

# Conserve Resources & Protect Environment

## Crop sector

### Soil, Fertilizers, Pesticides and Land

- Develop cropping pattern and integrated nutrient management methodologies to decrease nutrient depletion in soil and enhance organic matter contents
- Develop nutrient efficient varieties, especially in wheat, cotton, sugarcane, rice, maize and vegetables
- Improve fertilizers use efficiency through liquid and band placement 3A.1.4. Develop fertilizer use recommendations for different cropping systems
- Develop appropriate technologies to reduce soil erosion, desertification, soil compaction, and salinity & sodicity
- Research on developing efficient methods for composting 3A.1.7. Standardization of spraying techniques
- Developing alternatives of chemicals used in crops and livestock sector for improving health and productivity
- Development and validation of IPM models of different pests in various crops (especially in cotton and vegetables where maximum pesticide is used)
- Develop standards for the use of additives in spray mixtures to reduce pesticide doses 3A.1.11. Develop better land use options for Thal and Cholistan areas (crops, plants, grasses, small ruminant, etc.)

### Water use Efficiency

- Research on alternatives of flood irrigation at farm level by on farm storage, sprinkler irrigation and trickle irrigation and develop optimum input and management schemes for each
- Improve water use efficiency by adapting direct seeding in rice and furrow-bed system in other crops
- Develop rain water harvesting and conservation technologies for rainfed and dry regions 3A.2.4. Determination of optimum water requirements under alternative irrigation technologies of different crops grown under different soil types in different zones

### Environmental Efficiency of Crop and Livestock Production

- Management of pollinators particularly honeybees for sustainable agriculture crop yields of cross pollinated crops
- Studies on fate and pathway(s) of agrochemicals particularly pesticides in soil, water, and food chain including livestock products and environment
- Documenting the impact of pesticides and livestock production in close proximity of humans on environment including human/animal health.
- Developing technologies for reducing pesticides and heavy metals residues in different food commodities including livestock products
- Technologies for crop and livestock residue management for the conservation/ protection of environment.