

Status of farm power availability and implements in selected villages of Bastar district of Chhattisgarh

■ A.K. CHANDRAKER, A.K. DAVE, D. KHALKHO AND R.K. NAIK

Received : 20.05.2013; Revised : 29.10.2013; Accepted : 29.11.2013

See end of the Paper for authors' affiliation

Correspondence to :

D.KHALKHO

Faculty of Agricultural Engineering, Indira Gandhi Krishi Vishwavidyalaya, RAIPUR (C.G.) INDIA

■ **ABSTRACT** : Survey conducted in two villages of Bastar District of Chhattisgarh revealed that the percentage share of average tractive power, stationary power and draught animal power is 4.64(0.027 kW/ha), 37.33(0.07 kW/ha) and 76.7(0.34 kW/ha), respectively of cultivable area. Average farm power availability of the selected villages was found to be less than the national average *i.e.* 1.6 kW/ha. The villages have sufficient draught animals, indigenous implements and hand tools like indigenous plough, biasi plough, kopar, patela, pick-axe, crowbar, spade, wooden mallet etc. The study indicated a dire need of increasing the farm power availability and farm mechanization in this particular area to increase the productivity of land.

■ **KEY WORDS** : Farm power availability, Indigenous implements, Hand tools

■ **HOW TO CITE THIS PAPER** : Chandraker, A.K., Dave, A.K., Khalkho, D. and Naik, R.K. (2013). Status of farm power availability and implements in selected villages of Bastar district of Chhattisgarh. *Internat. J. Agric. Engg.*, **6**(2) : 555-557.

Chhattisgarh state has geographical area of 137.90 lakh ha, 35% of which is net sown area. 76% of marginal and small farmers own 34% of land and average land holding is 1.6 ha. 34% of the available land is cropped and 7.3% of area is under horticulture, for this sown area Chhattisgarh has average power availability is 0.72 kW/ha which is less than to national average farm power availability (1.6 kW/ha). The state is divided into three agroclimatic zones namely Northern hills, Chhattisgarh plains and Bastar plateau. Bastar plateau and Northern hills are the tribal dominant agro-climatic zones of the state.

Farm power is an essential input in agriculture for timely field operations for operating different types of farm equipment and for stationary jobs like operating irrigation equipments, threshers/ shellers/ cleaners/ graders and other post harvest equipments. Information about the availability of these power sources under time-series is very essential in planning and prediction level of farm mechanization, as this directly and indirectly provides vast potential for manufacturers, entrepreneurs, sales and repair etc. (Singh *et al.*, 2010). Availability of adequate farm power is very crucial for timely farm operations for increasing production and productivity and handling the crop produce to reduce losses. Farm mechanization inputs particularly tractor power has helped

India in increasing the food grain production from mere 51 million tonnes in 1950–51 to 230 million tonnes in 2007–08 to meet the country's food requirements (Bector and Gupta, 2009). The different sources of power available on the farm for doing various mobile and stationary operations are as under mobile power: Human, draught animals, tractors, power tillers, self propelled machines (combines, dozers, reapers, sprayers etc.), stationary power: Diesel/oil engines (for pump sets, threshers, sprayers and other stationary operations), electric motors (for pump sets, threshers, sprayers and other stationary operations).

■ METHODOLOGY

For sample surveying, two villages namely Bhataguda, Panchayat – Turenar, Block - Jagdalpur and another village Tahakapal, Block- Tokapal from Bastar district of Bastar plateau agroclimatic zone were selected for the survey work. The information on the villages as whole, its households, number of total cultivators, population, land less households, population of bullocks and buffaloes, population of tractors and agricultural machines, cultivated area, irrigated and non irrigated area, cropping pattern, cropping intensity, implements used and management practices followed by farmers were collected by personal interviews and the same was verified from village official record.

RESULTS AND DISCUSSION

The survey work was conducted in two villages of Bastar district of Chhattisgarh state chosen as sample villages to record the status of agricultural implements, draft animal and general utilization pattern of draft animals. The villages were surveyed to generate information on number of draft animals, type of draft animals, number of tractor, number of diesel engine, number of electric pump, number of tractor trolley and bullock cart, type and number of implements, cultivable area, cropping intensity and agriculture practices followed.

It was observed as represented in Table 1, that bullock and buffalo are popular draft animals for the region. However, the buffaloes were preferred more under wet land cultivation. In both villages it was found that the availability of animal drawn implements *desi* plough for tillage operation, *patella* (planker) for levelling, *Biasi* plough for interculture operations, bullock cart for transportation were popular

| Table 1 : Available farm power sources and implements in sample village | | | |
|---|---------------------------------|-----------------|-----------|
| Agricultural operations | Implement/Tools/Draught Animals | Sample villages | |
| | | Bhataguda | Tahakapal |
| Power source | Tractor | - | 2 |
| Tillage | <i>Desi</i> plough | 45 | 568 |
| | Cultivator | - | 2 |
| | Koper | 50 | 149 |
| | <i>Patela</i> | 48 | 130 |
| Sowing | | Manually | Manually |
| Transplanting | | Manually | Manually |
| Irrigation | <i>Tenda</i> | 5 | 12 |
| | Diesel pump | 4 | 12 |
| | Electric pump | 2 | 5 |
| Inter culture | <i>Biasi</i> plough | 53 | 100 |
| Plant protection | Sprayer | 5 | 9 |
| | Duster | - | - |
| Harvesting | | Manually | Manually |
| Threshing | Power thresher | - | - |
| | <i>Belan</i> | 38 | 87 |
| Winnowing | Winnowing fan | 15 | 250 |
| Transportation | Tractor trolley | - | 2 |
| | Bullock cart | 12 | 163 |
| Draught animal | Bullocks pair | 70 | 400 |
| | Buffalo pair | 15 | 200 |
| Processing equipment | <i>Dhanki</i> | 38 | 115 |
| | <i>Musal</i> | 45 | 134 |
| Hand tools | Pick-axe | 70 | 219 |
| | Spade | 92 | 231 |
| | Crow bar | 64 | 151 |
| | Mallet | 150 | 334 |

among the farmers of both the villages. However, for threshing work, the wooden roller (*belan*) was found popular in both the villages. The sowing, transplanting, weeding and crop harvesting by sickle was generally preferred manually. It was found that the diesel pump and electric pump were popular among the farmers of both villages. However, the use of *tenda* for lifting of water from wells was found very popular. Among the farmers the spraying operation was found mechanized. It means that no farmers do the work of spraying without the use of sprayer. The use of winnowing fan was very popular among the farmers for winnowing work. The use of hand tools such as pick axe, spade and crow bar was popular in both the villages. The use of wooden mallet was prevalent in Bastar plateau agroclimatic zone for breaking of clods. On the basis of survey of draft animals it was found that in sample villages it ranges between 500 – 650 kg/pair. The weight of buffaloes was on higher side in both the villages between 800 – 1100 kg/pair.

Table 1 depicts that power availability, contribution of stationary power, draught animal power of villages Bhataguda and Tahakapal of Bastar district was 0.28 kW/ha and 0.60 kW/ha., 0.075 kW/ha and 0.067 kW/ha, 0.208 kW/ha and 0.477 kW/ha, respectively. In terms of percentage stationary power and draught animal power was (26.08 and 11.25) and (73.91 and 79.47), respectively, tractive power in Tohkopal was 0.05 kW/ha but no tractive power found in village Bhataguda. In both the villages sufficient draught animal power was available but need for increasing tractive power was observed.

On the basis of sample villages, average power availability of Bastar district was 0.44 kW/ha, contribution of tractive power, stationary power and draught animal power was 0.027 kW/ha, 0.07 kW/ha and 0.343 kW/ha, respectively, in the terms of percentage total average tractive power, stationary power and draught animal power was 4.63, 37.33 and 76.70 percentage, respectively (Table 2). It was noticed that the higher per cent contribution from draught animal clearly indicates that draught animal power is popular in this area while tractive power contribution is very low.

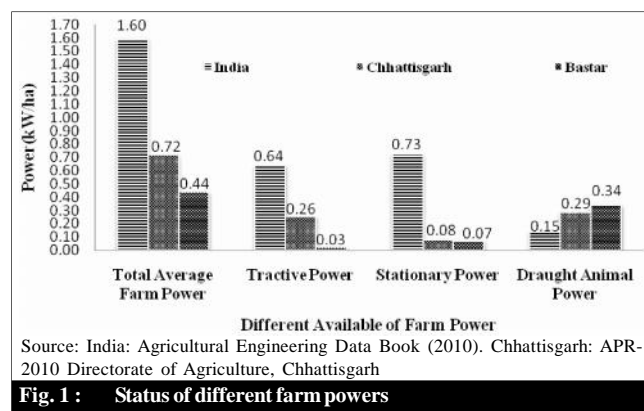


Fig. 1 : Status of different farm powers

Table 2 : Status of available farm power in sample villages

| Power | Sample villages | | |
|---|-----------------|---------------|---------------|
| | Bhataguda | Tahakapal | Average |
| Tractor(kW) | - | 52.22 | 26.11 |
| Diesel Engine(kW) | 14.92 | 44.76 | 29.84 |
| Electric Pump(kW) | 7.46 | 18.65 | 13.05 |
| Bullock pair(kW) | 52.22 | 298.40 | 175.31 |
| Buffalo pair (kW) | 11.19 | 149.20 | 80.195 |
| Total power availability (kW/ha) | 0.28 | 0.60 | 0.44 |
| Tractive power availability (kW/ha) | - | 0.050(9.27%) | 0.027(4.635%) |
| Stationary power availability (kW/ha) | 0.075(26.08%) | 0.067(11.25%) | 0.070(37.33%) |
| Draught Animal Power availability (kW/ha) | 0.208(73.91%) | 0.477(79.47%) | 0.343(76.7%) |

Fig. 1. Shows total average farm power availability of Bastar district (0.44 kW/ha) was lower than state and national average farm power availability of 0.72 kW/ha and 1.6 kW/ha, respectively. Tractive and stationary power of Bastar district (0.03 kW/h and 0.07kW/ha) was also low than state (0.26 kW/ha and 0.08kW/ha) and national average (0.64 kW/ha and 0.73kW/ha). While draught animal power of Bastar district (0.34 kW/ha) was higher than state (0.29 kW/ha) and national draught animal power (0.15 kW/ha).

Conclusion :

The existing implements/ equipment of sample villages were studied to locate the area where improvements are possible to remove the drudgery of the farmers in different farm operation to save their time and to increase the crop yields by proper operations. Some of the areas where improvement can be done:

- Proper constructional material can be used for increased life of plough share.
- The dimension of wooden roller *belan* should be standardized and some modification for higher efficiency is required.
- Use of rope should be popularized for operating wooden plank for higher efficiency.
- Good quality of sickle should be introduced having

similar dimension as a traditional one.

On the basis of study of sample villages average power availability, tractive and stationary power of Bastar district of Bastar Plateau Agroclimatic Zone was found lower than national and state farm powers. The villages have sufficient draught animals, indigenous implements and hand tools. The study indicated a dire need of increasing the farm power availability and farm mechanization in this particular area to increase the productivity of land.

Authors' affiliations:

A.K. CHANDRAKER, A.K. DAVE AND R.K. NAIK, Faculty of Agricultural Engineering, Indira Gandhi Krishi Vishwavidyalaya, RAIPUR (C.G.) INDIA

REFERENCES

- Anonymous (2010). Agricultural Engineering Data Book, CIAE Bhopal, pp 39-40.
- Anonymous (2010). Annual Progress Report, Directorate of Agriculture, Department of Agriculture, Govt. of Chhattisgarh.
- Bector, Vishal and Gupta, P.K. (2009). Present status and growth rate of utilization of farm power sources in India *Agric. Engg. Today*, **33**(4) : 3-9.
- Singh, R.S., Singh, S. and Singh, S.P. (2010). Farm power availability and agriculture production scenario in India. *Agric. Engg. Today*, **34** (1) : 9-20.

6th
Year
★★★★★ of Excellence ★★★★★