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Advancement of agricultural implements

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Abstract

Globalization has changed economic realities. Globalization has accelerated the need for knowledge intensive work performance in all the sectors of economy. Globalization of agriculture is involved in, technical change, a veritable maelstrom of scientific and economic. Use of advance implements in agriculture depend upon nature of farmers because some farmers welcomed innovation, especially when they want to reduced physical labor, other farmers are using old methods of farming. In the agriculture sector constant application of latest ideas and better work technologies is used to enhance productivity in the interest of economic well-being of farmers and for ensuring food security. The agricultural knowledge transfer in India are mainly based on extension program where knowledge is transferred to farmers through, publications, radio, person to person contact, television discussions and exhibit on products, fertilizers and seeds at farmers' fairs. Use of advanced equipment's of agriculture whereas boost the economy as well as affect the agricultural labor and increase the causal labor. In Punjab most of the farmers are small, they can't afford these equipment's because of high cost. So advancement of agricultural tools are beneficial for large farmers and harmful for agricultural labor and small farmers. Advancement of agriculture should be in that way which can promote balanced development of agriculture sector.

Keywords: Globalization advancement agricultural

Introduction

Green revolution in agriculture

Agricultural implements refers to technology used in farming. Agricultural machines have been designed for practically every stage of the agricultural process. Equipment's are used for both organic and non-organic farming's. People who are trained to design agricultural machinery, structure and equipment's are known as agricultural engineers. There are such many types of equipment's for tilling the soil, planting seeds, cultivating crops, irrigating the land, protecting them from pests and weeds, harvesting, livestock feeding, threshing grains, and sorting and packaging the products. From the past two or three decades, India have been giving more attention to the systematic organization of field trails, experiments, demonstrations, pilot projects and other applied research. Agricultural Implements are most important elements in crop production strategy in the post-green revolution period which has improved agricultural technology consisting of high yielding plant varieties, intensive cultivation, and greater use of fertilizers, increased irrigation and better techniques for planting, harvesting and plant protection (Mruthyunjaya *et al*, 1989) [9]. High yielding varieties have been developed for a number of crops but their impact on production, productivity and costs varies across crops and regions. In India the most primitive kind of agricultural technologies are used and other hand there are most modern agricultural Equipment's such as tractors and harvesting combines are used. Many of the farmers are using bullock carts and ploughs. The states like UP, Punjab and Haryana have irrigation and infrastructural facilities, were got benefits from Green revolution.

To facilitate second Green revolution in India, a massive effort for training of farmers is required. Merely transfer of information to farmers is not sufficient. Farmers themselves must be able to make choices what is best for them and thoroughly understand how to do and what to do, to increase their agriculture productivity and improve their economic condition.

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World's best agriculture knowledge must be available to Indian farmers and they must be motivated to use agricultural implements in their best interest. Necessary motivation to use the latest ideas in agricultural practices is possible only if it serves the farmers interest. Agricultural development and farmer's economic development depend upon advancement of agricultural implements. Farmers should also make increasing efforts for learning new technologies and become information literate for surviving and thriving the knowledge intensive farming era. For constant access to latest agriculture knowledge someone from the farmer family must have access to the internet facilities, knowledge of using the electronic information resources and be competent enough to make effective use of information technologies in agriculture.

Information Technology and agriculture Services

Various efforts are being made in India to absorption and adoption of information of technology for agriculture sector. The National Agriculture Policy emphasize to the use of information technology. The department of Agriculture and Cooperation is preparing e- government plan for more focused on implementation of e-governance activities in agriculture sector. Plan has identified the prioritized list of services which is provided to the farmers and the list of processes requiring re-engineering for the purpose. The Phase 1 of the National e-Governance Plan in agriculture is nearing completion. Second Phase will define the role of the civil society and private sector. To promote e-governance in agriculture at the center and provide support to States and UTs for the same, the Department has already implemented a Central Sector Scheme, strengthening/promoting agricultural information Systems during the tenth plan with a budgetary provision of ₹ 100.00 Crores (Mahlan IV *et al*, 2007) ^[12].

Efforts has made at various levels to improve the information communication infrastructure in India. There is continue growth of mobile telephony in India. Because of price competition, mobile telephony is becoming one of the cheapest in the world and helping the rural India to get connected and facilitating people living in rural area, difficult hilly territory and isolated humble hutments to get connected with the rest of the world. Mobile telephony is having a deep impact on rural India and improving communication among Marginal and Small farmers. The Government's National Commission on Farmers has recommended the establishment of Rural Knowledge Centers all over the country using modern information and communication technology (ICT). Mission 2007 was a national initiative launched by an alliance comprising nearly 80 organizations including civil society organizations.

The National Informatics Centre (NIC) runs NICNET, a government owned network for exchange of government information. It hosts most of the official information of various departments. It also maintains District Rural Development Agency (DRDA) portals. It has initiated Smart Village Project in the Tenth five year Plan. One of the objectives of this project is to introduce and promote information and communication technologies (ICTs) that are appropriate for use in rural areas and cost effective. AGMARKNET is a portal for agricultural marketing information that uses NICNET for reporting daily prices of agriculture products and arrivals data of 300 plus commodities and 2000 varieties on daily basis (Mahlan I V *et al*, 2007) ^[12]. 1347 Agriculture produce wholesale (APWMs) have been networked. This project has a potential of

expansion to about 7000 wholesale markets located throughout the country and further to 35,000 rural markets in India. Punjab government is using AGRISNET program to strengthening and promoting agricultural informatics and communications.

Advancement of Agricultural Implements in Punjab

With the introduction of new technology at a rapid speed practical training and education to the farmers engaged in agricultural and allied occupations had become necessity of the day. Agricultural Information Wing plays a major role in transmitting the latest farm technology to the farmers through farmers training camps and literature. Various activities under taken are as under.

- a) Farmer's Training: To impart training to the farmers, there are 12 farmers Training Centers in the State including PAU, Ludhiana and Khalsa College, Amritsar. About three lakh farmers are imparted training every year during Rabi and Kharif seasons and also by holding specialized training course in agriculture & other allied activities. 5413 training camps /programs were organized to disseminate latest farm technology among farmers during 2015-16 under various schemes like National Food security Mission, NMAET, CDP, NMOOP, SMAM, etc. Nearly 2.5 lakh farmers participated in these camps. The detail of camps is given as under:

Name of Training Camps	Achievements
District Level training camps during Rabi and Kharif	23
Block level training camps	307
Village level training camps	5083
Total	5413

- b) Bulletins & Books Various publications on Rabi & Kharif crops are printed and distributed to the farmers free of cost by the field agencies and extension workers for increasing the farm production.
- c) Publicity through Press: On the basis of policy decisions and research, News and Advertisements are printed in both Punjabi and English version and it has been issued to the farmers for information and guidance.
- d) Agriculture Fair & Exhibitions: Agriculture information unit arranged agricultural exhibitions at the district level. During farmer's training camps with the help of the field staff, training was imparted to the farmers for the adoption of latest scientific technology. Practical demonstrations were made at these exhibitions sites for the benefit of the farmers.
- e) Publicity through Doordarshan (T.V Talks): Under this Scheme agriculture based T.V program including talks on various subjects relating to agriculture and horticulture for the benefit of the farmers are given by the experts of the department of agriculture in "Krishi Darshan" Program from time to time and such programs are telecasted on Doordarshan Special audience based Live in phone programs (Once a month) are telecasted.
- f) Kisan Call Centre: The Government of India has launched a Kisan Call Center on 21 January 2004 to solve the needs of the farmers in the country. The objective of the KCC is mainly to respond the issues raised by the farmers in the local languages prevailing in the areas instantly on a continuous basis. A toll free phone number- 1551 & 1800-180-1551 has been allotted to answer the queries of the farmers. The Kisan Call Center Punjab

have been set up at Chandigarh. Adequate publicity has been given for toll free numbers during farmer's seminars, training camps, T.V talks etc. Posters have also been distributed for its wide publicity.

Modern agricultural development

Agriculture with its allied sector is unquestionably largest livelihood provider in India. Sustainable agriculture in the terms of rural employment, food security and environmentally sustainable technologies such as sustainable natural resource management, soil conservation and bio-diversity protection are essential for holistic rural development. Presently, much emphasis has been given by Ministry of Agriculture on commercializing of agriculture and its working on target of achieving 4 per cent growth rate annually. These include, focus on regionally differentiated strategy, crop diversification, potential areas and scientific management of resources.

Adequate production and distribution of food has become high priority and global necessity will fast changing world and increasing global competition, there is a need to exploit the available natural resources at maximum level and use best technology available at world level and to keep up with domestic demand of food and also to target export market.

North India especially Punjab and Haryana, is the most advanced and flourished region of India in term of technology advancement and adoption of new technology in agriculture. Punjab is the hub of latest agriculture machines and tools which has high demand not only in India but also at world level. Haryana is not behind in the terms of advancement of technology and adoption of technology.

Agriculture Machinery, tools and implements

The machines are used for direct action of forces which is based on energy work. Motor mechanisms used in agriculture to lighten work of production and improve farming techniques among the most widely used agricultural machines working in the fields mentioned

Walking Tractor: Agricultural machine is a single axle and is operated by handles with having median motor power and strength led to horticultural and ornamental work. It is mainly used to tilling the land.it can work in strong fields and used to make free field from weeds Walking tractors are used in construction of gardens. It effect the labor displacement.

Tractor: Tractor is a very useful agricultural machine, with four wheels and can move easily in the field. It has pulling power which make it enable for successful agricultural work in flooded fields. It has two brake pedals and is preparing to pull sledges. It is used for ploughing, smoothening the field and showing the crop.it don't affect the labor displacement.

Combine: Combine is a powerful engine agricultural machine. Its name combine derives from three harvesting operations: winnowing, reaping and threshing. Combine is most time and labor saving equipment in agriculture. Use of combines effect the agriculture activities positively and also effect the labor displacement negatively.

Farm equipment: Farm equipment's is a group of devices designed to ground, shredding, spraying and fertilizing the soil.

Sprayer: Sprayers is a farm equipment designed to spray on crop. The spray pump is used to remove insects, fungus and weeds by using various types of insecticides, fungicides or herbicides. It protect the crops from diseases. It placed on the placed back of the sprayer. While using sprayer pump, sprayer must use special mask on mouth and nose. Otherwise it can be harmful for sprayers.

Tillage planter: Tillage planter is a machine, used for preparing soil for seeding. It make the soil soft and smooth, which help the plants to grow.

Fertilizer: Fertilizers are used for fast growth of plants, protect the plants from diseases and remove the weeds. Fertilizers increase the production of crops which is very helpful for economic development. It also effect the National income, per capita income.

Packing: Various agricultural equipment is designed for packaging the crops and other products, It is not only used in agriculture field also used in agro based industries such as sacks, boxes, and containers. It protect the plants from damages by animals.

Plough: ploughing is necessary before the showing. Various ploughing machine are used. These machines make the soil smooth and soft for proper growth of seed. Following are the some ploughing machines are used:

Mould board: Mould board ploughing, is the composite of grating mould board and blade. The purpose of this type ploughing is turn over the upper layer of soil, bringing the nutrient soil on the surface to improve productivity.

Disc plough: Disc plough is used to till the upper soil for removing the weeds.

Drag: Agricultural equipment is designed to break up the parts and parcels of land that have been removed by the plough, are composed of a frame, which can be made of wood and metal teeth and the latch that attaches to tractor.

Agricultural Growth Drivers

A number of growth drivers contributed significantly for the rapid strides made by the state of Punjab in agriculture. These include the facility of tractors and other mechanized equipment's, the effective irrigation facilities, high yielding variety seeds, use and availability of chemical fertilizer, pesticide etc. These were further sprinkled with the favorable agricultural policies, expert consultancy and agricultural extension network which helped the farmers of the State to achieve the record productivity levels. Some of the important drivers of the State agricultural growth are highlighted in table 1

Table 1: Agricultural Growth Drivers in Punjab

Indicator/period	1970-71	1980-81	1990-91	2000-01	2009-10	2010-11
No of tractors (numbers)	5,281	1,18,845	2,89,064	4,34,032	4,98,517	5,04,310
No of tractors Per 000' ha	1.30	28.34	69.53	102.13	119.89	121.29

No of tube well (lakh)	1.92	6.00	8.00	10.73	13.76	13.82
Number of tube wells per 000' ha	47.37	143.06	189.66	252.47	330.93	332.37
Cropping intensity (%)	140.09	161.37	177.86	186.07	189.69	190
Consumption of chemical fertilizers (nutrient 000 tone)	223	762	1220	1313	1866	1911
Consumption of chemical fertilizers (kg/ha)	37.50	112.50	162.60	168.33	226	243
Consumption of insecticides/pesticide (technical grade M.T)	-	3200	6500	6970	5745	5600
Gross cropped area (000'ha)	5678	6763	7502	7941	7876	7872
% of net irrigated area to net area sown	71	81	93	93	97.9	97.9

Source: Statistical Abstract, Punjab

As table shows, the gross cropped area has increased from 5,678 thousand hectares in the year 1970-71 to 7872 thousand hectares in 2010-11. The number of tractors in the State increased from a meager 5281 in 1970-71 to more than 5 lakhs in 2010-11. There was a tremendous increase in irrigation facilities and the net irrigated area increased from 71 per cent in 1970-71 to about 98 percent in the year 2010-11. The number of tube wells has also gone up from 1.92 lakh in 1970-71 to 13.82 lakh in 2010-11. The proportion of area under high yielding variety seeds to gross cropped area has seen a big rise. Wheat, rice and maize are produced using high yielding variety seeds to the tune of hundred per cent. It has raised the consumption of chemical fertilizers and plant protection materials tremendously. Per hectare consumption of chemical fertilizers (NPK) saw a big flight from only 37.50 kg in 1970-71 to 243 kg in 2010-11. Total consumption of chemical fertilizers in the State increased from 223 thousand tons in 1970-11 to 1911 thousand tons in 2010-11. Consumption of insecticides and pesticides had also increased from 3200 MT in 1980-81 to 5600 MT in 2010-11. Result, in India use of Modern inputs and advanced agriculture equipment's are increasing. It has a positive impact on production and living standard of farmers.

Overall, there had been a sharp increase in the use of technology and mechanization for agricultural operations. After green revolution production of all crops has been increased specially wheat and paddy. Increase in agricultural production is due to technological support, price support, infrastructure support including markets and irrigation, subsistence requirements, lesser price and yield risks. All these factors together made paddy and wheat production much superior in profitability to other crops. It is pertinent to note that the Minimum Support Price offered by the Government for a few crops and assured procurement changed the mindset of the farmers from multiple crops to two crop pattern in Punjab. They started taking wheat and paddy the most secure and profitable venture. Moreover, the efforts to be put in by them in these crops are also felt easy by them in comparison to other crops. No doubt the environment in the State has been taken as congenial for agriculture by the farmers in Punjab but it has also made them lethargic. It created the barriers for more innovations and they simply stuck to wheat and paddy and that too with more dependence on the migrant labor. The agricultural production in terms of output has been increased but the quality and diversification suffered which ultimately led to failure of the farming community at many places in the State. Thus, the growth drivers played a significant role in the overall improvement in the agriculture but it was primarily restricted to a few crops which was not considered a good sign for the overall development of the state because of agricultural advancement. Agricultural advancement lead to increase in production as well as unemployment. It is beneficial for large farmers because small farmers can't afford these equipment's due to high cost. Advancement of agriculture equipment does not

support balanced development. The increasing cost of agricultural inputs and comparatively low cost of agricultural products in the international market is creating a crisis situation for Indian agriculture. It is cheaper to buy milk and milk products from the international markets than buying it from the Indian markets. The continuously growing input cost of agriculture is affecting the small farmers and their families. The small farmers are under debt and stress. Many farmers from India are getting exposure to best possible available technologies and educated farmers are working in International companies related to agriculture to help diffusion of better agriculture technologies in their geographical areas. Globalization of agriculture can best be discussed in the context of three components – increase in agricultural exports, improvement of productive efficiency by ensuring the convergence of potential and realized outputs, and value added activities using agricultural produce, and finally improved access to domestic and international markets that are either tightly regulated or protected.

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