

**College of
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Livestock Production & Management

Draught animals and Draughtability

By

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DRAUGHT ANIMALS

Draught animals include those animals that work with and for humans for subsistence and livelihood. The most commonly thought of draught animals are horses, donkeys, mules, camels and llamas, but animals such as water buffalo, sheep, goats, elephants, pigs and dogs also work with and for humans and can be classified as draught animals.

- A **working animal** is an animal, usually [domesticated](#), that is kept by humans and trained to perform tasks. They may be close members of the family, such as [guide](#) or [service dogs](#), or they may be animals trained strictly to perform a job, such as logging [elephants](#). They may also be used for [milk](#), a job that requires human training to encourage the animal to cooperate. Some, at the end of their working lives, may also be used for [meat](#) or other products such as [leather](#). Such animals are sometimes called **draft animals** or **beasts of burden**.

Draughtability

- Draught=work, Ability=capacity so working capacity of animal is known as draught ability of animal.
- Work in the strict sense of “force x distance through which the force is moved” is done by animals only under certain circumstances like (1) walking uphill (2) pulling against some external force.
- However , the term work has a more practical definition in the case of animals draught; It consist of “all activities which require an increase in energy expenditure”

- The net energy cost of walking unloaded has been estimated to be 2 joules/Kg. B.W./meter in cattle and buffaloes (Lawrence 1985)
- Work is done when force is exerted to move an object over a distance.
- Energy cost of walking uphill was found to be 26.82 joule/Kg. B.W./meter ascended (Thomas and Pearson, 1986)

- Cattle expended 3 joules and buffaloes 5 joules for carrying one Kg. load over one metre (Lowrence1985)
- The work performance of animals can be measured by quantifying their capacity to generate power source, generates a little more power than what is actually measured as tractive power because part of it is used in self-propulsion. The tractive power measured in watts is the rate at which work is performed and is calculated from the formula:
- $\text{Tractive power (W)} = \text{draught (N)} \times \text{speed (m/s)}$

- The work output is represented by the total amount of energy delivered by the animals to accomplish a particular task. It is expressed in terms of Kilowatt hours(K.W.H.) The draught component of pull is of most interest to person concerned with animals tractions because it determines the design of the implements and the feasibility of using them in a given condition.

- The application of draught from an animal for pulling a particular implement depends on several factors. The implement factors are animal breed, health and body weight, method of harness, training and field working conditions.
- The horse power developed by Sahiwal bullocks while using three agricultural implements viz. disc plough (0.84 H.P.), disc harrow (0.63 H.P.) and cultivator (0.70 H.P.)

- The tractive force produced by oxen is largely dependant on body weight. It range from 10-14 percent of their body weight.
- Ex. Mules=10-16% of B.W.
- Elephant=7% of B.W.
- On an average, the Hariyana bullock produced a higher H.P. than the crossbreds (0.52 H.P. vs. 0.44 H.P.)

- In practice the “working range” of speeds of walking of draught cattle and buffaloes is nearly narrow ($=0.7-1.2$ m/sec) with a means of 1 m/sec.
- In Sahiwal bullocks disc ploughing (2.21 Km./sec)
- Harrowing (1.98 Km./h) and tilling (2.21 Km/h)
- Swamp buffalo= 0.9 m/sec

MANAGEMENT OF CATTLE AND BUFFALO BULLOCKS

Castration

Castration helps to make the animal docile and tractable. Both cattle and buffaloes are generally castrated by 1.5 to 2 years of age before putting them for work. Too early castration or too late castration is not desirable. Castration using a Burdizzo castrator is recommended.

Shoeing

Bullocks that are used for regular carting should be invariably shod to prevent wear and tear of the hoof.

The shoes should be flat and cover the whole sole. The nail-holes should be towards the outer edge.

Washing and grooming

Bullocks used for regular work should be daily washed and groomed. The best time to give a bath is the after noon hours when the atmospheric temperature is high.

If the animals are taken to a pond or stream, the quality of water being unsure, it is better to water them prior to that with clean wholesome water.

If they are given water after the work, it is necessary to give a rest of at least 15 minutes before starting the bath.

Special care may be taken to see that mud is not caked in between the hooves or the shoe and hoof.

Regular grooming with a brush is essential to control parasites like ticks and mites as well as to stimulate circulation of the skin.

Health care

Because of hard work, draught bullocks are prone to physical stress and occupational injuries. In addition, they are susceptible to common diseases of bovines.

The types of injuries commonly encountered in working bullocks include bruises and open wounds caused by hitting or whipping and undue pulling on the nose rope.

Sores caused by badly fitting harness and yokes, concussion caused by stones or dried and hardened mud stuck in the cleft of the hooves and chronic irritation from head ropes leading to horn cancer.

Unequal pairing, ill-fitting yokes, working long hours, forcing the animal to pull loads beyond their capacity, careless ploughing, and sadistic beating and ritual branding are some of the reasons for injury. These should be avoided.

The age at which bullocks are usually trained to work in is around 3 years. Faster growth by better feeding can make the animals attain the body size for work at an earlier age.

The duration of training depends upon the species and type of animal, type of work and temperament of the animal.

Stage 1 – Teach the bullocks to accept the yoke.

Stage 2 – Walk the bullocks with the yoke . They may be taught to respond to voice commands.

Stage 3 – Attach the plough to the yoke and walk through dry field without actually applying the plough to the ground.

Stage 4 – Walk the bullocks behind a trained pair with actually applying the plough.

Once a pair is trained for ploughing it is easy to train them for carting. Before actually hitching to the cart, the pair should be yoked and walked along the road behind a cart. Once training is over, the bullocks should be put to occasional light work so that the animals do not lose the practice.

THANKS