



Geographical Spread of Farm Implement Manufacturers in India

R. C. Kathiriya^{1*}, T. D. Mehta² and P. J. Makwana³

¹SRF, Department of Farm Machinery and Power Engineering, CAET, Junagadh Agricultural University, Junagadh – 362001

²Assosite professor, Department of Farm Machinery and Power Engineering, CAET, Junagadh Agricultural University, Junagadh – 362001

³Dept of Soil and Water Engineering, CAET, Junagadh Agricultural University, Junagadh- 362001

*Corresponding author. E-mail: kathiriyaravi5@gmail.com

The adoption of mechanization technology depends upon the local manufacture and after sales-services besides credit and financial incentive provided by the government. The manufacture of agricultural machinery in India is quite complex comprising from village artisans, tiny units, small scale industries to State Agro Industrial Development Corporations and organized tractor, engine and processing equipment industries. Traditional hand tools and bullock drawn implements are largely fabricated by village craftsmen and small scale industries. Organized sectors manufacture sophisticated machinery such as tractors, engines, mills and dairying equipment. The small-scale industries seldom have Research and Development (R&D) facilities and they depend upon public institutions for technological support. They require not only drawings but also prototypes and technical guidance to manufacture the equipment. These industries however, upgrade the technology with experience. As per Agricultural Machinery Manufacturers Association (AMMA) of India, there are approximately 250 medium to large scale units, 2,500 small scale industries, 15,000 industries and 100,000 village level artisans.

Village craftsmen

Village artisans are the main source of supply, repair and maintenance of hand tools and traditional implements. These include implements and tools like spade, sickle, local ploughs, sowing devices, yokes, leveler, grinding wheels, hand mills, hand operated milk churning tools, winnowing devices, sieves, wooden storage structures, bullock carts, manual water lifting devices etc. If village artisans are properly trained they can accelerate the adoption of mechanization inputs due to their proximity with farmers.

Tiny and small-scale industries

The tiny and small scale units fabricate the bulk of improved agricultural machinery such as ploughs, cultivators, disc ploughs and harrows, seed drills, planters, plant protection equipment, reaper harvesters, combine harvesters, threshers, cleaners, graders, mills, crushers, oil expellers, diesel engines, irrigation pumps, dairy machinery etc.

Some of these units also fabricate implements and equipment for tractor and power tiller manufacturers. They may lack good machine tools and heat treatment facilities. Some of them are more organized and have better fabrication tooling and thus are able to manufacture better quality machinery. The bulk of the farm machinery is made by the small scale industries. They use materials from mild steel to medium carbon steel. Heat treatment practices are generally inadequate except in few industries manufacturing knife and tillage tools. Equipment manufactured by the small scale industry (SSI) units includes soil working tools, seeding and planting equipments, hand hoes, sprayers and dusters, harvesting and threshing equipments, like reapers, threshers, combines, maize shellers, cleaners, graders, mills, oil expellers etc.



Organized farm machinery industries

The medium scale and large scale industries manufacture diesel engines, electric motors, irrigation pumps, sprayers and dusters, land development machinery, tractors, power tillers, post-harvest and processing machinery and dairy equipment. There are 22 tractor, 5 power tiller, 200 diesel engine, 600 irrigation pump, 48 combine and 188 earthmoving machinery manufacturers as given in Table 1 below. The marketing of agricultural machinery by these industries is through their network of dealerships and, therefore, these manufacturers are able to provide effective after-sales service. These industries upgrade their product and process technologies through their own R&D efforts, in addition to technological support from external agencies.

Table 1: Major Farm Machinery Used in India

| Name of Machinery | Market Size Annually (units) | Annual Industry Size (crores) |
|------------------------|------------------------------|-------------------------------|
| Tractors | 6,00,000 | 34,200 |
| Power Tillers | 56,000 | 706 |
| Combined Harvesters | 4,000 - 5,000 | 770 |
| Threshers | 1,00,000 | 1,230 |
| Rotavators | 60,000 - 80,000 | 693 |
| Rice Transplanters | 1,500 -1,600 | 62 |
| Self-propelled Reapers | 4000 - 5,000 | 45 |
| Zero Till Seed Drills | 25,000 - 30,000 | 132 |
| Multi-Crop Planters | 1,000 - 2,000 | 8 |
| Laser Land Levellers | 3,000 - 4,000 | 129 |
| Weeders | 25,000 | 1,275 |

Source: Trends of Agriculture Mechanization in India, CSAM Policy Brief, June 2014

Major farm machinery used in India includes tractors, threshers and power tillers. Among these, the biggest market in terms of annual sales is that of tractors (around 6 lakh units annually), threshers (around 1 lakh units annually) and power tillers (around 56,000 units annually) as given in Table 2. Among farm machinery, tractors are most widely used by the domestic farmers with the total market size estimated at around 34,000 crores annually.

**Table 2: Status of Farm Mechanization Industry in India**

| Equipment manufacturers | Number of units |
|--------------------------------|------------------------|
| Agricultural tractors | 22 |
| Power Tillers | 5 |
| Irrigation Pumps | 600 |
| Plant Protection Equipment | 300 |
| Combine Harvesters | 48 |
| Reapers | 60 |
| Threshers | 6,000 |
| Seed Drills and Planters | 2,500 |
| Diesel Oil Engines | 200 |
| Plough, Cultivators, Harrows | 5,000 |
| Chaff Cutters | 50 |
| Rural artisans | >1 Mn |

Source: Presentation by Dr. Kanchan K. Singh, ADG (Engg.) ICAR in 2nd Regional Forum on Sustainable Agricultural Mechanization at Serpong, Indonesia 9-11 September 2014.

Today, India is recognized as a leading country in the world for the development and manufacture of agricultural implements and equipments. The range of equipment includes tractors, harvesting and threshing equipment, plant protection machines, irrigation and drainage pumps, sprinkler systems, land development machinery, dairy and agro-processing equipment etc. India is exporting increasing volumes of these to various countries including USA, Africa and Asia.