Types of Farm Power

Rice Science for a Better World

rice fact sheets

Introduction

All farm power operations require a specific amount of energy. The time required will vary according to the size and type of power source used. Power can be supplied by humans, animals, or machines. Explore the information for each of the five power sources given below.

1. Human Labor

In some cases, manual labor is more cost efficient than machines. One person can:

- shift 2-3 cubic meters of soil/day
- cultivate 60 square meters/day
- cultivate 1 hectare in 150-160 days
- hand weed 1 hectare in 30-35 days

2. Animals

Animals are still widely used as a major power source. A pair of animals will take 8-10 days to plow 1 hectare.

Advantages: Cheap to maintain, multi-purpose, self-replacement.

Disadvantages: Limited daily working hours, slow, high person/power ratio.

3. Two Wheel Tractor

Two wheel tractors are normally powered by 6-12 kw gasoline or diesel engines and are fitted with either rubber tires or steel cage wheels. A two wheel tractor can plow 1 ha/day.

Advantages: Multi-purpose vehicle, operate in harder conditions than animals or humans, operate in both wet and dry conditions, fairly simple mechanical design.

Disadvantages: Cost of owning and operating, operator fatigue, although ride-on versions are now available.

4. Four Wheel Tractor

Four-wheel tractors can be divided into 2 categories: 2-wheel drive and 4-wheel drive.

2-Wheel Drive	
Advantages	**Disadvantages**
Smaller turning circle.	Inability to work in wet and muddy conditions.
Simplicity of design.	
Fewer mechanical parts.	
Lower purchase price.	

4-Wheel Drive	
Advantages	**Disadvantages**
Ability to work in wet conditions.	Higher purchase cost.
More efficient.	Higher maintenance cost.

5. Track Laying Tractor

Used mainly for civil work but can be used for tillage.

Advantages: Good traction, high power aviailability at draw bar, lower operating cost.

Disadvantages: High cost, poor maneuverability, high purchase cost.

For More Information

Send an email to: irri-training@cgiar.org.

For an overall view of crop management practices, visit TropRice at http://www.knowledgebank.irri.org/troprice.

To diagnose problems in the field, visit RiceDoctor at http://www.knowledgebank.irri.org/ricedoctor.

IRRI International Rice Research Institute

Prepared by Joe Rickman and the Agricultural Engineering Department at IRRI.