

THE DEVELOPMENT OF AGRICULTURAL MACHINERY FROM SELF-PROPELLED TO SMART MACHINES

Barat Ghobadian

Associate Professor (Mechanical Engineering), Tarbiat Modares University (TMU), Tehran, Iran

ghobadib@modares.ac.ir

Abstract

During the 18th century, the oxen and horses were used for mechanical power, crude wooden was used for plows, sowing was done by hand, cultivating was carried out by hoe, hay and grain cutting was achieved with sickle, and threshing operation was possible with flail. For the last 100 years, the agricultural machinery industry has undergone a rapid development and transition. Agricultural mechanization that started with sharpened stones, wooden and metallic tools has now moved to electric operated sophisticated machineries, to meet the timeliness of farm operations, reducing drudgery, capacity enhancement and efficient utilization of inputs. The top 10 most significant new developments in agricultural machinery during the 19th and first half of the 20th centuries are: Cotton gin, Reaper/binder, Thresher, Steam engine, Combined- harvester-thresher, Auto truck, Gasoline tractor, General purpose tractor, Rubber tires and Hydraulic implement lift with draft control. During the recent years, the technology of agricultural machinery worldwide has gradually moved in the direction of sophistication, innovation and intelligence. The rapid development of information technologies has enabled farmers to apply remote monitoring, wireless sensor networks and information and communication technologies (ICT). This has enabled them to improve their cultivation and management. The big machinery companies have already introduced a variety of driverless tractors, and several prototypes are in the works. The latest innovations and prototypes show that, they might re-shape farming operations in the future. Future research and development efforts in smart farm mechanization is steered not only to develop machinery for those operations for which no suitable machinery exists today, but also for efficient use of resources, combating extreme climatic conditions, conserving environment and working in special or difficult agro-climates. The advent of autonomous system architectures brings the opportunity to develop a complete new range of agricultural equipment based on smart machines that can do the right thing, in the right place, at the right time in the right way.



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