

New Innovative Technologies for Enhancing Productivity under Contemporary Agriculture

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Agriculture is primary activity to produce food commodity, got improved in stages to fulfill food demand in countries. The countries who have shortfalls in the production import from countries where production is surplus, thus, trading develop for exchange of commodities, be it for food or any other goods. Coming to the topic of agriculture, productivity got improved by way of creating high yielding crop varieties, crops, cropping practices, plant nutrient management, cultivation and land form preparation, sowing for stand establishments, irrigation and weeding, inter-culture, integrated plant protection measures, harvesting, crop threshing, safe storage and subsequent uses and sale for making income. While there are lot of variations in climate, soil, rainfall and moisture supply depending on the situation of wetness, may be for short or long time systems of agriculture viz dryland and wetland agriculture or both are practiced; the proportion gets adjusted depending on the features of dominance of the aforesaid factors.

With time population increased and global projected population is to reach about 9 billion by year 2050. The long term population is possibly not available for Indian condition. However TERRI presented availability of land resources per capita to be around 0.25 ha per person in 1990's. The average per capita land holding was almost three decades earlier than now and this figure of per capita land availability must have gone still down as a result of division of land generation after generation. Thus, while land availability has decreased, the demand of food has increased. Like land availability of water has also got drastically reduced and causing equally huge stress for irrigation. Thanks to Agricultural Research for the fact that in spite of such drastic reduction in arable land vertical growth has made country self sufficient in food supply.

Now in addition to this, emission of greenhouse gases viz Carbon dioxide, Methane, Nitrous oxide, CFC and HFCs cause global warming and climate change, which disturb onset of season and occurrence of hydrologic events viz rainfall, wind and temperature and impose restriction on agriculture. Thus, the situation of increasing sustainable food demand is to be produced by limiting land water resources and extremes of rain and water supply. It requires some miracle like producing technological breakthrough to cope up with difficult situations.

Researchers have to apply wisdom to tackle problem obstructing the productivity and keep it rising to counter balance the rising food demand. Some innovative measures have been developed to enhance resilience in cope up with adverse hydrologic situations. The land formation systems comprises raised bed and furrow land form that works as auto drainage and as well as it aids more moisture than a flat land topography. The land form is equipped after sowing of crop with sprinkler setup to irrigate the crop with super micro irrigation. Crops and cropping pattern have to be selected based on innovative application of nitrogen cycle, weed management by innovative eco-zero weeding agriculture, While these technologies are universally applicable, but limiting land and flexible field sizes can provided with appropriate technology viz nano bio-technology and by bringing some improvement in high-tech seeding machineries. These measures were devised on the principle of quantum mechanics, ie remain suitable for all the situations, need no change ie remain fixed and need no deviations or further research, have capacity to bring increase in crop yield up to 12-15 percent, but when all measures are applied in crop production sequentially as it is needed for a given crop, it will bring increase in yield by two to three fold the yield levels being harvested presently. These innovations have been developed and three fold on farmer's field which proved highly successful and encouraging. Besides increase in yield, it brings higher income as result of high productivity and eliminates drudgery of hard work in agriculture. Further, researches by large group of research scientists will produce data for varying condition and foster agriculture productivity.

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