Major Projects
Sugarcane Research Institute
U.P. Council of Sugarcane Research, Shahjahanpur

A. CROP IMPROVEMENT

1. Breeding
   • Development of new varieties with higher cane yield and sugar recovery combined with disease resistance through breeding method
   • Raising of the seedlings
   • First clonal generation (C₁)
   • Second clonal generation (C₂)
   • Preliminary Varietal Trial on plant and ratoon (early & mid late).
   • Standard Varietal Trial on plant and ratoon (early & mid late).
   • To identify the varieties for late planting
   • Uniform Regional Varietal Trials
   • Zonal Varietal Trials

2. Genetics and Cytogenetics
   • Collection, maintenance and evaluation of sugarcane germplasm
   • Studies on floral behaviour in sugarcane varieties
   • Cytogenetical studies in sugarcane

3. Biotechnology
   • Sugarcane improvement through biotechnological approaches
   • Development of transgenic sugarcane for borer resistance and high sugar content.
   • Fingerprinting of sugarcane varieties
   • Genotyping and phenotyping of mapping population for sugar related traits in sugarcane

4. Tissue Culture
   • In vitro micropropagation of newly released varieties
   • Researches for improvement of micropropagation protocol
   • Development of low cost protocol for efficient plant multiplication
   • Sugarcane improvement through somaclonal variation

B. CROP PRODUCTION

1. Agronomy
   • Planting methods and agronomical practices for sugarcane
   • Intercropping with autumn and spring planted sugarcane under trench planting method
   • Methods of irrigation
   • Ratoon management in sugarcane
   • Development of low input agronomic practices for optimal cane and sugar yields

2. Soil Chemistry
   • Soil survey, soil testing and fertility mapping in UP
   • Fertilizer recommendations based on soil test
   • Macro-and micronutrient management in sugarcane
   • Integrated nutrient management

3. Sugar Chemistry
   • Nutritional requirement of sugarcane
   • Post harvest deterioration and its management

4. Gur and Khandsari Chemistry
   • Screening of varieties for quality gur production.
   • Studies on gur quality and storability of gur.
5. Physiology
- Studies on abiotic stresses in sugarcane
- Studies on physiological parameters in sugarcane varieties
- Weed management

6. Biochemistry
- Studies on biochemical aspects of sugarcane growth, maturity and sugar accumulation
- Studies on biochemical parameters associated with biotic and abiotic stresses

7. Pesticide Chemistry
- Evaluation of efficacy of newer pesticides
- Evaluation of pesticide residues in soil and sugarcane juice

8. Soil Microbiology
- Production and distribution of organo-decomposer for quick decomposition of organic wastes
- Production and distribution of bio-fertilizers viz., Azotobacter, PSB, Ankush
- Effect of biofertilizers on sugarcane yield and quality
- Method of application and doses of biofertilizers

9. Seed Production
- Production and distribution of breeder seed cane of newly developed varieties among the growers of different sugar factory zones

C. CROP PROTECTION

1. Pathology
- Survey of sugarcane diseases in U.P.
- Collection, maintenance and virulence testing of pathogenic mycoflora
- Characterization and identification of pathotypes/races of red rot pathogen in Uttar Pradesh
- Varietal resistance test against red rot disease
- Integrated disease management

2. Entomology
- Survey and surveillance of sugarcane insect pests
- Varietal screening for resistance to major insect pests of sugarcane
- Integrated Pest Management (IPM) for white grub
- Biological control of insect-pests

D. EXTENSION
- Transfer of technologies on sugarcane cultivation
- Varietal and intercropping demonstrations.
- Organizing farmers’ fairs and training programmes under NFSM and other schemes
- Organizing kisan goshthies at sugar factories and villages of different factory zones of U.P.
- To impart training on cane cultivation, and cane & sugar productivity to farmers, cane development staff and sugar factory personnel
- Motivation of sugar factories and cane growers to adopt modern approaches of cane cultivation

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