

Course Contents:

Introduction; Concept of Agricultural cycle, Agricultural Productivity, and Food Security; Agricultural activity impact on environment; Introduction to concept of agriculture as a contributor to global warming; Agricultural Productivity, and Food Security; Factors impacting agricultural Growth, Yield. Discussion of main issues affecting food security; mainly global warming, or climate change, and anthropogenic activities; Agriculture and Climate Change; Influence of temperature and carbon dioxide on agricultural productivity. Concept of carbon fertilization; Examination of the relationship between climate change and agriculture under two headings; A. Contribution of agricultural practices to climate change; B. Impact of Climate change on agricultural productivity; Status of Food Security and Need for Sustainable Agriculture; Current agricultural production worldwide; Variation in availability of resources over time and resulting food scarcity; Overview of reports on food security and future predictions by International agencies; Concept of IPM (Integrated Pest Management) & the sustainable intensification of agriculture; Adapting Agriculture to Climate Change; Challenges ahead and mitigation strategies being adopted to ensure food security. Discussion of adaptation options, with detailed discussion of Low-Emissions Climate-Smart Agriculture; Impact of Climate Change on Indian Agriculture: Economic perspective; Case study: India and USA; Govt. Initiatives to ensure food security and enhance food production; Government policies and initiatives, trends over time, current focus, future predictions; International treaties and Initiatives worldwide; Modeling Environmental fate and transport of agrochemicals. This will involve examination of the Post application behavior of agrochemicals; Concept of Point and Nonpoint-source pollution (NPSP), Short and Long Range Transport (LRT) to non target destinations, impacts of changes in temperature and carbon dioxide on crops will be investigated.