SUBJECT: AGRICULTURAL SCIENCE

CLASS: SS1

WEEK: 7

TOPIC: SOURCES OF FARM POWER

TERM: 3RD TERM

Power is needed in the farm for varieties of operations on the farm are ploughing, ridging, harrowing etc. While examples of stationary operation are threshing, shelling, pumping of water etc.in all these operation, human power is by the earliest source of power available on the farm and this is considered to be very important in all activities carried out the farm.

POWER SOURCES

The following are the common sources of farm power.

1. Human power
2. Animal power
3. Wind power
4. Solar power
5. Electrical power
6. Water power
7. Mechanical power
8. Biogas

HUMAN POWER

Manual power or human power has been in existence from the time immemorial. The human power has played important role in agricultural production and related food processing activities in the world. Men can serve as source of power or control farm devices, but their level of maximization depends on the degree of mechanization.

ADVANTAGES OF HUMAN POWER

1. Haman power is always precise
2. Human power serves as the controlling aid for all other powers.
3. It may be skilled or unskilled.

DISADVANTAGES OF HUMAN POWER

1. Human power is highly insufficient.
2. Human power is not reliable

3. It is easily fatigued.
4. Skilled labour is expensive

ANIMAL POWER

Animal power is still widely used I several countries and can be derived from oxen, buffalo, donkey, camels and horses. Animal power may use for both stationary and mobile operations. Special harnesses to hitch various equipment's to the animals. The output derivable from animal is dependent on the following;

i. Food intake
ii. Breed of animal
iii. Training given to the animal

ADVANTAGES OF ANIMAL POWER

1. It is a cheap source of power
2. Animal are more powerful than human
3. Animal output is more than human power
4. Animal dungs excreted during work help to increase soil fertility

DISADVANTAGES OF ANIMAL POWER

1. The farm may be affected by pests and disease from animals.
2. Weather condition determines their activities
3. High cost of maintenance is required.
4. Animal can eat up crops if not properly monitored.

WIND POWER

This has been successfully used to generate current or pressure for pumping water used on the farm. The natural breeze turns the blades of a windmill which in-turn operates pump to lift water. Wind power is also used to generate electricity on the farm.

ADVANTAGES OF WIND POWER

1. It is a cheap source of farm power.
2. It can replace electrical power.

DISADVANTAGES OF WIND POWER

1. Its supply maybe unreliable
2. The cost of maintenance is high.
3. Wind power cannot be stored.

SOLAR WIND

Many countries all year round. There are plenty of potentials for the development of solar energy in Nigeria. Solar energy can be used for processing food, vegetable and for general drying of crops. Solar power can be used in solar operated pumps. The energy from the sun is received in a collector and transmitted into a heat engine which converts the solar energy into mechanical power to run a water or irrigation.

ADVANTAGES OF SOLAR POWER

1. Its maintenance is free.
2. It doesn't produce wastes that pollute the environment.
3. It does not require fuel
4. In its natural form, it can be used for drying farm produce.

DISDVANTAGES OF SOLAR POWER

1. It is very expensive to set-up
2. It is sunlight dependent
3. It is not as efficient as electrical power.

ELECTRIC POWER

Electricity is the most efficient and clean source of power used on agricultural farm.it is extremely used for a number of operations namely; heating, refrigeration and lot more. However, the most important use of electric motors which convert electric power to run different machines.

ADVANTAGES OF ELECTRICAL POWER

1. It is a neat source of power
2. It can be converted to another form of energy.

DISDVANTAGES OF ELECTRICAL POWER

1. It is expensive
2. It is very converted to another form of energy.
3. Maintenance cost is high

WATER POWER

Flowing water in canals, river and streams can be harnessed to convert water power or hydro power into mechanical or electric power. The energy from flowing water from higher level to a lower level can also be harnessed to operate a few farm activities such as grinder, generating power to produce electricity etc.

ADVANTAGES OF WATER POWER

1. Power generated from water is very efficient.
2. It is used to operate steams engine.

3. In its natural form, it is used for washing and bathing.

DISADVANTAGES OF WATER POWER

1. It is weather dependent or seasonal in nature
2. It is expensive to set-up and operates.
3. Its maintenance cost is high.

MECHANICAL POWER

The power generated from internal combustion engines may be used on the farm for a wide variety of operations .when such an engine is self-propelled; it forms the nucleus of the tractor.

ADVANTAGES OF MECHANICAL POWER

1. It makes farm work less tedious.
2. It saves time
3. It facilitates the cultivation of large areas of land.
4. It is not prone to disease or pest.

DISAVANTAGES OF MECHANICAL POWER

1. It is very expensive to acquire.
2. It destroys soil structure.
3. It causes environmental pollution.
4. It requires skilled labor
5. Its maintenance of cost is high.

BIOGAS

The use of biogas power is not common in developing countries. When plants and animals remains are allowed to decompose in the absence of oxygen by anaerobic bacteria, biogas is produced. Anaerobic bacteria cannot tolerate oxygen.

ADVANTAGES OF BIOGAS

1. It is not expensive to produce
2. It is provides an efficient means of waste disposal.
3. The organic fertilizer, help to increase the fertility of the soil.

DISAVANTAGES OF BIOGAS

1. It is only possible in a place where there is abundant of organic matter.
2. It requires special skills.