**IEEE Eu-Reka 2020**

**TECHNOLOGIES FOR AGRICULTURE,FOOD PROCESSING & RULAR DEVELOPMENT**

IEEE-Institute of Electrical and Electronics Engineering.IEEE is the world’s largest technical professional organization dedicated to Advancing Technology for the benefit of humanity.Established in 1884.IEEE aims to raise the national high school literacy.Expose high school students to advance state-of-art technologies.

Is the use of technology in agriculture,horticulture,and aquaculture with the aim of improving yield,efficiency,and profitability. A major turning point for agricultutre technology is the industrial revolution.

Hydrophonics Technology is a soilless farming technology that is used to grow vegetables and tomatoes.It guarantees an all year round production for farmers and insulates these crops from the effects of climate change.

Farms,worksites and livestock can unfortunately be a target for theft.However,remote security cameras are gaining popularity and are relatively inexpensive.Cameras are easy to set up install and usually only require batteries.

Importance of agriculture technology:

Higher crop productivity

* Decreased  use of water, fertilizer, and pesticides, which in turn keeps food prices down
* Reduced impact on natural ecosystems
* Less runoff of chemicals into rivers and groundwater
* Increased worker safety

Rural development:

“Rural Development is a process of change, by which the efforts of the people themselves are united, those of government authorities to improve their economic, social and cultural conditions of communities in to the life of the nation and to enable them to contribute fully to national programme.

Aims of rural development:

1.To Build: public service

Communication

2.To Improve: education

Health

3.To Generate: employment

Farm & storage

People related problems:

* 1.Traditional way of thinking.
* 2.Poor understanding.
* 3.Low level of education to understand developmental efforts and new technology.

4.Deprived psychology and scientific orientation

Agriculture related problems:

1.Lack of expected awareness ,knowledge ,skill and attitude. 2.Unavailability of inputs.

3.Poor marketing facility.

INFASTRUCTRAL RELATED PROB.

* Poor infrastructure facilities like-:
* 1.Water
* 2.Electricity
* 3.Transport
* 4.Educational institutions

**Principles of Strategy**

* Production not a Challenge – productivity is.
* De-risk Agriculture
* Monetise the Output
* Address structural issues
* Sustainability to form the basis

**Flagship Schemes:**

**1. Soil Health Management**

* + Setting up of new soil testing laboratories and strengthening the existing labs.
  + raining of lab staff/extension officers/farmers/field functionaries on balanced use of fertilizer.
  + Promotion and distribution of micro nutrients.
  + Issue of Soil Health Cards

**2. Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)**

* + Developing long term solutions for mitigating the affect of drought.
  + Increasing area under irrigation.

**3. National Food Security Mission (NFSM)**

* + Under implementation in 638 Districts of 29 States.
  + Promotes & extends improved technologies, i.e., Seed, Micro Nutrient, Soil Amendments, Integrated Pest Management, Farm Machinery & Implements, Irrigation Devices, Capacity Building of Farmers.
  + Includes cluster demonstrations of rice, wheat, pulses & nutri-cereals, distribution of improved seeds/need based inputs, resource & energy conservation techniques, efficient water application tools, cropping system based training and local initiatives.

**3. e-NAM**

* + Pan India electronic trading portal in selected regulated wholesale markets in States that have undertaken reforms.
  + Common tradeable parameters developed for 90 commodities.
  + 506 markets integrated on e-NAM till date. 585 markets to be integrated by 31.03.2018.

**4. Pradhan Mantri Fasal Bima Yojana (PMFBY)**

* + Available to farmers at very low rates of premium.
  + Farmers to get full insurance. No capping of sum insured.
  + Insurance cover at all stages of crop cycle.
  + Focus on covering non-loanee along with loanee farmers.
  + Target for area coverage 40% (2017-18) and 50% (2018-19)

'National Rural Employment Guarantee Act'2005 (NREGA)

* Act guarantees 100 days of employment in a financial year to every household social safety net for the vulnerable groups and an opportunity to combine growth with equity Structured towards harnessing the rural work-force, employment for the area for future growth employment and self-sufficiency Operationalized from 2nd February, 2006 in 200 selected districts, extended to 130 more districts in 2007-08.
* The remaining districts (around 275) of the country under

the ambit of NREGA from 1st of April, 2008

Food processing:

* Food processing Technology includes set of physical and chemical techniques in the transformation of food ingredients or agricultural products into food.
* It includes many forms of processing foods, such as grinding grain to make raw flour to home cooking and complex industrial methods used to make convenience foods.

SOME OF THE HEAT PROCESSING TECHNIQUES:

* BLANCHING – Mild heat treatment that kills some enzymes reduces the microbial growth. Ex :: frozen or canned vegetables.
* PASTEURIZATION – Primarily used mild heat treatment to reduce microbial activities. Ex :: pasteurized milk.

COMMERCIAL STERILIZATION -- A severe heat treatment that destroys the pathogenic and microorganisms. Ex :: canned foods

PACKAGING

THE PROCCESS OF PACKING THE FOOD FOR TRANSPORTATION AND STORING.

Ohmic Heating:-

Advanced thermal processing method.

Food material heated by passing electric current through it.

Microwave heating:-

× It uses electromagnetic waves of frequencies (3MHz to 300GHz).  
× Polar water molecules will rotate according to the alternating electromagnetic field

Pulsed electric field:-

× Also called as High Intensity Pulsed Electric Field  
× Mainly used to inactivate deteriorative microorganisms  
× Pulses of high voltage ( 20-80kV/cm) passed over the product placed between electrodes for an extremely short period of time (1-100us).  
× The gap between two electrodes is called as the treatment gap.

High pressure Processing:

×Also called as High hydrostatic pressure processing  
× High pressure up to 1000Mpa are applied to food packages submerged in a liquid  
× Pressure causes destruction of microorganisms

Ultrasound:

×Also called as Ultrasonication  
× The freq.of sound waves audible to human ear ranges from 20Hz to 20 kHz. Ferq.below 20Hz are Infrasound and above 20 kHz are ultrasound.  
× When ultrasound waves meet medium,it creates regions of alternating compression and expansion.  
× These compression and expansion cause formation of bubbles in the medium that is cavitations.  
× These bubbles are larger in size during expansion cycle, which iincreases gas diffusion, causing the bubble to expand  
× when ultrasonic energy is insufficient to retain the vapour phase in the bubbles then rapid condensation occurs.  
× The condensed molecules collide and create shock waves which create regions high temperature and pressure

REFERENCES:-

* IEEE PUBLISHED PAPER
* WIKIPEDIA
* FOOD SAFETY AND STANDARDS AUTHORITY OF INDIA