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## **Agricultural Implements: A Step towards Sustainability of Environment**

**Mohd Ashraf**

*HNB Garhwal Central University Srinagar Uttrakhand*

*Email:- [mohdashraf2d@gmail.com](mailto:mohdashraf2d@gmail.com)*

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### **ABSTRACT**

The global food system must become more sustainable. Digital agriculture — digital and geospatial technologies to monitor, assess and manage soil, climatic and genetic resources illustrates how to meet this challenge so as to balance the economic, environmental and social dimensions of sustainable food production.

**Keywords:-Food, System, Primary, Economy, Hybrid**

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### **Introduction**

Indian agriculture is infrequent in its characteristics and it is full of diversification . In India, 250 diverse types of crops are cultivated in different agro-climatic conditions in various regions. In several developed nations of the world heterogeneously 25-30 crops are grown . For developing the Indian economy, agriculture is the most predominant sector, it comes up with 18% of national revenue and 15% of entire overseas market and bolsters up to two-thirds of the workforce . The establishment stage of Indian agriculture has been greatly influenced by technologies used for farm mechanization in England . Nowadays, advanced technology is used in agriculture for mechanization of hybrid crops .

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### **Agricultural Machinery Industry in India**

Agricultural equipment manufacturing industries play a vital role to promote agribusiness sector of India . In the ordered segment of Annual Survey of Industries (ASI) agricultural machinery manufacturing industries were considered as 0.6% of all manufacturing factories, 0.26% of equity capital, 0.43% of recruitment, 0.76% of intake, 0.79% outtake in 1977-98 . These digits change according to time- periods. In foreign trade 0.03% export and 0.01% import occurred in 2001-2002. The growth rate of agricultural machinery export is higher than imports . Haryana, Punjab, Maharashtra, and Tamil Nadu established bulk of agricultural machinery manufacturing industries . 2 Agricultural equipment comprises of various tools like seed drills, axes, chaff cutter machines, cultivators, thrashers, plough and others, all these agricultural implements upgrade the productivity of crops . There is a large-scale demand for agriculture machinery to increase farmer's income in India. Indian agricultural machinery industry market was accounted for the US \$ 8.5 billion in 2017 and it would be US \$ 12.8 in 2023, at CAGR (Compound annual growth rate) of 6.3% during 2013-2023 . Agricultural equipment market has grown instantaneously in past few years due to the high demand for agricultural equipment used by farmer in farmland during crop mechanization period. This market is growing rapidly due to its various factors: easy credit loan by bank and government initiatives, development of contract farming and rising agricultural productivity.

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### **Indian Agricultural Implements Market Key Drivers are:**

Shortage of manual labour: shortage of labour during crop sowing and crop harvesting period farmer moves towards the farm mechanization. The government is running a number of rural development schemes such as NREGA (National Rural Employment Guarantee Agency) etc. [15]. For getting employment, people migrate to urban areas. During this migration, the ratio of seasonal labour is decreased which was native to Bihar and U.P. Considering the lack of this seasonal labour, farmers opt for mechanization. Due to this, the demand for agricultural implements is increasing day by day .

High productiveness and effectiveness: the crop yield per unit area per hectare had increased by using agricultural implements by the farmers. The use of these implements has helped the agricultural land to be utilized in a better way through low lost

Long-term cost saving: once the farmer purchases agricultural farm machinery, in the long-term, it reduces the cost of operations as compared to manual labour

Up-Gradation in Agriculture Techniques: agricultural implements used during irrigation and land reclamation also help to prevent soil erosion. For example, plowing of land by tractors makes the soil inner layer exposed and upper layer goes deeper and enhances the soil fertility

Government incentives: Government is coming forward to promote agricultural incentive. It provides subsidies on the farmers' water, power consumption, agricultural machinery and hybrid seeds, etc., so that they can use these things at the lowest costs. The government of India also provides Income tax exemption on agricultural revenue

Large Agricultural Economy: The population of India is 18% of the world population. A typical Indian farmer wants more yields of crops using modern method to full fill the requirement of the growing population.

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## Food Demand in India

In India agricultural policy for food is self-sufficiency in food has been the primary goal. According to the census of India in 2011, the population of India is 1.2 billion and this figure is increasing rapidly. Food demand increases to feed the growing population [21]. The consumption of food increased from 115.6 metric tons in 1960- 61 and 241.4 metric tons in 2010-2011. The government of India has undertaken a variety of campaigns that bring production, distributor, and consumption of food across the country. For meeting the ever growing demand of food, Indian farmers are using more advanced agricultural machinery

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## The industry structure spans both tiny rural units and MNCs

Production of the fundamental farming implements has been basically by the tiny devices along with the village artisans, tiny scale industries as well as the "State Agro-Industrial Development Corporations". Some standard artisans, as well as industries categorized as small scale, depending on its knowledge, operator's suggestions as well as governmentowned investigation along with the advancement institutions for the technical reinforcement. They usually work from their own houses of fundamental companies which are usually without normal or regular utility products. Moderate scope industries work in the personal premises with sufficient infrastructure, occasionally developing a component of an industrial estate. Additionally, they have produced as well as advertising 42 Amenities & use skilled or competent manpower. Solutions including diesel engines, irrigation pumps, electric motors, sprayers as well as dusters have been manufactured in this specific field. Complicated items for example machinery used for the development of land, power tillers, tractors, post-harvesters along with the machinery of processing as well as milk products have been produced by the large players in the organized segment. These companies normally have massive production facilities, expert advertising systems of retailers & give an efficient after-sales program. Additionally, they have in-house advancement as well as investigation amenities or even have JVS or joint ventures with experienced places for the up-gradation of technology. Of LESER (Lean Energy-Saving and Emission Reduction) produces, producers as well as market tractors for Overseas & Indian markets will be the biggest producer of tractors in India. TAFE, Punjab Tractors, John Deere as well as New Holland have been included by other major players [72]. Through the years, the share of the animal, as well as the human energy of farming, has decreased considerably, paving the means for an assortment of the equipment to come through. Numerous of these have been pushed by the tractors, diesel engines as well as tillers. A number of the standard processes' farming were converted with the arrival of the mechanization. Such as Land development, tillage & seedbed planning, combinations accounting to some significant energy utilization share in the cycle of harvesting. From the animal-driven or the pushed ploughing along with cutter harrow, the task is getting converted by the utilization of tractor pushed or driven products. Planting & growing as a procedure, although not driven comprehensively, is usually being suboptimal because of drilling intricacy of acreage then uniformly plantation of seeds. Such a particular procedure is getting converted by the contemporary seed drills as well as planters. Watering of farmland continues to be mostly automated as well as the usage of electric powered motors along with the diesel & pumps has become more developed. Likewise, the tasks pertaining to the plant safety, threshing as well as harvesting will be automated, mainly with the assistance of sprayers as well as tractor mounted tools, correspondingly as an outcome of the advancements, the usage of the animals to power up farming events have been continually decreasing. This particular drop has been 43 coordinated by nearly identical expansion in the tractor's share, specifying that the former has been supplanted by the latter

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## FARM MACHINERY INDUSTRIES IN INDIA

The espousal of the mechanization technology has been dependent on the local manufacture as well as after-sales-services besides credit & monetary incentives offered by Government. The creation of farming machinery of India has been pretty complicated comprising with village artisans, small devices, tiny level businesses to "State AgroIndustrial Development Corporations" and organized tractor, engine as well as processing products businesses. Traditional hand equipment as well as bullock down implements has been mostly fabricated by small scale industries & village craftsmen. Structured sectors manufacture 49 advanced machinery like engines, mills, tractors as well as dairying products. The small scale industries rarely have R&D amenities as well as the hinge upon public institutions for the technical reinforcement. They need not just illustrations but additionally prototypes as well as specialized instruction to produce the gear. These industries nevertheless, increase the technology with the experience

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## Conclusion

The population of India is 18% of the world population. A typical Indian farmer wants more yields of crops using modern method that the growing population gets food in a suitable amount. The 50% share of the people of India depends on agriculture, which is offering to promote the agricultural

market. Advanced and scientific farming is needed globally and its growth is demanded constantly. Scientific farming required extensive use of machinery and equipment's for farming. This not only increase yields but also supplements man power. Therefore availability of such implements and machineries is equally important. This in turn paved the way for increased manufacturing units which in turn required minimum pollution needs. Hence manufacturing and pollution control must go side by side. If observed the geographical region of India, Punjab and Haryana are more fertile in North India and their rice and wheat production is high. These States have extensive uses of agricultural machineries and implements. This study covers total of 80 industries out of which 44 (55%) are from Haryana state, 31 (38.8%) is from Punjab and rest 5 (6.3%) are from NCR region. Haryana and Punjab are two major states where agriculture activities are higher. As such majorly agriculture product manufacturing industries are concentrated here. In recent times NCR has witnessed a major pollution problem from the agriculture in Haryana and Punjab. The reuse of crops (Parali) becomes impossible to remove from the field for sowing new 190 Crops. There is no machinery or implements to remove them. The farmers are burning it in the field itself, creating huge pollution in the NCR region. Big industries produce Tractors and motors while small and medium produce agricultural implements some of these products are significantly creating emission and effusion which are of concern from pollution point of view. A few of these sectors perform CSR activities but majority of them not are not performing. With improved cropping strength or the intensity, growers have been accompanied or even mostly changed animate strength with the tractors, power or the energy tillers, electric motors as well as diesel engines. Haryana, Punjab and Uttar Pradesh contribute to the major market of sales of tractors in the year 1980 having 55-57% share in terms of overall India's product sales. However small equipment's and post-harvest equipment's manufacturing is distributed across the country. Large industries because of fund availability take up CSR activities in a bigger perspective and cover various activities. Besides Governmental Organizations like State Agro Industries Development corporations, major manufacturers of Tractors and other machineries are doing CSR work for farmers .These include enhancing social status, education, training and development ,Knowhow and Agricultural research to help farmers for agricultural outputs. Thus there is scope for mechanized farming in India. The shortage of labor for farming pursuits has been anticipated to produce manifold in succeeding years. The considerable degree of food costs will imply increase earnings for growers. This can lead to larger paying by the farmers particularly on the options to improve by mechanizing their farming efficiency along with the result. Thus, the need for farming equipment between farmers has been apt to increase considerably in the next 5 years. 191 It would be appropriate to extend full attention to Small and medium industries in the agriculture sector across the country. Since agriculture id both State and Central subject as such both State and Central Government must take more active parts through group awareness programs.

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