Canada
Subsidiary Body for Scientific and Technological Advice (SBSTA)

Agriculture Workshop #2: *Assessment of risk and vulnerability of agricultural systems to different climate change scenarios at regional, national and local levels, including but not limited to pests and diseases*

Thank-you co-chairs and colleagues, I would like to take this opportunity to briefly share some of our experiences with climate risk and vulnerability assessments for Canadian agriculture systems.

In 2014, the Government of Canada released a science assessment report entitled *Canada in a Changing Climate: Sector Perspectives on Impacts and Adaptation*[1], which contains a chapter devoted to food production with an assessment of risks, vulnerabilities and opportunities facing the Canadian agriculture and agri-food sector given changing climatic conditions.

Canada's agriculture and agri-food sector will be affected by climate change in different ways and a diverse range of adaptation techniques will be needed.

[1] http://www.nrcan.gc.ca/environment/resources/publications/impacts-adaptation/reports/assessments/2014/16309

Key potential climate change include:

- Locations for particular crops will change. Longer and warmer growing seasons may allow warmer weather crops to be grown further north where soil conditions permit;
- Pollinators would face shorter, less harsh winters but may be affected by increased pest and disease activity, different food sources and changes in the timing of flowering plants;
- Animal production will be affected with longer feeding seasons and changes in crop production, water availability and heating and cooling requirements;
- Changes in water supply and precipitation patterns will affect farm operations (e.g. need for drainage or irrigation). Water quality will also be affected;
- Pests, diseases and invasive species could become more virulent and diverse with potential for more severe outbreaks. There will also likely be increased growth of weeds that could negatively affect production and require timely adaptation;

Regarding pests, the Government of Canada has conducted work using bioclimate simulation models to assess the impact of climate change scenarios on the distribution and relative abundance of various crop pests.

These scenarios predict increased risk to crops across all Canadian agricultural regions with pest species expanding northward.

Comparing pest species prevalence under changing climatic conditions has permitted analysis of potential control responses to crop pests in Canada. In addition, geographic regions that are likely to be at greatest risk of invasion or increased occurrence of pest species can be identified.

Advanced notification of the potential invasiveness of specific crop pests gives those involved in crop management research a wider window of opportunity to develop and transfer management tactics to mitigate pest impacts. And through increased awareness, farmers in potentially high-risk areas can be more proactive in monitoring or detection, and will have useful information, on recommended practices to combat the establishment or spread of these pest species.

Thank-you