

# CHAPTER 1. SELECTION AND CARE

## 1.1 SELECTION PROCESSES

### 1.1.1 CHOICE OF SPECIES

#### GENERAL

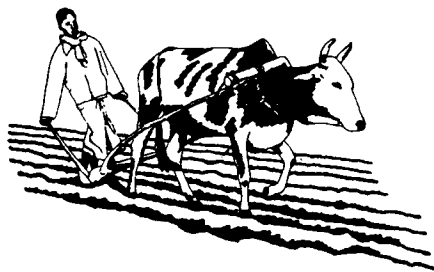
The choice of draught animals depends mainly on the type of work to be performed, the local environment and socio-economic conditions and the local availability of animals. Farmers generally require animals that are affordable, well-adapted and easily replaced. Smallholder farmers frequently benefit from working with animals that are also maintained for other purposes, such as production of milk, meat, manure, offsprings and for social and economic functions.

#### CATTLE

Cattle are the main working animals of the world. Cattle are generally strong, but relatively slow (walking at 2-4 km/h). They are quite easy to train for basic field work, but need to be used regularly if high standards of performance are required. They always need close supervision during work. Harnessing of cattle, using simple wooden yokes, is extremely simple.

Cattle are widely available in most countries, making them easy to purchase, to sell and to replace. In most cases this is an advantage but in countries where cattle theft is serious, the ease with which live cattle or beef can be sold may be a problem. Indigenous cattle breeds tend to be well adapted to the local climate, feed availability and diseases. Local work cattle often find all their own feed through free-range grazing of relatively poor pasture. They can also be maintained in other feed management systems including paddock grazing, stall feeding, staked grazing and supplemented grazing.

Cattle often have many social and economic functions, so that ownership of work oxen, cows or bulls may provide benefits beyond their work output. At the end of their working lives, cattle can generally be sold profitably for meat. Working cows, if well managed, can provide milk and calves in addition to their work.



*Fig. 1 Plowing with a single ox.*

*Source: DAN, 1986*

There are many different breeds of cattle, some of which have been specially bred for milk production, for meat or for work. The largest work oxen of European breeds can weigh 1500 kg, while some oxen of the small West African breeds can weigh less than 150 kg.

### HORSES, DONKEYS AND MULES

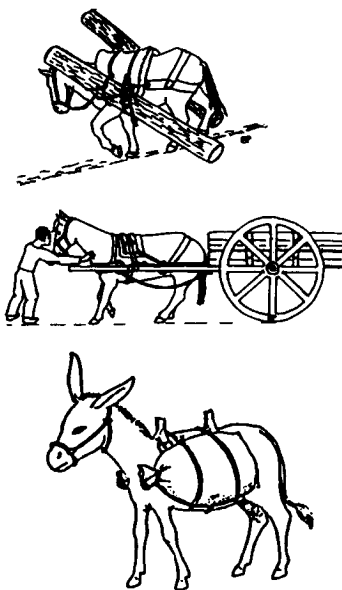
Horses, donkeys and mules belong to the equine group, which tend to be found mainly in temperate, semi-arid or highland areas. They seldom flourish in the humid and semi-humid tropics. Equines move more quickly than bovines (cattle and buffaloes). They walk at 4-6 km/h, and readily trot faster than this, making them particularly well suited for transport, whether riding, packing or pulling carts. They can maintain a good pace over long distances and are capable of rapid surges of power (very useful for getting stopped carts moving). They tend to be single-purpose work animals, and their meat and milk are seldom consumed by humans. Wooden yokes are not well-suited to equines, and so their harnessing tends to be more complicated than that of cattle.

### HORSES

Although horses are excellent work animals in temperate zones, their range and use in the tropics is restricted by health problems and the need for very good management. Horses tend to be high-status, expensive, specialized work animals. They require good quality feed, which is usually only affordable for profitable transport operations. In North Africa, Senegal and some highland regions in Africa, horses maintained mainly for transport may be used briefly for crop cultivation. However, for most smallholder farmers in tropical Africa, horses are unlikely to be the work animals of choice.

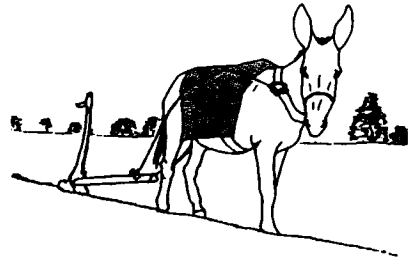
### DONKEYS

Donkeys are small work animals, well adapted to semi-arid areas. They do not seem to thrive in humid or semi-humid conditions, but they are reputed to survive better than zebu cattle in tsetse infested areas. They have great ability to live entirely on poor free range grazing, and in serious drought conditions they tend to outlive cattle.



*Fig. 2 Horses used for carrying logs (above), for cart transport (centre) and a donkey with pack load (below). Sources: Poitrineau, 1988; INADES, 1985*

Donkeys are mainly used for transport operations, carrying pack loads, pulling light carts or for riding. Donkeys are often very cheap and have little, or no, disposal value. Although they have sometimes been considered as animals of ridicule or low status, they have excellent reputations as easily trainable and very dependable work animals. They are famous for being able to carry or pull large loads for their size, but their ability to pull cultivation implements is limited by their relatively low body weight. Single donkeys can pull light cultivation implements, but for heavier operations they have to be hitched in teams.



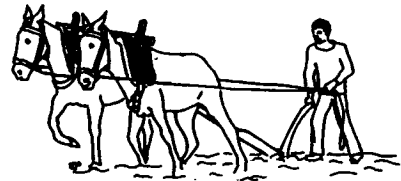
*Fig. 3 Plowing with a donkey.*

*Source: DAN, 1990*

Where donkeys already thrive they may well be ideal animals for on-farm and off-farm transport. With suitable, light implements, they can also be usefully employed for cultivation. Donkeys are easily managed by children. Donkeys may be appropriate for use by those women farmers who do not have easy access to cattle.

### MULES

Mules are specialized work animals produced by crossing a female horse with a male donkey. They are therefore only found where both horses and donkeys breed well, notably in temperate, semi-arid highland areas. They make excellent, single-purpose work animals, being more hardy than horses and stronger than donkeys. They are generally expensive, and tend to be used mainly by those engaged in profitable transport operations or commercial farming.



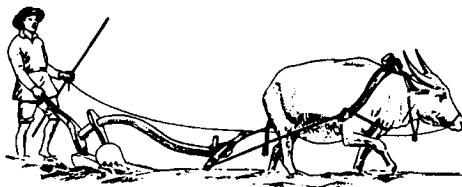
*Fig. 4 Plowing with mules*

*Source: Poirineau, 1988*

### BUFFALOES

Water buffaloes are bovids, related to cattle, found mainly in rice-based farming systems in south east Asia. They are larger and heavier than most tropical cattle breeds, and have large feet well-adapted to walking in muddy fields. Their digestive systems make them able to survive on relatively poor quality diets based mainly on rice straw. Their temperature regulation system is not as efficient as that of cattle, which is why they tend to wallow in water to keep cool. They are susceptible to the disease trypanosomiasis.

Some buffalo breeds are specialized for milk production while the so-called swamp buffaloes (*carabao*) have been bred mainly for work and meat. The water buffalo is not closely related to the African buffalo, and they have not been successfully crossbred.



*Fig. 5 Plowing with a single water buffalo.*

*Source: Hopfen, 1969*

In Egypt, water buffaloes are kept mainly for milk, although surplus males are used for draught work. Despite some attempts by governments and projects to introduce water buffaloes to sub-Saharan Africa, they have yet to thrive and breed successfully at village level. Thus their use by smallholder farmers in sub-Saharan Africa is not a realistic option at present.

## CAMELS

Camels are multipurpose work animals well adapted to arid conditions. Their long legs, fast pace and ability to survive drought makes them useful pack animals in desert regions. They also pull carts (mainly in Asia). Animals maintained primarily for transport and for meat, are also used for tillage in several countries bordering the Sahara desert, the Middle East and parts of India. Camels are mainly found in areas where cropping is quite marginal. This, together with their high cost and management requirements, means that smallholder farmers seldom choose camels as agricultural work animals, unless they already own them for meat production or transport.

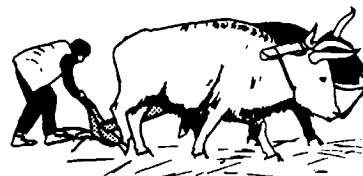


*Fig. 6 Ploughing with a camel.*

*Source: DAN, 1988*

## OTHER SPECIES

Many other species can be used for transport work in special circumstances, including yaks (central Asia), elephants (Southeast Asia), goats (central America and reindeer (north Europe). Zebra have been harnessed on occasions. These unusual examples are all very interesting but have little relevance for smallholder farmers, and so will not be discussed in this manual.



*Fig. 7 Plowing with a pair of yaks.*

*Source: DAN, 1989*