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Status of Farm Mechanization under Animal Farming in Chhattisgarh Plains Agro-Climatic Zone of Chhattisgarh State

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Abstract: **This study was conducted in two district of Chhattisgarh plains agro-climatic zone of Chhattisgarh State. In which two blocks were selected from each district purposely (based on draught animal population and animal drawn implements). Three villages were selected from each block and ten respondents randomly selected from each village Total of 120. The purpose of this study was to analyze the status of farm mechanization under the animal farming system, availability of draught animal population, identification of animal drawn and other farm implements and their utilization for agricultural production. The required data of the study were collected with the help of a detailed proforma which was developed prior to survey, after consulting the literature available as suggested by the different researchers. It was found that the Chhattisgarh plains cover about 64% of the total draught animal population. Average draught animal power in Chhattisgarh plains was found that 0.172 kW/ha. Chhattisgarh plains have the highest utilization of animal power was 316 h/ha. The study reveals that the majority of the respondents about 96 per cent used country plough as a primary tillage implement, 99 per cent used wooden plank and Kopar as a secondary tillage implement in the zone. In case of traditional sowing methods majority of 98 per cent used broadcasting method for sowing and only 2 per cent of the respondents used seed drill as improved seeding implements.**

Key Words: Farm mechanization, Draught animal, Implements, Chhattisgarh.

I. INTRODUCTION

Farm mechanization is the implementation of mechanical technology and increased power to agriculture. Agricultural mechanization is the process of using improved agricultural implements to mechanize the work of agriculture. Mechanization not only includes the use of tractors as well as animal-powered and human-powered implements. The effective mechanization contributes to increase production in two major ways: firstly the timeliness of operation and secondly the good quality of work. The requirement of power for certain operations like seedbed preparation, seeding and harvesting becomes so great that the existing human and animal power in the country appears to be inadequate. As a result, the operations are either partially done or sometimes completely neglected, resulting in low yield due poor growth or untimely harvesting or both. Farm mechanization has been helpful to bring about a significant improvement in agricultural productivity. Thus, there is strong need for mechanization of agricultural operations. The factors that justify the strengthening of farm mechanization in the country can be numerous. The timeliness of operations has assumed greater significant in obtaining optimal yields from different crops, which has been possible by way of mechanization. *(Singh, J., 2002)*

II. METHODOLOGY:

Chhattisgarh state consists of three zones i.e. Chhattisgarh Plain, Bastar Plateau, Northern hills zones. For this particular study Chhattisgarh Plains zone was selected. For this particular study two districts were selected from the zone i.e. Rajnandgaon and Mahasamund were selected from Chhattisgarh Plains. In Chhattisgarh plains agro-climatic zone Rajnandgaon has Dongargarh and Chhuriya block, Mahasamund district has Mahasamund and Pithora block. In Chhattisgarh plains, from Rajnandgaon district, Andi, Deokatta and Kanhargaon villages from Dongargarh block and from Chhuriya block, Maharajpur, Bholapur and Khobha. Ten farmers from each of the selected village will be considered to collect the required information. To collect information leading to fulfil the objectives of this study each farmer was interviewed separately on the pre- tested Proforma. Enquiry method was adopted for obtaining the information from selected farmers falling in 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, 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.. Data were analysed for the most part by using 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.

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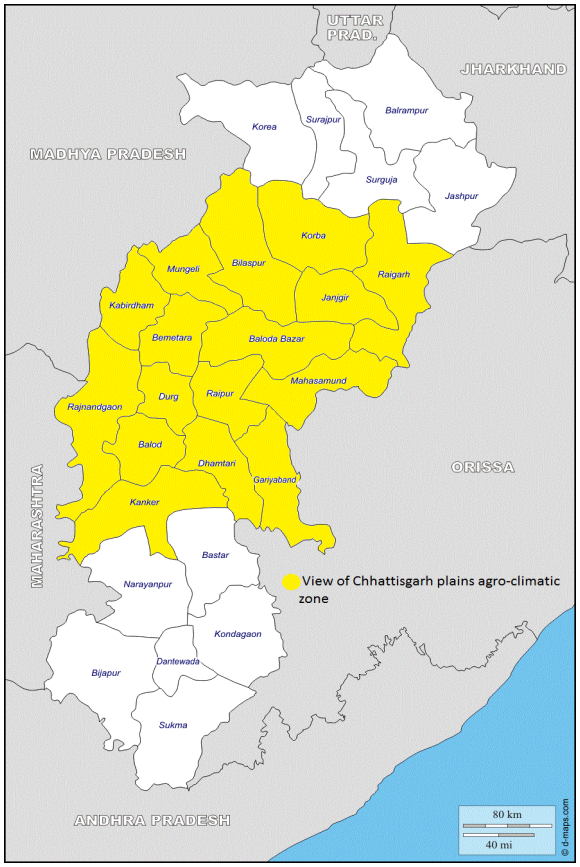

III. RESULTS AND DISCUSSION

a. *Status of Draught Animals in Chhattisgarh Plains*

District wise draught animal population is presented in Table 31. It was found that, draught animals used in the zone comprise of Bullocks. Out of total draught animal population in Chhattisgarh plains Rajnandgaon has a major share as 11.58 per cent and minimum share of Durg district of 3 per cent. It shows the general information about the draught animal population in Chhattisgarh Plains.

Table I. Draught animal population in Chhattisgarh plains (2013-14)

S.No	Zone	District	Bullock	He- buffalo	Total
1	CHHATTISGARH PLAINS	Raipur	57203	21607	78810
2		Baloda Bazar	74800	55835	130635
3		Gariyaband	147517	16977	164494
4		Mahasamund	74509	26604	101113
5		Dhamtari	74509	20274	94783
6		Durg	49081	17762	66843
7		Balod	91602	31632	123234
8		Bemetara	82113	35088	117201
9		Rajnandgaon	202434	55389	257823
10		Kabirdham	66552	43968	110520
11		Bilaspur	144567	73159	217726
12		Mungeli	39786	34306	74092
13		Jangir champa	91127	100281	191408
14		Korba	84416	44721	129137
15		Kanker	135165	28861	164026
16		Raigarh	150604	54134	204738
TOTAL					2226583

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3.2 Availability of Draught animal power and farm implements in Chhattisgarh plains In Chhattisgarh plains agro-climatic zone the draught animal power available is shown in table 3.2. It shows that Korba district has maximum power availability as 0.236 kW/ha and minimum was found in 0.12 kW/ha. The average draught animal power found in Chhattisgarh plains was 0.172 kW/ha as shown in table 3.2 and table 3.3 shows availability of farm Implements and bullock cart in different districts of Chhattisgarh plains. It shows that Rajnandgaon district of Chhattisgarh plains has maximum numbers of wooden plough as 137404 and Mungeli district has minimum as 28362. Again Rajnandgaon district has maximum numbers of iron plough as 4236 and Gariyaband has minimum as 476, but in case of bullock cart, again Mungeli district has minimum 2931 and Rajnandgaon has maximum 58823 number of bullock cart.

Table II. Draught animal power in of Chhattisgarh plains (2012-13)

Agro- climatic zone	Name of District	Availability of draught animal power, kW/ha	Average draught animal power, kW/ha
Chhattisgarh Plains	Rajnandgaon	0.18	
	Mahasamund	0.16	
	Raipur	0.12	
	Gariyaband	0.162	
	Baloda Bazar	0.161	
	Dhamtari	0.131	0.172
	Durg	0.147	
	Balod	0.155	
	Bemetara	0.142	
	Kabirdham	0.1427	
	Bilaspur	0.225	
	Mungeli	0.231	
	Korba	0.236	
	Kanker	0.2	
	Jangir champa	0.18	
	Raigarh	0.191	

Table III. Availability of farm implements and bullock carts in Chhattisgarh plains

S.No.	District	Wooden Plough	Iron Plough	Bullock Cart
1	Raipur	40730	3586	27639
2	Baloda Bazar	84359	3104	45049
3	Gariyaband	35524	476	12738
4	Mahasamund	81938	3533	30174
5	Dhamatri	45654	3613	25941
6	Durg	43393	2902	24499
7	Balod	70546	2561	32309
8	Bemetara	61184	3232	32653
9	Rajnandgaon	137404	4236	58823
10	Kabirdham	50873	2861	22071
11	Bilaspur	106399	1367	36224
12	Mungeli	28362	1813	2931
13	Janjgir-Champa	88338	4039	40129
14	Kanker	92666	747	12051
15	Korba	56734	652	7964
16	Raigarh	85506	2446	22959

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3.3 Average Utilization of Animal Power in Chhattisgarh

To collect information on 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 3.4 shows the average utilization of animal power for different operations in the selected villages of Chhattisgarh plains agro-climatic zone. Maharajpur village had the highest utilization of 316 h/ha and lowest utilization was in Bundeli village 212 h/ha. The draught animals are used for ploughing, planking, threshing and carting operations mainly. Table 4.6 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.

Table IV. Average utilization of animal power in selected villages of Chhattisgarh

S. N.	District/ Block	Village	Area (ha)	No. of Draft Pair	Implement wise Utilization (hrs)				Total Uti lization	Uti lization Pair (hrs)	Use h/ha
					Plough	Wooden Plank/ Kopar	Threshing	Carting			
Rajnandgaon district											
	Dongargarh	Andi	15	14	1480	750	1074	986	4290	306	286
		Deokatta	16.75	14	1530	840	1104	1046	4520	322	269
		Kanhargaon	15.875	13	1260	770	1011	871	3912	300	246
	Chhuriya	Mahrajpur	6.77	9	546	430	690	480	2146	238	316
		Bholapur	15.5	16	1520	780	1090	1010	4400	275	283
		Khobha	17.5	16	1640	880	1120	771	4411	275	252
2.	Mahasamund District										
	Mahasamund	Garhsiwani	14.16	10	1390	720	910	641	3661	366	258
		LafinKhurd	13	10	1250	680	1045	961	3936	393	302
		Bhoring	13.8	10	1280	710	921	841	3752	375	271
	Pithora	Bundeli	20.21	11	1870	1030	640	761	4301	391	212
		Ghoghra	14.375	10	1410	760	750	640	3560	356	247
		Sonasilli	15.83	10	1270	810	1011	980	4071	407	257

3.4 Month Wise Utilization of Draught Animal

The average monthly utilization of draught animals in Chhattisgarh plains has been shown in table 3.4. The highest utilization of draught animals was in the month of June mainly due to ploughing and seed bed preparation. December showed the least use of draught animals. However, draught animals are also engaged in the months of March, April and October 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.

3.5 Availability of Farm implements in the selected villages

The following farm implements were found in the selected villages in which 5 tractors found, desi plough 122, 3 mould board plough found in the selected villages, 108 biasi plough, no disc harrow found in the villages, 67 wooden plank, 58 kopar were found, 1 seed drill, 8 cage wheel. It showed that the selected villages were depend on draught animal for farm operations.

Table V. Month wise utilization of draught animals

S.No	Month	Utilization, hrs
1	May	122
2	June	14818
3	July	6760
4	August	0
5	Sept.	0
6	Oct.	230
7	Nov.	6431
8	Dec.	3569
9	Jan.	0
10	Feb.	0
11	March	0
12	April	0
Total		31920

Table VI. Farm implements available in the selected villages

S.No	Farm implements	Chhattisgarh plains
1	Tractor	5
2	Desi plough	122
3	M.B. plough	3
4	Biasi plough	108
5	Disc harrow	0
6	Cultivator	4
7	Wooden plank	67
8	Koper	58
9	Seed drill	1
10	Rice transplanter	0
11	Weeder	0
12	Reaper/harvester	0
13	Thresher	1
14	Cage wheel	8
15	Others	0

IV. CONCLUSIONS

On the basis of this study it was found that,

- The month wise bullock power utilization for different category, it was observed that June and July is the peak period.
- The highest utilization of bullocks power use/ha was noted in village Maharajpur of Chhattisgarh plains and it was 316 h/ha.

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- Average farm power availability in the selected villages were found as 0.172 kW/ha as compared to the average of State i.e. 1.098 kW/ha.
- Based on the opinion of the respondents, rice transplanting and harvesting operations and winnowing/threshing involved heavy level of drudgery followed by medium to medium–heavy level of drudgeries in FYM application, preparatory work during seed-bed, intercultural operations. The rest of the operations involved light and medium level of drudgery.
- Most of the respondents used traditional farm tools/equipment for various farm operations.

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