

DESIGN AND FABRICATION OF JUICE AND PEDIGREE MAKING MACHINE

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Abstract— Drinking juice never made us realize that how much fruit pulp is getting wasted. If we can utilize that pulp for some other purpose by decreasing its moisture content which is responsible for decaying of things it would be of great benefit. Pulp to pedigree deals with heating of pulp to reduce its moisture content and then grinding it to make pedigree which can be fed to the animals. This machine not only making the juice and reduces the moisture but also helps in storing of pulp. Further, the dried pulp is finely grinded. This pulp then can be readily utilized in the form of pedigree to cattle animals and help saving useful pulp from getting wasted

Keywords—pedigree,grinder, juice;

1. INTRODUCTION

Livestock play an integral role in the livelihood of poor farmers by providing economic, social and food security. Taking 2010 as the base year, percent more milk in 2050, while these values for developing countries will be 116 percent, respectively (FAO, 2011). To meet this demand, huge quantity of feed resources will be required; challenging sustainability of the feed production systems. Already there is a considerable shortage of feed availability in most developing countries The ongoing shift in the cropping pattern from cereals to more remunerative fruit and vegetable crops in many Asian countries will lead to decreased supply of cereals and crop residues for animal feeding. Fruit and vegetable processing, packing, distribution and CZ consumption in the organized sector in India, the Philippines, China and the USA generate approximately 1.81, 6.53, 32.0 and 15.0 million tons of fruit and vegetable wastes. Therefore if we can utilize the pulp for some other purpose by decreasing its moisture content which is responsible for decaying of nutrients and proteins. Pulp to pedigree deals with heating of pulp in a heating furnace to reduce its moisture content to permissible level so that its nutrient content does not get affected and then grinding it to make pedigree which can be fed to the animals. This machine not only reduces the moisture but also helps in storing of pulp by reducing the water of pulp

2. LITRATURE REVIEW

[1]M. Wadhwa, Senior Biochemist at Guru Angad Dev Veterinary and Animal Sciences University (GADVASU) M.

P. S. Bakshi former Senior Nutritionist-cum-Head, Department of Animal Nutrition at GADVASU, Ludhiana, India. Harinder P.S .Makkar is Animal Production Officer at FAO Rome.Fruit and vegetable wastes like baby corn husk, cauliflower and cabbage leaves, pea Pods, sarson saag waste, culled snow peas and tomato pomace; citrus, carrot and bottle gourd pulp; banana and mango peels etc. are a rich source of nutrients and these can be fed either as such, after drying or ensiling with cereal straws, without effecting the palatability, nutrient utilization, health or performance of livestock. These can also be used for the production of value-added products like essential oils, polyphenols, anti-carcinogenic compounds, edible oil, pigments, enzymes, bio ethanol, bio-methane, bio-degradable plastic, single cell proteins etc. The effective and efficient utilization of fruit and vegetable wastes will reduce the cost of animal feeding thereby increasing farmers" profits, generate an array of value-added products and help in waste management and reduction of environmental pollution.

[2]Romdhane ben slama¹, fethi mechlouch² & houcine ben daoud³ Laboratoire d"analyse des procédés enig gages, Tunisia Laboratoire de thermodynamique appliqué enig gages, Tunisia Iset de sfax, tunisia. Int. Symp. on Convective Heat and Mass Transfer in Sustainable Energy April 26 –May 1, 2009, It is well known that air solar collector can be of interest for drying, especially when they are used in such a way that the products have no direct contact with sun radiation, Presenting a real product of some economical interest, the orange peels, the drying kinetics curves have been established in quasisteady states regimes and can be used for similar applications, and are presented in the first part of the paper, The second part of the paper, deals with a real air dryer system with two major key points: Interest of baffles to increase the efficiency of air solar collectors even with low air flow, Interest of combination between natural convection and forced convection, through use of fan, to control the precisely as possible the quality of drying process.

3. PROBLEM STATEMENT

Here we define the problem statement- Nowadays availability of food for the cattle animals is biggest issue for farmers. The problem is increasing day by day due to environmental conditions like draught. As we know human life is somehow depended upon cattle animals so, it is essential to fulfill the demand of animals.

Following are the majorly occurring problem on which our project implies better solution

- i. Increasing cost of pedigree day by day.
- ii. Poor knowledge of farmers to provide nutritive pedigree.
- iii. Huge Production of Fruit and Vegetable waste.
- iv. Drawbacks of conventional pedigree processing methods.
- v. Less availability of fodder in summer season.
- vi. Increasing environmental pollution by barracking

4. OBJECTIVE

The main purpose of this machine is to making juice and heating of pulp to reduce its moisture content and then grinding it to make pedigree which can be fed to the animals.

1. To make juice.
2. To use the wasted pulp for animal feed.
3. Long term storage and use the product.

5. METHODOLOGY

What Pedigree making machine does?

This machine works on heating and drying process by means of heating element and hot air flow. If the temperature of furnace and velocity of air kept to the required condition for the fruit pulp and waste which is coming from juicer then we can minimize the moisture content. And also there is no harm to the other nutrients while heating. The drying process of this fruit waste increase the life and after some process we can directly feed this to animal as food. This increases the nutrition to animals and reduces the fruit waste

6. NEED OF MACHINE –

Food processing is done to increase the life of food and also the nutrients in it. Long years ago there are some conventional food preserving techniques which are time consuming, complicated and risky. But now days drying methods are used to preserve some food content. In this sun heating is most common method to remove moisture content of food. Food processing Industries are the one of rising industries but the waste generation is also more. Generally the waste is barrack into ground. To avoid this wastage we can convert it into pedigree for animals.

a) Conceptual survey –

We referred four different research papers regarding food processing and conservation of food stock by different methods. We found out the different nutrition sources in various fruits and vegetables which are useful in making of animal feed.

7. CONSTRUCTION AND WORKING

A. CONSTRUCTION

Fig1shows the simple setup for the juice and pedigree making machine. It consist of the heating furnace made up of MS sheets. There is a lid for the feeding of fruitpulp from juice maker box Inside the furnace compartment A Heater coil and Temperature measuring device are installed. Heating coil is used to heat the pulp and the temperature measuring device is used to monitor the temperature inside the furnace. A Exhaust fan is installed bellow the

furnace compartment so as to increase theheat transfer rate by inducing hot air to the furnace. Exhaust Fan is driven by the DC motor. The furnace is followed by the grinder, the household grinder is installed near the furnace. Feeder mechanism is provided is provided to transferthe pulp from furnace to the grinder which operates on the mechanical linkage. To collect the powder form pedigree a collecting vessel is used at the bottom.

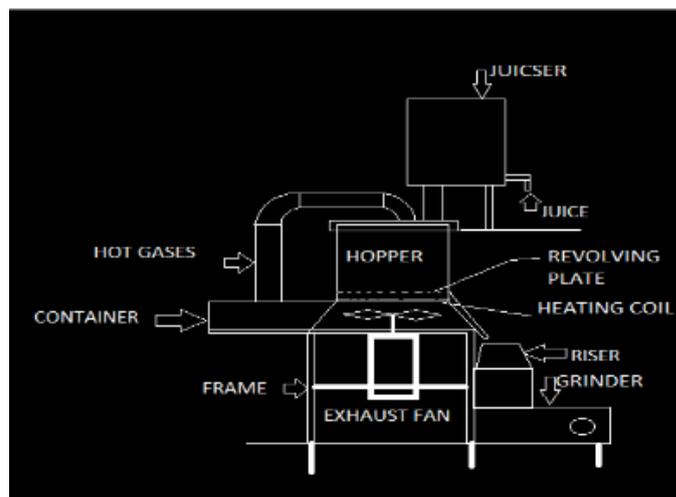


Fig-1 construction of system

B. Working

This setup implies conversion of Fruit into juice and remaining pulp of juice into useful pedigree which can be totally utilized by farm cattle. This machine consists of feeding the pulp from juicer into the furnace. The furnace consists of a heating coil with a fan. This setup induces hot air into the system with the help of blower. In the furnace, drying process of pulp takes place. Blower increases the rate of heat transfer which in turn decreases the time of reducing the moisture content in the fruit pulp. Monitoring of fruit pulp and temperature inside the furnace can be performed with the help of temperature measuring device and time period for which the pulp is heated. Temperature measuring device is installed inside the furnace. Further this dried pulp is forwarded to the grinder with the help of feeder mechanism to grinder where it will be almost converted into powder form. Grinding of pulp will be monitored using the optimum time required for converting dry pulp into almost powder state.

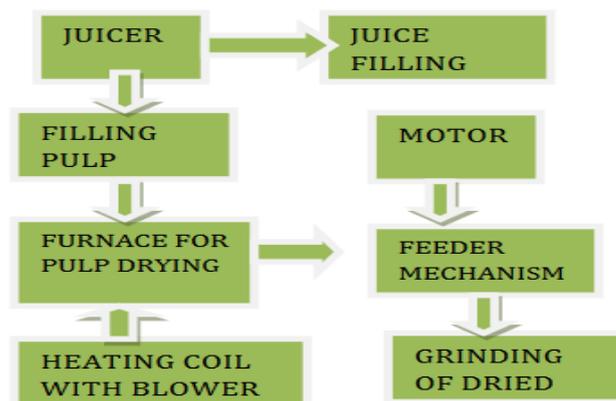


Fig 2. Working of system

C. Cad modeling

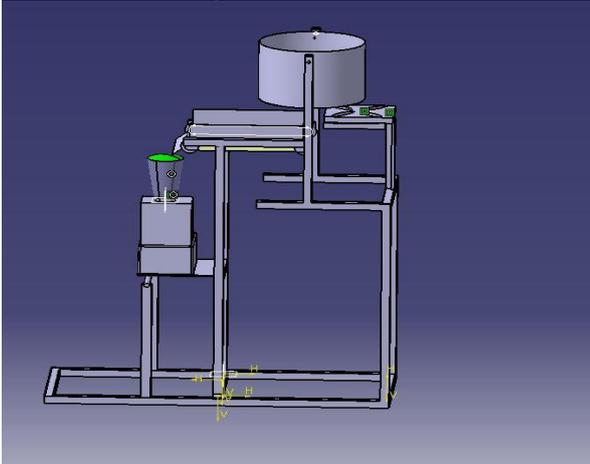


Fig –Cad modeling

b) Safety Precautions

The following points should be considered for the safe operation of machine and to avoid accidents:-

- All the parts of the machine should be checked to be in perfect alignment.
- All the nuts and bolts should be perfectly tightened.
- The operating switch should be located at convenient distance from the operator so as to control the machine easily.
- The inspection and maintenance of the machine should be done from time to time.

c) Advantages of pedigree making machine:

- Storage life increases
- Highly Nutritive Pedigree
- Fruit and Vegetable waste is less Costlier and easily Available
- Simple Handling
- Less time Consuming
- Use of Waste Material
- Prevents Environmental Pollution.

d) Disadvantages:

- High Initial Cost
- Requires Electricity drying & Grinding.

8. FUTURE SCOPE

- This machine can further be used to convert large amount of pulp in pedigree.
- Fast working of machine can be achieved by using a high industrial grade heater as this machine has a normal grade heater for furnace.
- Conveyor system can be implemented for automatic loading of pulp in to the furnace area.
- Automatic packaging system can be installed at the end of conveyor to package.

9. CONCLUSION

We have designed and fabricated Pedigree Making Machine, In which approximately 2kg of Fruit and vegetables pulp can be used at a time. This machine has limited use up to some extent of commercial purpose. The capacity of the same machine can be easily modified for the use of large scale commercial purpose.

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