Future agricultural production will face multifaceted challenges from global climate change the fundamental reason behind this is the increasing accumulation of greenhouse gases and carbon dioxide in the atmosphere at undefined rates.

Solutions for increasing the crop yield in changing weather patterns

Crop rotation-Crop rotation also called conservation agriculture improves the quality of the land by improving soil restoration, soil moisturizing and higher yields. Crop rotation also helps to reduce the emission of greenhouse gases which is the main factor behind the increase in global temperature. This is because the higher level of organic matter in the soil reduces the need of nitrogen based fertilizers and without it the production of nitrous oxide is much lower and nitrous oxide is 300 times more harmful greenhouse gas than carbon dioxide.

By using the DSSAT model-The Decision Support System for Agrotechnology Transfer was developed by an international network of scientists. The DSSAT system is used to predict the yield of different crops by the function of water, condition of soil, crop management and genetic information.

By adaption to organic farming-The global warming potential of conventional agriculture is strongly affected by the use of synthetic nitrogen fertilizers and by high nitrogen concentrations in soils which is responsible for the global temperature change. By adapting the organic farming which is self-sufficient which uses manures recycling from livestock and of crops residues. The leguminous crops which produce nitrogen can be 154 million tonnes which exceeds the production of nitrogen by fossil fuels which is not fully exploited by conventional farming techniques.

By adaption to agriculture to climate change- adaption to climate changes helps to increase the production of crops. This can be achieved by adjustment of planting and harvest times, expansion of crop lands to more permitting areas, , changing genotypes or species to those with more appropriate thermal time or heat stress tolerance, developing new germplasm with improved traits, altering fertilization rates and irrigation practices, and using climate forecasting to reduce production risks.

By improving the farm machinery- The emission of greenhouse gases can be reduced by improving the efficiency of farm machinery and can be accomplished by using the equipment that is best suited for the given farm type. The right machinery, such as two-wheel tractors, combined with agronomic innovations, such as direct seeding technology, can contribute to climate change adaptation and mitigation. Small tractors using tined equipment instead of disc ploughs or modern direct seeding equipment are more productive than tillage based systems.