

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
