



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)



Country Presentation Paper – India

10th Session of the Technical Committee of CSAM

&

**Regional Workshop on Establishing a Regional Database
Of Agricultural Mechanization in Asia and the Pacific**

17-19 November 2014

Siem Reap, Cambodia

DR. SURENDRA SINGH



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

The all India Agricultural Machinery Manufacturers' Association (AMMA-India) was established in the year 2010 on January 17 represents the machinery manufacturers of agriculture and allied sectors. The main objectives of association are:

- Augmenting and intensifying agricultural mechanization related activities in different agro-climatic zones.**
- Promoting scientific development and technological up-gradation of need based agricultural machines and power sources.**
- Providing technological coordination, management and advisory back-up to the members of AMMA-India.**
- Providing effective liaison with Government organizations, NGOs and agencies sponsoring national and international fairs/meets and to establish institutional relations for implementation of appropriate policies and initiatives to promote growth of agricultural mechanization.**



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

**The Association is Registered
Under Society Act**

**With
416 members**



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

Power availability on Indian farms (in millions)

Year	Agricultural workers	Draught animals	Tractors	Power tillers	Motors & Engines
1990-91	183	71	1.2	0.03	13
2000-01	215	60	2.54	0.11	20
2009-10	243	52.6	4.00	0.26	25.0
2013-14	272	52	5.237	0.441	25.5



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

Sales of Tractors and Power Tillers in India

Tractor sale



Power tiller sale





AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

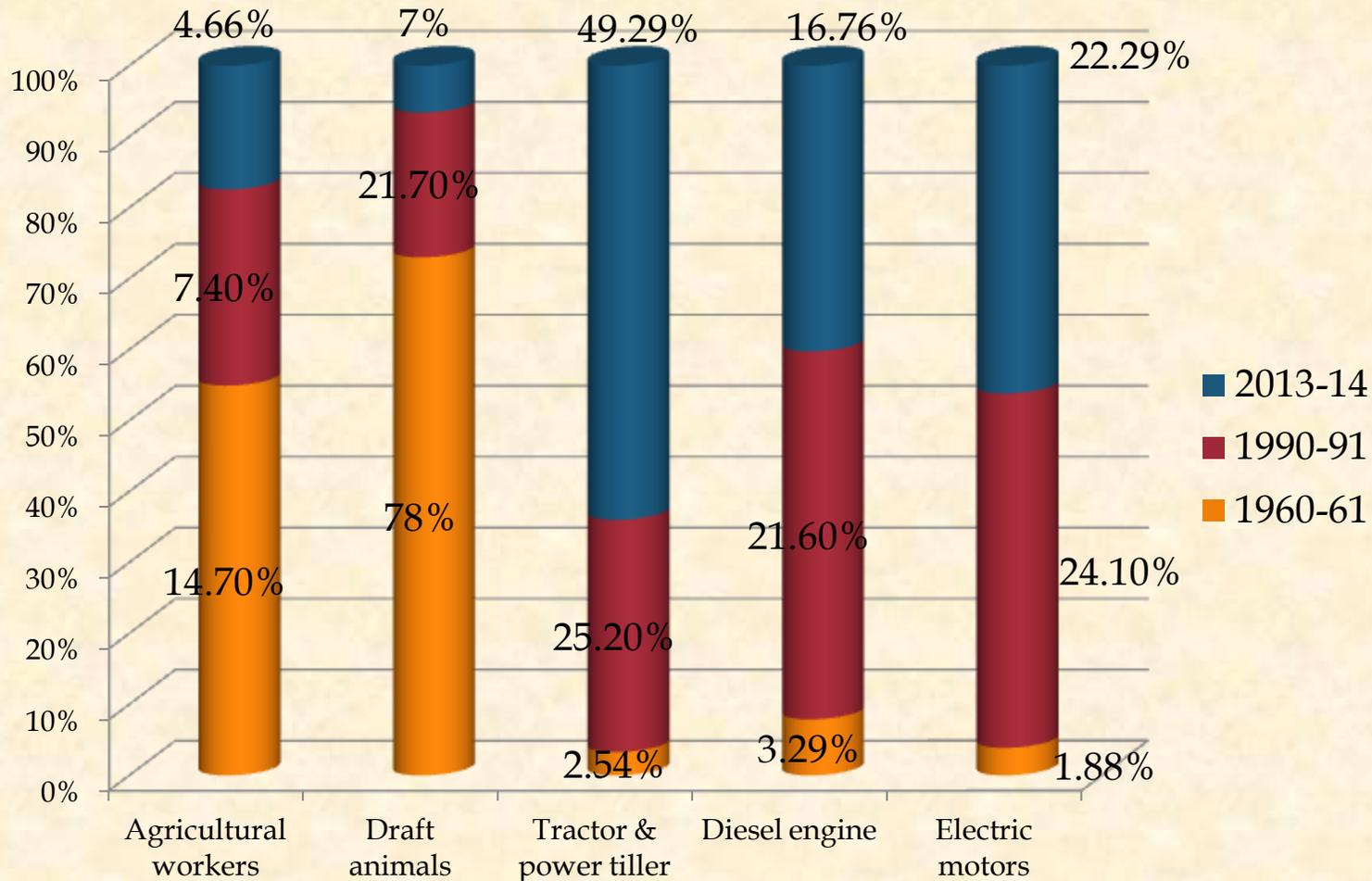
Cropping intensity, Power availability on Indian farms

Year	Cropping intensity (%)	Productivity (t/ha)	Power available (kW/ha)	Power per unit production (kW/t)	Net sown area per tractor (ha)
1965-66	114	0.636	0.32	0.50	2162
1975-76	120	0.944	0.48	0.51	487
1985-86	127	1.184	0.73	0.62	174
1995-96	131	1.50	1.05	0.70	84
2004-05	135	1.65	1.47	0.89	47
2009-10	139.2	1.85	1.73	0.96	36
2013-14	141	2.11	2.02	0.96	27



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

Power availability on Indian farms from different sources (%)





AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

Power required by 2020

Item	2020-21
Power, kW/ha	2.50
Agril. Workers, millions	280
Draft animals, millions	38
Tractor, millions	7.5
Power tiller, millions	1.5
Diesel engine, millions	9.5
Electric motors, millions	21



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

Annual market of major farm machinery used in India

Item	Numbers	Item	Numbers
Tractors	500,000	Power tillers	50,000
MB plow	45,000	Rotavator	100,000
Cultivators	150,000	Harrows	120,000
Seed-ferti drills	60,000	Planters	15,000
Rice transplanters	3,000	Power weeders	35,000
Reapers	15,000	Threshers	60,000
Combine harvesters	3,500	Trailers	150,000
Sprayers (TD)	10,000	Laser land levellers	2,500
Potato diggers	30,000	Rotary hoes/Power weeders	25,000



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

Source of data collection in agriculture sector in India

Indian Livestock Census was the only source of detailed information on the number of the livestock population category-wise. It provided information on the four components:

**Livestock,
Agricultural Implements and Machinery,
Poultry, and
Fisheries.**

Farm Machines/Equipment/ covered were 55 comprising of

**7 Manually Operated Implement,
8 Animal operated Implements,
3 Plant Protection Equipment,
6 Irrigation Equipment,
21 Tractors and other Power operated Implements,
8 Equipment for Livestock and Poultry, and
2 Horticultural Tools.**



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

The first Livestock Census was carried out from December 1919 to April 1920. The Indian Livestock Census of 1951 was first official Census after attaining Independence with the initiation of the first five-year plan.

The Indian Livestock Census is conducted every five years. Enumeration is done on all-India basis and covers district-wise information with rural/urban break-up. It is a complete count of all the above-mentioned four components at a pre-defined reference point of time. The ultimate responsibility for conducting the census rests with the respective State Governments.



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

During the 10th Five Year Plan, at the Central level, work of Indian Livestock Census was transferred from the Directorate of Economics and Statistics (DES) in the Department of Agriculture & Cooperation (DOAC) to the Department of Animal Husbandry and Dairying (DAHD) under Ministry of Agriculture, Govt. of India.

Data pertaining to agricultural implements and machinery were collected on a regular basis till 2003 through Indian Livestock Censuses.



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

The 17th Indian Livestock Census, after a gap of five years, was to be conducted in 2002, but due to time taken by the transfer process of Livestock Census scheme from Department of Agriculture & Cooperation (DOAC) to Department of Animal Husbandry & Dairying (DAHD), it was delayed by one year and was conducted in October, 2003

It included

Manually Operated Implements: Seed-cum-fertiliser drill, Seed drill, Chaff cutter, Wheel hoe, Sprayer, duster, Rice planter and Thresher

Animal Operated Implements: Cultivator, Disc Harrow, Seed-cum-fertiliser drill, Leveler, Wetland puddler, Sugarcane crusher and Cart



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

Plant Protection Equipment: manual and power operated sprayers/dusters including tractor operated

Irrigation Equipment: Manual, Animal, Diesel Engine and Electric operated Pumps and Water lifting devices; Drip and Sprinkler.

Tractor and other Power Operated Implements: Power tillers; Wheel tractors; Crawler tractors; Mould board plough; Cultivator; Disc harrow; Rotavator; Seed-cum-fertiliser drill; Planter; Leveler; Potato diggers; Tractor operated combine harvester, Self-propelled combine harvester, Trailers; Paddy threshers; Wheat threshers; Multicrop threshers; Maize sheller; Sugarcane crusher; Reaper and Rice transplanter.

Equipment for Livestock and Poultry Incubators/Breeders: Milking machine; Hay harvesting machine; Straw reaper; Stationary baler; Manually operated, animal operated and power operated chaff cutters

Horticultural Tools: Hand tools ; Power operated tools



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

The 18th Indian Livestock Census was conducted in October, 2007, during which information on the following agricultural machinery was collected:

Animal operated implements: Wooden plough; Steel plough; Cultivator; Disc Harrow; Seed-cum-fertiliser drill/ Seed drill; Leveler; Wetland puddler; Sugarcane crusher, Animal cart; Ghanis (Oil extruders) and Water lifting devices (animal).

Equipment for Livestock and Poultry: Milking machine; Baler; Straw reaper; Forage harvester; Manually operated, animal operated and power operated chaff cutters



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

Population of farm machines in India

Farm Machinery	Number of Farm Machines Available ('000)		
	1992	2003	% Increase over 1992 figure
Manual Operated Machinery			
Seed-cum-fertilizer drill	876	2,494	185
Seed drill	949	19,136	1920
Chaff cutter	11,833	10,404	-12
Wheel hand hoe	1,470	2,142	46
Sprayer	2,606	5,052	94
Thresher	900	910	1
Animal Operated Machinery			
Wooden plough	39,581	43,975	11
Steel plough	9,397	17,066	82
Disc harrow	2,257	2,650	17
Cultivator	5,325	6,698	26
Seed-cum-fertiliser drill	2,815	5,103	81
Seed drill	4,535	4,700	3.6
Leveler	9,610	11,971	24.6
Wet land pudller	2,375	3,547	49.3
Animal cart	13,386	10,101	-24.5



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

Population of farm machines in India

Farm Machinery	Number of Farm Machines Available ('000)		
	1992	2003	% Increase over 1992
Tractor/Power Operated Machinery			
Power operated sprayer/duster	306.2	607.8	98.5
Diesel engine pump set	4,577.4	7,237.4	58.1
Electric pump set	6,403.5	8,446.3	31.9
MB Plough	498.9	171.7	-65.6
Cultivator	684	965	41.1
Disc Harrow	645.6	1,771.5	174.4
Seed cum ferti drill	389.6	1,011.0	159.5
Planter	96.2	114.0	18.5
Leveler	589.9	877.6	48.8
Potato digger	97.5	295.5	203
Trailer	462.2	1,116.5	142
Paddy thresher	35.4	161.3	356
Wheat thresher	1,075.7	726.0	-32.5
Maize Sheller	62.2	118.6	90.6
Chaff cutter	976.8	2,273.8	133
Combines (Both TD & SP)	8.5	20.0	135



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

A project entitled

**“Study relating to formulating long term mechanization strategy
for each agro climatic zone/State”**

funded by DOAC, Ministry of Agriculture, Govt. of India started in 2000 at Indian Agricultural Statistical Research Institute (IASRI), New Delhi in collaboration with Central Institute of Agricultural Engineering (CIAE), Bhopal and was completed in 2005 and final report was published in 2006. The main objective of study was to identify Mechanization gap state-wise and crop-wise and recommendations have been made accordingly. Out of so many issues identified and recommendations made on long term mechanization strategy, one of the recommendations was that the data pertaining to agricultural implements and machinery should be collected regularly in an objective manner. However it could not be done.



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

Experts were of the opinion that data on agricultural implements and machinery being collected through the different Indian Livestock Censuses may be compiled into a Database so as to find out the status of farm mechanization over different Livestock Census periods by working out mechanization indicators for different regions.

Therefore the study was further extended at the Indian Agricultural Statistical Research Institute (IASRI), New Delhi in assistant with CIAE Bhopal and made projections of agricultural machinery till 2024-25 based on available data till 2003.



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

Actual and projected population (millions) of power operated equipment in India

Year	Plough	Tillers	Harrows	Planters	Levellers	Sprayers & Dusters	Threshers
1972-73	0.057	0.082	0.056	0.009	0.049	0.035	0.206
1982-83	0.143	0.315	0.189	0.031	0.414	0.124	1.025
1992-93	0.408	0.706	0.531	0.054	1.057	0.303	2.597
2002-03	0.806	0.927	0.878	0.073	1.761	0.538	5.063
2007-08	1.04	1.038	1.051	0.082	2.07	0.655	6.296
2012-13	1.28	1.148	1.225	0.09	2.307	0.773	7.529
2017-18	1.517	1.259	1.398	0.098	2.441	0.89	8.762
2022-23	1.744	1.369	1.572	0.106	2.439	1.008	9.995
2023-24	1.788	1.391	1.607	0.108	2.419	1.031	10.241
2024-25	1.831	1.413	1.641	0.109	2.392	1.055	10.488



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

Actual and projected population (millions) of animal operated equipment in India

Year	Wooden plough	Steel plough	Puddlers	Seed drills & planters	Carts	Cane Crushers	manually operated Sprayers & dusters
1977-78	41.358	6.55	2.109	5.014	12.87	0.759	1.552
1982-83	42.737	7.123	2.519	5.787	13.808	0.693	1.575
1992-93	43.464	12.649	5.151	7.706	15.22	0.76	1.824
2002-03	44.194	18.987	8.241	9.786	16.461	0.851	2.032
2007-08	44.559	22.162	9.786	10.831	17.026	0.901	2.103
2012-13	44.924	25.337	11.331	11.862	17.56	0.951	2.19
2017-18	45.289	28.512	12.876	12.87	18.067	1.001	2.352
2022-23	45.654	31.687	14.421	13.852	18.551	1.051	2.671
2023-24	45.727	32.322	14.73	14.044	18.645	1.061	2.763
2024-25	45.8	32.957	15.039	14.236	18.738	1.071	2.866



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

**Power operated implements with respect
to the net cultivated area (number/000 ha)**

Year	Plough	Tillers	Harrows	Planters	Levellers	Sprayers & Dusters	Threshers
1972-73	0.405	0.582	0.398	0.064	0.348	0.249	1.463
1982-83	1.019	2.245	1.347	0.221	2.951	0.884	7.306
1992-93	2.869	4.965	3.734	0.380	7.433	2.131	18.263
2002-03	5.708	6.565	6.218	0.517	12.472	3.810	35.857
2012-13	9.040	8.107	8.651	0.636	16.292	5.459	53.171
2022-23	12.343	9.689	11.125	0.750	17.261	7.134	70.736
2023-24	12.663	9.851	11.381	0.765	17.132	7.302	72.528
2024-25	12.967	10.007	11.622	0.772	16.941	7.472	74.277



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

Animal operated implements with respect to the net cultivated area (number/000 ha)

Year	Wooden plough	Steel plough	Puddlers	Seed drills & planters	Carts	Cane crushers
1982-83	294.783	50.770	17.954	41.247	98.418	4.939
1992-93	305.654	88.952	36.224	54.191	107.032	5.345
2002-03	312.989	134.469	58.364	69.306	116.579	6.027
2012-13	317.260	178.934	80.021	83.771	124.011	6.716
2022-23	323.100	224.253	102.059	98.033	131.288	7.438
2023-24	323.846	228.909	104.320	99.462	132.047	7.514
2024-25	324.363	233.407	106.508	100.822	132.705	7.585



AGRICULTURAL MACHINERY MANUFACTURER'S ASSOCIATION (AMMA-India)

THANKS