

A Review on Sugarcane Harvesting and Thresher Machineries

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Abstract - This paper is focused on development of sugarcane harvesting machines and threshing mechanism develop inside harvester. Nowadays there are need of fast production of agricultural products. 75% Indian economy is based on agriculture. So development of agriculture field is considered as development of India. But nowadays because of industrialization shortage of labor found in agriculture field. . Day by day labor demands about their salary are also increased. This review paper is a small work towards analyzing sugarcane harvester machine aspects for economical harvesting which will help to minimize the working fatigue and to reduce labor cost. Today's world there is a heavy demand for sugar and its byproducts. The major states growing sugarcane are Maharashtra, Uttar Pradesh and Karnataka. Now India is the leading producer of sugarcane in the world.

This project aims to reduce labor as well as farmer's effort and to increase the output of agricultural products. If compared to other harvesting machines, this machine can cut the two side from the lower, and upper portion of the sugarcane, and threshing mechanism removes all the leaves, and pass sugarcane to the tank. Higher cost machine cant to purchase by common or middle class person, hence cost reduction is our main focused.

Key Words: Thresher, labors, sugarcane, harvesting.

1 Introduction:-

Sugarcane is the major economic crops in India. It is used as a raw material in sugar manufacturing. Recently India is the second-biggest sugar producer country after Brazil. The Indian agriculture depends heavily on human labor which results in low productivity per hector of per labor, so it wastes a lot of time on working process. Indian agriculture has facing challenges like shortage of agricultural labor, not only in peak working as but also in normal time.

This is mainly for increased nonfarm job opportunities having higher wage, migration of labor force to cities and low status of agricultural labors in the society. Human labor shortage tends to be a serious problem in rapid agricultural industrial development. Sugarcane leaf-removing tools could help speed up sugarcane harvest and reduce contamination. Harvesting is a process of cutting and gathering of mature crop from the field. Harvester is a machine is used for harvesting. Different types of harvesting machines are available in the market namely paddy harvester, Tea harvester, Potato harvester, Wheat harvester and sugarcane harvester, as mentioned above all are available in small scale

except sugarcane harvesting machine. Sugarcane harvesting is an agricultural machinery use to harvest and process sugarcane.



Fig.1. Sugarcane is harvested by hand mechanically.



Fig. 2. Sugarcane harvested by machine

3. LITERATURE REVIEW

In world mostly sugar is used as for domestic cooking application. The supply of sugar is diminished from time to time with population growth. This lead to public to spend large percentage of their money for sugar instead of performing productive work in agriculture. Sugar production has lead to a growing depends on crop residues and animal dung of fuel.

This could potentially lead to severe reduction in agricultural output at a time when greater production is expected in the sector. Similarly, shortages and high cost of fuel lead to the reduction in the number of sugarcane products. To avoid this problems we have to enhanced

production rate and their quality small period of time, with lower budget. This machine helps to harvest as fast as possible up to 4.5hecters/day.

The use of thresher mechanism is to clean sugarcane exit and to make sugarcane free of their leaves. In traditional way leads to incomplete harvesting of sugarcane, causing labors tendency of work. Hence more amount of leaves with sugarcane pass, which was not applicable for anything. This must be waste, and make pollute surrounding area of industry.

4. ADVANTAGES

1. Harvesting time will be lower.
2. Efficient work is done by using this machine.
3. Low number of labors are required for whole operation.
4. Cost of harvesting is very less as compared with manual harvesting.

5. DISADVANTAGES

1. Efficient work is not done.
2. The cost of machine will be more.
3. Shortage of experienced labor.

6. PROCEDURE

In Worldwide production of sugar main countries are Brazil, India, china, European countries produced up to 78% of global sugar.



The Chassis frame of the main base of the vehicle on which body is mounted with wheels and machinery. As per the design, marking has been done. As per the marking, angles are cut by cutting machine and holes are drilled on angles by using drilling machine for fixing saw chain assembly and DC motor. L-angles have been weld as per marking and finally the chassis is fabricated as per the required dimensions. Two wheels are attached to each other through the pipe and connected to the frame for the movement of the harvester in the field. L-angle is weld to pipe to make handle and welded to the chassis for pushing the vehicle in the field. At handle l-shape angle plate is weld to place the solar panel.

L-angle is cut to the required dimension and DC motor is fitted to it; and then it is welded to the front portion of the frame. A shaft from the DC motor is connected to drive sprocket. Guide bar is mounted in front part of the chassis by using nuts and bolts and weld as per the requirement.

Proper alignment is made between the drive sprocket and guide bar for the rotation of the saw chain properly. Distance between the guide bar and ground is done as per the requirement. DC motor is connected to the battery through switch and solar panel is connected to the battery for power generation.

Sheet metal is cut by a cutting machine as per the chassis dimensions and it is weld on chassis frame for carrying load on the vehicle.

7. CONCLUSION

The sugarcane harvesting machine with thresher is designed and fabricated. After testing small scale sugarcane harvester in the surrounding. There found that the large amount of leaves are harvested with sugarcane and they are proceed, which make dust n surrounding. Due to that the machine was not gives required results as per requirement. So one more mechanism is fixed at the middle for the proper and smooth harvesting of the sugarcane.

By using this mechanism problem of the leaves extraction from sugarcane is reduced. Comparing with manual harvesting only 10% of labors are required for entire operation. It makes the process faster hence reduces most of the harvesting time and labor required to operate the machine is also less.

So, it reduces the labor cost. The machine is used by maximum number of farmers definitely farmer can overcome the labor shortage problem. This reduces the labor cost and process become faster and easy. The productivity is also increased.

REFERENCES

- 1] Government of India, Indian agricultural statistics 2015-16, Ministry of Agriculture & Farmers Welfare, Department.
- 2] "Design and Fabrication of Multipurpose Robust Cutting Machine for Agriculture (2014-15 project report)
- 3] The Office of Sugarcane and Sugar Commission, 2008. The report on sugarcane and Sugar production.
- 4] Makrand Patil, P. D. Patil, Optimization of blade angle for cutting system of sugarcane harvester, International indexed and referred research journal, march 2013, ISSN-0975-3486, vol-4
- 5] Caillouet, K. G. Apparatus and method for harvesting cane. United State Patent 2001. - 6230477