traders (importers, distributors, wholesalers), and also agricultural universities and research institutions that develop and adapt farm machinery to local conditions

Major challenges to farm mechanization are:

- Lack of transparency on government subsidy distribution process results in the elite farmers benefiting most from the program rather than the small and marginal farmers.
- Farmers lack knowledge on farm machinery types, quality, and multipurpose uses.
- Lack of workshop for repair and maintenance services of farm machinery, including power tillers, mini-tillers, and laser land levelers.
- Spare parts of farm machinery are expensive and not readily available.

Major challenges to farm mechanization are:

- **Limited knowledge of grassroots extension workers in agricultural engineering and mechanization at the farm level.**
- **Although farm machinery are available on rent, its number is limited, and the owner charges more fees during the peak season.**
- **Irregular and unstable energy supply.**
- **Domestic manufacturers have a limited distribution network with uncertain sales and marketing.**
- **Polices to support the local manufacturer are lacking, resulting in an uneven playing field between importers and domestic manufacturers.**

Major challenges to farm mechanization are:

- **Traders (importers, distributors, wholesalers) face high market distortions due to frequent changes in policies such as farmers' purchase of machinery under government subsidy or with grants from development organizations.**
- **Low priority to farm mechanization in the national agricultural research system resulting in a lack of adequate qualified scientists and modernized physical facilities for fabrication of agriculture machinery and equipment design, testing, and validation.**

• Future of Agricultural Mechanization

- **Farm mechanization to cover all food production systems**
- **Affordable tools and equipment for small farmers : Small farms produce diversified nutritious food locally**
- **More emphasis on Input cost reduction and wastage reduction**
- **More emphasis on water harvesting and optimum water usage**
- **More natural conservation practices that give resilience**
- **More no tillage farming adopting Conservation Agriculture**
- **Local food processing, storage and distribution systems**
- **Increase in Control environment agriculture**
- **Less usage of chemicals and less energy usage at farm**
- **More electrified farm equipment including use of solar energy**

Thank You