

## Farm Mechanization of Vidarbha Region

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**ABSTRACT:** Farm mechanization is need of the day to produce more from the same piece of land and avoiding delay in observing the various package of practices. Considering this present study was conducted in Akola District. Two talukas Viz. Akola and Akot were selected purposively. Six villages from each Taluka were selected. A total sample of 120 farmers, 10 from each selected village was drawn by random method of sampling. The data were collected with the help of structured interview schedule. The exploratory design of social research was used. Statistical tools like frequency, percentage, mean, standard deviation were used for analysis of data. Manually operated implements namely; Pickaxe and spade were used by cent per cent respondents. Less than three fifth (56.67 per cent) of the respondents were found in medium possession category of manually operated tools and implements. One fourth (26.67 per cent) possessed low manually operated tools and implements and 16.65 per cent of the respondent belonged to high possession category of manually operated tools and implements. It was interesting to note that the large section of respondents (66.67 per cent) came under medium category and 17.50 per cent was under high category of possession of bullock drawn implements and equipments. Only 15.83 per cent of the respondents belonged to low category of possession of the implements and equipments. Majority (72.50 per cent) of the respondents belonged to low category which as one fourth (24.17 per cent) were in medium possession category of power operated equipments and machineries. Meagre (3.33 per cent ) belonged to high category. 45.00 belonged to low category and 42.50 per cent farmers were found under medium category of farm implements possession.

**Keyword:** Farm mechanization, status.

### INTRODUCTION

The increasing use of tractors and irrigation pumps operated by electric motors and diesel engine are the indicators of the fact that, use of mechanical power in India has increased. Animate power contributed 92 percent of the total farm power in 1960-61 and mechanical and electrical together contributed only 8 percent. In 2005-2006, the contribution from animate power reduced to 16 percent and from mechanical and electrical power increased to 84 percent. It may however, be realized that the use of mechanical and electrical power is more for stationary operation than tractive field operations as share of tractive power to the total mechanical power is only about 35 percent.

With the increase in farm power availability, the necessity of farm equipment for various farm operations has also increased. Various types of tools and implements such as plough/cultivar, seed drill,

sprayers and thresher were introduced in the beginning. The utilization of majority of the tools and equipments has grown many folds in last ten years. The rate of growth, however in animal operated machinery has remained low as compared to tractor or power operated machinery. As the power availability increased on Indian farms, cropping intensity increased and side by side cropping pattern also changed. Now the more emphasis is being given on oil seeds and pulses, fruits and vegetable crops, hill agriculture, plantation crops and crops for diversification from rice-wheat to maize, cotton, sugarcane etc.

New agricultural strategy has set up on agricultural revolution in the country. Under the changed conditions the importance of time and speed in farm operations can hardly be over emphasized. To ensure time and speed in farm operations, machine and improved farm implements are crucial importance. Agricultural machinery and implements are rightly

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**Table 1**  
**Implement and machinery wise possession of respondents**

Sr. No.	Farm operation	Farm implements, Equipments and Machineries	Respondents (n = 120)	
			Frequency	Percent
<b>I. Land preparation.</b>				
A. Manual	1.	Pick-aux	120	100
		Spade	120	100
B. Bullock drawn	1.	Mould board plough	80	66.67
		Disc plough	10	08.33
		Disc harrow	5	04.17
		Ridger	40	33.33
		Clod crusher	60	50.00
C. Power operator	2.	Rotavator	8	6.67
		Rotavator	13	10.83
		Mould board plough	29	24.17
		Cage wheel	0	00.00
		Ridger	4	03.33
		Blade	10	8.33
<b>II. Sowing</b>				
A. Manual	1.	Seed cum fertilizer drill	80	66.67
		Dibbler	68	56.67
B. Bullock drawn	1.	Seed cum fertilizer drill	77	64.17
		Seed drill over plough	20	16.17
		Soil planter	13	10.83
		Cotton planter	77	64.17
		Sugarcane planter	0	00.00
C. Power operated	1.	Seed cum fertilizer drill	28	23.33
		Maize seed drill	10	08.33
		Groundnut seed drill	4	03.33
		Pneumatic planter	0	00.00
<b>III. Intercultural operation</b>				
A. Manual	1.	Weeder	103	85.83
B. Bullock drawn	1.	3-4 tinned cultivator	65	54.17
		Improved bukhar	12	10.00
C. Power operated	1.	5-7 tinned cultivator	25	20.83
		11 tinned cultivator	3	02.50
<b>IV. Irrigation</b>				
A. Power operated	1.	Centrifugal pump	90	75.00
		Submersible pump	48	40.00
		Sprinkler set	31	25.83
		Drip irrigation set	26	21.66
<b>V. Plant protection</b>				
A. Manual	1.	Hand sprayer	30	25.00
		Knapsack sprayer	26	20.83
		Foot sprayer	56	46.67
B. Power operated	1.	Tractor mound sprayer	0	00.00
		Motorized knapsack sprayer	2	01.67
		Power sprayer	20	16.67
<b>VI. Harvesting and Threshing</b>				
A. Manual	1.	Sickle	120	100.00
B. Bullock drawn	1.	Groundnut harvester	0	00.00
C. Power operated	1.	Reaper binder	0	00.00
		Groundnut digger	0	00.00
		Thresher	39	32.50
		Combine harvester	0	00.00

<b>VII. Packaging</b>				
	1.	Gunny bag	120	100.00
<b>VIII. Processing</b>				
	1.	Grander	0	0
	2.	Cleaner	0	0
	3.	Dal mill	0	0
<b>IX. Transportation</b>				
	1.	Bullock cart	78	65.00
	2.	Tractor trolley	37	30.83
<b>X. Storage</b>				
	1.	Grain storage structure	0	
	2.	Godewn / Ware house	0	
<b>XI. Other</b>				
A. Manual	1.	Manual chaff cutter	95	79.77
B. Bullock drawn				
C. Power operated	1.	Powered chaff cutter	20	16.67

known as the 'inputs of inputs' as without these inputs, benefit from the other inputs cannot be realized to fullest extent. Realizing the importance of agricultural machinery and implements, efforts are being made by the State Agricultural Universities and other agencies to invent and reinvent farm machineries, implements and such other mechanical devices.

Hence, the study has been planned with following objectives.

## METHODOLOGY

The present investigation was confined to the Akola district (M.S.). Two talukas *viz.*, Akola and Akot were selected purposively. Six villages from each taluka were selected. A total sample of 120 farmers, ten from each selected village was drawn by random method of sampling. The data was collected with the help of structured interview schedule. The exploratory design of social research was used. Statistical tools like frequency, percentage, mean, standard deviation were used for analysis of the data. It refers to farm implements and farm machineries possessed by individual respondents. In possession, operation wise manual tools and implements was given 1 score each and for bullock drawn implements and equipments 2 score was given for each and for tractor drawn equipments and any machine 3 score was given for each. And total score of manual, bullock drawn and power operated was used for manipulation.

## FINDINGS

The respondents according to their implements equipments and machineries wise possession is work out as given in Table 1, below.

Table 1 revealed about the farm operation wise possession of farm mechanization tools, implements and machineries by the respondents

### Land Preparations

It is evident from the Table 1 that manually operate implements namely; pick-aux and spade were used cent percent respondents. There are the common implements requirements to the farmers.

In case of the bullock drawn implements and machineries used in land preparation M.B. plough was possessed by 66.67 percent of respondents followed by clod crusher (50%), Ridger (33.33%), disc plough (8.33%), Rotavator (6.67%), and disc harrow (4.17%).

In case of power operated or power drawn land preparatory equipments mould board ploughs were possessed by one forth (24.17%) of the respondents followed by Rotavator (10.83%), leveler blade and ridger were possessed by very little respondents i.e. 8.33 percent and 3.33 percent respectively. These types of attachments were restricted to the respondents who owned the tractor or power tiller the tractor or power tiller.

### Sowing

Table 1 revealed that, in case of manual tools used for sowing operation two third (66.67%) of the respondents owned push type seed-cum fertilizer drill whereas more than half of the respondents (56.67%) possessed dibbler.

Regarding bullock drawn implements and machineries used in sowing, seed cum fertilizer drill and cotton planters were possessed by 64.17 percent respondents equally followed by seed drill over plough (16.17%) and soil planter (10.83%).

In case of power operated or power drawn land preparatory equipments and machineries one fifth of the respondents (23.33%) possessed seed-cum fertilizer drill followed by Maize seed drill (8.33%), Groundnut seed drill (3.33%) and no one has pneumatic planter.

Seed cum fertilizer drill is preferably used by the tractor owners. As far as the maize seed drill and groundnut seed drills are concerned, the area under this crop was very less. So, they might have not possessed power operated maize seed drill and groundnut seed drill.

### Intercultural Operations

Weeding is the most important operation in agriculture this caters the use of weeder and majority

(85.83%) of the respondents possessed the weeder.

In case of bullock drawn implements 3-4 tinned cultivators were possessed little more than half of the respondents (54.17%) followed by the improved bukhar by (10.00%).

Regarding power operated intercultural operation 5-7 tinned cultivators were owned by one fifth (20.83%) of the respondents whereas, only, 2.50 percent respondents possessed 11 tinned cultivators.

### Irrigation

In case of possession of irrigation equipments 75 percent of the farmers possessed centrifugal pumps followed by submersible pumps (40.00%). One fourth of the respondents (25.83%) possessed sprinkler set and one fifth of the respondents (21.66%) possessed drip irrigation set.

### Plant Protection

Nearly half of the respondents (46.67%) possessed foot sprayers

One forth (25.00%) and one fifth (20.83%) of the respondents had hand sprayers and knapsack sprayers respectively. These are the most commonly used equipments for plant protection.

In case of power operated plant protection equipments are concerned, none of the farmers possessed tractor mounted sprayers. whereas 16.67 percent of the respondents possessed power sprayers and motorized knapsack sprayer were possessed by only 1.67 percent of the respondents.

The limited possession of the power operated plant protection equipments were characterized by its cost and little use to the small and medium farmers who are in the majority

### Harvesting and Threshing

Sickle is one of the most important tool in harvesting, so all the farmers irrespective of their land holding possessed the sickle.

It is interesting to note that none of the farmers possessed groundnut harvester reaper binder ground nut digger and combine harvester this is due to the cropping pattern of this area and combine harvester is high cost machineries and can be used by custom hiring.

Thresher was also found with good number of farmers it was possessed by 32.50 percent respondents.

Table 2

**Distribution of respondents according to manual possession**

Sr. No.	Manual Possession	Respondents n = 120	
		Frequency	Percent
1.	Low (Up to 6)	32	26.67
2.	Medium (7 to 8)	68	56.67
3.	High (9 and above)	20	16.66
Total		120	100.00
Mean = 7.241667 S.D. = 1.414189			

It is the common observation that, keeping the thresher comes under commercial activity the owner of the thresher provides the services to the other farmers on hire basis, so it can satisfy the need of other farmers in threshing of their crops.

**Packaging and Processing**

Gunny bag is common used packaging material by almost all the farmers. While in case of commercial processing no farmers were possessed processing equipments like grander cleaner and dalmills.

**Transportation**

From the Table 1 it can be seen that, bullock carts was the major means of transportation it was used by (65.00%) of the respondents followed by tractor trolley (30.83%). Tractor trolley and tractor itself were its provided by owner to other farmers on hire basis for satisfies the needs of other farmers.

**Storage**

No farmers were possessed the grain storage and godowns/warehouses

The major concern in the field of agriculture is storage and processing unfortunately no respondents was found with suitable storage structure and value addition units therefore the efforts are needed in this direction.

Due to non availability of suitable storage structure farmers have to sell their produce immediately after threshing and they are getting very less price in glut in the market and the farmers could not get adequate enumeration to more extent of satisfactions. Value addition is also one of the important aspects. The processed agricultural produce can give good remunerative prices but in the study area no farmers were engaged in the value addition of agricultural produce.

The efforts in this direction by extension agencies are needed to develop the small scale entrepreneurship at village level.

Table 3

**Distribution of respondents according to bullock draw implement and equipment possession**

Sr. No.	Bullock drawn implement and equipment possession	Respondents n = 120	
		Frequency	Percent
1.	Low (Upto 7)	19	15.83
2.	Medium (8 to 23)	80	66.67
3.	High (24 and above)	21	17.50
Total		120	100.00
Mean = 15.16667 S.D. = 8.50243			

**Other**

In case of other equipments, implements and machineries manual chaff cutter was used by 79.77 percent of the respondents whereas, powered chaff cutter was used by 16.67 percent of the respondents

It was thought necessary to assess the possession of implements, equipments and machineries as per the mode of use that is manual, bullock drawn and power operated for this purpose the mode wise score of each individual was ascertained and on the basis of mean and standard deviation and obtained score the respondents were grouped in the categories as low, medium and high.

**Possession of manual tools and implements**

Possession of manual tools and implements shown in Table 2.

It is observed from the Table 2 revealed that slightly more than half of the respondents (56.67%) found in medium category of manual tools and implement possession. One fourth (26.67%) possessed low manual tools and implements and 16.65 percent of the respondents belong to high category of manual possession.

It is clearly indicate that 73.32 percent of the respondents had medium to high level of manually operated tools and equipments.

**Possession of bullock drawn implements and equipments**

Possession of bullock drawn implements and equipments shown in Table 3.

As per as the possession of bullock drawn implements and machinery are concerned from Table 3, it is interesting to note that the large section of the respondents *i.e.* 66.67 per cent came under medium category and 17.50 per cent was under high category, possession of bullock drawn implements and equipments only 15.83 per cent of the respondents belonged to low category of possession.

**Table 4**

**Distribution of respondents according to power operated machineries or power drawn equipments**

Sr. No.	Power operated equipment and machineries possession	Respondents n = 120	
		Frequency	Percent
1.	Low (Upto 25)	87	72.50
2.	Medium (26 to 74)	29	24.17
3.	High (75 and above)	04	03.33

**Possession of power operated equipments and machineries**

Possession of power operated equipments and machineries shown in Table 4.

From Table 4, In case of power operated equipment and machinery majority of the respondents belonged to low category (72.50%), where as oneforth (24.17%) had medium category of power operated equipments and machineries. Merge (3.33%) belonged to high category.

Total score was used for manipulation and on the basis of mean and standard deviation respondents were distributed in Table 5 as follows.

It is evident from Table 5 that the 45.00 percent of farmers found in low level of farm implements and machinery possession category. Whereas, 42.5 percent farmers found under medium level category of farm implement possession. Only 12.5 percent farmers belonged to high level category of farm implements and machinery possession.

From the data, it is, obvious that the new or improved implements, equipments and machineries were costly and not affordable by the small and medium farmers, hence, very few of them lies in high category. Majority of the small and the medium farmers hire there implements, equipments and machinery as per their requirement.

**CONCLUSION**

Manually operate implements namely; pick-axe and spade were used by cent percent respondents.

Slightly more than half of the respondents (56.67%) found in medium category of manual tools and implement possession. One fourth (26.67%) possessed low manual tools and implements and 16.65 percent of the respondents belong to high category of manual possession

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**Table 5**

**Distribution of respondents according to their implement and machinery possession**

Sr. No.	Implements and machinery possession (Score)	Respondents (n = 120)	
		Frequency	Percent
1.	Low (up to 36)	54	45.00
2.	Medium (37 to 62)	51	42.50
3.	High (63 and above)	15	12.50
Total		120	100.00

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