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MULTIPURPOSE AGRICULTURE VECHICLE

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Abstract- India is an agriculture based country in 70%people depends on the outcome of farming. But if you observe that with the increase in population the farm gets distributed among the family and because of this the farmers in india held averagely only 2 acre farm.also economically,farmers are very poor due to which they are unable to purchase tractors or other costly farming equipment hence they use traditional way of farming. Basically many farmers in india still also use bullocks , horses for farming operation.this will not satisfy the need of energy requirement of the farming as compared to other countries in the world.

So we are thinking that humans and animal efforts can be replaced by some advanced mechanization which will be suitable for small scale farmer from economical and effort point of view.

I. INTRODUCTION

Agriculture occupies a key position in Indian economy. It ntributes about 40% of the gross national product and provides a source of live-hood to nearly 79% of working population of the country. The delopment of agriculture ,therefore, has been accorded a high priority into planned development of the country with the help of modern technology in agricultural production. Impact of new agriculture tecnology on farm gives the more income. Indian agriculture has witnessed significant changes in production technology through the introduction and spread of high yielding varieties of crops and intensive applications of modern inputs in farming. This process of transformation in agricultural form a traditional to a modern state has brought in agriculture because of the higher rate of return to such investment.

The daily need of man could not be easier in the desired proportion . The main reason for this is the high rate of our population growth. So long as the rate of population growth if not brought down, it is difficult to raise the standard of living. Therefore,it is necessary to have changed the planning on agriculture and increases agriculture products for the daily need of people.It is also useful to improve our economy because 80% people depend on the farm. Therefore to meet the need of people it is essential to increase the agriculture productivity . Indian economy is agro based and agro is fully dependent on weather. So to meet growing need of food grain we have to use fertilizers, hybrids seeds, and various types of machines to take more yield from the available land. So keeping this view in mind we have develop the machines for use of multiples attachment working on Diesel engine, as our project "Multipurpose Agricultural Vehicle" .

II. LITERATURE SURVEY

During early 60's ,a concept of farm power availability per hectare basis was used to indicate level of farm mechanization.the potential power availability was used as the measure and could not reflect critical constraint of farm power availability during peak requirements the actual level of use .

Table:Farm power availability per unit net cropped area.

Power	1971-72	1981-82	1991-92	1966-97
Farm power(Mkw)	44.65	70.26	114.08	138.65
Unit farm(kw/ha)	0.32	0.5	0.8	0.47
Mechanical power	36.9	63.7	76.9	78.0

III. CONSTRUCTIONAL DETAILS

Following are the main components of the machine "Multipurpose Agriculture Vehicle" .

A. Disel engine

The engine used in the project is 4- stroke single cylinder engine,which has a bore of 70mm and stroke of 70mm.The engine is horizontal air cooled engine,which has a C.R of 20.5-22.the rated power is about 12 BHP at 2600 rpm.The engine is oil lubricated.

B. Transmission

The transmission used in this project is of simple type.the rajdoot engine has three speed gear box having first gear down and two gear in upward position.there is a neutral position available in the transmission system,one between first and second.the gear shifting mechanism is very easy and the gear oil used in the engine is SAE 90.

Table: Technical specifications

Engine	Disel
Type	4- stroke single cylinder
Bore	70mm
Stroke	70mm
Rated output	2.94 KW
Rated speed	2600 rpm
Method of lubrication	Centrifugal Lubrication
Method of starting	Hand Cranking
CR	20.5-22

C. Frame

The frame of our project is of rectangular shape and material used for the frame is Mild steel (1.5" angle) .frame acts as base for engine.frame is made by joining the angles on which engine with gear box is fastened with nuts and bolts.power is transmitted from engine shaft to intermediate shaft and then to axle with the help of chain and sprocket.

At the back of frame one MS angle is welded for connecting the attachment to the project model i.e cultivator,land preparatory ,weeder,etc.an extra arrangement is also made for the arrangement of STP pump at the front side of frame.

D. Chain And Sprocket

Sprocket is used to transmit power to the intermediate shaft to axle with the help of chain drive.the chain drive is used because it transmits power effectively from one shaft to another with very high efficiency and minor power losses

The chain is lubricated for its smooth working.the total speed reduction obtained by chain drive is 12.

E. Wheels

Three wheels are used for our project,two wheels at the rear side and one at the front side of the frame.rear wheels are attached to the frame by using pedestal bearing. Two big wheels having diameter 520mm and another front wheel having diameter 520mm to balance the draft requirement.

❖ **Image of " Multipurpose Agriculture Vechicle"**

IV. WORKING OF MANUAL CUM ENGINE OPERATED "MULTIPURPOSE AGRICULTURAL VEHICLE".

The machine was taken into the field for the cultivating or weeding of grass and then connection of different attachment are made depending on the operation. After connecting the attachment check the oil and diesel level in the tank. After that the engine is started by using the kick and by keeping the gear control lever in neutral position and accelerator lever in middle position.

Then operating the clutch, gear lever is shifted to 1st or 2nd position; the clutch is released slowly and the accelerator is raised simultaneously and it is kept fixed at desired position.As soon as the clutch is released, the power of the engine is transmitted to the intermediate shaft through chain drive. And from intermediate shaft power is given to the rear axle on which wheels are mounted and thus we get the forward motion of the wheel. Give some manual force to deep cultivating shovel teeth into the soil for cultivation and for weeding operation in that way machine gives tractive effort in forward direction. Once the teeth of cultivator go deep into the soil, it will be pulled in forward direction. so in this way the cultivation operation in the farm field is peformed.

Similarly, for pesticide sprayer pump, a foundation is made on which pesticide sprayer pump is mounted. For rotating the pump a pulley is provided on the intermediate shaft. Just by connecting pump pulley with pulley on intermediate shaft and by using a belt drive arrangement we get the same rotation or rpm at which engine is running.

❖ **Function of Project**

1. Cultivation.
2. Land Preperation.
3. Weeding Operation.
4. Pesticides Sprayer Pump.
5. Pumping water from well at 100m head and 500m long.
6. Flower mill.
7. Power generation.
8. Cutting animal food (Sugarcane, Maize, Millet, Rick etc.)

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