

Original Research Article

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## Status of Farm Mechanization under Animal Farming in Bastar Plateau Agro-climatic Zone of Chhattisgarh

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### ABSTRACT

This study was conducted in two districts of Bastar plateau agro-climatic zone, which covers 28% of the total geographical area of Chhattisgarh State. Two blocks were selected from each district of Bastar plateau purposely. Three villages were selected from each block and ten respondents randomly selected from each village, total of 120. The objective of this study was to analyze the status of farm mechanization under the animal farming and identification of availability of draught animal and animal-drawn farm implements with their utilization for agricultural operations. The data for the study was collected with a detailed Proforma was developed prior to the survey, after consulting the literature available as suggested by the different researchers. During the study, we found that the Bastar plateau cover about 64% of the total draught animal population. Average draught animal power in Bastar plateau was found that 0.208 kW/ha. The highest utilization of animal power in Bastar plateau have was 233 hrs/ha. The study reveals that the majority of the respondents used country plough as their primary tillage implement, wooden plank and Kopar as a secondary tillage implement. In the case of traditional sowing methods majority, 98% used broadcasting method for sowing and only 2 per cent of the respondents used seed drill as improved seed sowing implements.

#### Keywords

Farm  
Mechanization,  
Draught Animal,  
Farm Implements,  
Bastar plateau

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### Introduction

Farm mechanization refers to the utilization of mechanical aids, improved farm implements to enhance the agricultural production. It may not include only tractors, farm mechanization considering also animal-drawn and human powered implements. The effective mechanization contributes to increased production in two major ways: firstly the timeliness of operation and

secondly the good quality of work. The power required for different agricultural operations like land preparation, sowing, and harvesting appears inadequate due to the usage of traditional implements instead of improved farm implements.

As a result, the operations are either partially done or sometimes completely neglected, resulting in low yield due to poor growth or untimely harvesting or both.

Farm mechanization has been helpful to bring about a significant improvement in agricultural productivity. Thus, there is a strong need for mechanization of agricultural operations. The factors that justify the strengthening of farm mechanization in the country can be numerous.

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### **Materials and Methods**

Chhattisgarh state consists of three zones i.e. Chhattisgarh Plain, Bastar plateau, Northern hills zones. For this particular study, Bastar plateau zone was selected. For this particular study two districts were selected from zone i.e. Bastar and Kondagaon were selected. In Bastar plateau Bastar district has Bakavand and Baster block and Kondagaon district has Keshkal and Kondagaon were selected purposely for a case study and from Kondagaon district, Makadi, Anantpur and Kerwahi villages from Keshkal block. From Kondagaon block Masora, Palli, Badekanera villages. In Baster district, Bagmohalai, Bakel and Mathota and from Bakavand block Kolawali, Satosa and Chinndgaon.

Ten farmers from each of the selected village will be considered to collect the required information. In all, a total 120 farmers were selected for the present study. To collect information leading to fulfilling the objectives of this study each farmer was interviewed separately on the pre- tested Proforma.

Inquiry method was adopted for obtaining the information from selected farmers falling into different categories. The time (in hours) required for various farm operations mainly field preparation, sowing, weeding, harvesting, threshing, and transportation etc. through draught animal were recorded for each crop on the basis of the verbal interview of the farmers.

The secondary data related to Chhattisgarh state is collected from the Commissioner, Land Records, Directorate of Animal Husbandry, a Statistical handbook of Chhattisgarh. Adopting standard techniques suggested by the research workers the data thus collected was processed. First of all the data for animal power utilization was arranged separately for different categories of respondents for each village. To identify the location of survey sites in the selected district of the zone, villages were grouped block – wise. The farmers were selected randomly. The frequency, percentage and mean were calculated for precise and meaning analysis and interpreting of the data collected. Data were analysed for the most part by using the tabular form as for its inherent quality in portraying the true picture of draught animal and farmer involvement in agriculture and allied activities in the state of Chhattisgarh.

### **Results and Discussion**

#### **Status of draught animals in bastar plateau**

District wise draught animal population is presented in Table No. 1. It was found that draught animals used in the zone comprise of Bullocks and he-buffaloes. Out of total draught animal population in Bastar plateau, Bastar district has a major share of 30.64 per cent and a minimum share of Bijapur district is 11.2 per cent. It shows the general information about the draught animal population in Bastar plateau.

**Availability of draught animal power and farm implements in bastar plateau**

In Bastar plateau agro-climatic zone the draught animal power available is shown in Table No. 2. It shows that Kondagaon district has maximum power availability as 0.28 kW/ha and the minimum was found in Dantewada district as 0.15 kW/ha. The average draught animal power found in Bastar plateau was 0.208 kW/ha and Table No. 3 shows the availability of farm implements and bullock cart in different districts of Bastar plateau. It shows that Kanker district of Bastar plateau has maximum numbers of the wooden plough as 92666 and Narayanpur district has a minimum as 18031. Bastar district has maximum numbers of the iron plough as 1685 and Narayanpur have a minimum as 21, but in the case of a bullock carts, again Kanker district has maximum 12051 and Dantewada has minimum 57 number of a bullock carts.

**Average utilization of animal power in Chhattisgarh**

To collect information on the extent of animal power utilization in the state primary data was collected from the respondents by asking them questions on different farm operations

carried out using animal power, approximate duration of utilization for each operation and implement owned by them. Table No. 4 shows the average utilization of animal power for different operations in the selected villages of Bastar plateau agro-climatic zone. Badekanera village had the highest utilization of 271 h/ha and lowest utilization was in Baghmohala village 193 h/ha. The draught animals are used for ploughing, planking, threshing and carting operations mainly. Table 4 also reveals that the ploughing operation requires the highest number of hours among all the field operations followed by threshing and carting. Ploughing has a share ranging between 30-50 % of total usage of draught animals for different operations.

**Month wise utilization of draught animal**

The average monthly utilization of draught animals in Bastar plateau has been shown in Table No. 5. The highest utilization of draught animals was in the month of June and July mainly due to ploughing and seed bed preparation. However, draught animals are also engaged in the months of November and December in carting of harvest materials, but these values are very low as compared to the other months in which the animals are used for farm operations.

**Table.1** Draught animal population in Bastar plateau

S.No	Zone	District	Bullock	He- buffalo	Total
1	Bastar plateau	Bastar	118689	40343	159032
2		Kondagaon	114365	23095	137460
3		Narayanpur	22956	7537	30493
4		Dantewada	60582	4568	65150
5		Sukma	60612	8142	68754
6		Bijapur	52853	5225	58081
<b>Total</b>					518970

**Table.2** Draught animal power in of Bastar plateau

Agro- climatic zone	Name of District	Availability of draught animal power, kW/ha	Average draught animal power, kW/ha
<b>Bastar Plateau</b>	Jagdalpur	0.212	
	Kondagaon	0.28	
	Dantewada	0.15	
	Sukma	0.163	0.208
	Narayanpur	0.24	
	Bijapur	0.207	

**Table.3** Availability of farm implements and bullock carts in Bastar plateau

S.No.	District	Wooden Plough	Iron Plough	Bullock Cart
1	Bastar	89110	1685	10355
2	Kondagaon	81237	696	7810
3	Narayanpur	18031	21	907
4	Kanker	92666	747	12051
5	Dantewada	50984	59	57
6	Sukma	49071	741	762
7	Bijapur	32551	46	2969

**Table.4** Average utilization of animal power in selected villages of Chhattisgarh

District/ Block	Village	Area (ha)	No. of Draught Pair	Implement wise Utilization (hrs)				Total Utilization	Utilization Pair (hrs)	Use h/ha
				Plough	Wooden Plank/ Kopar	Threshing	Carting			
<b>Bastar Plateau (Agro- climatic Zone)</b>										
<b>Kondagaon District</b>										
<b>Keskal</b>	Makadi	20	14	1830	980	1084	1171	5065	361	253
	Anantpur	17.16	11	1575	870	978	1024	4447	404	259
	Kerwahi	18.33	14	1720	850	1021	987	4578	327	249
<b>Kondagaon</b>	Masora	16.04	10	1510	820	876	920	4126	412	257
	Palli	23.2	12	2190	1140	1234	1026	5590	465	240
	Badekanera	11.45	10	1040	570	873	628	3111	311	271
<b>Bastar District</b>										
<b>Bastar</b>	Baghmohalai	22.29	11	2110	1070	1050	80	4310	391	193
	Bakel	15	12	1610	770	870	120	3370	280	224
	Mathota	11.125	10	950	520	750	0	2220	222	199
<b>Bakavand</b>	Kolawali	17.08	13	1520	820	1030	72	3442	264	201
	Satosa	16.83	10	1580	800	990	160	3530	353	209
	Chhindgaon	7.5	10	670	550	630	0	1850	185	246

**Table.5** Month wise utilization of draught animals

S.No	Month	Bastar Plateau
1	May	37
2	June	9444
3	July	7125
4	August	0
5	Sept.	0
6	Oct.	19
7	Nov.	6347
8	Dec.	4988
9	Jan.	0
10	Feb.	0
11	March	0
12	April	0

**Table.6** Farm implements available in the selected villages

S.No	Farm implements	Bastar plateau
1	Tractor	3
2	Desi plough	126
3	M.B. plough	1
4	Biasi plough	97
5	Disc harrow	0
6	Cultivator	2
7	Wooden plank	58
8	Koper	54
9	Seed drill	1
10	Rice transplanter	0
11	Weeder	0
12	Reaper/harvester	0
13	Thresher	1
14	Cage wheel	4
15	others	0

**Availability of farm implements in the selected villages**

The farm implements were found in the selected villages which has shown in Table No. 6, in which 3 tractors found, desi plough 126, 1 mould board plough found in the selected villages, 97 biasi plough, no disc harrow found in the villages, 58 wooden planks, 54 koper were found, 1 seed drill, 4

cage wheel. It showed that the selected villages depended on draught animal for farm operations. Bastar plateau contribute the largest area in the Chhattisgarh state. Two blocks namely Dongargarh and Chhuriya from Rajnandgaon district and Mahasamund and Pithora block were selected from Mahasamund district from Bastar plateau. Three villages from each block were selected for conduction of survey work. In this study,

10 farmers from each of the village were interviewed personally for recording all necessary observation as per Proforma. It was observed that June and July months shows a rise in draught power utilization due to the time of tillage and intercultural operation for paddy crop, bullocks power utilization was confined for transportation in November.

The utilization in the month of December is mainly for threshing operation just after the harvest of paddy. The Bullocks are mostly unutilized in the month of February March and April due to mono-crop nature of the area.

The month wise bullock power utilization for a different category, it was observed that June and July are the peak period.

The highest utilization of bullocks power use/ha was noted in village Maharajpur of Bastar plateau and it was 316 h/ha.

Average farm power availability in the selected villages was found as 0.172 kW/ha as compared to the average i.e. 1.098 kW/ha.

Based on the opinion of the respondents, rice transplanting and harvesting operations and winnowing/threshing involved a heavy level of drudgery followed by a medium to medium-heavy level of drudgeries in FYM application, preparatory work during seed-bed, intercultural operations. The rest of the operations involved a light and medium level of drudgery.

Most of the respondents used traditional farm tools/equipment for various farm operations.

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