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Editorial: Machine learning techniques in designing crop plants: An introspection

India is the second most populated country in the world with a sixth of the world's population which equals to 1.42 billion. At the same time India is the second largest producer of wheat and rice, the world's major food staples. India is currently the world's second largest producer of several dry fruits, agriculture-based textile raw materials, roots and tuber crops, pulses, farmed fish, sugarcane and numerous vegetables but still the problem of malnutrition and hunger is still persisting in the society. A re-look at how productivity and production in agriculture, are addressing the issue of food shortage currently and in the future is something that cannot be argued anymore. Machine learning (ML) has emerged together with big data technologies and high-performance computing to create new opportunities to unravel, quantify, and understand data intensive processes in agricultural operational environments. Artificial Intelligence (AI) is mainly applied when describing a machine that can demonstrate the characteristics of human beings. AI has helped to great extent to breeders in complex traits screening, such as detecting disease invasion in disease trial screening, at an early stage of crops and this, in turn, has improved the process of making decisions. In terms of developing crop designing methods, AI has made a significant contribution in the area of high-throughput phenotyping. Similarly, it has allowed and helped plant breeders to expand into areas that have not been explored in the past by designing crop methods that are capable of helping breeders to develop smart climate crop genotypes. Similarly, it has allowed and helped plant breeders to expand into areas that have not been explored in the past by designing crop methods that are capable of helping breeders to develop smart climate crop genotypes. AI technology has been used to accelerate the process of breeding new plant varieties, such as high-throughput genomics and phenomics to advanced breeding. Crop breeders harness artificial intelligence to breed crops for the changing climate. With a lot of uncertainty that still covers today's environment due to the ever-changing climatic conditions, there is a need to optimize the utilization of digitalization, as this has a heavy bearing on the designs of breeding methods to be utilized for future plant breeding programs. The strength of artificial intelligence ranges from molecular to organismal scale, with this ability, combined with its capability to characterize complex traits in a very detailed and near real-time manner, AI still presents a ray of hope in designing crop methods that have the potential to bridge the gap between the phenotypic and genotypic traits of diverse crops. Using AI, researchers are trying to develop a genetic model to design a crop plant. An urgent need is to accelerate the plant breeding cycle using artificial intelligence to depict plant responses to environmental perturbations in real-time. Improving digital technologies would result in an improvement in designing methods of crop production which would consequently increase agricultural production and productivity. AI-led breeding programs are also becoming more accessible. Moving forward, there is a great need to improve the weaknesses that still exist in AI and ML if the current challenges and future needs are to be addressed. Contrary to this, the use of AI has a high potential to create technological unemployment. Fostering AI among academia-industry can boost its research and application at national level. It will push technology frontiers through the creation of new knowledge and in developing applications. We anticipate the AI practices benefit India in addressing challenges in the field of agriculture especially in plant breeding to design climate resilient crop plants.