

IEEE 2017-18 Agricultural Based projects

1) ADVANCED 4 IN 1 MULTI PURPOSE AGRICULTURAL VEHICLE

This agri-vehicle vehicle is an agricultural machine of a considerable power and great soil clearing capacity. This multipurpose system gives an advance method to sow, plow, water and rolling the crops with minimum man power and labor making it an efficient vehicle. The machine will sow the seeds the farm by considering particular rows and specific column at fixed distance depending on crop. Moreover the vehicle is self powered by solar energy. In most cases, a lot of factors have to be considered (e.g., the size and color of the fruit to be picked) before the commencement of a task. Vehicles can be used for other horticultural tasks such as pruning, weeding, spraying and monitoring. Vehicles can also be used in livestock applications (livestock vehicleics) such as automatic milking, washing and castrating. Vehicles like these have many benefits for the agricultural industry, including a higher quality of fresh produce, lower production costs, and a smaller need for manual labor.

2) ADVANCED 5 IN 1 MULTI PURPOSE AGRICULTURAL ROBOTIC VEHICLE –AGRIBOT

This robotic vehicle is an agricultural machine of a considerable power and great soil clearing capacity. This multipurpose system gives an advance method to sow, plow, water and cut the crops with minimum man power and labor making it an efficient vehicle. The machine will cultivate the farm by considering particular rows and specific column at fixed distance depending on crop. Moreover the vehicle can be controlled through RF medium using a Controller. The whole process calculation, processing, monitoring are designed with motors & sensor interfaced with microcontroller.

3) DESIGN AND DEVELOPMENT OF SUGAR CANE BUD CHIPPING MACHINE

Sugarcane is a vegetative propagated Crop. In India, for conventional system of sugarcane cultivation, about 6 – 8 tones seed cane /ha is used as planting material, which comprises of about 32,000 stalk pieces having 2-3 buds. Cane cuttings with one, two or three buds known as sets are used as seed. This large mass of planting material poses a great problem in transport, handling and storage of seed cane and undergoes rapid deterioration thus reducing the viability of buds and subsequently their sprouting. One alternative to reduce the mass and improve the quality of seed cane would be to plant excised axillary buds of cane stalk, popularly known as bud chips. These bud chips are less bulky, easily transportable and more economical seed material. The bud chip technology holds great promise in rapid multiplication of new cane varieties.

The left-over cane can be well utilized for preparing juice or sugar or jiggery. Despite of all these benefits of bud chips for rapid multiplication of new cane, a common problem many sugar cane farmers are facing in a developing country like India is affordable (low cost) bud chipping machine. The existing (traditional) tools used for bud chipping of sugar cane are unsafe, messy and need skill and training. The risk of injury is also too high. This necessitates the development of a bud chipping machine for sugar cane. In this direction, literature survey, patent search, market survey and concept generation was carried out. Different concepts were developed using concept generation. Among the

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different concepts developed, the best concept was selected based on concept selection strategy.

4) DESIGN AND FABRICATION OF GROUNDNUT SHELLING AND SEPARATING MACHINE

This work focused on the design and fabrication of a groundnut shelling and separating machine electrically powered by a 1hp motor. The machine has the capacity of shelling 400kg of groundnut per hour with a shelling and separating efficiencies of 95.25% and 91.67% respectively. The machine was fabricated from locally sourced materials, which makes it cheap and easily affordable and also easy and cheaper to maintain. It is also of light weight and comprises of the hopper, crushing chamber, separation chamber and the blower unit. During the process of testing, it was observed that majority of the groundnut pods that came out unshelled or partially shelled were the ones with one seed per pod and those with two small seeds in their pods. Groundnut is the sixth most important oilseed crop in the world. It contains 48-50% oil and 26-28% protein, and is a rich source of dietary fiber, minerals and vitamins. It grows best on soils that are well drained, loosely textured and well supplied with calcium, potassium and phosphorous. Over 100 countries worldwide grow groundnut

5) DESIGN AND FABRICATION OF MANUAL RICE TRANSPLANTER

Agriculture is most important sector of the Indian economy. It is most important source of employment for the majority of the work force in the country. Rice is primary and major crop cultivated in India. As the large work force is engaged in this sector, Traditional method is costly, time consuming and labor intensive work. To make the transplanter system several attempts has been made to design and fabricate this machine. This study is focused on design analysis and fabrication of a manually operated rice transplanter for small scale Indian rice cultivators. By achieving the goals like simplifying the mechanism, reduce cost and reduced weight of present rice transplanter. The availability and use of manual rice transplanter in Western Maharashtra is very rare, so design of this project is useful to farmers.

6) DESIGN AND FABRICATION OF MINI POWER TILLER WEEDER

Power tillers occasionally termed as walking tractors have been conceived as an equipment to prepare seedbeds with rotary tillers. They have limitations in their use for traction work due to the low drawbar power per brake horsepower of the engine. At present, most of the power tiller manufactured in the country are in the range of 8-10 hp and weigh about 400 kg. The power tillers are not potentially used in hilly areas due to the lack of its maneuverability on sloppy lands. This is primarily due to its heavy weight, which needs to be optimized further. There was a long felt need to develop a lightweight, portable and propelled two-wheeled walking type tractor for use in hilly areas, orchards and small farms. This power tiller can also be used for inter row tillage, water pumping and other agricultural operations. Therefore it is felt necessary to develop a lightweight power tiller fitted with 2-4hp engine with a gearbox having at least two forward speeds. It should be light enough for two persons to easily lift it manually for shifting from one field to another. This feature is particularly useful when operating in terrace fields and fields with high bounds. Now-a-days some models of power tiller have a optional riding facility. Power tillers have been especially designed and developed for use on small or medium farms where conventional four wheel tractors are not easily maneuverable. Although power tillers have been mainly used for seedbed preparation in low land paddy fields, there is a good potential for their use as a power source for other agricultural operations such as seed bed preparation, sowing and fertilizer application.

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7) DESIGN AND FABRICATION OF SUGARCANE HARVESTER USING SAW CHAIN (SOLAR OPERATED)

Indian sugar industry, second largest agro-based processing industry after the cotton textiles industry in country, has a lion's share in accelerating industrialization process and bringing socio-economic changes in under developed rural areas. Sugar industry covers around 7.5% of total rural population and provides employment to 5 lakh rural people. About 4.5 crore farmers are engaged in sugarcane cultivation in India. Sugar mills (cooperative, private, and public) have been instrumental in initiating a number of entrepreneurial activities in rural India. Present paper is an attempt as to review progress of sugar industry in India, understand its problems and challenges in context of on-going liberalization process. Indian sugar industry can be a global leader provided it comes out of the vicious cycle of shortage and surplus of sugarcane, lower sugarcane yield, and lower sugar recovery, ever increasing production costs and mounting losses. It needs quality management at all levels of activity to enhance productivity and production. Attention is required on cost minimization and undertaking by product processing activities. The world demand for sugar is the primary driver of sugarcane agriculture. Cane accounts for 80% of sugar produced; most of the rest is made from sugar beets.

8) FABRICATION OF ARECA NUT PELLER MACHINE

Betel nut is an important commercial crop in India. Betel nut is the seed of the Betel nut palm. It plays a prominent role in the social, cultural functions, religious and economic life of people in India. This Betel nut has uses in Ayurveda and veterinary medicines. There are two varieties of Betel nut, called White Supari and Red Supari. White variety supari is prepared by harvesting fully ripe Betel nut and by sun drying for 40 to 50 days. Red variety supari is prepared by harvesting the tender (green) Betel nut, boiling it and peeling off the husk. The nut derived by peeling the tender nut, are processed as per the variety required (i.e., whole nut, two pieces, 8pieces, etc) boiled in water and then Sun dried. Dried fruit is fruit from which the majority of original water content has been removed naturally or through the use of specialise dryers and dehydrators dried fruit has long tradition of use dating back to the fourth millennium BC in Mesopotamia, and is prized because of its sweet test, nutrition value and long shell life. There are different types of dry fruits available in India such as Almonds, Apricot, Cardamom, Cashew nut, Dates and so on .they are rich in carbohydrates and low in fat. They are source of fibre, vitamin and minerals. The fragility of vitamin C means that there is virtually none in dry fruit.

9) FABRICATION OF COCONUT DEHUSKING MACHINE

Manual husking is time consuming since it is hand operated using a sharp blade. Besides, it is dangerous and may cause severe back pain to the workers. In addition, the labour shortage in the agriculture sector is critical. Therefore, the development of a mechanical dehusking machine is essential to resolve these problems. This paper highlights the design and development of a mechanical coconut dehusking machine. It consisted of a petrol powered engine, hydraulic system, gears, chains, rollers with sharp spikes, mesh guard, speed controller and frame. The dehusking rate was estimated at 250 – 300 nuts an hour or 7 – 10 seconds per nut. Estimated cost of the dehusker machine is 10,000 per unit. Coconut is one of the most important industrial crops in the tropics. In Malaysia, the total acreage of coconut is 115,000 hectares (Abdul Rahman 2009) and produces 400 million nuts annually (Arancon Jr. 2009). The domestic demand was reported to be 543 million nuts (Abdul Rahman 2009). Each part of the tree has its own commercial value that can be formed into various products and usages, including to cater for traditional and modern need. The coconut water is used by the food industry in making '*nata*

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de coco’, a jelly-like food which is a Malaysian favorite. To take out the flesh, the coconut nut has to be husked from the coconut skin. Currently, this is performed manually.

10) FABRICATION OF MINI POWER TILLER AND WEEDER

Power tillers occasionally termed as walking tractors have been conceived as an equipment to prepare seedbeds with rotary tillers. They have limitations in their use for traction work due to the low drawbar power per brake horsepower of the engine. At present, most of the power tiller manufactured in the country are in the range of 8-10 hp and weigh about 400 kg. The power tillers are not potentially used in hilly areas due to the lack of its maneuverability on sloppy lands. This is primarily due to its heavy weight, which needs to be optimized further. There was a long felt need to develop a lightweight, portable and propelled two-wheeled walking type tractor for use in hilly areas, orchards and small farms. This power tiller can also be used for inter row tillage, water pumping and other agricultural operations. Therefore, it is felt necessary to develop a lightweight power tiller fitted with 2-4hp engine with a gearbox having at least two forward speeds. It should be light enough for two persons to easily lift it manually for shifting from one field to another. This feature is particularly useful when operating in terrace fields and fields with high bounds.

11) FABRICATION OF SEED SOWING MACHINE

Agro-Technology is the process of applying the technology innovation occurring in daily life and applying that to the agriculture sector which improves the efficiency of the crop produced and also to develop a better mechanical machine to help the agriculture field which reduces the amount and time of work spent on one crop. Hence in this work of project we decided to design a better mechanical machine which is available to the farmers at a cheaper rate and also which can sow and seed the crop at the same time. This project consists of the better design of the machine which can be used specifically for rice, wheat crops etc. agriculture needs to find new ways to improve efficiency. One approach is to utilize available information technologies in the form of more intelligent machines to reduce and target energy inputs in more effective ways than in the past. Precision farming has shown benefits of this approach but we can now move towards a new generation of equipment. The advent of autonomous system architectures gives us the opportunity to develop a complete new range of agricultural equipment based on small smart machines that can do the right thing, in the right place, at the right time in the right way.

12) FABRICATION OF SOLAR OPERATED PESTICIDE SPRAYER

India is a country where nearly 70% of people lives in rural area and main source of their income is farming, directly or indirectly. 70% of people in India are connected with farming directly or indirectly, instead of that we are not producing the crop of which we having capacity to produce. Reason behind this is we farmers of our country are not using technology very well. So we have to make machines that can help then to save their time and money and to increase the production rate and their profit. We have to make economic machineries so farmers can purchase it as per capita income of our country’s farmers are low and our country per capita income is low that of compared to other country as our country is developing country. Present scenario in agricultural field in India related to sprayer is that farmers are using hand operated sprayer or motorized sprayer. According to idea in our project we are making a small 4 wheel kart or vehicle which is electronically operated by a wireless remote which runs on power source as a DC battery. One vertical arm is attached at centre of vehicle and one horizontal arm at top of

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the vertical arm. Nozzle is fitted to these arms so that it can spray pesticides both the sides. As more no of nozzle are there hence spraying is done rapidly and time and money is saved.

13) FABRICATION OF WHEAT HARVESTING MACHINE

This project is intended to help small-scale grain growers meet an increased demand for diverse, locally grown grains by designing a reaper-binder machine. To refine our prototype and final design, we worked closely with a three person review panel, made up of grain farmers and industrial designers. With this prototype, we hope to provide farmers nationwide with a way to harvest and bind grains on small plots of land in cities and along the periphery of urban areas. Nationally, most of the food we eat is produced by large agricultural supply chains, which link farmers, seed suppliers, pesticide and fertilizer suppliers, transporters, distributors, wholesalers and retail outlets. Currently the United States harvests about 114.8 million acres of grain per year worth some \$15 billion (USDA Census of Agriculture, 2007). On a number of dimensions this scale of production is not sustainable. One of these issues is that \$28 billion is spent by all the farms in the U.S. on chemical fertilizer alone, which is made primarily from non-renewable resources including fossil fuels (USDA Census of Agriculture 2007). On an average farm in the United States, 107 gallons of fossil fuels per acre will be used, with one third of that going into the production of fertilizer (Pimental, 2006).

14) MOTORCYCLE DRIVEN MULTI-PURPOSE AGRICULTURAL MACHINE

With introduction of summer groundnut crop in the region increased the demand of draft power which forced the farmers to search for economical alternatives. Also increasing frequency of drought, decreased supply of fodder, restrictive usage of bullocks, high maintenance cost of draft animals added to it. Whereas tractors were found uneconomical for later stage (when the soil has considerably softened) for ploughing and inter-culturing, weeding due to high weight and fuel consumption, triggered the innovator. It is a simple multipurpose toolbar which attaches to vehicles like Enfield Bullet Motorcycle by replacing the back wheel. It is an innovation by Shri Mansukhbhai Ambabhai Jagani, Amreli. The innovation was scouted by Mr. Mahesh Parmar, SRISTI For farming operations, tractor is not an affordable option for farmers having small land holdings. Increase in the cost of fodder for bullocks, regular occurrence of drought and shortage of farm labor forced the farmers of Saurashtra area of Gujarat to look for an alternative to Bullock. Inspired by a local mode of transport, the three-wheel taxi "chhakdo" (common transport in the Saurashtra region), innovator has developed an innovative multipurpose farming machine which can do all the operations which can be carried out by a pair of bullock. Using the self fabricated chassis, drive and power of an Enfield Bullet motorcycle in front the innovator has retrofitted an attachment with two wheels at the rear with a tool bar to fit various farm implements. The rear wheel of the motorcycle has been removed and an innovative assembled unit has been attached. It can also be designed and attached to locally available Chhakdo rickshaw or assembled vehicle having minimum 6.5 HP engine.

15) PATIENT MONITORING SYSTEM USING ARDUINO NANO AND ANDROID APPLICATION

Recent years have seen a rising interest in wearable sensors and today several devices commercially available for personal health care, fitness, and activity awareness, researchers have also considered applications of such technologies in clinical applications in remote health monitoring systems for long term recording, management and clinical access to patient's physiological information. Based on current technological trends, one can readily imagine a time in the near future when the routine physical

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examination is preceded by a two–three day period of continuous physiological monitoring using inexpensive wearable sensors. Wireless technology has completely transformed the way we live, but health care is yet to enter the digital life at least at remote areas. This will overcome the problem of people living in remote areas where the availability of health care centers and facility of transportation are not good enough. This will also help the people who don't have enough time to look after their health and go for regular checkup to the health care centers.

16) REAL TIME ADVANCED 5 IN 1 MULTI PURPOSE AGRICULTURAL VEHICLE – AGRI VEHICLE

This Agricultural vehicle is an agricultural machine of a considerable power and great soil clearing capacity. This multipurpose system gives an advance method to sow, plow, water and cut the crops with minimum man power and labor making it an efficient vehicle. The machine will cultivate the farm by considering particular rows and specific column at fixed distance depending on crop. Moreover the vehicle can be controlled manually by driving the vehicle using seating arrangement. This agricultural vehicle will be running with batteries. Batteries will be charged using Solar Energy. So ultimate aim is to develop a agricultural vehicle which uses renewable sources for operation.

17) TEA LEAF CUTTING MACHINE

India continues to be the largest producer of tea accounting for 32.08 per cent of the global output. In terms of area, it occupies about 20.07 per cent of the world tea area. Although India holds a leading position in production and export, the current position of tea trade reveals that its share in the world production and export has been declining steadily over the past three decades. There are various reasons behind the decline of production rate, one of the major reasons is shortage of laborers and increase in wages, another major reason is the attack of pests. Tea is grown in a monoculture and often subject to attack by insects and other pests; hence pesticide use is not uncommon. Though production rate was increased by the mechanization of tea leaf harvesting, the use of machines caused damage to the tea bushes and was difficult to maintain height and carry all over the tea estate.

18) TOURISM MANAGEMENT SYSTEM

Most of the people in this world like to travel from one place to another no matter whether it is a small or large distance. Some people like to travel by train, flight, bus or by any other means of transport. This travel and tourism application is designed for the travel agency in which there is an option of doing the railway or air ticket reservation in order to reach the intended destination. The travel and tourism system is one of the applications that will help the customers to book the air ticket or the railway tickets through this application of the travel agency. Booking of tickets will be done with a great ease and without any difficulty. This will be one of the interesting projects that one can work on and implement in real time world. The user interface must be simple and easy to understand.

19) AUTOMATIC RESCUE SYSTEM FOR AMBULANCE AND AUTHORITATIVE VEHICLES

The traffic congestion in urban areas can't be controlled beyond a limit. But the death rate occurring due to the delay in traffic can be controlled to an extent. This can be achieved with the help of "AARS using GPRS 3G TECHNOLOGY". Through this, we can provide a smooth flow for the ambulance by controlling the traffic light according to the ambulance location to reach the hospital. The location of the ambulance can be easily identified with the help of the GPS unit installed in it. A controller in the Technofist,



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traffic junction can automatically control the traffic flow and thus reduces the time delay taken by ambulance to the hospitals. The traffic junction and the ambulance will have GPRS 3G modem to communicate between them. The chances of misusing the ambulance can overcome with the help of an RFID tag given to the doctor s in the respective hospitals so that the security can be attained.. This scheme is helpful for the Traffic police to control the traffic there by helping the patients who are facing emergency.

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