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Mechanized Groundnut Production to Overcome Human Labour Complications

Groundnut is cash crop and most important oil seed in India. Groundnut is grown over an area in India 39.31 lakh ha during 2019-2020. Groundnut crop need well till soil preparation for good extend roots penetrate and increasing the yield. Tillage is a process of field preparation by ploughing and levelling the hard pan of field soil into fine pulverized. In groundnut production primary and secondary tillage operation plays an important role in improving the production through good soil operations. Seed sowing is the process of placing the good quality of viable seeds into soil at optimum depth for its healthier establishment. Weed management plays significant role in improving crop production and productivity by eliminating the crop and weeds competitions. Tractor drawn weeder will cover 4-5 ha day⁻¹ and large area will be weeded in limited time. Groundnut is a single harvest crop and whole field attain maturity at same time. Application of harvester viz., groundnut digger, shaker cum windrower, groundnut fresh pod thresher, groundnut fresh pod stripper, dry pod thresher and groundnut combine harvester can be done. Separation of kernel or seed from the harvested dried pods with fine quality is called decortication. The groundnut mechanization is used to increasing the groundnut production and cost saving operation.

INTRODUCTION

Groundnut (*Arachis hypogaea* L.), is a cash crop and most important oil seed of our country. Most important groundnut production states viz., Gujarat, Andhra Pradesh, Tamil Nadu, Karnataka, Maharashtra, Madhya Pradesh, Rajasthan, Orissa, and Uttar Pradesh. India has transferred 6, 64,442.93 MT of peanuts to the world for the worth of

Rs.5, 096.34 cores/ 711.38 USD millions during the year 2019-20 (APEDA). In groundnut cultivation from seed sowing to harvesting, it requires massive labor energy and also depends on labor availability at right time. In manual operations requires more cost expansive and time-consuming operations. To overcome those difficulties in groundnut mechanized package practices are recommended to boost our groundnut production with low expansive at farmer level.

MACHINES INVOLVED IN GROUNDNUT CULTIVATION

1. Tillage operation
 - a. Mould board plough
 - b. Disc plough
 - c. Rotovator
 - d. Disc harrow
2. Seed sowing equipment
 - a. Seed driller
 - b. Seed cum fertilizer driller
 - c. Raised bed seed drill
3. Inter cultural equipment
 - a. Weeder
 - b. Boom sprayer
4. Harvesting and threshing equipment
 - a. Groundnut digger, shaker cum windrower
 - b. Groundnut fresh pod thresher
 - c. Groundnut fresh pod stripper
 - d. Dry pod thresher
 - e. Groundnut combine harvester
5. Decortication equipment
 - a. Hand operated decorticator
 - b. Power operated groundnut decorticator

TILLAGE OPERATION

Tillage is a process of field preparation by ploughing and leveling the hard pan of field soil into fine pulverized. In groundnut production tillage operation plays an important role in improving the production through good soil operations. Groundnut crop cultivation needs good till soil preparation for good extend roots penetrate and increasing the yield. Hence primary tillage is like disc plough, mould board plough and chisel plough used to penetrate up to depth of 30- 60 cm for essential in groundnut cultivation system. After that primary tillage operation using secondary tillage machinery is like disc harrow and rotavator to prepare good seed bed for sowing process. Hence, secondary tillage machinery is essential to get a maximum seed germination and to

attain high plant population. Disc harrow and rotovator is important tillage implement in groundnut cultivation.

SEED SOWING

Seed sowing is the process of placing the good quality of viable seeds into soil at optimum depth for its healthier establishment. Groundnut is sowing in important and timely particularly rainfed cultivation and irrigated condition. Manual scattering of seeds is the time consuming, cover minimum area per unit time and also irregular spacing lead difficulties in maintaining exact plant population. Using seed drill equipment in groundnut cultivation will cover 6-7 ha day⁻¹ and also uniform spacing was maintained. Seed rate was also get reduced by using seed driller for seed sowing. Hence, conclude that utilization of seed drill and seed cum fertilizer drill will help farmers economically benefit and also fast sowing. Seed cum fertilizer drill will also decrease the loss of fertilizer by placing near to germinating seeds, through broadcasting maximum fertilizer loss was occurring.

INTERCULTURAL OPERATIONS

Weed management plays significant role in improving crop production and productivity by eliminating the crop and weeds competitions. Weeding at right time will helps crops to achieve better establishment and also proper weeding will increase pegging. Tractor drawn weeder will cover 4- 5 ha/ day and large area will be weeded in limited time.

HARVESTING AND THRESHING

Groundnut is a single harvest crop whole field attains maturity at same time, application of harvester *viz.*, groundnut digger, shaker cum windrower, groundnut fresh pod thresher, groundnut fresh pod stripper, dry pod thresher and groundnut combine harvester. Early and fast harvesting was achieved by using the following equipment. After harvesting manual stripping is the major problem and time-consuming process. Using thresher or combined harvester will finish the post harvesting process as easier. Timely harvest within a shorter period leads to fetch high market price and improves farmer's livelihood. Using groundnut harvester is labor cost saving and time saving are 50 and 95% respectively compared to manual harvesting.

DECORTICATING EQUIPMENT

Separation of kernel or seed from the harvested dried pods with fine quality is called decortication. Decortication of pods with lesser damages to kernels was achieved by utilizing the groundnut decorticator. Power operated groundnut decorticator capacity is 250-300 kg/h. With shorter time huge quantity of groundnut pods are shelled with good quality.

CONCLUSION

Hence, overall conclude that application of farm equipment's for groundnut cultivation will lead to save more labour energy, cost of cultivation, time and also quick achievement of works.

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