



Agricultural Machinery Manufacturers  
Association (AMMA-India)



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# **Cutting-Edge Technologies in Agricultural Mechanization**

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***By***

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**1<sup>st</sup> Tractor and Farm Machinery Manufacturers Meet was organized on 16-17 January 2010 at Punjab Agricultural University, Ludhiana with special agenda of formation of All India Agricultural Machinery Manufacturers Association (AIAMMA).**

**The All-India Agricultural Machinery Manufacturers Association (AMMA-India) was established in the year 2010 on January 17 at the behest of Department of Agriculture and Cooperation (Mechanization and Technology Division), Ministry of Agriculture and Cooperation, Govt. Of India and it represents the machinery manufacturers of agriculture and allied sectors.**

**Presently there are 777 members in the association.**



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**AMMA-India is member in various Technical and Policies related committees of Mechanization and Technology Division of Department of Agriculture & Cooperation, Ministry of Agriculture and Farmers Welfare, Govt. of India.**



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**AMMA-India is member in various committees of Bureau of Indian standards (BIS) i.e.**

**FAD 11 (Agricultural Machinery and Equipment Sectional Committee)**

**FAD 20 (Agriculture and Food Processing Sectional Committee)**

**FADC (Food and Agriculture Division Council)**

**also represents BIS in various ISO Strategic Advisory Groups (SAG)**



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**AMMA-India is also associated with followings in organizing agricultural machinery exhibitions:**

- **CODISSIA Intec Technology Centre Coimbatore**
- **Agri Asia Gandhinagar by Radeecal Communications**
- **Agritech Bharat, New Delhi by Radeecal Communications**



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## Status of Agricultural Machinery Industry in India

This is unorganized sector in Bharat mostly with small and medium categories of industries.

### MANUFACTURING UNITS

- 250 Medium to Large Scale Units
- 2,500 Small Scale Industries
- 15,000 Tiny Industries
- 10,00,000 Village level Artisans

**12 billion USD (Rs. 90,000 Crores) annual Industry,  
CAGR growth 5-8%**



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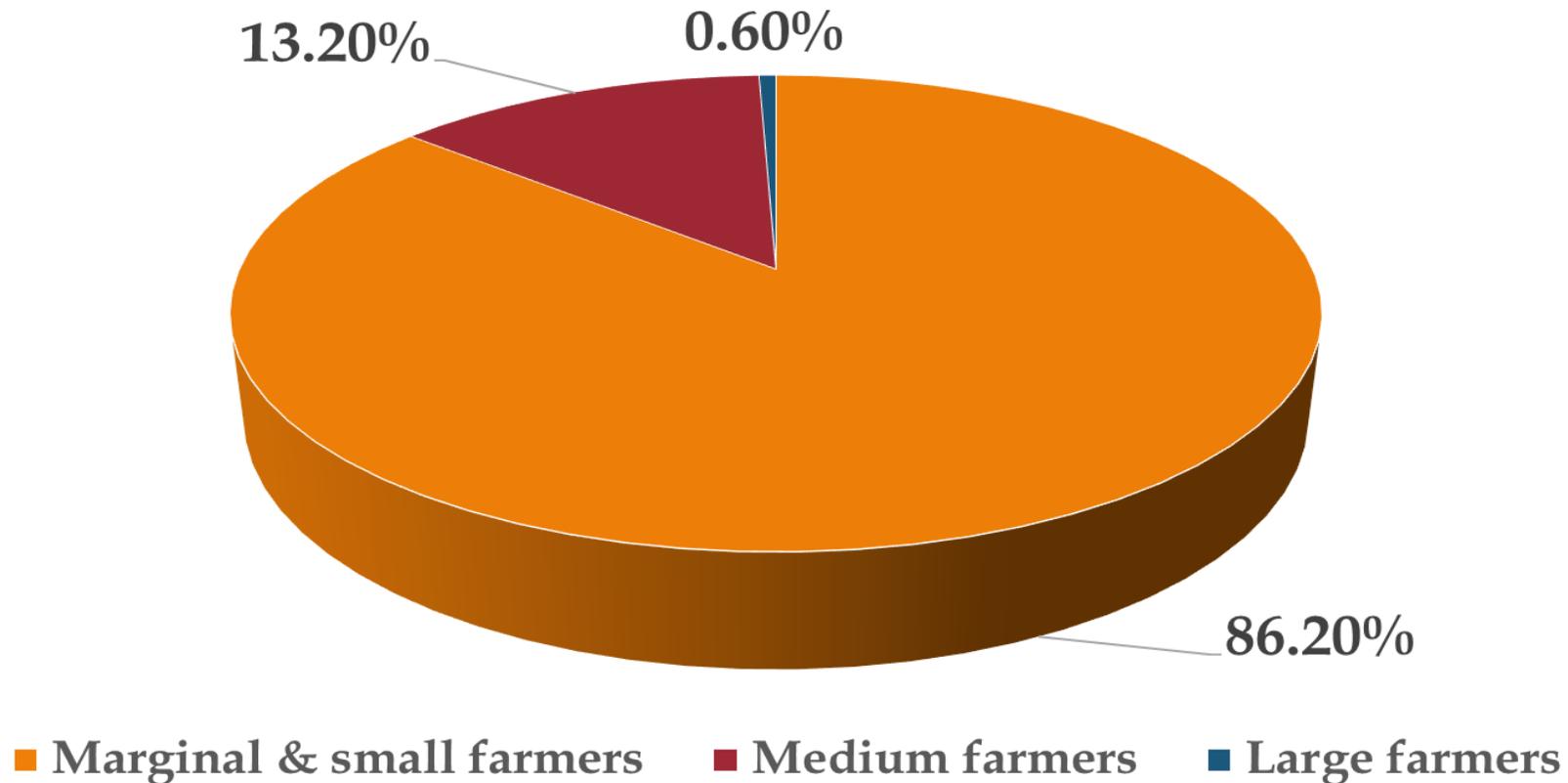


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## Number of land holdings

Total 138 million farmers





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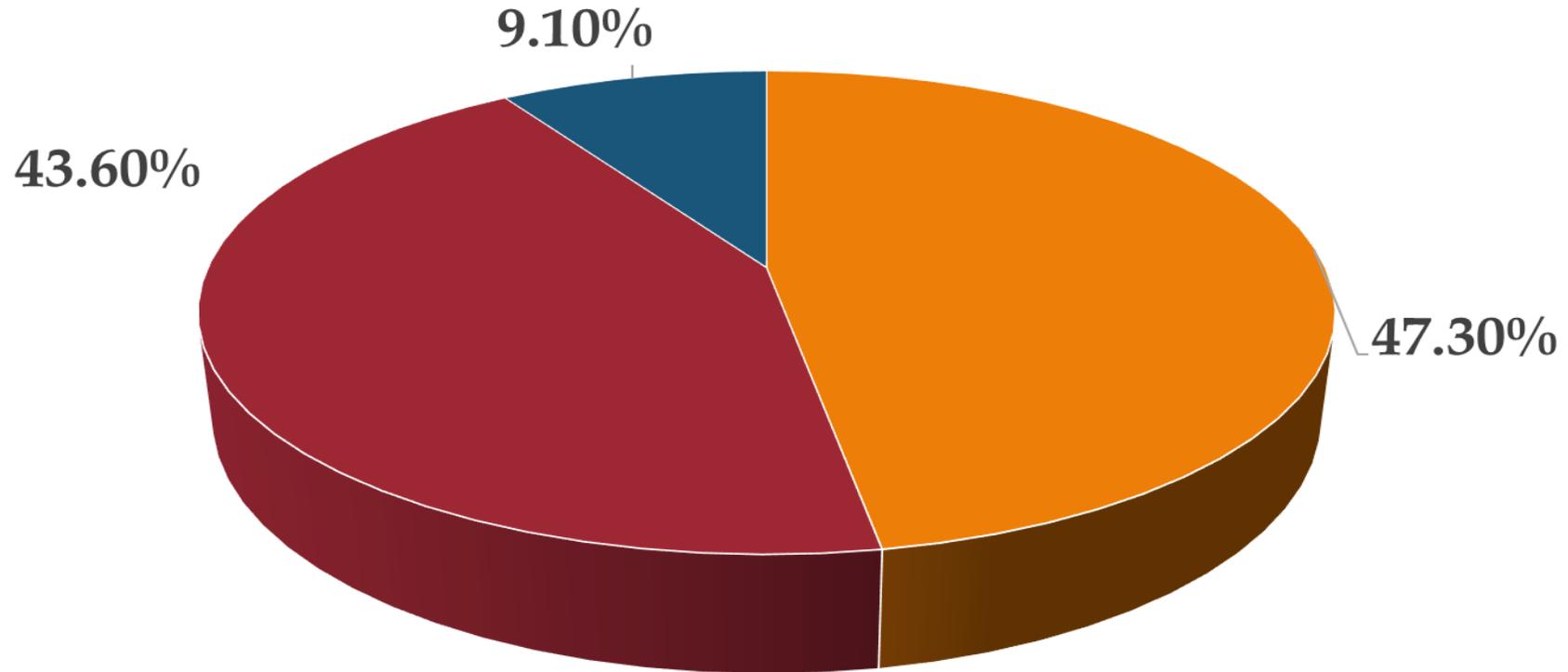


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## Net cultivated area

Total 140 million ha



■ Marginal & small farmers ■ Medium farmers ■ Large farmers



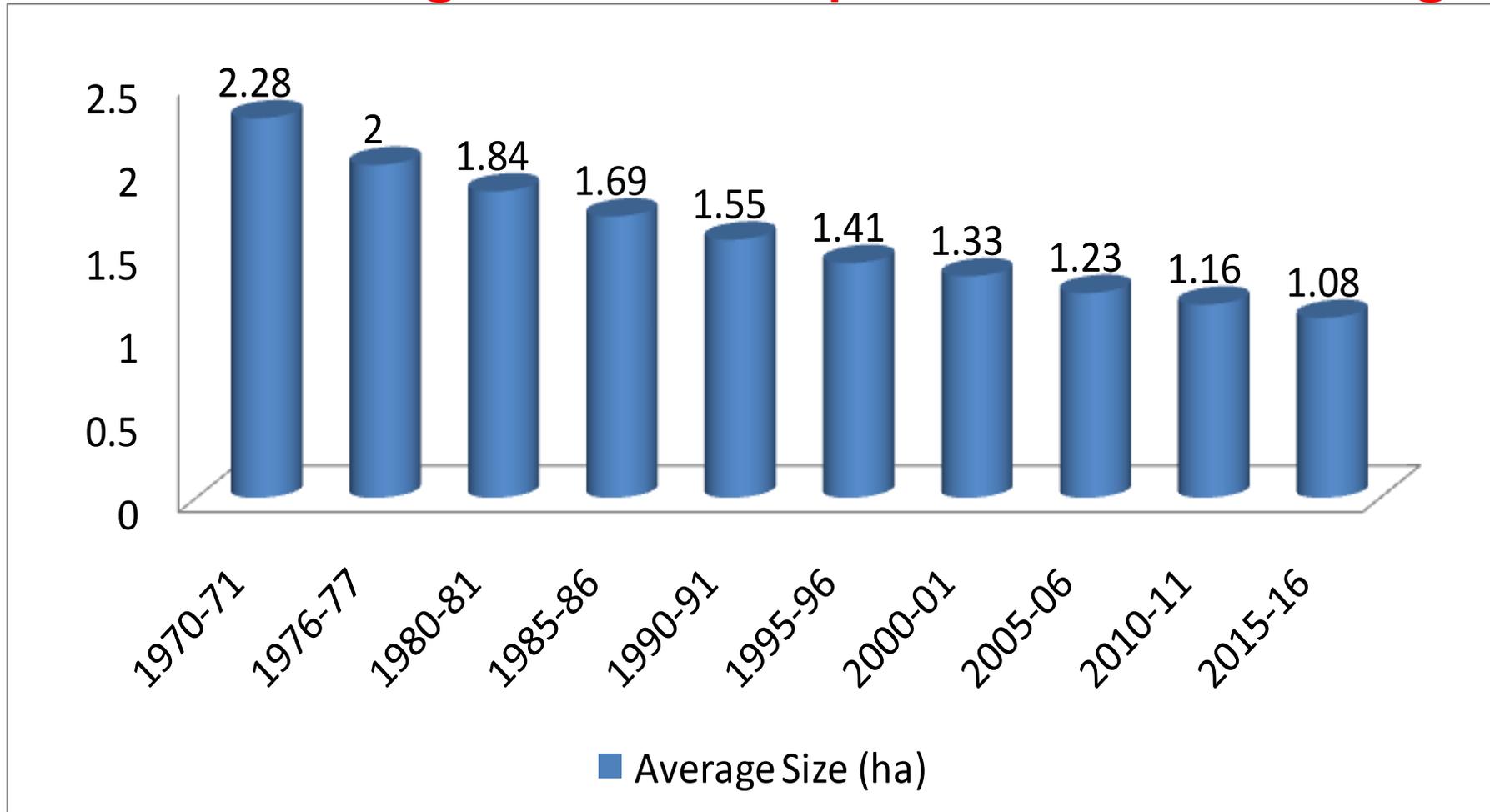
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## Average size of operational holdings





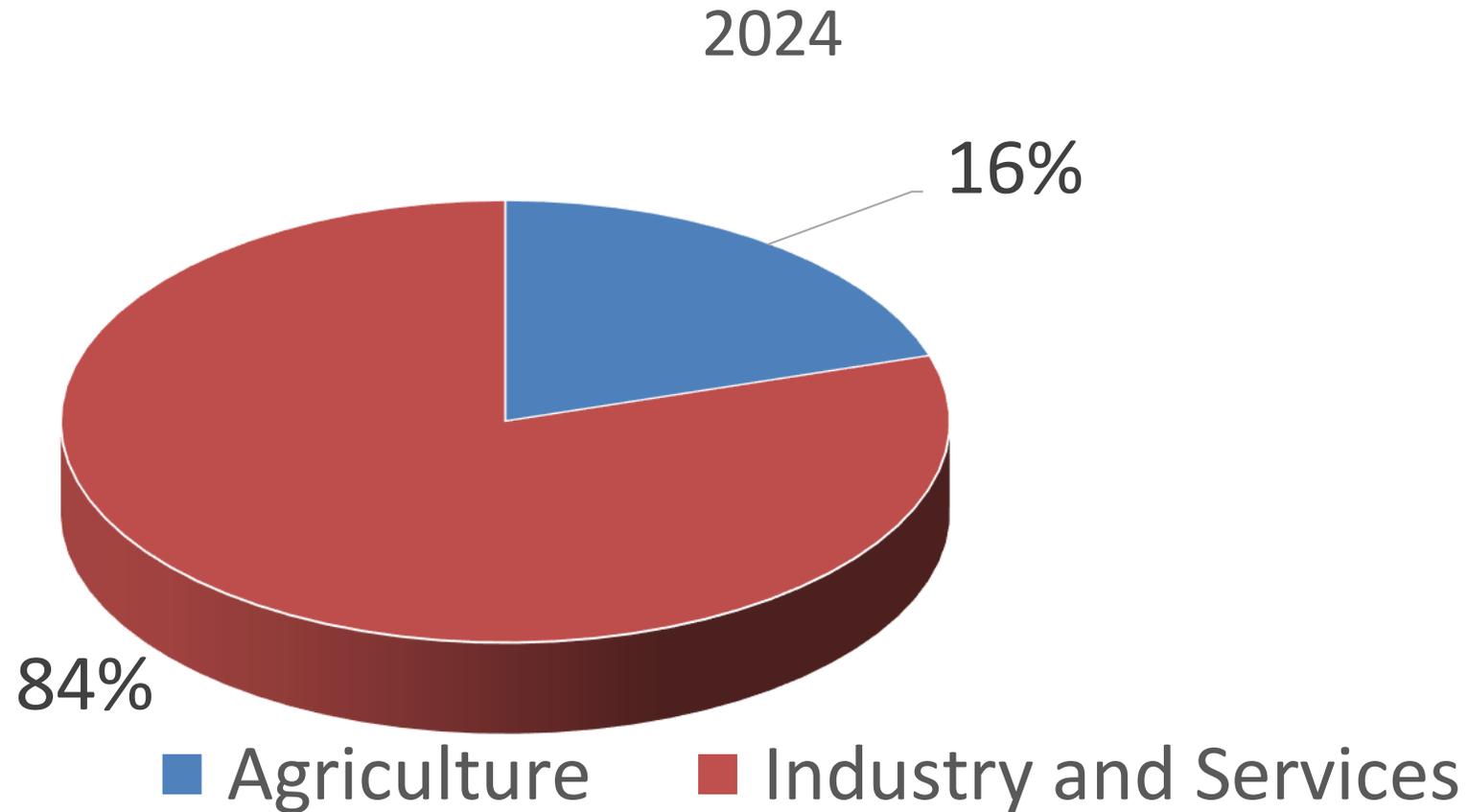
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## Indian Agriculture Contribution to GDP





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- **Indian agriculture has travelled many folds after 1950 till date in terms of**
  - **Net sown area : 20% (119 to 140 Mha)**
  - **Cropping intensity : 40% (111% to 156%)**
  - **Food grain production : 534% (51 to 332 Mt)**
  - **Horticulture production : 352 Mt**
  - **Irrigated area : 280% (21 to 80 Mha)**



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## Level of Farm Mechanization in India

Operation	Level of Mechanization, %
Soil working and seedbed preparation	60
Seeding and planting	40
Plant protection	50
Irrigation	45
Harvesting and threshing	80-90% for wheat, rice and potato and less than 50% for others
Overall	About 55%



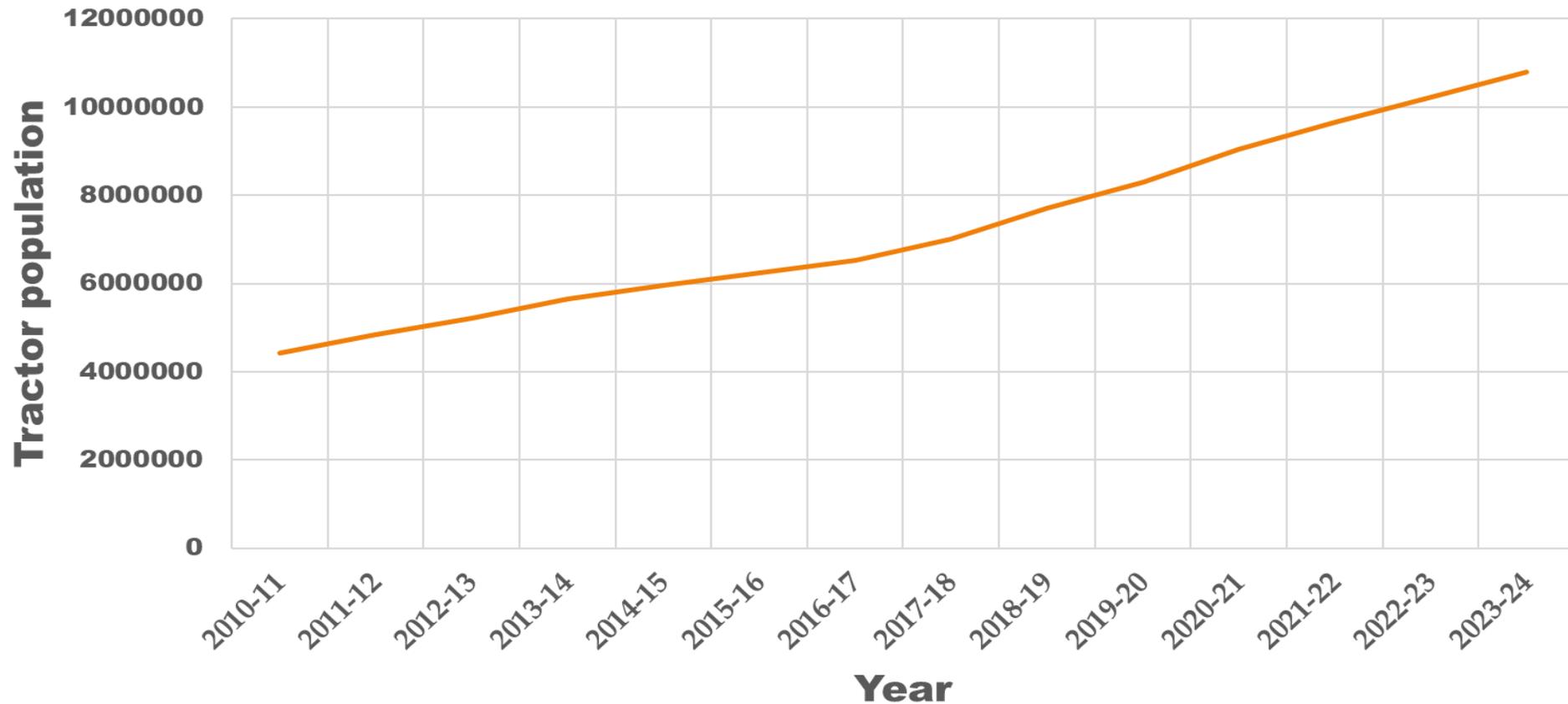
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## Tractor population in the country





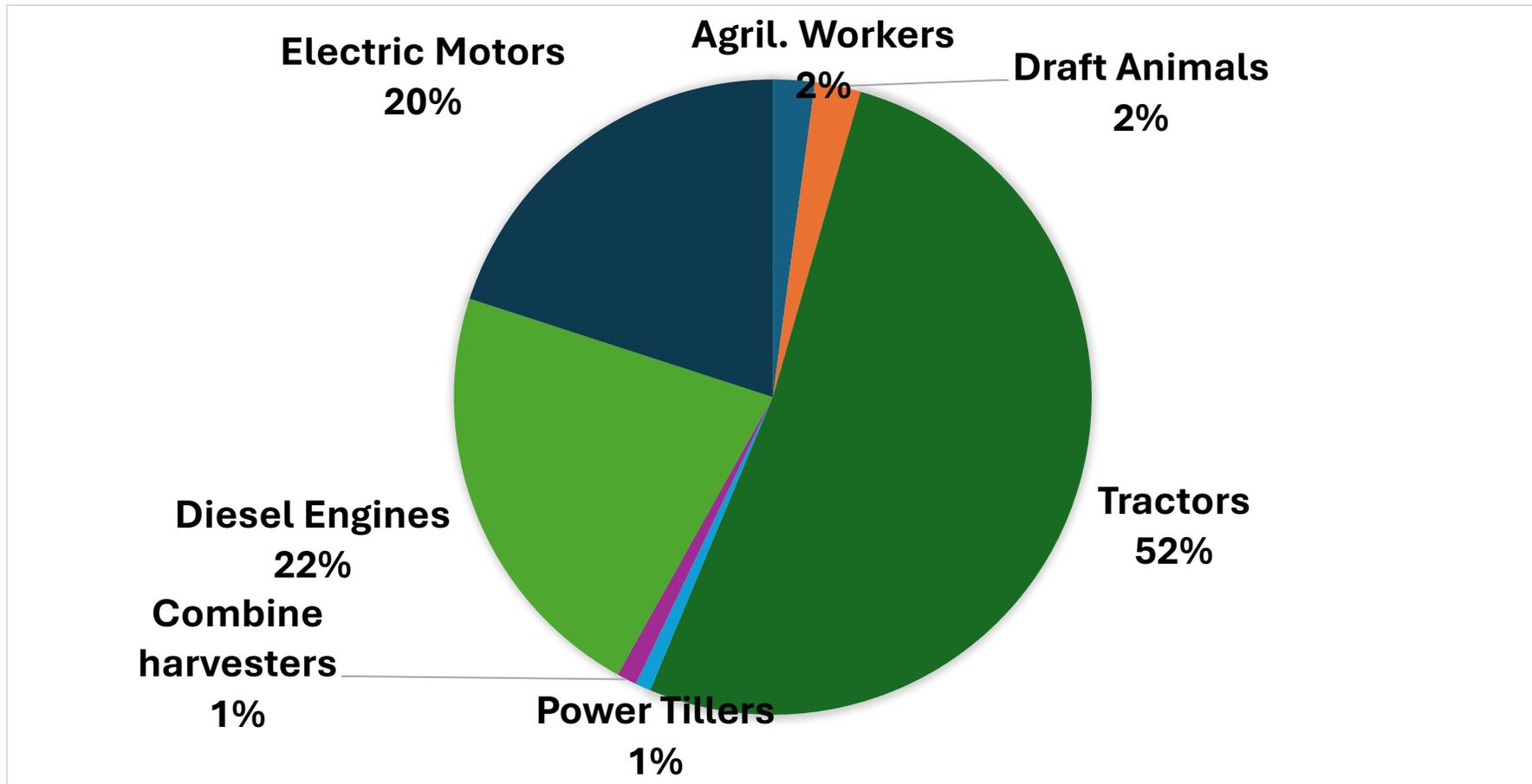
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## Current share of different source of farm power in total Farm Power Availability





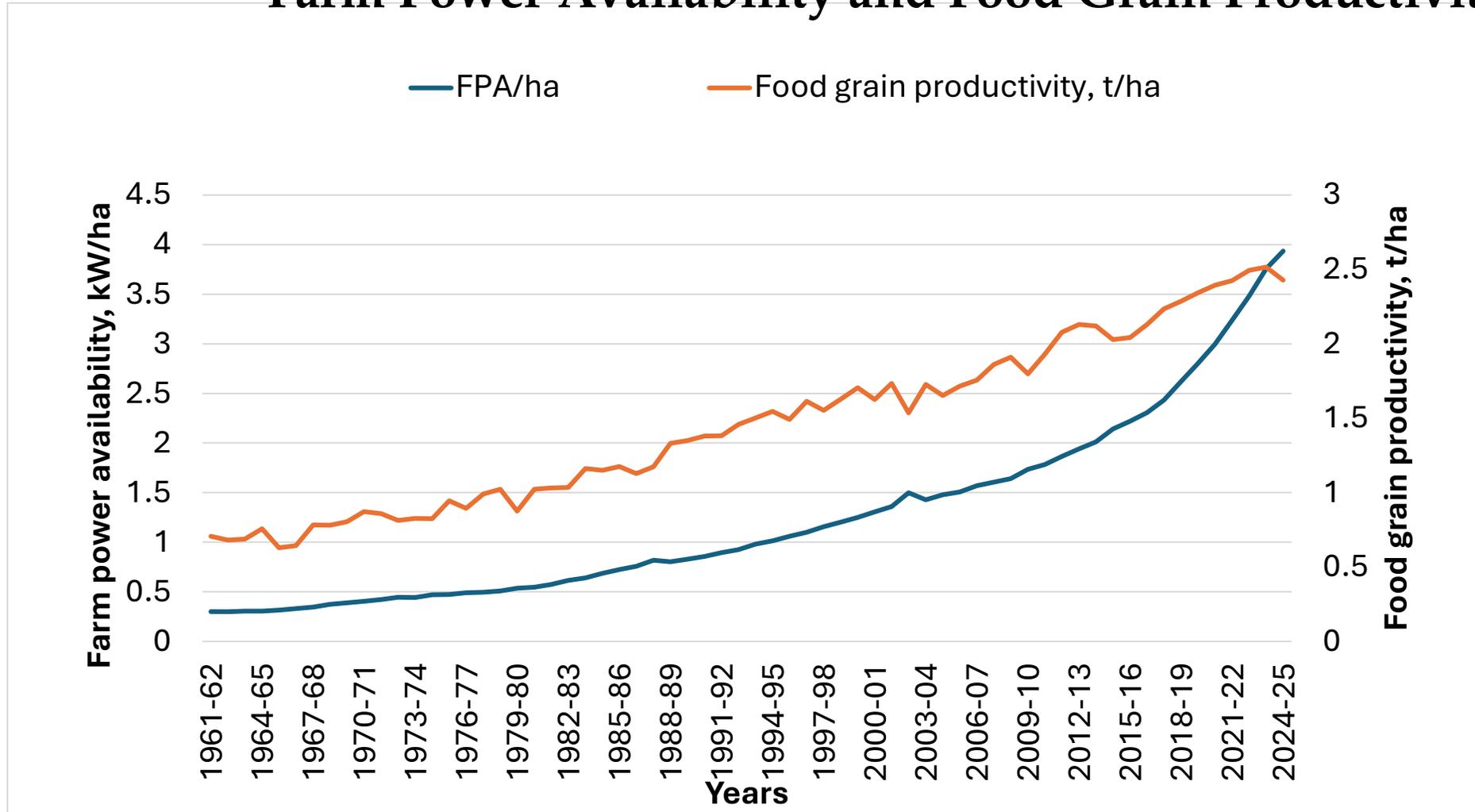
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## Farm Power Availability and Food Grain Productivity





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**Precision Agriculture holds the key role to achieve higher yields with reduced wastage of inputs and it needs thrust on Farm mechanization for all crops.**



**Self-propelled single row  
vacuum planter**



**Tractor operated Pneumatic planter**



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## **Conservation Agriculture Machinery**

**Conservation agriculture needs to be popularised. Though no-till direct seeding equipment have been developed, these have to be adopted on large scale. Residue-In-situ machines are also not commonly used. Multi cropping practices need tools for field, horticultural, and forestry crops. Also, equipment for integrated farming with animal/poultry/fish are needed. CA equipment are mostly available for large farms and needs to be developed for small holder farms also.**



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## **Soil and water Conservation Machinery**

**Broad Bed Furrow (BBF) equipment has been used for many crops effectively in a few farms. This has to be widely adapted. No other soil/ water conserving and contour cultivation equipment are available. Though Drip irrigation systems have been accepted by many farmers for water saving and efficient irrigation, irrigation schedulers and controllers are yet to be accepted on a large scale.**



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## Developments in Use of AI/IoT /Robotic/Drone/Automation/Autonomous in Agricultural Mechanization

**Followings are some of the areas we are working with:**

- 1) IoT in agriculture**
- 2) Unmanned ground vehicle**
- 3) Smart agricultural Systems**
- 4) Remote sensing drones**
- 5) Auto pilot console**
- 6) Agricultural drones**



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**Fully  
Electric Self  
Propelled  
Boom  
Sprayer**



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## The Electric Unmanned Ground Vehicle

- Multipurpose utility & all terrain operations
- Load carrying up to 500 kg
- Trailer towing up to 2 tons
- Spraying systems up to 250L and 180° spraying
- Attachments for de-weeding and light tilling
- Swappable battery- 5 hours of operation
- Multiple options for vehicle control
- Autonomous capabilities enabling farm automation
- One Robot, Many Applications





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## **e-Tractor - The future is Autonomous The electric Tractor**

- 35-50 hp tractor
- Autonomous Capabilities
- Low Operation cost per hour.





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## Unmanned Aerial Spraying Systems - Drone

- **UASS (Unmanned Aerial Spraying System), commonly called as drone sprayer and drone seeder, already in use in the country for several crops.**



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## **Outlook of Agricultural Machinery Industry**

- **Short term profit industries**
- **Resistance to change frequently with variant**
- **Collaboration and knowledge sharing is very little**
- **Limited attempt for smallholder farmers**
- **Not much interest in resource intensive production**
- **Access to finance is very poor**
- **Affordability to latest technologies/machines is very limited**
- **Infrastructure development is very poor in absence of easy finance**
- **Market insight is very poor**
- **Skill gap is there**



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**THANK YOU**