

INTRODUCTION

0.2 INTRODUCTION TO DRAUGHT ANIMAL POWER

0.2.3 BUDGETING FOR ANIMAL POWER UTILIZATION (Part 2)

INTRODUCTION

The previous Module showed how to make a first estimate of costs based on local hire charges. It also introduced the idea of **FIXED COSTS** and **VARIABLE COSTS** in order to better analyze the situation. We will now see how to calculate these costs on the farm.

PURCHASE COSTS

The initial capital cost of animals or implements are their purchase prices. Fill in the approximate local prices for these in **Table 1** below.

Item	Local prices	Illustrative prices US\$
Two oxen (2½ years old)		200
Ox yoke and reins		20
Two donkeys (2½ years old)		100
Donkey harness		30
Mouldboard plough		50
Cultivator/weeder		60
Seed planter		120
Harrow		40
Cart		150

Table 1 Local purchase costs of draft animals and equipment

DEPRECIATION AND AMORTIZATION

Animals and equipment have a useful working life of several years. After this time they are replaced. If a farmer wishes to replace the animals or equipment, the farmer should set aside some funds each year for the replacement. This is known as amortization or depreciation. To find out the depreciation, it is necessary to know the cost price, the expected working life, and the value (if any) at the end of the working life. The following **Table 2** provides space for entering in the local estimates of working life (with some illustrative estimates).

Item	Local estimates	Illustrative examples
Oxen		5 years
Yoke		2 years
Donkeys		7 years
Donkey harness		5 years
Mouldboard plough		10 years
Cultivator/weeder		7 years
Seed planter		7 years
Harrow		10 years
Cart		10 years

Table 2 Estimates of the working life for draught animals and equipment

Equipment is often assumed to have zero value after its working life. An implement that costs \$100 and has an expected life of 10 years has an annual depreciation of $\$100/10 \text{ years} = \10 per year. The cost of owning that implement is thus \$10 per year (plus any interest costs). Oxen grow during their working lives and are generally sold at a profit. This *appreciation* in value is very important and is an added attraction to the use of draught animals.

INSURANCE/RISK COSTS

Sometimes it is possible to buy insurance against the risk of an animal dying, or against it or the equipment being stolen. This cost is generally between 5% and 10% of the value of the animals insured and between 1% and 5% in the case of equipment. Even if a farmer does not buy this insurance, he is running his own risk and an amount should be added to the budget.

INTEREST COSTS

Interest rates vary greatly between regions and countries. Even within a country, interest rates can be low in some years (eg, 5%) and high in others (eg, 40%), low in some villages (eg, 10%) and high in others (eg, 100%). Generally if inflation is high (prices are always going up), interest rates are also high. Fill **Table 3** to show the cost of loans to farmers in your local area.

Local costs of loans (fill in local costs)		
Loan from local development project	Loan from local Bank	Informal village loan

Table 3 Estimates of interest costs for draught animals and equipment

VETERINARY AND HEALTH CARE COSTS

Animals need health care which may involve vaccinations, treatment of wounds and control of ticks and insects. Regular dipping is often necessary, particularly for control of tse-tse fly and East Coast fever. Some veterinary services may be free, but it is increasingly common for farmers to have to pay for the health care of their animals and this must be added to the budget.

FEEDING COSTS

Feed supplements are important if the animals are to work well and remain strong and healthy. Even if the farmer grows his own feed, a small cost should be added to the budget.

LABOUR COSTS

They say that "time is money". Thus time taken to look after animals and work with them is a cost, particularly if the farmer could earn money elsewhere during the time he now spends with the animals due to this extra work. An allowance should thus be made for this labour cost.

REPAIR AND MAINTENANCE COSTS FOR THE EQUIPMENT

This obviously depends upon how much the equipment is used. However it is usual to estimate this as an annual cost of about 10% of the initial cost of the animal traction equipment.

ANIMAL POWER BUDGET

The Table below, on page 4, gives an example of how animal power costs can be worked out. Local cost estimates should be used in the table. Notice that the more the animals are used, the less will be the daily costs and the *per hectare* costs of the work. Estimates of actual costs are difficult on small farms. It is **not** normally necessary to undertake such formal budgeting. You should also realise that costs are not the whole story. Animals may also have important social benefits and advantages such as better timeliness, improved status, domestic transport, etc.

Item	Local estimates	Illustration (\$)
INITIAL ASSUMPTIONS		
Animal purchase price (eg, two oxen)		200
Animal sale price after working life (eg, two oxen)		300
Animal working years		5
Cost of new mouldboard plough		50
Cost of yoke, chain, ropes, reins and shelter		40
SUB-TOTAL: EQUIPMENT COSTS (50 + 40 =		90
ANNUAL EQUIPMENT COST CALCULATIONS		
Annual equipment depreciation: (example: 10 year life or 1/10th total cost / year)		$(90/10 = 9$
Interest: (example: 10% interest on 50% of equipment cost)		$(90/2 * 1/10 = 4.50$
Repairs and maintenance: (example: 10% of initial equipment cost per year)		$(90 * 1/10 = 9$
ANNUAL ANIMAL COST CALCULATIONS		
Animal capital costs: (example: appreciation over five years)		$((100) * 1/5 = (20)$
Loan interest costs for purchase of animals: (example: 10% interest on 50% of animal cost)		$(200/2 * 1/10 = 10$
Animal insurance costs: (example: 5% of initial cost of animals per year)		$(200 * 5/100 = 10$
Management and veterinary costs: (example: flat rate of \$20 per animal per year)		$(20 * 2 = 40$
Feed supplementation costs throughout year: (example: flat rate of \$20 per animal per year)		$(20 * 2 = 40$
TOTAL ANNUAL FIXED COSTS (for equipment and animals)		102.50
LABOUR, FEED AND MANAGEMENT COSTS		
Daily Supervision costs of animals (if required) (example: hired labour at \$2 per day)		2
Daily Labour costs for ploughing (if required) (example: \$2 per working day)		2
Feed supplementation and management costs (example: \$2 per working day)		2
TOTAL DAILY VARIABLE COSTS (when animals are working)		6
Example: Animals are used only to plough 5 hectares during the year, taking 5 days/ha: TOTAL FIXED COSTS / HA $(102.5 / 5 \text{ ha} =$		20.50
TOTAL VARIABLE COSTS / HA $(6 * 5 \text{ days} =$		30
TOTAL COST PER HA $(20.5 + 30 =$		50.50