Ontario Federation of Agriculture

CLIMATE CHANGE BACKGROUND DOCUMENT

The term 'Climate Change' refers to a change in either the average state of the climate or in its variability that persists for an extended period - typically decades or longer. Climate Change may be due to natural processes, such as volcanic activity, variability in ocean currents, wobble in the Earth's axis, changes in solar output and to human activities that result in atmospheric changes.

Climate Change is a global phenomenon that is currently attributed mainly to human activities resulting in increased emissions of carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4). Collectively these gases are known as Greenhouse Gases (GHGs).

Leading scientists, politicians, insurance companies, and economists are recognizing that increased GHG levels are contributing to a rise in global temperature, and that this will cause changes in our climate. The recorded one degree increase in global temperature means that the atmosphere is capable of holding 7% more moisture. This has significant impact on our weather patterns.

It is generally accepted that with an increasing global temperature, the Earth will experience more frequent and more severe weather events. Severe rain events may punctuate longer and more frequent periods of drought or water restrictions, for example. The severity, volatility, and variability of climate changes remain unknown for specific locations, but it is known that temperatures are warming.

While a rise in temperature may mean a longer, more productive growing season in much of Canada, it may also have the potential to disrupt farm operations in a number of ways, including:

- More frequent, extreme weather events (storms and droughts)
- Increased requirement for irrigation water
- Increased plant damage from new (invasive) and existing weeds and insects
- Movement of human and livestock diseases into Canada from lower-latitudes
- Lower livestock productivity (including conception rates) due to thermal stress.

The OFA position statement is intended to make clear our recognition of the situation according to current evidence.

Drivers for a Position Statement on Climate Change

Action from government, society, and the marketplace has already begun:

- The Provincial Government has signalled its intention to address Climate Change by creating the Ministry of Environment and Climate Change (MOE&CC)
- Other provincial Ministries are charged with amending the Building Code and infrastructure specifications to cope with Climate Change impacts
- Large retailers are demanding life cycle accounting of product carbon footprints – marketing is a major driver with the sustainability

efforts of large retailers and will ultimately be downloaded to producers
- At the federal level, the global perception is that Canada is not doing enough to combat Climate Change and that we are agging behind
- Other sectors, such as the insurance and banking sectors, have responded to Climate Change and may impose costs related to the associated risks

Moving Forward

OFA's position with regards Climate Change has two fronts: adaptation to changes in temperature and water availability and mitigation of Greenhouse Gases.

- **Adaptation** – If climate model predictions are correct, we can expect continued increases in global temperature in the long term. For the agricultural sector, warmer weather can be good (better growing conditions) and bad (invasive species and pests, increased transpiration). Farmers will face an increase in extreme weather events. Adaptation involves building resilience within production systems to enable farmers to cope with these changes and can include considerations such as:
    - Water management – coping with the extremes of too much water and flooded fields (drainage infrastructure) and strategies to retain water for periods of drought (retention and irrigation infrastructure)
    - Plant solutions – new varieties that are drought and disease tolerant
    - Invasive species and new plant diseases as a result of increased temperatures
    - Long-term research requirements
    - Adjustment of management practices that enable Climate Change adaptation
    - Infrastructure Issues – Upgrades to bridges, roads, etc.
- **Mitigation** – As well as the need for farmers to be able to *adapt* to the variability of Climate Change, there is a need to reduce GHG emissions with the goal of preventing or reducing further impacts in the future. Efforts to reduce GHG emissions are known collectively as Climate Change *mitigation*.

Under mitigation, the agricultural sector can be positioned as part of the solution to Climate Change, as changes to production methods serve to reduce carbon release and/or sequester (lock up) carbon in the soil. Mitigation can also include considerations such as:

- Energy (fossil fuel) conservation or replacement – recent reports indicate that Canada lags other industrialized nations in energy conservation
- Carbon management
- Support for Ontario's bio-economy in the development, piloting and commercialization of biomaterials, bio-energy, biopharmaceuticals, and other products generated from biomass;
- Beneficial Management Practices
- Renewable energy

Climate Change and the OFA

OFA has been involved Climate Change discussions since it emerged as an issue. As early as 1991, the Ontario Farm Environmental Coalition (a coalition of the OFA, and other Ontario farm organizations) released a publication entitled *Our Farm Environmental Agenda* containing references to GHGs. In the early 1990s, work was carried out by the OFA and other farm organizations to investigate the potential for agriculture to provide carbon offsets by way of sequestering CO_2 in farm soils.

Recently, the OFA revisited the concept of having Ontario farmers participate in a carbon trading system in a study conducted in 2009. From a farmer's perspective participating in a carbon trading system would be a payment for provision of an environmental good. Other studies conducted by the

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OFA in the last five years relating to Climate Change mitigation investigated the benefits of establishing a bio-economy to reduce the reliance on petroleum for fuel, and petro-chemicals. Agricultural biomass from either crop residues or purpose grown crops can serve as a feedstock for a bio-economy.