

Research Paper :

Mechanization of cotton crop production in India

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ABSTRACT

In context of increasing commercialization of agriculture, mechanization is very important. There has been increase in the use of farm machinery in Indian Agriculture as it contributed to the increase in output due to timeliness of operations and increasing precision in input application. The present study describes the availability of machinery, in India, for the mechanization of cotton cultivation for operations viz., seedbed preparation, sowing and planting, inter-culture, plant protection and harvesting. Energy requirement for different operations for cotton cultivation in conventional and using improved practices are described. Evaluation was carried out using traditional method of cultivation in comparison with improved practices on cost of operation and energy requirement. It revealed that improved machines consume less energy as compared to its traditional counter part.

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Farm mechanization has been helpful to bring about a significant improvement in agricultural productivity. Thus, there is strong need for mechanization of agricultural operations. The factors that justify the strengthening of farm mechanization in the country can be numerous. The timeliness of operations has assumed greater significant in obtaining optimal yields from different crops, which has been possible by way of mechanization.

Cotton is one of the principle commercial crops in India. India ranks first in the World in area under cotton cultivation (8.76 million hectare), while in term of production this ranking is third at 11.64 million bales (170 kg each). In fact the average yield of cotton is very low and it is around 226 kg/ha as against the average yield of 584 kg/ha in the World as most of the operations in the cultivation of cotton are done in a traditional way involving lot of labour force. In India only 35.8 per cent of area under cotton crop is irrigated (Yadav and Kumar, 2002).

Better cultivation practices, plant protection measures and balanced dose of fertilizers play a significant role in augmenting the yields. Nevertheless, the adoption of advance processes and improved implements are equally important. Mechanization alone would enable multiple cropping programme resulting in greater employment potential in the long run by the repair, servicing and maintenance of farm machines and tractors (Goyal *et al.*, 1979). Mechanization of agriculture has become one of the most critical requirements but this is one of the factors that contribute to high yield. Almost mechanization of cereal crops has been achieved in the medieval period of green revolution. The farmers in the country are still

using the traditional methods of cultivation of cotton crop, which leads to considerably low productivity. The cotton is mostly drilled manually or behind the 'desi' plough. The seed rate is very high. After germination the plants are thinned to maintain the required number of plants per hectare, which is highly labour intensive. Thinning is also essential to provide necessary aeration and light to the crop. In some cases tractor-drawn drills are used for sowing cotton seeds and crops are thinned later. Farmers are now started using seeds of high yielding varieties, which are very costly and can not be sown by traditional way of sowing otherwise cost of production will increase. Mechanical interventions can be made through mechanization of tillage, planting, interculture and plant protection operations for efficient utilization of costly inputs. Precision farming allows farmers to take economic decisions about input use while avoiding environmental degradation. This is essential to sustain profitable productivity levels of cotton-based cropping systems. Precision farming aims at providing a variable rate application of inputs according to locally determined spatial variables at farm level.

METHODOLOGY

Following implements and machinery are being used for cotton crop production viz., rotavator, tractor drawn pneumatic cotton planter, tractor drawn inclined plate planter/vertical roller type planter, cultivator with modified sweeps, inter-cultivation, cultivator with modified sweeps, self propelled power weeder, plant protection operation, power tiller operated boom sprayer, cotton stalk shredding