

# A Review on Cultivation of Groundnut and Mechanization Processes in India

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**Abstract:** The groundnut is the king of oil seeds. India and china are the world's largest ground nut producers nearly about 60 percent of production. Groundnut is the one of the most important cash crops and food crops for India. Even though many types of machinery were developed in the agricultural field, still farmers are following traditional method in view high machinery cost. Due to better job opportunities in other sectors and less profit in agricultural field, few farmers are moving from rural to urban areas. In rural areas farmers are facing labor scarcity. Due to this there is a delay in farming operations ie., seed planting, harvesting and weed removing during cultivation season hence more money is spent for the process.

In India, mechanization for groundnut cultivation is done for land preparation only and for the rest, traditional methods are followed. Marginal and small land holders are not able to use mechanization leading to poor seed plantation, lack of plant protection and inefficient post harvesting methods. About 70 percent of groundnut producing states are Gujarat, Andhra Pradesh, Tamil Nadu, and Karnataka. For ground nut cultivation few machines are available for post harvesting but are not efficient enough to harvest fully i.e.20 to 30% of groundnut is retained in plant itself. Hence farmers prefer traditional methods.

**Keywords:** Groundnut production, Groundnut cultivation, Mechanization, Agricultural mechanization, Farm mechanization, Agricultural equipment's, farm tools, Agricultural facilities.

## 1. INTRODUCTION

Groundnut originated in South America, When Peruvian Indians cultivated 3500 years ago. The groundnut is one of the most important crops for many countries, this provides edible oil and protein, and these seeds contain 47-53% of oil. 25-36 % protein. Groundnut flowers grown above the ground and after that pegs move towards the soil and pods are developed underneath of the soil. The yield is

varies from country to country like United States America producing average of 3500kg/ha to South America 2500 kg/ha, In Asia 1600 kg/ha and Africa producing very less 800kg/ha [ 1].

Asian region producing more groundnut cultivation in the world about 67% of the total production in 2007. India occupies 1<sup>st</sup> position in term area about 70 lakh hectares and output of 80 to 85 lakh million ton and second position in production next to china. India exports the peanut to more than 75 countries [2]. This crop growing in all the season Kharif, rabi and summer seasons, maximum growing in Kharif crop between June to October.

About 70% of the groundnut grows in low and irregular rainfall areas, because of that low and average yield [3] in Asia and Africa region. Irregular manson and inadequate water at the time of flowering significantly reduce the yield.

## 2. LITERATURE REVIEW

Groundnut is a very important crops in the agricultural sector, labor force was 520 million during 2009-10, in the present condition 2/3 of the workforce is employed in agricultural and rural, even 1/3 of the rural households are dependent on agriculture. After 2000-01 employment ratio has increased like construction, software's, and mechanical and textiles industries. Resulting in the decrease of labor force and increased wages in agricultural sector [4].

In India 80 percent of groundnut is grown in Kharif season under rain dependent areas, yield of 1180 kg/ha (2008-09). In rain fed areas timely operation has very crucial role in sowing and harvesting so as to get good yields. If delay in timely operations results in lower yields. The total expenditure of the groundnut production (labor+ bullock= machine labor) cost was Rupees 19,812 per hectare during 2005-06.(Directorate of economics and statistics 2005-06).

For land preparation farmers are using tractor and bullock cart. Farmers About 87 and 69 percent of farmers in Gujarat and Andhra Pradesh are using bullock cart for sowing operation. For intercultural operation like weed control 83 percent of the farmers depends on bullock and manual force. 90percent of the farmers in Andhra Pradesh for harvesting use the traditional method. Groundnut operation is a labor intensive, if modern equipment is implemented so that it reduces the labour cost and improve the productivity [5]

The average yield in India is very less (1212 kg/hectare-2012) compared to world average (1626 kg/hectare). The developed country like United States (US) yield is very high compare to other countries. India is lagging in groundnut production. Majority of the groundnut growers are marginal and small land owners in rain fed areas [5].

In Karnataka yield is very low compare to other states 766 kg/ha, where as in Tamil Nadu 1634 kg/ha but Indian average is 1194 kg/ha [6]. There are two methods of harvesting like traditional method and mechanized method. Using traditional method groundnut is pulled and overturned by hand. Harvesting regularly serious of operation like digging, lifting, windrowing, stocking and threshing. For groundnut harvesting for one hectare of land usually needed 12 to 14 labors are needed in one day. Sometimes it is very difficult to harvest, when crop has passed the time and soil is too hardened, more time to harvest the groundnut by manually, in this time use the blade harrow or hand hoe for harvesting, during this time additional labor is needed [7].

If consider the ergonomic aspects for harvesting of groundnut, it is a repetitive work, while harvesting plucking of pods from the plant in the field, heart rate, body temperature even blood pressure will vary during that time. Those who are involved in harvesting getting more joint pain. So, develop of machine to overcome this problem decrease the workload and reduce the fatigue in the agricultural field [8].

Rural population is decreasing day by day not only in India but even in other countries also, urban population is increasing; we need to develop the necessary tool to rural community to provide food and vegetables for urban people. So in agricultural field use of more advanced technologies will increase the productivity and develops the efficient tool and technique in groundnut production. Mechanization method for groundnut (peanut) drill,

starter, combine Sheller and toaster to increase the production, Reduce the harvesting cost up to 32 percent by using machinery [9]

If minimize the post-harvest loss in one percent, it can lead to increase of 40 million USD annually. During 2013, it was recorded that there was about 40 percent post harvest losses in Nigeria. For post harvesting activities, cereal and oilseeds growers in Nigeria use the traditional technique rather than the mechanical device, resulting in the annual post harvesting losses. In Nigeria 10 %, 20% and 30%, maize, cowpea and groundnut respectively, even 20 % losses in storage problem. Grain losses due to mechanical damage by 15-20 %, transport/distribution by 5-10 % and processing by 10-15 percent [10] Large farmers adopted mechanization mostly on hired tractor, 33% of the farmers using tractors for ploughing and for transportation using bullock cart.[11]

For ground nut harvesting in the traditional method time required is too much, even effort is more higher cost of labor and profit margin is very less.[12] Using machinery reduce the human efforts, will increase the efficiency and get more profit. Some times 20-30 women labor required to stripping an acre of groundnut pod.

When groundnut leaves turned to yellow then pods become hard, incase delay in harvesting due to weakening in pegs many pods left in the soil, even 10 to 30% loss [13]. In case harvesting early yield is very less compared to normal days and poor oil content and seeds quality. Sometimes soil is dry and hard, harvesting peanut is very tedious and time consuming, need more labor. Therefore, use mechanical method of harvesting reduce the labor cost and improve the economic growth.

Labors availability is very poor during season delay in all the work in agricultural operations like plantation, weed removal, harvesting and threshing, resulted less profit to farmers and same time migration is increasing day by day in rural areas[14]. Increase the productivity and profit mechanized for agricultural operation. The harvesting machine efficiency of 92.30%, Threshing efficiency of 82.30% and 72.30% of cleaning efficiency, this machine attached to tractor. Increase the profit and save the cost and time.

The small landowner's average land is 1.3 ha. They do not have sufficient capital to expand their production. The researchers developed several technologies for groundnut operations but not reach to small scale land owners and income not increased.

Groundnut growers are depend on women workers they involved all the activity like planting, weeding, harvesting, storage and marketing [15]. If adopt the new technology increase the yield and higher income and this lead to better living standard.

### 3.CONCLUSION

It is strongly evident from the above data that there is a huge scope to conduct research on mechanization for groundnut production and use of advanced tools and techniques to develop devices by design professionals catering to needs of the agro sector. It is notice that present Indian agricultural mechanization is very low compared to advanced countries. In present situation India achieved only 40 percent of mechanization. Labor cost is increasing due to small and medium farm holders are moving from rural to urban places for the betterment of financial growth. In village farmers are losing their interest in agriculture work due to changes in the monsoon. Water sources are going down in the rain fed areas. Agricultural machinery cost is very high, small and medium farmers are not affordable. Population in India is increasing, whereas land is decreasing due to defragmentation and farm land converted into real estate business. So that increase the volume of production and productivity and reduce the cost and expand the planted areas. From the above discussion more efforts to strengthen the mechanization level and agricultural economic factors for efficient use of modern agricultural machinery. In future develop the lower cost machines to suite for medium and marginal farmers.

From the above discussion, it can be inferred that there is huge scope to use automation equipment for groundnut cultivation and harvesting in the field of agriculture. This will lead to improved yield and returns allowing the villagers to stay back and find their livelihood in rural areas.

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